

Draconema cephalatum Cobb, 1913

(Figs. 1 to 8, 198 to 199)

Syn: *Chaetosoma cephalatum* (Cobb, 1913) Steiner, 1921

Tristicochaeta cephalatum (Cobb, 1913) Cobb, 1935

Measurements (25 ♀♀): L = 1.1 (0.9-1.4) mm; b = 10.4 (8.3-14.0); c = 13.8 (8.7-18.0); V = 54 (50-60)%; CAT = 25 (20-33) μ m; SER (L/W) = 1.9 (1.5-2.2); SER (E/L) = 11 (9-14)%; No Large SER Ann = 11 (9-13); SS = 14-73 μ m; first SIAT = 49 (41-63) μ m; last SIAT = 40 (33-54) μ m; first SvAT = 43 (33-59) μ m; last SvAT = 29 (23-39) μ m; No SIAT = 14 (12-14); No SvAT = 16 (14-18); Non-ann Term to Tail Length = 51 (44-57)%; T/ABD = 4.0 (3.1-4.8).

(20 ♂♂): L = 1.1 (0.8-1.5) mm; a = 19.4 (16.3-24.0); b = 11.2 (7.3-13.8); c = 10.8 (8.0-12.5); CAT = 25 (21-32) μ m; SER (L/W) = 1.9 (1.7-2.3); SER (E/L) = 11 (9-14)%; No Large SER Ann = 11 (9-13); SS = 15-82 μ m; first SIAT = 51 (41-64) μ m; last SIAT = 42 (35-51) μ m; first SvAT = 43 (34-53) μ m; last SvAT = 30 (22-38) μ m; No SIAT = 9 (8-10); No SvAT = 16 (14-18); Non-ann Term to Tail Length = 37 (31-45)%; T/ABD = 4.0 (3.5-5.0); Spic = 72 (64-85) μ m; Gub = 20 (16-23) μ m.

Males Emended.—Amphids elongate loop-shaped. CAT typical of genus. Longest SS on swollen esophageal region. Long and short SS intermingled with SIAT. Three to 6 long setae with SIAT, usually 4, almost equal in length to adjacent tube, not alternating with tubes. Caudal glands extend anterior to anus 2.7 to 2.9 times ABD. Anal setae with 2 subventral pairs, short, broad-based, unevenly tapered, 6 to 9 μ m long, 1 pair anterior and 1 posterior to anus; and 2 uniformly tapered sublateral pairs, 8 to 13 μ m long, 1 pair anterior and 1 posterior to anus (fig. 5). Anal flap short, crenate. Six pairs of setae on non-annulated tail region, position measured from last complete tail annule to tail tip; 1 subventral pair about 50%; 3 subdorsal pairs, 1 long pair just posterior to last complete tail annule equal in length to long setae on annulated tail, 1 short pair just posterior to long pair, and 1 short pair about 33%; 2 lateral pairs, 1 about 66%, 1 about 75%.

Females Emended.—Similar to males. Amphids usually unispiral, or if elongate loop-shaped sometimes ventral arm converging toward dorsal arm. Vulva encircled by minute spine-like projections, smaller but similar to *D. ophicephalum*. Paravulval setae 11 to 13 μ m long. Longest SS on swollen esophageal region. Short setae intermingled with SIAT. Caudal glands extend anterior to anus 2.3 to 4.9 times ABD. Setae on non-annulated tail region as in males, except with only 1 lateral pair about 50%.

First-Stage Larvae.—Not observed.

Second-Stage Larvae.—L = 0.4 mm. Similar to adults. Amphids unispiral. Two large annules posterior to rostrum. CAT and SIAT typical of genus. Two pairs of setae on non-annulated tail region; 1 lateral pair about 50%, 1 pair adjacent to or slightly dorsal to lateral pair.

Third-Stage Larvae.—L = 0.4 to 0.6 mm. Similar to adults. Amphids unispiral. One to 2 large annules posterior to rostrum. CAT and SIAT typical of genus. Three to 4 pairs of setae on non-annulated tail region; 1 lateral pair about 50%; 1 subventral pair present or absent adjacent to long subdorsal pair; 2 subdorsal pairs, 1 long pair just posterior to last complete tail annule equal in length to long setae on annulated tail, 1 short pair near tail tip.

Fourth-Stage Larvae.—L = 0.8 to 0.9 mm. Similar to adults. Amphids unispiral. Two to 4 large annules posterior to rostrum. CAT and SIAT typical of genus; 9 VAT. Four pairs of setae on non-annulated tail region; 1 lateral pair about 66%; 3 subdorsal pairs, 1 long pair just posterior to last complete tail annule equal in length to long setae on annulated tail, 1 short pair just posterior to long pair, 1 short pair about 33%.

Lectotype (♂).—Collected in 1910 by Dr. N. A. Cobb. Catalogue No. T-241t, USDA Nematode Collection, Beltsville, Maryland.

Paralectotype.—1 ♂. Same data as lectotype, USDA Nematode Collection, Beltsville, Maryland.

Type Habitat.—Marine, associated with sand at base of algae.

Type Locality.—Kingston Harbor and an Island off Port Royal, Jamaica, West Indies.

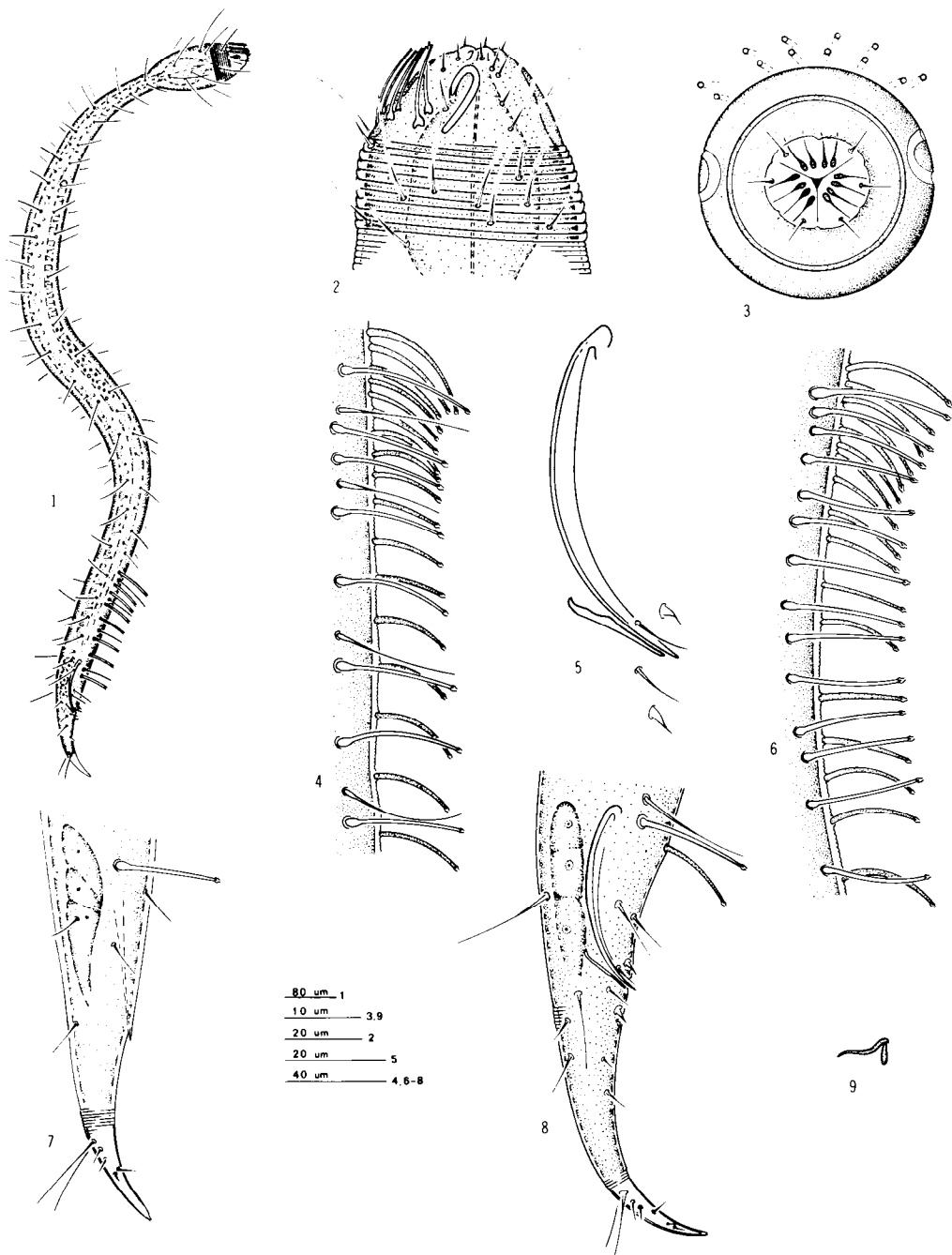
Distribution.—Known distribution. Antarctica. Australia: Christies Beach, Norman Ville Beach, Port Jackson, and Port Noarlunga. Solano, Colombia. Punta Carnera, Ecuador. Florida, USA: Bear Cut, Coral Key, and Soldier Key. Japan: Akkeshi, Hokkaida; Ibusuki, Kyushu; Nakaminato, Ibaraki-ken; Shimoda, Shizuoka-ken; and Wajima, Ishikawa-ken. Tamuning, Agana Bay, Guam Island, Marianas Islands. Galeta Beach and Panama City, Panama. Philippine Islands: Little Santa Cruz Island; Matabungkay, Batangas; and Zamboanga, Mindanao. Society Islands: Tiarei, Papeete, Tahiti Island; Uturoa and Raiatea, Raiatea Island. Kingston Harbor and an island off Port Royal, Jamaica, West Indies.

This species has also been recorded from Fuegian Archipelago, Antarctica; Barents Sea; Campbell Island; Hudson Bay, Canada; Falkland Islands; Kerguelen Island; North Sea; Norway; Öresund; Red Sea; Skagerrak; South Georgia Islands; Svalbard; California, USA; Tobago, West Indies.

Diagnosis.—Males differ from other known *Draconema* males by 2 pairs of uniformly tapered anal setae; and 2 pairs of short, broad-based, unevenly tapered anal setae. Females most closely resemble *D. haswelli* but differ by 5 pairs of setae on non-annulated tail region; amphids usually unispiral, or if loop-shaped, ventral arm always partially converged toward dorsal arm. Females differ from *D. chilense* n. sp., *D. ophicephalum*, and *D. antarcticum* n. sp. by fewer SIAT; and from *D. claparedii* by 1 long pair of setae on non-annulated tail region.

Second-stage larvae differ from other known second-stage *Draconema* by 2 pairs of short setae on non-annulated tail region. Third-stage larvae differ from other known third-stage *Draconema* by 1 pair of short setae on non-annulated tail region near tail tip. Fourth-stage larvae differ from other known fourth-stage *Draconema* by 1 short subdorsal pair of setae about 33%, and 1 short lateral pair of setae about 66% on non-annulated tail region.

The syntype series of N. A. Cobb's was available for study. These specimens were in fair condition and conform to Cobb's original description, therefore, the lectotype is not redescribed in this review.



1. Figs. 1-8: *Draconema cephalatum* Cobb. 1) Male, full length^a, SvAT and correct number of CAT not illustrated; 2) Male, head; 3) Female, face view; 4) Male, PAT^b; 5) Male, anal region; 6) Female, PAT^b; 7) Female, tail; 8) Male, tail. Fig. 9: *Draconema antarcticum* n. sp., male, lateral view of internal projecting cuticularized rib of lip region.

a. Total number and position of setae on non-annulated tail region not illustrated.

b. Short SS with SIAT not illustrated.

Abbreviations Used in Species Descriptions and Keys

ABD = Anal body diameter.

Acan-set = Acanthiform setae (see Morphology).

Ant = Anterior.

Ave = Average.

CAT = Cephalic adhesion tubes (dorsal side of rostrum). Number or length of CAT.

CAT (Ant) = Length of most anterior CAT (*Cygnonema* n. gen.).

CAT (Post) = Length of most posterior CAT (*Cygnonema* n. gen.).

Ceph = Cephalic region.

Ceph Acan-set = Length of largest sublateral acanthiform setae on rostrum, measured from base of seta to distal end.

Corn-set = Corniform setae (see Morphology).

first Mod-SLAT = Length of first posterior sublateral Mod-AT (most anterior sublateral tube, see Morphology).

first Mod-SvAT = Length of first posterior subventral Mod-AT (most anterior subventral tube).

- first SIAT* = Length of first posterior sublateral adhesion tube (most anterior sublateral tube).
- first SvAT* = Length of first posterior subventral adhesion tube (most anterior subventral tube).
- first VAT* = Length of first posterior adhesion tube in ventral row (most anterior tube).
- Gub* = Length of gubernaculum.
- last Mod-SIAT* = Length of last posterior sublateral Mod-AT (most posterior sublateral tube).
- last SIAT* = Length of last posterior sublateral adhesion tube (most posterior sublateral tube).
- last SvAT* = Length of last posterior subventral adhesion tube (most posterior subventral tube).
- last VAT* = Length of last posterior adhesion tube in ventral row (most posterior ventral tube).
- Med Corn-set* = (δ) Length of single large ventral corniform seta just anterior to first SvAT (*Dracotoranema* n. gen.).
- Mod-AT* = Modified adhesion tubes; small diameter, base of tubes slightly broadened, with distal end slightly expanded and open (*Dracognomus* n. gen. see Morphology).
- Mod-CAT* = Length or number of Mod-AT on rostrum (*Dracognomus* n. gen.).
- Mod-SIAT* = Posterior sublateral rows of Mod-AT.
- Mod-SvAT* = Posterior subventral rows of Mod-AT.
- No* = Number.
- No Large SER Ann* = Number of enlarged annules just posterior to rostrum (*Draconema*).
- No Mod-SIAT* = Number of Mod-AT in sublateral rows.
- No Mod-SvAT* = Number of Mod-AT in subventral rows.
- Non-ann Term to Tail Length* = Length of non-annulated tail region to total tail length (%).
- No SIAT* = Number of SIAT in sublateral rows.
- No SvAT* = Number of SvAT in subventral rows.
- No VAT* = Number of VAT in ventral row.
- PAT* = Posterior adhesion tubes (see Morphology). Number or length of SIAT and SvAT combined and given as range.
- Post* = Posterior.
- Preanal Acarn-set* = (δ) Length of preanal acanthiform setae (measured from base of seta to distal end).
- Preanal Corn-set* = (δ) Length of preanal corniform setae (measured from base of seta to distal end).
- PS* = Somatic setae borne on conspicuous, raised, cuticular pedicels (*Dracograllus* n. gen.).
- SER* = Swollen esophageal region.
- SER (E/L)* = Length of swollen body area in esophageal region, expressed as % of body length.
- SER (L/W)* = Length of swollen body area in esophageal region divided by greatest body width in this area.

SLAT = Sublateral rows of posterior adhesion tubes. Length of first and last tubes sometimes given as range.

Spic = Length of spicule.

SS = Somatic setae (see Explanation of Measurements).

SVAT = Subventral rows of posterior adhesion tubes. Length of first and last tubes sometimes given as range.

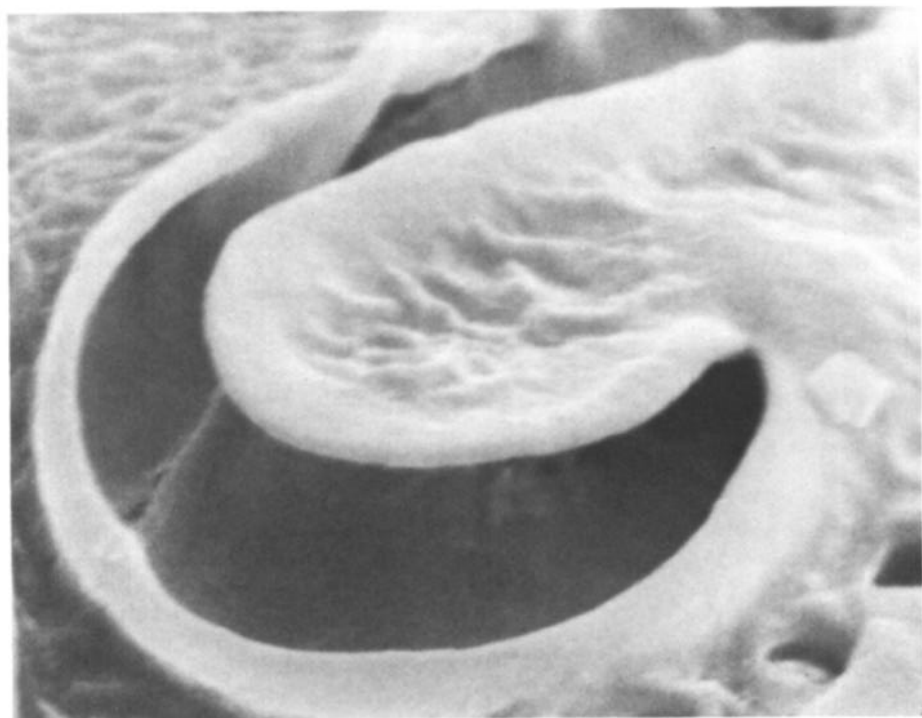
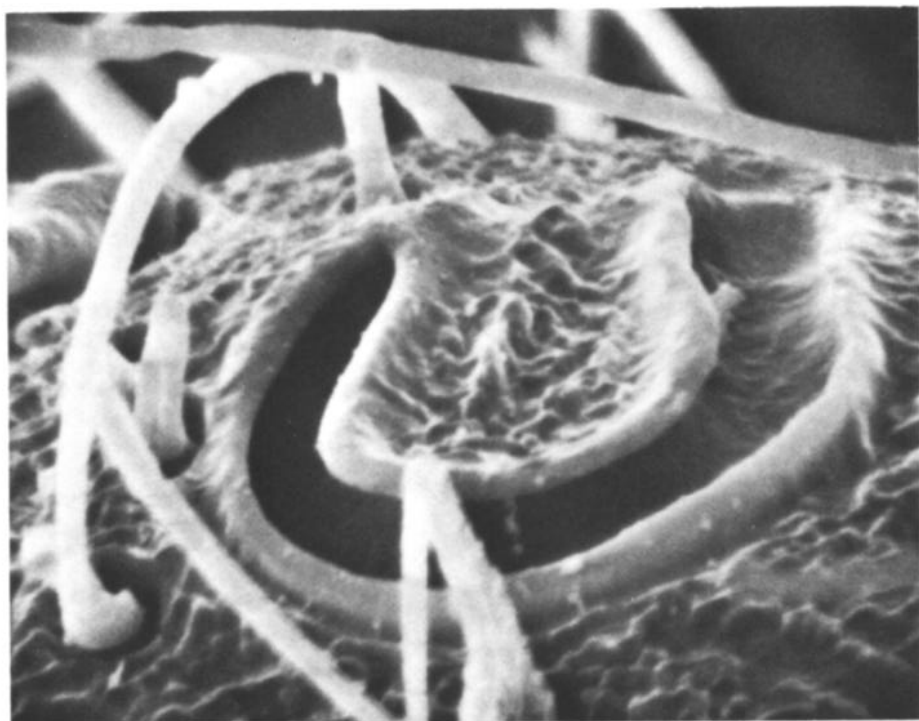
T/ABD = Total tail length divided by anal body diameter.

Vent = Ventral.

VAT = Posterior adhesion tubes in single ventral row.

Explanation of Measurements Used in Species Descriptions and Keys

1. No *a* measurement is given for females because most are swollen, and this measurement is not a useful taxonomic character.
2. No gonad lengths are given for either sex; these measurements are not useful taxonomic characters.
3. Most measurements and counts of posterior adhesion tubes have been made on the right side of the nematodes.
4. All μm measurements and averages of any structures counted have been rounded off to nearest whole number.
5. Measurements of swollen esophageal region were taken as follows:
 - a. *Length*—measured from the anterior tip of the lip region to just posterior to the swollen esophageal region; in most of the Draconematidae the body is constricted at this region.
 - b. *Width*—the body diameter was measured at the widest part of the swollen esophageal region.
6. Position of setae and cuticularized protuberants on the non-annulated tail region was measured from the last complete tail annule to tail tip, and expressed as a percent.
7. Location of cephalic adhesion tubes when posterior to rostrum, expressed as rostral widths posterior to rostrum.
8. Rostral width was measured at the base of the rostrum just anterior to first body annule.
9. Somatic setae measurements expressed as a range, only the *longest* setae were measured on the rostrum, swollen esophageal region, opposite PAT, and annulated tail region.



33. FIGS. 198-199: *Draconema cephalatum* Cobb. Scanning electron micrographs of amphidial grooves, note dorsal arm of groove penetrating rostrum appearing as a hole (see Morphology page 11); 198) Male, X 10,000; 199) Female, X 6,500. Prepared by Arnold Bell, Department of Nematology, University of California, Riverside, California.