



## Short Communication

# *Cyphoderopsis nepalensis* (Wilson, 1982): A New Record of Collembola (Entomobryomorpha: Paronellidae) from India

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### Abstract

*Cyphoderopsis nepalensis* (Wilson, 1982) is recorded first time from Valmiki Tiger Reserve, West Champaran district of Bihar, India. Earlier it was known and described as *Troglopedetes nepalensis* from several caves and leaf litter from Pokhra, Mahendra Gupha, Nepal. However the species is now recorded from soil habitat of grassland ecosystem.

**Keywords:** Collembola, First Record, Terai Grassland, Valmiki Tiger Reserve

### Introduction

The genus *Cyphoderopsis* Carpenter (1917) was established for *C. kempfi* Carpenter, 1917, a species described from Assam, India. Jantarit *et al.* (2013) made great contribution to its modern taxonomy. At present 15 species of *Cyphoderopsis* described worldwide and 6 species of *Cyphoderopsis* were previously known from India. The present communication is added one more species of *Cyphoderopsis*, in the context of collembolan fauna of India.

The present communication is based on collection made through an extensive faunistic survey in the Valmiki Tiger Reserve, West Champaran district of Bihar, India as a part of Terai grassland of Gangetic plains, by the author in the year, 2017.

### Material and Methods

Collembolan specimens were collected from Terai Grasslands (27°24.154' N, 83°54.663' E and 27°20.173' N, 83°53.396' E) in West Champaran dist., Bihar following the methods provided in Hazra & Mandal (2015). The specimens were mounted under a cover slip in Hoyer's solution, and were studied under a Leica Digital Module (DM 2500) microscope and identified using keys and illustrations of Christiansen and Bellinger (1998). Photographs were taken under a Leica Digital Module

R (DMR) microscope using amounting Leica DFC 295 digital camera, and were enhanced with Photoshop CS4 (Adobe Inc.). All specimens and permanent slides have been deposited in the Apterygota Section, Zoological Survey of India (ZSI), Kolkata.

### Results

#### Taxonomy

Family PARONELLIDAE Börner, 1913

Tribe *Callyntrurini* Mitra, 1913

Genus *Cyphoderopsis* Carpenter, 1917

Type species *Cyphoderopsis kempfi* Carpenter, 1917

*Diagnosis of the genus:* Medium sized Paronellidae of 0.8 to 2.5 mm. Body colour usually white or weakly pigmented. Habitus rather broad, antennae shorter than body, scales generally absent on legs, present on antennae, head, body and furca. Antennae with 4 segments: Ant. I the shortest and Ant. IV the longest; Ant. IV not subdivided. Tenant hair either pointed on clavate, claw with 0–2 inner teeth; one (*ceylonica* group) or two (*kempfi* group) rows of dental spines. Fourth abdominal segment 3 to 7 times as long as the third measured along dorsal axis. Furcula well developed, about 1.8 to 2.8 times as long as body. Mucro rather stout, straight, normally with 3 main teeth, the apical one blunt,

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the sub-apical one small and acute, the dorso-basal one acute and longer with 0–5 toothless basally.

In *Troglopedetes*, Ant. IV is divided in two sub equal sub segments, but in *Cyphoderopsis* Ant. IV is not sub divided.

**Cyphoderopsis nepalensis** (Wilson, 1982) (Figure 1)

1982. *Troglopedetes nepalensis* Wilson, Transactions of the British Cave Research Association, 9: 212.

Type locality: Nepal: Pokhra, Mahendra Gupha.

**Material examined:** Soil habitat, Terai Grasslands, Valmikinagar Range VTR-II, West Champaran dist., Bihar, (27°24.154'N, 83°54.663'E), 24.i.2017, coll. G.P. Mandal, 01 ex., 2533/H14; Soil habitat, Terai Grasslands, Valmikinagar Range VTR-II, West Champaran dist., Bihar, (27°20.173'N, 83°53.396'E), 22.i.2017, coll. G.P. Mandal, 01 ex., 2541/H14.

**Diagnosis:** Coloration: White in alcohol. Head, body and furcula covered with numerous brownish scales. Ratio of Antennae: Head as 1.9: 1. Antenna to body length is 1: 2.3. Antennae IV not sub divided. Two strong wing-like basal teeth and a weak sub apical tooth; unguiculus lanceolate; a single row of spine on each dens, dens thickly covered with setae.



**Figure 1.** *Cyphoderopsis nepalensis* (Wilson, 1982): Habitus.

The main diagnostic character of this species is dentes with one row of dental spines, eyes absent, manubrium longer than mucrodens and claw with two strong internal teeth.

**Distribution:** *India:* Terai Grassland, Valmiki Tiger Reserve, West Champaran district of Bihar. *Elsewhere:* Nepal.

**Discussion**

Currently 15 species of the genus *Cyphoderopsis* are described worldwide. Thibaud and Najt (1988) segregated all the species of *Cyphoderopsis* into two groups, viz., *ceylonica* group and *kempi* group. They are listed here under with distributional information.

1. The '*ceylonica*' group is distinguished in having one row of dental spines and the group comprise following five species.
  - *C. nayakensis* (Stach, 1960) (= *Troglopedetes nayakensis* Stach, 1960). Afganistan, Nayak cave (Stach, 1960). Thibaud and Najt (1988) transferred this species to *Cyphoderopsis* after examination of type specimens.
  - *C. sexocellata* Yosii, 1966a. India; Bombay (Yosii, 1966a) and Kerala Vandiperiyar, Nellikkai Estate (Prabhoo, 1971).
  - *C. ceylonica* Yosii, 1966a. Sri Lanka; India: Assam and Sikkim (Yosii, 1966b).
  - *C. gorumaraensis* Mandal, Suman & Bhattacharya, 2019. India: West Bengal, Jalpaiguri district, Gorumara Beat, Gorumara National Park (Mandal & Bhattachrya, 2019).
  - *C. nepalensis* (Wilson, 1982) (= *Troglopedetes nepalensis* Wilson, 1982). Nepal: Pokhra, Mahendra Gupha (Wilson, 1982). Jantarit, *et al.* (2013) transferred this species to *Cyphoderopsis* after examination of type specimens.

**Table 1.** *Cyphoderopsis nepalensis* (Wilson, 1982), measurements in µm from identified specimen (slide no. 2533/H14).

Body	Head	Ant.	Ant. I	Ant. II	Ant. III	Ant. IV	Th. II	Th. III
1281	287	555	70	160	94	231	158	104
Abd. I	Abd. II	Abd. III	Abd. IV	Abd. V	Abd. VI	Man	Dens	Mucro
56	68	79	452	48	29	328	253	58

2. The '**kempi**' group is distinguished in having two rows of dental spines and the group contains following ten species.

- *C. kempi* Carpenter, 1917. India: Assam (Carpenter, 1917), no ecological data available.
- *C. gracilis* Carpenter, 1924. India: Assam, Siju cave (Carpenter, 1924), no ecological data available.
- *C. lamottei* Delamare Deboutteville, 1951. Guinea (Delamare Deboutteville, 1951), no ecological data available.
- *C. madagascarensis* (Wilson, 1982) (= *Troglopedetes madagascarensis* Wilson, 1982). Madagascar: Andrafiabe cave, from bat guano (Wilson, 1982).
- *C. decemocolata* Prabhoo, 1971. India: Kerala (Prabhoo, 1971).
- *C. pauliani* Delamare Deboutteville, 1951 (= *Troglopedetes pauliani* Delamare Deboutteville, 1951). Ivory Coast (Delamare Deboutteville, 1951).
- *C. khaophang* Jantrai, Satasook & Deharveng, 2013. Thailand: Surat Thani Province, Phanom district, Tham Khao Phang (Jantrai & Deharveng, 2013).
- *C. cavicola* Jantrai, Satasook & Deharveng, 2013. Thailand: Surat Thani Province, Phanom district, Tham Khao Phang (Jantrai & Deharveng, 2013).
- *C. phangnga* Jantrai, Satasook & Deharveng, 2013. Thailand: Phangnga province, Muang Phangna district (Jantrai & Deharveng, 2013).
- *C. thachana* Jantrai, Satasook & Deharveng, 2013. Thailand: Surat Thani Province, Tha Chana district (Jantrai & Deharveng, 2013).

*Cyphoderopsis nepalensis* differs from its congeners in *ceylonica* group having claw with 2 strong internal tooth, which is absent in other four species. This species is new record from India, Valmiki Tiger Reserve, and West Champaran district of Bihar. Previously, *C. nepalensis* was only known from its type locality Pokhra, Mahendra Gupha, Nepal. Obviously the present report from India forms its second report. Though, *C. nepalensis* was reported from cave habitat but our collection from soil habitat. *Cyphoderopsis* is also represented in caves and in forest litter by several species in Thailand (Jantrai & Deharveng, 2013). The distribution of the genus *Cyphoderopsis* ranges over tropical regions of Asia and Africa.

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## References

- Carpenter, G.H. 1917. Collembola: Zoological results of the Abor expedition 1911-1912, *Rec. Ind. Mus.*, **8**: 561-568.
- Carpenter, G.H. 1924. Collembola of the siju cave, Garo Hills, Assam, *Rec. Indian Mus.*, **25**: 285-289.
- Christiansen, K.A. and Bellinger, P. 1998. The Collembola of North America North of the Rio Grande. A taxonomic analysis, Grinnell College, Iowa; p. 1-1520.
- Delamare Deboutteville, C. 1951. Nouveaux Collemboles de la Côte d'Ivoire, *Bulléin du Museum d'Histoire naturelle de Paris*, **23**: 280-86.
- Hazra, A.K. and G.P. Mandal 2015. A new species of Dicranocentroides (Collembola: Paronellidae) from India, *Journal of Threatened Taxa*, **7**(9): 7547-51.
- Jantrai, S., Satasook, C. and Deharveng, L. 2013. The genus *Cyphoderopsis* Carpenter (Collembola: Paronellidae) in Thailand and a faunal transition at the Isthmus of Kra in Troglopedetinae, *Zootaxa*, **3721**(1): 49-70. <https://doi.org/10.11646/zootaxa.3721.1.2>. PMID: 26120658.
- Mandal, G.P., Suman, K.K. and Bhattacharya, K.K. 2019. Two new species of Collembola *Sinella jaldaparaensis* (Entomobryidae) and *Cyphoderopsis gorumaraensis* (Paronellidae) from India, *Journal of Entomology and Zoology Studies*, **7**(4): 145-150.
- Prabhoo, N.R. 1971. Soil and litter Collembola of South India, I. Arthropleona. *Oriental Insects*, **5**: 1-46.

- Stach, J. 1960. Materialien zur Kenntnis der Collembolen Fauna Afghanistans, *Acta Zoologica Cracoviensia*, Tom V, Nr 12, Krakow, **31**(12): 507-582.
- Thibaud, J.M. and Najt, J. 1988. Collemboles (Insecta) de l'Equator IV. Paronellidae avec revision de quatre genres, *Bulletin du Museum National d'Histoire Naturelle*, **10**: 719-30.
- Wilson, M.J. 1982. A review of world Troglopedetinae (Insecta, Collembola, Paronellidae) including an identification table and descriptions of new species, *Transactions of the British Cave Research Association*, **9**: 210-26.
- Yosii, R. 1966a. On some Collembola of Afghanistan, India and Ceylon, collected by the Kuphe Expedition, 1960, Res. Kyoto Univ. Sci. Exp. Karakoram and Hindukush, 1955, **8**: 333-405.
- Yosii, R. 1966b. Collembola of Himalaya, *Journ. Coll. Arts. and Sci. Chiba. Univ.; Nat. Sci. Ser.*, **4**(4): 461-531.