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**THREE NEPALESE SPECIES OF UROTHRIPINI,
WITH A COMMENT ON TERMINOLOGY FOR
PROTHORACIC MORPHOLOGY
(THYSANOPTERA : PHLAEOTHRIPIDAE)**

By IWAO KUDÔ

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Abstract

KUDÔ, I. 1989. Three Nepalese species of Urothripini, with a comment on terminology for prothoracic morphology (Thysanoptera : Phlaeothripidae). *Ins. matsum. n. s.* 42: 83-91, 1 tab., 3 figs.

Three species of urothripine thrips are described from Nepal: *Ananthakrishnaniella gibberosa* n. sp., *Stephanothrips takagii* n. sp., and *S. adnatus* Ananthakrishnan. New terminology is proposed for the prothoracic morphology of Tubulifera.

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Eight species of urothripine thrips have hitherto been known in the Indian region (Ananthkrishnan and Sen 1980), but no species of this group has been recorded from Nepal. The present paper deals with three species of Urothripini based on the material collected by me in 1983 in Nepal. On this occasion, new terminology is proposed for the prosternal morphology of Tubulifera. The abbreviations used in the following lines are as in my previous paper (Kudô 1984).

DESCRIPTION

Ananthkrishnaniella gibberosa n. sp.

♀ (apterous). Head, prothorax and mesothorax brown; metathorax and abdomen yellow, sides of abdominal segments I, II, VII-IX and apex of X brown. All coxae and femora brown; fore and mid tibiae and apex of femora yellowish white, fore and mid tibiae often brownish; hind tibia pale brown. Head and prothoracic setae brownish; metathoracic setae pale. A_1 - A_5 pale yellow, A_1 and A_5 with a brownish tint; A_6 and A_7 brown.

Head (Fig. 1.1) L/W 1.20-1.25; ocellar region strongly elevated, forming a hump; dorsal surface with small tubercles; cheek with 8-10 distinct setae arising from tubercles; eye with 10-11 facets; maxillary stylets extending to base of eyes and apart from each other by about half head W; maxillary bridge distinct.

Antenna (Fig. 1.2) 1.5-1.6 times as long as head; A_2 - A_7 distinctly pedicellate; A_3 L/W 1.32-1.52, with 7 setae and 1 outer sense cone; A_4 L/W 1.26-1.39, with 7 setae; A_5 L/W 1.39-1.50, with 9 setae; A_6 L/W 1.58-1.78, with 12 setae; A_4 - A_6 each with 1 inner and 1 outer sense cone, these cones being subequal and about 0.5 times as long as respective segment; A_7 L/W 3.00-3.40, with 10-11 setae.

Pronotum (Fig. 1.1) W/L 1.65-1.79, nearly smooth except for epimeron tuberculate; with 44-58 discal setae arising from small tubercles; epimeral setae developed (L 24-26 μ m). Probasis sternum (Fig. 1.3) (see under Comment, p. 89) reduced to two small lateral plates or entirely membranous, with 2 pairs of setae, inner pair smaller and sometimes disappearing on either side; furcasternum (see under Comment, p. 89) represented by sclerites narrowly connected at middle, with 3-5 pairs of setae; spinasternum distinct. Mesonotum with 15-20 setae; metanotum with 43-53 setae; metepimeral setae developed (L 18-22 μ m); mesopresternum developed, with a pair of setae; mesosternum with 14-20 setae; metasternum with 25-34 setae. Fore tarsus with a hamus.

Abdominal terga nearly unsculptured; T_1 weakly transverse-striate, T_2 - T_8 weakly reticulate on anterior part; T_2 with 6 posteromarginal setae, T_3 - T_8 each with 8; T_1 - T_8 with 19-31, 32-46, 24-37, 25-34, 24-31, 23-32, 19-28 and 16-22 discal setae, respectively, in transverse row or rows at middle; $T_{10}L/T_9L$ 1.46-1.57; $T_{10}L/W$ 7.00-7.96, 1.39-1.52 times as long as head; anal setae in 3 pairs, subequal in length, longest one 2.7-3.1 times as long as tube.

Measurements (μ m). Body L 1.7-1.8 mm. Head L 165-176, W 133-150; pronotum L 119-133, W 210-238; T_9L 160-176; $T_{10}L$ 238-263, W 33-35; anal setae L 690-790. Antenna 266-282 in total L; antennal segments as follows:

Segment	1	2	3	4	5	6	7
L	24-27	37-39	35-41	37-43	38-41	37-41	48-52
W	29-31	33-38	26-28	29-31	26-29	23-25	15-16

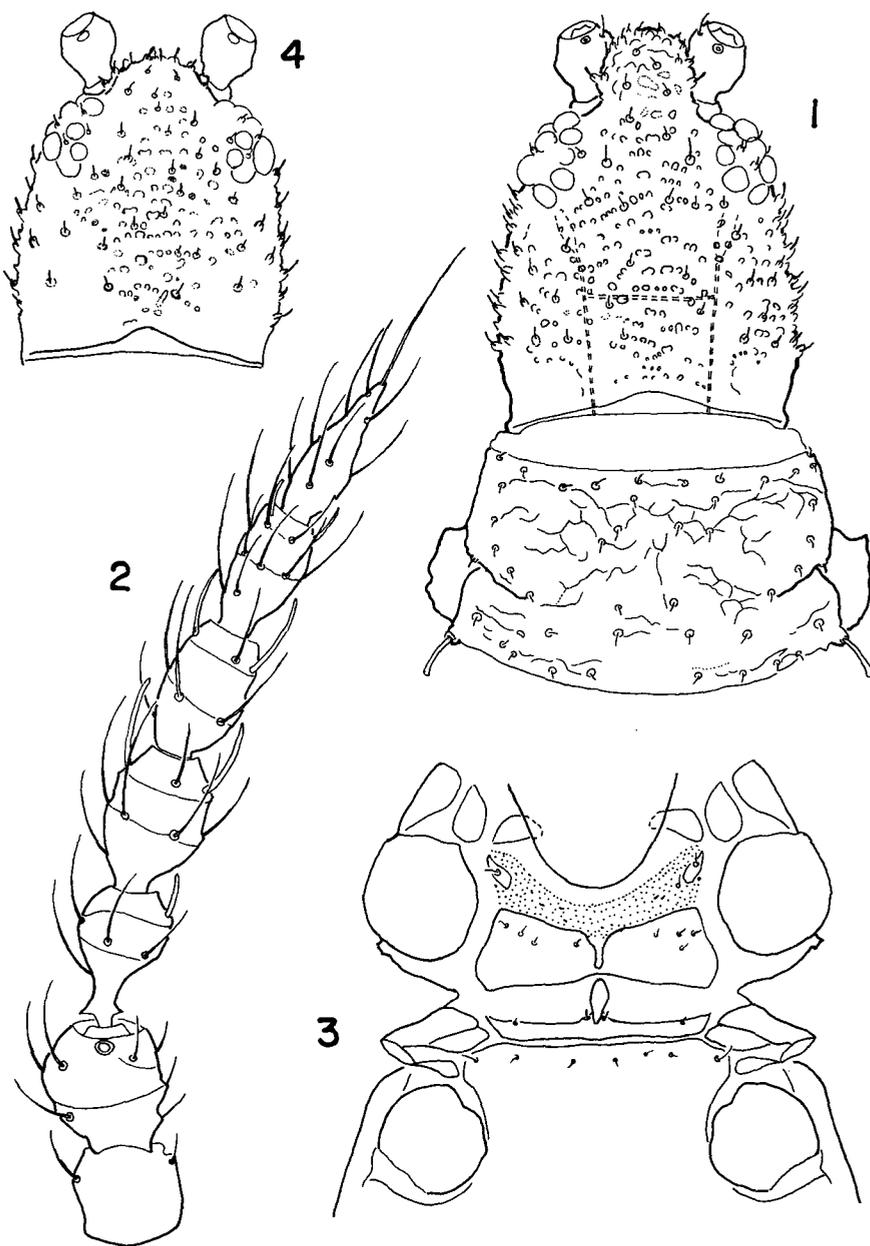


Fig. 1. *Ananthakrishnaniella gibberosa*. 1, ♀, head and pronotum; 2, ♀, right antenna; 3, ♀, prosternum; 4, ♂, head.

♂ (apterous). Very similar to the female; ocellar hump (Fig. 1.4) smaller than in the female; abdominal segment IX bulged laterally. Body L 1.2-1.3 mm.

Specimens examined. Holotype: ♀ (dry leaf of *Quercus* sp.), Siwapuri (2,300 m), Kathmandu Valley, VII 19 1983. Paratypes: 2 ♀ collected with the holotype; 1 ♀ (dead plant), Thare (1,900 m), Bagmati, IX 9 1983; 11 ♀ 2 ♂ (grass tussock), Dhunche (2,200 m), Bagmati, IX 10 1983.

The holotype is deposited in my collection. Some paratypes are retained in Entomological Institute, Hokkaidō University and Department of Agriculture, Nepal.

Host plants. Dry leaves and grass.

Distribution. Nepal: Bagmati (Kathmandu Valley; Rasuwa).

Remarks. *A. gibberosa*, which is a second species of the genus, is easily distinguished from *A. tarai* Stannard occurring in Uttar Pradesh, India, by the dark femora and the strongly elevated ocellar hump. In *A. tarai* the fore and mid femora are yellow and the ocellar region is only rounded forward.

Stephanothrips adnatus Ananthakrishnan

Stephanothrips adnatus Ananthakrishnan, 1972, Oriental Ins. 6: 433-434.

♀ (apterous). Head, anteromedian area of prothorax, and abdominal segments I and II brown; posterior half of prothorax and entire pterothorax yellowish white; abdominal segments III-X yellow, III-VIII with a brown tint on lateral third. Fore and mid legs yellowish white; hind leg brown but tibia yellow at base and apex. Antenna yellow except for apical half of A_5 brown.

Head (Fig. 2.1) L/W 1.33-1.38; with 3 pairs of setae on anterior margin; dorsal surface tuberculate, not reticulate at middle; cheek with 5-7 setae arising from tubercles; eye with 3 facets; maxillary stylets extending to base of eyes and apart from each other by about third head W. Antenna (Fig. 2.2) 5-segmented, about 1.4 times as long as head; A_3 L/W 3.72-4.15, showing incomplete sutures; A_4 L/W 1.45-1.63; A_5 L/W 2.96-3.27, narrowed at base, with a partial suture on ventral side.

Pronotum (Fig. 2.1) W/L 1.75-1.88; tuberculate on anterior half; with 34-45 discal setae; epimeral setae developed (L 18-23 μ m); probasisternum reduced to two lateral plates, with 2 pairs of setae. Metepimeral setae minute; meso- and metafurcae placed laterally and widely separated. Fore tarsus without a hamus.

T_1 and T_2 fused; T_1 - T_8 with 18-21, 16-22, 15-20, 15-23, 16-19, 15-17, 15-18 and 14 discal setae, respectively, in transverse row at middle; T_{10} L/ T_9 L 1.58-1.68; T_{10} L/W 9.00-9.55, 1.61-1.66 times as long as head; anal setae in 3 pairs, subequal in length, longest seta 2.5-2.7 times as long as tube.

Measurements (μ m). Body L 1.5-1.7 mm. Head L 163-175, W 122-130; head setae L, B_1 45-61, B_2 and B_3 20-37; pronotum L 120-122, W 213-225; T_9 L 168-179; T_{10} L 270-288, W 29-31; anal setae L 687-750. Antenna 240-249 in total L; antennal segments as follows:

Segment	1	2	3	4	5
L	22-25	36-37	106-110	29-31	45-49
W	27-29	32-33	27-29	19-20	15

♂. Unknown.

Table 1. Mean and S.D. of quantitative characters in females of *Ananthakrishnaniella gibberosa* and *Stephanothrips adnatus*.

Character	<i>A. gibberosa</i>		<i>S. adnatus</i>	
	Mean±S.D.	n	Mean±S.D.	n
1. Head L/W	1.21±0.03	11	1.35±0.02	5
2. A ₃ L/W	1.45±0.07	12	3.95±0.18	4
3. A ₄ L/W	1.32±0.04	12	1.57±0.09	4
4. A ₅ L/W	1.43±0.04	12	3.08±0.14	4
5. A ₆ L/W	1.70±0.07	12	(absent)	
6. A ₇ L/W	3.16±0.14	12	(absent)	
7. Pronotum W/L	1.74±0.04	12	1.80±0.05	5
8. T ₁₀ L/W	7.39±0.25	13	9.23±0.21	5
9. T ₁₀ L/T ₉ L	1.51±0.04	13	1.62±0.05	5
10. T ₁₀ L/Head L	1.47±0.05	12	1.64±0.02	5
11. Anal seta L/T ₁₀ L	2.92±0.13	9	2.61±0.05	4
12. No. of discal setae on pronotum	51.8±5.2	10	39.5±7.8	2
13. Do. on mesonotum	17.6±2.3	10	—	
14. Do. on metanotum	47.4±3.5	7	—	
15. Do. on mesosternum	17.0±2.0	7	—	
16. Do. on metasternum	29.9±2.7	7	—	
17. Do. on T ₁	24.5±3.7	12	20.0±1.7	3
18. Do. on T ₂	36.1±5.0	13	18.3±2.6	4
19. Do. on T ₃	28.8±3.6	13	17.3±2.5	3
20. Do. on T ₄	28.4±3.0	12	18.0±3.8	4
21. Do. on T ₅	27.3±2.4	13	17.0±1.4	4
22. Do. on T ₆	26.3±2.6	13	16.3±1.0	4
23. Do. on T ₇	23.1±2.9	12	16.3±1.5	4
24. Do. on T ₈	19.4±1.9	12	14.0±0.0	3

Specimens examined. 3♀ (grass tussock), Godawari (1,700 m), Kathmandu Valley, VII 14 1983; 1♀ (grass tussock), Sundarijal (1,700 m), Kathmandu Valley, IX 30 1983; 1♀ (*Eleusine coracana*), Ramche (1,800 m), Bagmati, IX 8. 1983. ♀ holotype (dry twig), Muktheswar (1,200 m), Uttar Pradesh, India, X 19 1970, in Ananthakrishnan collection.

Host plants. Gramineae: *Eleusine coracana* (L.) Gaertn.; unidentified grass.

Distribution. India: Uttar Pradesh. Nepal: Bagmati (Kathmandu Valley; Rasuwa).

Remarks. This species, so far known only from Uttar Pradesh by the type material, is newly recorded in Nepal. The Nepalese specimens examined are darker than the holotype on the head, hind leg, and abdominal segments.

Stephanothrips takagii n. sp.

♀ (apterous). Head brown, yellowish longitudinally at middle; prothorax, abdominal segments I and II brown; abdominal segments III-X yellow, segments

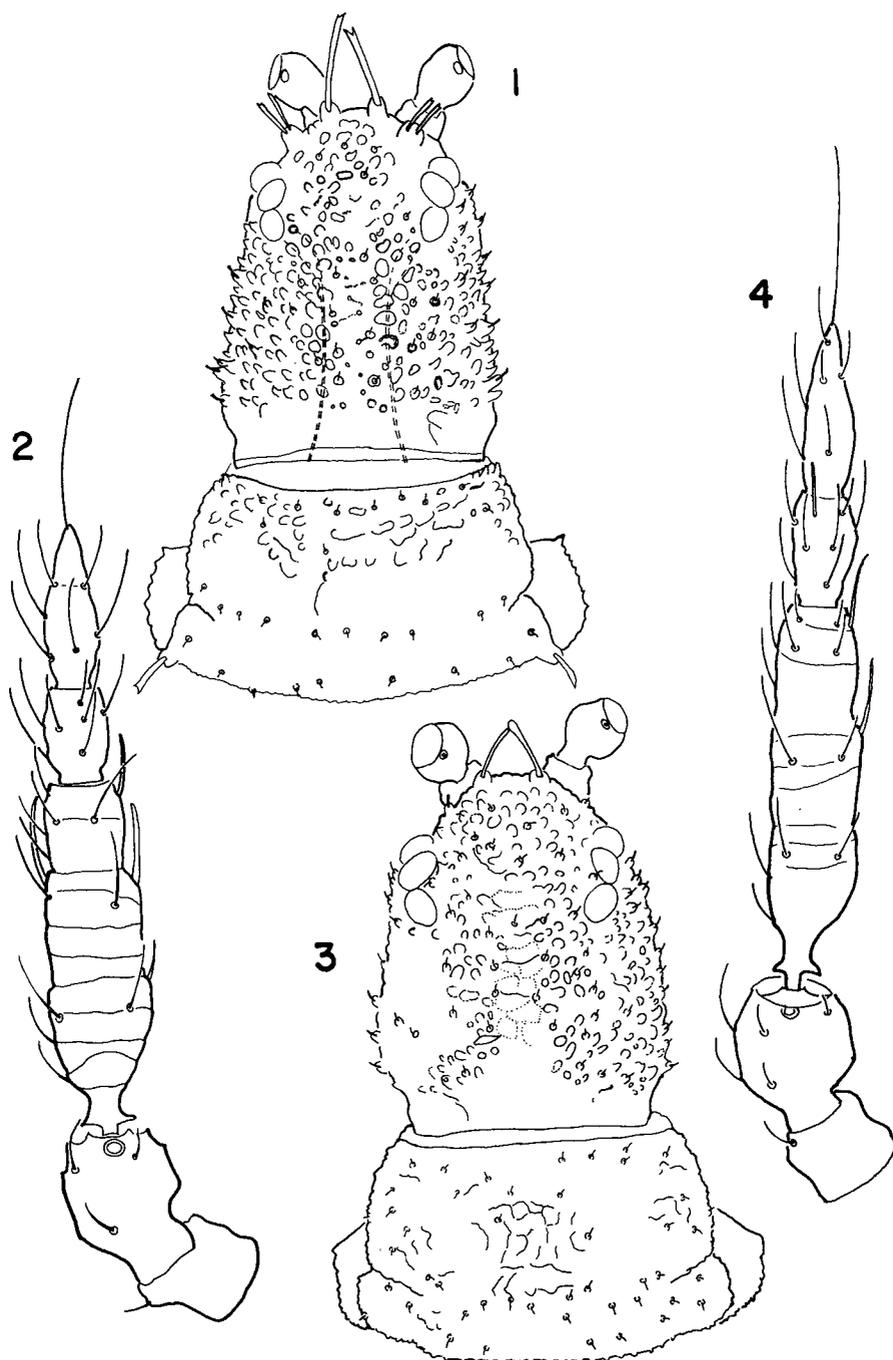


Fig. 2. *Stephanothrips adnatus* (1, 2) and *S. takagii* (3, 4), ♀. 1, 3, head and pronotum ; 2, 4, right antenna.

III-VIII brown laterally ; pterothorax, and fore and mid legs pale yellow ; hind leg brown, tarsus and apex of tibia yellow. Antenna yellow, A₄ and A₅ brownish.

Head (Fig. 2.3) L/W 1.30, with a pair of setae on anterior margin ; dorsal surface tuberculate, nearly smooth to slightly reticulate at middle ; cheek setae small, some posterior setae distinct ; eye with 3 facets. Antenna (Fig. 2.4) 5-segmented, 1.47 times as long as head ; A₃ L/W 4.29, showing incomplete sutures ; A₄ L/W 1.72 ; A₅ L/W 3.29, narrowed at base, with a partial suture on ventral side.

Pronotum (Fig. 2.3) W/L 1.69 ; with 52 (?) discal setae ; epimeral setae minute. Metepimeral setae minute ; meso- and metafurcae placed laterally and separated widely. Fore tarsus without hamus.

T₁ and T₂ fused ; T₁-T₈ with 17 (?), 22, 19, 17, 16, 16, 14 and 16 discal setae, respectively, in transverse row at middle ; T₁₀ L/T₉ L 1.54 ; T₁₀ L/W 7.17, 1.28 times as long as head ; anal setae in 3 pairs, broken apically in the specimen examined, but they are probably subequal and at least 2.8 times as long as tube.

Measurements (μm). Body L 1.44 mm. Head L 164, W 125 ; anterior head setae L 37 ; pronotum L 118, W 200 ; T₉L 135 ; T₁₀ L 208, W 29 ; anal setae at least 580. Antenna 239 in total L ; antennal segments as follows :

Segment	1	2	3	4	5
L	22	35	105	31	46
W	27	31	24.5	18	14

♂. Unknown.

Specimen examined. Holotype ♀ (grass tussock), Suri Dhoban (1,100 m), Janakpur, VIII 29 1983. The holotype is deposited in my collection.

Host plant. Gramineae : an unidentified species.

Distribution. Nepal : Janakpur (Dolakha).

Remarks. *S. takagii* is very similar to *S. japonicus* Saikawa from Japan and Taiwan in having 1 pair of cephalic setae, 5-segmented antenna, and minute pro- and metepimeral setae. It is distinguished from the latter by the yellow fore femur, the brown hind leg and abdominal segments I and II, and the shorter tube which is about 1.3 times as long as the head. In *S. japonicus* the fore femur is brown, the hind leg and abdominal segments I and II are yellow, and the tube is 1.4-1.5 times as long as the head.

COMMENT ON TERMINOLOGY FOR PROSTERNAL MORPHOLOGY

The prosternal morphology has been described by different terms in the suborders Tubulifera and Terebrantia.

The prosternum of Thysanoptera is largely membranous with sclerotized plates, but degree of sclerotization in these plates varies considerably in different groups. In Terebrantia, these plates are recognized as basisternum, furcasternum and spinasternum. The basisternum is a thinly sclerotized plate in most Terebrantia (Fig. 3.1), but sometimes is rather strongly sclerotized as exemplified by *Chirothrips*. The furcasternum is usually a medially constricted transverse plate, and often divided into two plates as in *Dendrothrips*. The spinasternum is a transverse plate situated in front of the anterior margin of mesosternum and bears the spina at the middle of its posterior margin. It is greatly reduced in some genera such as *Dendrothrips* and *Hydatothrips*. On the other hand, in Tubulifera the prosternum generally bears two

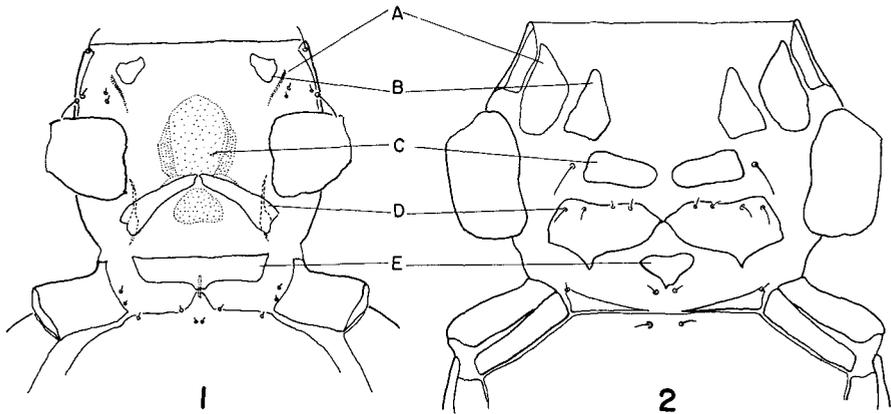


Fig. 3. Prosternal plates. 1, *Taeniothrips oreophilus*; 2, *Haplothrips niger*. A, preepisternum+katepisternum; B, lateral cervical sclerite; C, basisternum; D, furcasternum; E, spinasternum.

pairs of plates in front of the spinasternum, which is represented by a small triangular plate (Fig. 3.2). The anterior pair is, however, often membranous as in Terebrantia. Stannard (1957) designated the anterior pair "prepectus" and the posterior pair "basisternum". His terms, proposed for Tubulifera, have been adopted thereafter by other specialists in describing thrips of this group (e.g. Ananthakrishnan 1964, Mound *et al.* 1976).

The original divisions of the thoracic sternum in the pterygotes are obscure as compared with those in the apterygotes because of fusion, loss and modification of parts. However, the thoracic sternum can generally be considered to be composed of the presternum, the basisternum, the furcasternum, and the spinasternum from the front backward. The term "prepectus" is generally used for the anterior transverse area or ridge along the episternum and the sternum (Matsuda 1970). Thus it would be difficult to call the anterior pair of plates in Tubulifera "prepectus". The prosternal plates in Terebrantia and Tubulifera are considered homologous between these groups because of their essential structural similarities. In this regard, in Tubulifera, too, the anterior and the posterior pairs of plates could be designated the "basisternum" (=Stannard's "prepectus") and the "furcasternum" (=Stannard's "basisternum"), respectively. The characters of these plates are of taxonomic importance in many cases. I would, therefore, propose to use the common terms for both Terebrantia and Tubulifera.

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