

# FREE-LIVING MARINE NEMATODES FROM SANDY SEDIMENTS OFF THE COAST OF PERU (1)

by

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## Résumé

Trois espèces nouvelles, *Tarvaia peruvensis* n.sp., *Odontophora regalia* n.sp. and *Tricoma peruvensis* n.sp. sont décrites des sédiments sableux des côtes péruviennes. *Leptodasynemella riemanni* (Haspeslagh) est redécrite.

## Introduction

The species described herein were collected during Cruise 73 of the R/V Knorr in the upwelling region off the coast of Peru. Station location is 15°45'S 75°26'W with a water depth of 40m. Poorly sorted sediments, primarily of medium-size sand grains, were collected with a Reinick box corer.

Specimens were fixed with 3 percent V/V formalin in seawater and mounted in glycerine. All drawings were made with a camera lucida. Type specimens have been deposited with the National Museum of Natural History. The following abbreviations are used throughout the paper: L = overall length in mm; a =  $L \div$  maximum body width; b =  $L \div$  length to base of oesophagus; c =  $L \div$  tail length; V = position of vulva as percent of L.

In the setal patterns for *Tricoma* the numerator represents the right side of the body and the denominator the left side.

## DESCRIPTIONS

### **TARVAIA PERUVENSIS** n. »p.

(Fig. 1)

Holotype: male USNM No. 57780.

Allotype: female USNM No. 57781.

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## Description

	Male	Female
L	<b>144</b>	2.77
a	42.10	55.4
b	19.27	<b>17.9</b>
c	9.03	<b>11.3</b>
V percent	—	49 %

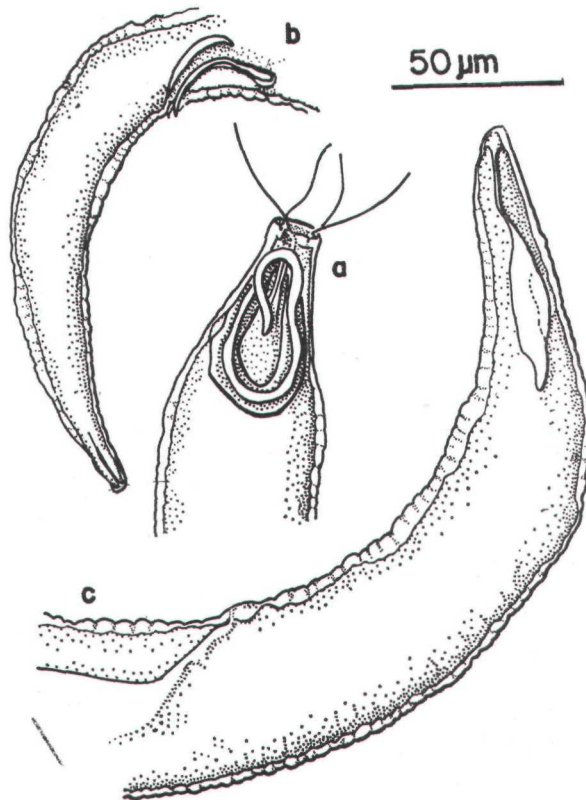


FIG. 1

*Tarvaia peruvensis* n. sp.

a: male head; b: male tail; c: female tail.

Cuticle weakly annulated. No cervical or somatic setae. Amphid spiral, located on plate in neck region, 14.2µm wide in male, 22.6µm wide in female.

Head diameter at level of cephalic setae 14.2µm in male, 18.6µm in female. Neck diameter at base of amphid 28.5µm in male, 53µm in female. Four cephalic setae present, 31.4µm—42.2µm long in male, 39.3µm—43.3µm long in female. Oesophagus cylindrical, without terminal bulb or swelling, 75µm long in male, 155µm in female.

Tail conical, length 160.0 $\mu$ m in male, 245.0 $\mu$ m in female. Anal body diameter 38.3 $\mu$ m in male, 57.9 $\mu$ m in female. Male without supplements. Spicula length (chord) 34.3 $\mu$ m, gubernaculum length (chord) 32.4 $\mu$ m. Ovaries paired.

#### Differential diagnosis

*Tarvaia peruvensis* n. sp. is distinguished from *T. angusta* Gerlach (1953 and 1962) and *T. donsi* Allgen (1934 and 1943) by the shape of the head. *T. peruvensis* n. sp. has a head which is significantly narrower than the body. Allgen's illustrations are difficult to interpret but it appears that *T. donsi* has only a slightly constricted head. The position of the amphid of *T. donsi* is further back than that of *T. peruvensis*.

#### **ODONTOPHORA REGALIA** n. sp.

(Fig. 2 and 3)

#### Material studied

Holotype: Male USNM No. 57782.

Allotype: female USNM No. 57783.

Paratypes: 5 males, 3 females and 5 juveniles USNM No. 57784.

#### Description

	Males	Females	Juveniles
L range	3.81 — 4.25	3.08 — 4.74	1.73 — 3.13
m $\pm$ S.D.	4.03 $\pm$ 0.17	3.9 $\pm$ 0.68	2.4 $\pm$ 0.52
a range	56.8 — 92.4	49.2 — 70.1	42.7 — 58.0
mean	68.1 $\pm$ 12.5	56.8 $\pm$ 9.4	48.5 $\pm$ 6.3
b range	18.0 — 33.0	7.9 — 22.8	11.6 — 15.7
mean	21.6 $\pm$ 5.6	17.5 $\pm$ 6.6	13.2 $\pm$ 2.0
c range	11.2 — 26.9	17.3 — 26.0	12.5 — 19.2
mean	20.5 $\pm$ 5.2	22.1 $\pm$ 3.7	16.0 $\pm$ 2.9
V percent range		54.54 — 61.21	
mean		56.48 $\pm$ 3.2	

Cuticle smooth. Amphid loop-shaped located just behind cephalic setae. Amphid width 8.8—10.6 (9.9+0.8)  $\mu$ m in males, 9.8—11.8 (9.3 + 0.8)  $\mu$ m in females and 8.1—9.8 (9.3 + 0.8)  $\mu$ m in juveniles, much shorter than buccal cavity.

Mean head diameter 23.5—45.2 (31.5 + 8.9)  $\mu$ m in males, 27.90—39.93 (31.57 + 5.6)  $\mu$ m in females, 22.31—29.22 (25.59+2.9)  $\mu$ m in juveniles. Labial papillae or setae not visible. Four cephalic setae,

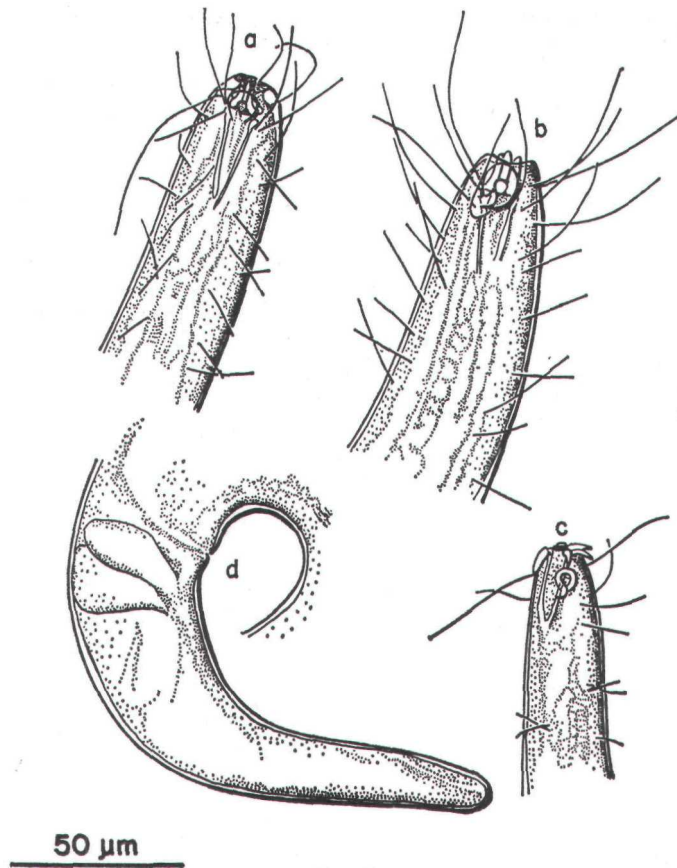


FIG. 2  
*Odontophora regalia* n. sp.  
 a: female head; b: male head; c: juvenile head, teeth everted;  
 d: female tail.

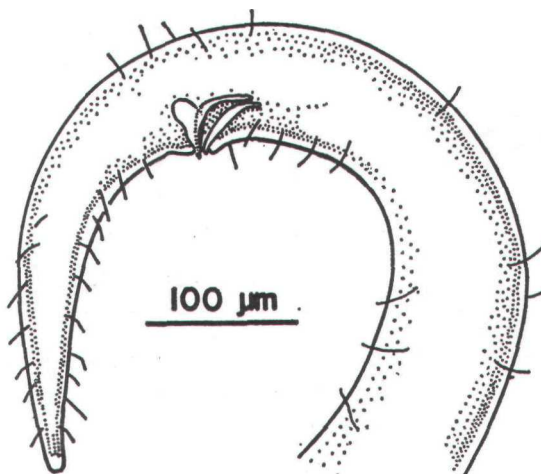


FIG. 3  
*Odontophora regalia*  
 Male tail.

51.9—76.4 (65.8+8)  $\mu\text{m}$  in long in males, 38.5—61.1 (50.5 $\pm$ 8)  $\mu\text{m}$  in females, 35.9—62.4 (48.6+9.6)  $\mu\text{m}$  in juveniles. Many subcephalic setae, pattern very variable, longer than one head diameter. Somatic setae sparse. Oesophagus cylindrical without terminal bulb or swelling.

Tail conical, 167.4—364.0 (222.2+71.2)  $\mu\text{m}$  long in male, 159.4—186.0 (176.4+11.8)  $\mu\text{m}$  long in females, 124.9—186.0 (148.9+28)  $\mu\text{m}$  long in juveniles. Anal body diameter 39.3—58.8 (52.6+6.9)  $\mu\text{m}$  long in males, 46.5—55.8 (51.3+4.3)  $\mu\text{m}$  long in females, 31.9—46.0 (39.05  $\pm$ 5)  $\mu\text{m}$  long in juveniles. Male with variable number of pre- and post-anal setae. Spicula length (cord) 41.2—65.5 (53.6+8.2)  $\mu\text{m}$ . Gubernaculum well developed.

#### Differential diagnosis

*O. regalia* n. sp. differs from several similar species by the straight proximal end of the spicula and the small apophysis on the teeth.

Jensen and Gerlach (1976) mention the presence of denticulate projections on each of the odontia and suggest that it could be an important characteristic for species identification. These projections are not found on the odontia of *O. regalia*. In addition, several specimens of *O. wieseri* found in the samples were examined. These specimens did not have denticulate projections on the odontia.

#### Key to species

The following key should be incorporated into the key by Wieser (1956 and 1959) under couplet B.

2. Cephalic setae longer than 1.2 head diameter; subcephalic setae longer than 1 head diameter; spicular apparatus well developed.
  - a. amphids at base of buccal cavity, circular. *O. parangustilaima* (Wieser 1956).
  - b. amphids just behind cephalic setae, loop-shaped oval in outline.
    - aa. 4 subcephalic setae; first circle of cervical setae behind buccal cavity longer than 1 head diameter; 13-15 preanal supplements in male: *O. longisetosa* (Allgen 1928) Allgen 1959.
    - bb. 10-12 subcephalic setae.
      - aaa. well-developed labial and cephalic papillae.
        - aaaa. gubernaculum as wide or wider than spicula structure, proximal end of spicula decurved.
 

<i>O. mucronata</i> Wieser (1956)	}	perhaps
<i>O. ornata</i> Lorenzen (1971)	}	synonymous
        - bbbb. gubernaculum narrower than spicula structure.
 

<i>O. mercurialis</i> Wieser (1959).	}	
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      - bbb. labial and cephalic papillae absent or very indistinct,
        - aaaa. proximal end of spicula recurved: *O. peritricha* Wieser (1956).

bbbb. proximal end of spicula decurved:

*O. lituifera* Wieser (1959) } perhaps  
*O. falcifera* Ott (1972) } synonymous

cccc. proximal end of spicula straight: *O. regalia* n. sp.

cc. 8 subcephalic setae: *O. phalarata* Lorenzen (1971).

3. Cephalic setae one head diameter long or more; subcephalic setae much shorter than one head diameter; spicular apparatus well developed; terminal setae—if present—much shorter than one anal diameter.

*O. variabilis* Wieser and Hopper (1967) } perhaps  
*O. angustilaimoides* Chitwood (1951) } synonymous  
*O. bermudensis* Jensen and Gerlach (1976) }

4. Cephalic setae one head diameter long or more; subcephalic setae 0.5—1.0 head diameter in length; terminal setae—if present—one anal diameter or longer.

a. labial papilliae present.

aa. subcephalic setae very close to cephalic setae, difficult to distinguish circles *O. viloti* Luc and De Coninck (1959).

bb. cephalic setae and subcephalic setae distinctly separated  
*O. rectangula* Lorenzen (1971).

b. labial papilliae absent.

aa. amphid completely ahead of subcephalic setae: *O. wieseri* Luc and De Coninck (1959).

bb. amphid extends to level of subcephalic setae:

aaa. ends of amphid level with each other: *O. fatisca* Vitiello (1971).

bbb. one side of amphid much longer than other: *O. urothrix* Gerlach (1957).

#### LEPTODASYNEMELLA RIEMANNI

(Fig. 4)

The genus *Leptodasysemella* was proposed by Haspeslagh (1973). The type species, designated *L. riemanni*, is synonymous with *Dasysemella* sp. in Riemann (1966). Riemann described one juvenile and two individuals. Several individuals of this species were found off the coast of Peru, including one male. The following is a description of these individuals.

#### Material studied

One male USNM No. 57785.

One juvenile USNM No. 57787.

Three females USNM No. 57786.

## Description

	Males	Females	Juveniles
L mean	3.432	2.930 ± 0.59	2.534
range		2.417 — 3.391	
a mean	72.57	68.43 ± 4.65	56.82
range		64.36 — 73.50	
b mean	19.54	11.98 ± 5.6	oesophagus
range		6.78 — 17.98	indistinct
c mean	17.46	12.54 ± 1.69	anus
range		10.71 — 14.04	indistinct
V percent mean		52 ± 11	
range		44 — 65	

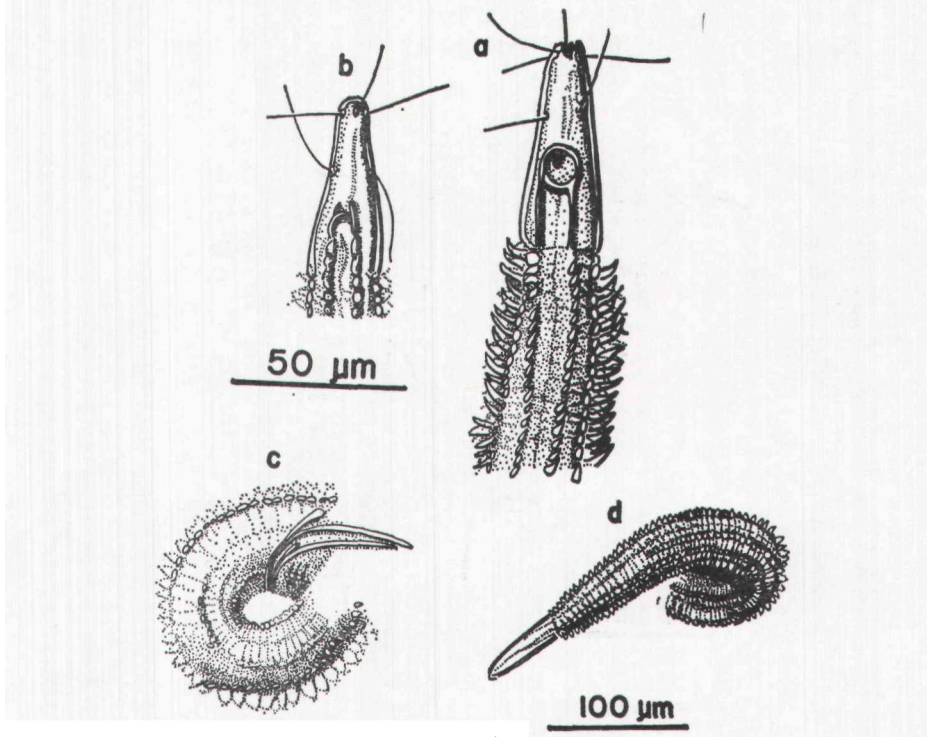


FIG. 4

*Leptodasynemella riemanni*

a: female head; b: male head; c: male tail; d: female tail.

Cuticle distinctly annulated with longitudinal crests. Crests apparently composed of two adjacent parallel ridges. Each ridge consists of series of smooth angular projections from body wall. Helmet distinct. Cephalic setae in an anterior circle of six and posterior of four. Amphid circular spiral located behind cephalic setae. Cuticular crests extend onto cephalic capsule and terminate in a ring around amphid.

Head diameter 24.7μm in male, 31.4+6.2μm in female, 23.9 in

juvenile. Amphid width  $7.8\mu\text{m}$  in male,  $9.5\pm 2.3\mu\text{m}$  in female,  $9.8\mu\text{m}$  in juvenile.

Tail conical, length  $196.6\mu\text{m}$  in male,  $243.7\pm 43.4\mu\text{m}$  in female. Anal body diameter  $25.2\mu\text{m}$  in male,  $40.3\pm 12.7\mu\text{m}$  in female. Spicula length (chord)  $45.2\mu\text{m}$ .

**TRICOMA PERUVENSIS** . sp.

(Fig. 5)

**Material studied**

Holotype: male USNM No. 57788.

Allotype: female USNM No. 57789.

Paratypes: five males USNM No. 57790.

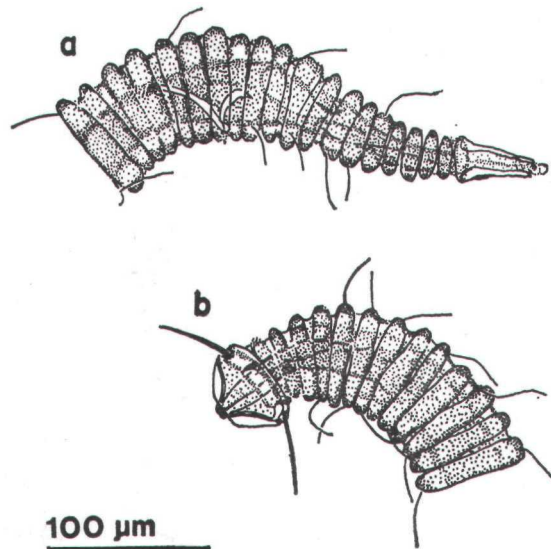


FIG. 5  
*Tricoma peruvensis*

**Description**

	Males	Females
L range	0.884 — 1.174	0.875
mean	$1.076 \pm 0.11$	
a range	16.6 — 23.6	16.2
mean	$20.2 \pm 3.2$	
b range	7.6 — 13.8	9.6
mean	$10.1 \pm 2.5$	
c range	5.1 — 7.2	7.0
mean	$6.2 \pm 7.7$	
V percent		52



Body composed of 81-83 rings. Head triangular, large amphid covers head width 45.6µm in female, 57.0µm in male. Stoma indistinct. Four cephalic setae on distinct peduncular structures. Cephalic setae length 34.2µm in female, 28.5—42.8 (35.4±6) µm in males.

Red pigment spots within rings 10-14, usually in two rings, occasionally occupies only one ring. Oesophagus length 91.5µm in female, 111.15±28µm in male. Setal pattern: (Holotype) subdorsal:

5 7 14 15 16 20 23 25 29 33 37 42 50 58 62 63 = 17  
6 9 10 12 14 15 17 21 25 29 33 36 39 43 45 51 59 63 73 = 19

subventral:

4 5 6 8 10 12 15 16 21 29 31 34 36 38 41 48 51 52 55 58 60 71 72  
17 19 21 27 29 32 35 40 42 45 47 48 50 52 54 57 58 61 70 72 74  
74 75 = 26  
= 21

(Allotype) subdorsal: 8 11 15 18 22 27 35 43 51 55 64 69 76 = 13  
7 10 13 16 20 22 27 35 43 47 58 = 11

subventral:

3 7 9 12 16 23 28 31 34 48 51 53 55 58 60 65 76 = 17  
9 12 17 22 24 28 30 33 38 40 42 44 46 49 52 55 58 60 65 72 74 = 21

(Paratypes) 1) subdorsal:

6 10 11 15 18 22 29 36 43 49 54 59 63 70 = 14  
5 10 14 18 22 30 35 43 49 53 57 63 = 12

subventral:

8 10 11 13 17 20 21 27 30 32 35 41 43 46 49 51 55 56 59 61 63 66 = 22  
5 9 10 12 13 16 19 21 24 31 35 38 41 43 46 50 51 54 59 61 64 = 21

2) subdorsal:

5 10 12 15 19 23 26 30 32 37 40 46 52 56 63 67 71 74 = 18  
5 10 11 14 17 20 22 28 32 37 41 45 52 54 60 64 67 69 = 18

subventral:

9 11 13 15 17 18 21 22 24 26 29 31 32 34 37 39 41 44 45 47 50 52  
6 8 9 11 13 16 19 22 23 26 28 30 36 38 41 43 44 46 47 51 52  
55 61 66 68 70 73 76 77 = 30  
55 58 61 63 65 67 69 72 74 77 78 = 32

3) subdorsal: 4 10 14 18 26 35 40 48 50 57 64 = 11

6 7 11 16 21 27 35 43 50 55 63 = 11

4 6 9 11 13 14 17 19 23 26 29 32 36 41 54 57 68 72 75 77

4 6 9 13 16 19 22 26 31 34 37 41 45 48 52 55 58 61 64 66 69  
= 20  
73 = 22

4) subdorsal:

5 8 11 13 16 20 22 26 30 34 38 43 47 52 56 60 64 70 74 78 = 20

6 9 12 16 19 22 26 30 34 40 44 49 54 59 64 70 74 78 = 18

subventral:

3 5 6 10 12 14 16 20 22 24 27 30 32 37 38 40 43 45 48 51 54 56 58  
3 5 8 10 12 15 17 19 21 23 25 28 31 33 36 39 41 44 47 50 53 56 57  
60 62 65 67 71 73 75 77 = 31  
62 65 68 70 72 73 75 77 = 31

5) subdorsal:	6	11	16	20	24	27	29	31	33	38	41	47	53	57	64	69	72	= 17					
	7	10	12	15	18	21	23	29	33	38	42	46	51	55	61	65	74	= 17					
subventral:																							
6	9	11	13	15	17	18	20	21	23	25	26	28	30	31	33	36	38	39	43	45	47	50	
8	10	12	13	16	21	22	25	27	29	37	39	42	44	46	48	51	53	56	58				
								52	55	59	61	63	66	69	70	73	75	77	= 34				
								61	63	65	67	72	76	= 26									

Maximum body diameter 54.15 $\mu$ m in female, 48.5–59.8 (53.7 $\pm$ 5)  $\mu$ m in males. Spicula (chord) 30.8–65.5 (55.5 $\pm$ 12.7)  $\mu$ m. Anal body diameter 42.75 $\mu$ m in female, 51.3–54.2 (52.9 $\pm$ 1.7)  $\mu$ m in males. Tail length 125.4 $\mu$ m in female, 145.4–184.0 (175.06 $\pm$ 23.5)  $\mu$ m in males. Filamentous eclocommensal organisms were observed on several of the individuals.

#### Differential diagnosis

This species is very similar to *T. hopperi* Timm (1970) and *T. hopperi australiensis* Decraemer (1978) but differs by the lack of a distinct stoma, the greater number of subdorsal and subventral setae, and the greater number of tricomoid main rings. It differs from *T. similis* Cobb (1912), *T. uncinata* Gerlach (1955), *T. rostrata* Timm (1970), and *T. parasitifera* Kreis (1934) in the shape of the gubernaculum. The shape of the head also differs from *T. rostrata* and *T. parasitifera*.

#### Acknowledgments

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#### Summary

Three new species, *Tarvaia peruvensis* n. sp., *Odontophora regalia* n. sp. and *Tricoma peruvensis* n. sp. are described from sandy sediments off the coast of Peru. *Leptodasynemella riemanni* (Haspeslagh) is redescribed.

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