

**TWO NEW MARINE NEMATODE SPECIES OF THE FAMILY
COMESOMATIDAE FILIPJEV, 1918 (NEMATODA: CHROMADORIDA)
FROM HALONG BAY, VIETNAM**

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ABSTRACT: Two new marine nematode species of the family Comesomatidae from Halong bay, Vietnam are given. The first new species *Sabatieria doancanhi* sp.n. could be placed into the *Sabatieria praedatrix* group by having S-shaped spicules, present single precloacal setea and followed by a series of 13 to 18 fine tubular supplements. The second new species *Vasostoma vietnamica* sp.n. could be placed into the subfamily Dorylaimopsinae de Coninck, 1965 by having a long spicules (176 µm long; 4.5 anal diameters) with a slender apophysis.

Key words: marine nematode, *Sabatieria*, *Vasostoma*, Halong Bay, Vietnam.

The systematic of Comesomatidae was reviewed by some authors: de Coninck, 1965; Vitiello, 1969; Jensen, 1979; Platt, 1985; Lorenzen, (1981, 1994); Smolyanko & Belogurov, 1991; Hope & Zhang, 1995 and Muthumbi et al., 1997. According to Jensen (1979) the Comesomatidae included three subfamilies: Sabatierinae Filipjev, 1934 (comprised the genera *Actarjania* Boucher, 1973, *Cervonema* Wieser, 1954, *Pierrickia* Vitiello, 1970, *Laimella* Cobb, 1920, *Sabatieria* De Rouville, 1903 and *Scholpaniella* Sergeeva, 1973); Dorylaimopsinae de Coninck, 1965 (included *Dorylaimopsis* Ditlevsen, 1918; *Hopperia* Vitiello, 1969; *Paracomesonchium* Hopper, 1967, *Vasostoma* Wieser, 1954 and *Metasabatieria* Timm, 1961) and Comesomatinae Filipjev, 1918 (including *Paracomesoma* Hope and Murphy, 1972, *Metacomesoma* Wieser, 1954 and *Comesoma* Bastian, 1865).

I. MATERIAL AND METHODS

Seven stations were sampled in the sub-tidal area from 1.8-10.0 m depth in Halong bay, Vietnam at the coastline near Halong city and Campha town.

Samples were collected by Ponar grab. At each station, one grab was taken and subsampled by taking approximately 250 g of sediment for nematode extraction. Nematode samples were fixed in hot formalin 10%. The nematodes were extracted by centrifugal-flotation technique according to De Grisse (1969) and gradually transferred to anhydrous glycerine (Seinhorst, 1959) and mounted into permanent slides.

The measurements for taxonomic description were done using a high magnification microscope (Olympus CH30RF200) with camera Lucida attached to Quantimet 500+ computer. Type specimens are deposited in the Museum of Zoology of Ghent university, B-9000 Gent, Belgium.

Abbreviation used in the text: (A%). amphid diameter as percentage of corresponding body diameter; (a). body length divided by maximum body width; (a.b.d). anal body diameter; (b). body length divided by pharyngeal length; (c). body length divided by tail length; (c.b.d). corresponding body diameter; (c'). tail length divided by anal body diameter; (Cs). number of cervical setae in each subventral row; (dia.). diameter; (Hd%). head diameter as percentage

of body diameter at posterior end of oesophagus
body diameter; (L). total body length (μm);
(ps). number of precloacal supplements;
(R3%). length of cephalic setae as percentage
of head diameter; (spic). spicule chord length as

proportion of cloacal body diameter; (S-E).
secretory-excretory system.

Note: in the descriptions the length of the
spicules is measured along the curve.

Formula (after Filipjev)

<i>Head nerve-ring</i>	<i>end of the pharynx</i>	<i>M(vulva)</i>	<i>anus</i>	<i>total body</i>
			<i>c.b.d</i>	

Table I

Geographic position and water depth of the sampling stations in Halong Bay

Station	Coordinates		Depth (m)
	Latitude	Longitude	
HL3	20°59'33"	107°04'46"	3.0
HL4	20°58'50"	107°04'02"	3.0
HL5	20°57'28"	107°03'56"	10.0
HL6	20°56'03"	107°01'39"	1.8
HL7	20°55'18"	107°00'88"	2.5
HL8	20°55'71"	107°12'07"	6.0
HL9	20°55'73"	107°08'52"	3.5

II. TAXONOMY AND DESCRIPTION

Key to the subfamilies (newly elaborated) of Comesomatidae

- 1(2). Posterior part of the buccal cavity widened.....Dorylaimopsinae
- 2(1). Posterior part of the buccal cavity not widened.....(3)
- 3(4). Spicules elongated.....Comesomatinae (4)
- 4(3). Spicules short.....Sabatieriinae

1. *Sabatieria doancahi* sp.n.

(figures 1, 2; table 3)

Type material: six males and six females and four juveniles on slide number: 1♂ holotype: slide 104066; 1♀ allotype: slide 104065 deposited in the Nematode Collection of the zoological Museum, Ghent university, Belgium and a part of Paratypes deposited in the DON (Department of Nematology) Collection of the Institute of Ecology and biological Resources, Hanoi, Vietnam.

Type locality: Halong bay, Quangninh province, Vietnam.

Habitat: *Sabatieria doancahi* sp.n. was found in very silty sediment (median grain size ranged from 6.9 μm to 50.84 μm), 0.6-12 m depth, from Halong Bay at station: HL3, HL4,

HL5, HL6, HL7 and HL8.

Etymology: The new species is named after the first Vietnamese nematologist, Assoc. Prof. Dr. Doan Canh, Institute of Tropical Biology, Hochiminh city, Vietnam.

Measurements:

Holotype: ♂,

-	98	190	<i>M</i>	2091	2211 μm
15	38	46	47	42	

a: 47; b: 12; c: 18; spicule length: 92 μm

Allotype: ♀,

-	110	213	1172	2283	2467 μm
15	39	54	56	42	

a: 44; b: 12; c: 15; V: 48 %

Paratype: other ♂♂s and ♀♀s see table 3.

Description

Males: medium to large body size: 2276 µm length with a round head and 15 µm width or 31% of diameter at end of oesophagus. The cuticle is ornamented along the body with dots. Along the lateral sides of the body the dots are larger and disorderly arranged, whereas along the dorsal and ventral sides they are smaller and grouped in regular transverse rows. At the head region, the cuticle consists of minute points, irregularly arranged; at the level of the anterior most cervical setae, the dots become larger and are arranged into transverse rows. Posterior to the base of the oesophagus the larger dots become irregular again. Anterior sensilla in three circles: six inner labial papillae, six outer labial setae and four cephalic setae, 5 µm length (36% of the corresponding body diameter) and situated just anterior to the amphids. The buccal cavity is small and cup-shaped with a dorsal sector more distinctly sclerotized than the ventrosublateral sides. Amphids multispiral composed of 2.5 turns

(54% of the corresponding diameter). Somatic setae 4-5 µm length arranged longitudinal rows: 2 subventral and 2 subdorsal rows in front of the nerve ring and tail. The oesophagus gradually expands towards the posterior end. S-E gland is located ventrally and opens through an ampulla at 100 µm from the anterior end. Nerve-ring at 98 µm from the front end (52% of the oesophagus length) marginal tubes present. The cardia is small. The testes are paired, opposed and outstretched, the anterior one positioned at the left side and the posterior one at the right side of the intestine. Spicules curved, 90 µm length, S-shaped, cuticularized (2.1 anal diameters). Gubernaculum with a long caudal apophysis. Anterior to the cloaca a single seta is present, followed by a series of 13 to 18 fine tubular supplements. Tail conical-cylindrical with posterior 1/3 cylindrical, 3.3 anal diameters long. Tail tip enlarged, with three subterminal setae 4 µm long and three distinct caudal gland cells.

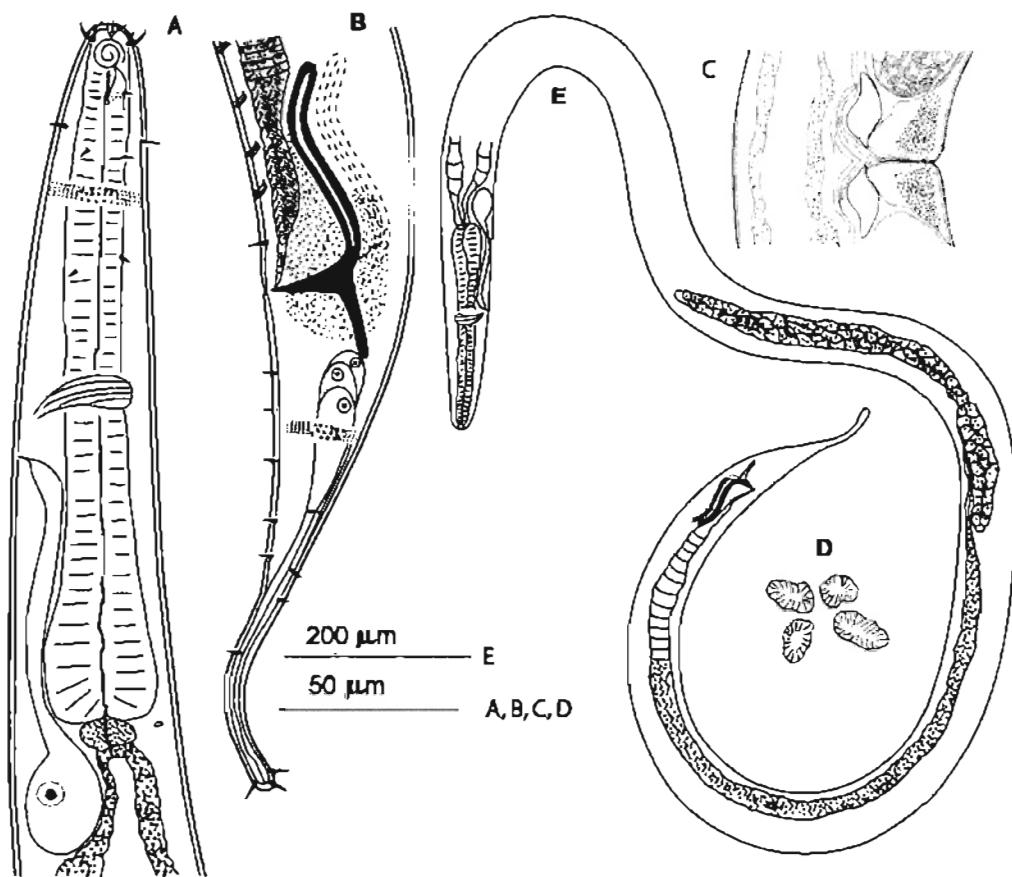


Figure 1. *Sabatieria doancahi* sp.n.

A. Oesophagus region of male; B. Posterior end of male;
C. Female reproductive system; D. Sperm cells; E. Entire male.

Females: body 2.5 mm length. The vulva situated before the middle of the body (46% of the total body length). Reproductive system didelphic-amphidelphic with outstretched ovaries, the anterior one situated at the left side and the posterior one at the right side of the intestine. One egg ($37 \times 102 \mu\text{m}$) present in posterior branch, large ovate sperm cells.

Juveniles: habitus similar to the adults, the body size is generally smaller. Number and position of cephalic setae turn of amphids.

Differential diagnosis

Sabatieria doancanhi sp.n. belongs to the *Sabatieria praedatrix*-group with its simple

tubular supplements and straight gubernaculums apophyses. From all species in this group it can easily be differentiated by the length and particular S-shaped spicules. *S. chaui* resembles *S. alata* Warwick, 1973 by spic. value (ranged from 1.6-1.8), head shape, but it differs from *S. alata* by having shorter body length (*S. alata* L = 3070-3220 μm). *S. chaui* resembles *S. falcifera* Wieser, 1954; *S. praedatrix* de Man, 1907 and *S. sanjosensis* Pastor de Ward, 2003 in the number of supplements (13-17 ps.). Meanwhile, it can be distinguished from *S. falcifera* by numbers of supplements (10 ps in *S. falcifera* and 26 in *S. lyonessa*).

Table 2

Male measurements of the species, belonging to *Sabatieria praedatrix*-group species (after Platt, 1985) including the new species

Species	L	A	Hd%	A%	R3	Spic	ps	c'
<i>S. alata</i>	3070-3220	36-53	32	55	30	1.6-1.8	21	5.5
<i>S. ancudiana</i>	1610-1850	42-65	46	70-73	60-70	1.5	16	3.5
<i>S. doancanhi</i> sp.n.	2211-2385	41-54	13-15	47-60	31-37	1.6-1.8	13-18	2.9-5.7
<i>S. concava</i>	950-1050	30-35	38	75	20-25	1.2	4-8	2.1-2.5
<i>S. coomansi</i>	3236-3833	34.2-40	25-39	40-48	22-27	1.6-1.9	23-26	2.9-3.6
<i>S. demani</i>	8000	63	30	65	90	2.0	14	3.5
<i>S. dodecaspapillata</i>	2430-2525	29-36	20	60	50	1.6-1.8	12	4-4.3
<i>S. falcifera</i>	1750-2430	28-36	?	60	40	1.5	10	3-3.3
<i>S. flecha</i>	1391-1483	27-31	21-27	57-68	35-45	1.2-1.9	7-12	3.3-3.8
<i>S. granifer</i>	1765-2620	26-40	26-30	55-68	20-50	1.5-1.6	13-17	3.3-4.8
<i>S. heipi</i>	1529-1576	29.2-34	33	70	38	2.1	11	4.0
<i>S. intermissa</i>	2110-2550	40-80	40	73	70-90	2.0	16	3.5
<i>S. lawsi</i>	2060-2400	32-35	26-27	50-66	32-44	1.6-1.7	17	3.1-3.8
<i>S. lyonessa</i>	3920	70	46	40	50	2.1	26	2.1
<i>S. parabyssalis</i>	1470-1830	31-32	30	90	70	1.3	15-20	3.8-4.3
<i>S. paracupida</i>	1700-1850	36	34	64-70	71-77	1.7-1.8	19-22	4.0
<i>S. paradoxa</i>	1460-1660	35-38	30-32	54	38-46	1.7-1.8	17-19	4.0
<i>S. praedatrix</i>	1760-2900	38-55	40	50-63	40-42	1.5-1.8	13-17	4-4.5
<i>S. sanjosensis</i>	2875-3250	81.2-82	29-31	40-50	50-57	1.1-1.4	15-17	3.7-6
<i>S. stekhoveni</i>	1550-1700	35-38	32-39	63-72	50-60	1.3-1.5	8-11	4-4.2
<i>S. triplex</i>	2850	57	30	66	50	1.3	20	3.7
<i>S. vasicola</i>	2020-2550	27-32	29-33	55-57	30-40	1.3-1.4	19	3.1-4

Table 3

Measurements of *Sabatieria doancanhi* sp.n. (all measurements in µm, except ratio's)

Parameter	Males (n = 6)					Females (n = 6)					Juveniles (n = 4)				
	Average	SD	Max	Min	Average	SD	Max	Min	Average	SD	Max	Min	SD	Max	Min
L	2276	67	2385	2211	2510	92	2631	2363	1827	212.9	2141	1687			
a	48.2	5.8	54.0	40.7	44.5	2.6	47.7	40.2	48.1	5.6	54.8	41.5			
b	11.4	0.5	11.8	10.7	11.3	0.7	12.2	10.3	10.2	1.2	11.6	9.1			
c	16.2	2.1	18.4	13.3	14.5	0.7	15.6	13.6	12.8	0.9	14.0	11.9			
Head dia.	14.5	0.8	15.1	13.4	15.1	0.9	16.7	14.0	12.5	0.5	13.0	12.0			
Hd%	30.8	4.7	35.8	24.4	31.6	2.0	34.9	28.9	32.8	1.6	35.2	31.7			
Cephalic setae	5.3	0.4	5.8	5.0	5.2	0.1	5.3	5.1	4.8	0.2	5.4	4.5			
R3%	36.3	2.4	38.6	33.6	34.5	2.0	36.8	30.9	36	3.3	42	35			
Amphid: width	9.4	0.6	9.8	8.6	9.4	0.6	10.0	8.3	8.0	0.9	8.8	6.8			
A%	53.2	2.9	56.1	49.5	54.2	4.4	59.9	47.1	55.7	89.5	56.3	55.7			
Oesophagus: length	199.3	7.7	208.2	189.8	222.2	13.4	245.5	208.6	179.3	16.2	194.9	156.6			
c.b.d	47.7	5.3	54.9	42.1	47.9	2.0	51.6	46.2	38.1	2.9	41.1	34.2			
Max dia.	47.7	5.3	54.9	42.1	56.5	2.3	58.9	52.4	38.1	2.9	41.1	34.2			
Vulva: from ant.					1158.9	75.4	1234.1	1158.9							
V %						46.2	2.3	48.7	42.5						
Spicule length	89.9	2.1	91.8	87.2											
spic.	2.1	0.2	2.3	1.8											
Gubernaculum	43.3	6.2	52.1	38.3											
Supplements	16	2	18	13											
Tail length	142.4	20.0	168.4	120.3	173.7	9.0	185.8	164.6	142.6	7.2	152.8	135.7			
Terminal setae	4.0	0.3	4.3	3.7	4.0	0.2	4.2	3.7	3.7	0.1	3.8	3.7			
Anal dia.	43.4	5.6	51.5	38.6	39.7	1.4	42.0	38.2	32.4	1.4	33.8	30.7			
c'	3.3	0.3	3.7	2.9	4.4	0.3	4.8	4.0	3.0	0.3	3.6	2.8			

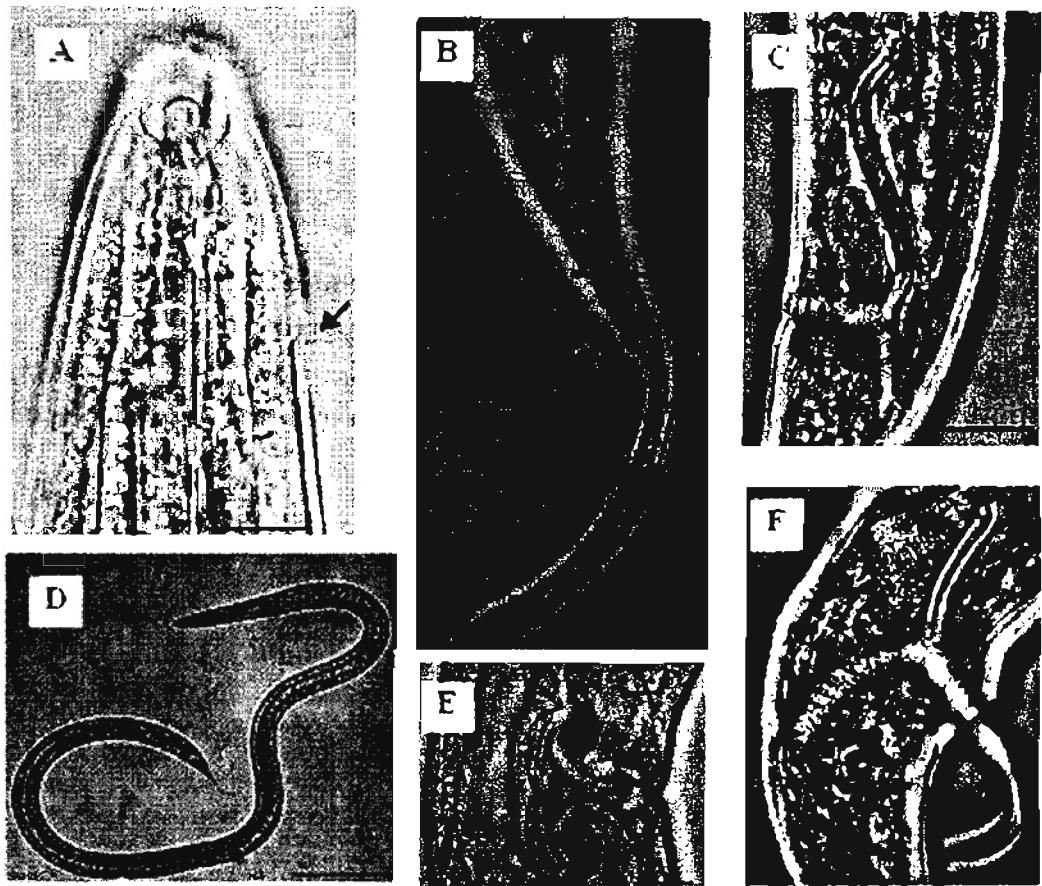


Figure 2. *Sabatieria doancahi* sp.n.

A. Anterior showing amphid, cephalic and cervical setae on the head of male; B. Punctuation in posterior of female; C. Male reproductive system; D. Entire male; E. Marginal tubes of male; F. Copulatory apparatus.

Scale bars: A-C, E-F = 10 μm ; D = 200 μm .

2. *Vasostoma vietnamica* sp.n.

(figures 3, 4; table 4)

Type material: 5♂ and 4♀ and 6 juveniles on slide number: 1♂ holotype: slide 104063; 1♀ allotype: slide 104064 deposited in the Nematode Collection of the zoological Museum, Ghent university, Belgium and a part of paratypes deposited in the DON (Department of Nematology) Collection of the Institute of Ecology and biological Resources, Hanoi, Vietnam.

Type Locality: Halong bay, Quangninh province, Vietnam.

Habitat: *Vasostoma vietnamica* sp.n. was found in the silty sediment (median grain size ranged from 7.00 μm to 8.00 μm), 3.5-12.5 m depth, from Halong bay, Northern Vietnam at station: HL3, HL7, HL8 and HL9.

Etymology: the name of new species is named after Vietnam.

Measurements:

Holotype: ♂₁

-	101	248	M	1265	1416 μm
10.3	35.1	38.7	39.6	36.9	

a: 32.5; b: 5.8; c: 9.0; spicule length: 176.4 μm

Allotype: ♀₁

-	110.4	266.8	874	1634.5	1822 μm
15.3	46	64.4	83.7	43.7	

a: 21; b: 6.8; c: 9.5; V: 48%

Paratype: other ♂♂ and ♀♀ see table 4.

Description

Males: cuticle finely striated with no other ornamentation. Six internal labial papillae, four cephalic setae 4.5 μm length. Amphids spiral with 2.5 turns, closely behind the cephalic setae. The diameter of the amphids is 11 μm , with 85% of the head diameter. Stoma 27 μm deep, with 3 length sclerotized teeth. Nerve-ring positioned at 131 μm from the front end (46%

of the oesophagus length). Prominent S-E cell just posterior to oesophageal bulb. Marginal tubes present. Reproductive system diorchic with opposed and outstretched testes, the anterior one positioned at the left side and the posterior one at the right side of the intestine. The spicules equal, slender, 176 μm length (4.5 anal diameters). The gubernaculum with caudal apophyses, 1.1 anal diameter long. There are 15 papilliform supplements. Tail 4.1 anal diameter length, with slightly swollen tip. Row of post-cloaca submedian setae on tail and 2 setae at tip. Caudal glands well developed and grouped.

Females: the body 1822 μm length. The vulva situated before the middle of the body (48% of the total body length). The reproductive system is didelphic-amphidelphic with outstretched ovaries, anterior one to the left and posterior one to the right side of the intestine.

Large ovate sperm cell present in spermatheca. Tail longer than in males.

Juveniles: habitus similar to the adults, the body size generally is smaller. Number and position of cephalic setae, turn of amphids the same adults

Differential diagnosis

Vasostoma vietnamica n. sp. is characterized by having of the 15 body pre-cloaca supplements, the particular shape of the spicule and apophysis gubernaculum. New species *V. vietnamica* sp.n. can be distinguished from *V. spiratus* Wieser 1954 by having longer spicules (136.8-190.9 μm vs 65-70.0 μm in *V. spiratus*). The new species also differs from *V. longispiculum* Timm, 1961 by its typical structure caudal apophyses of the copulatory apparatus.

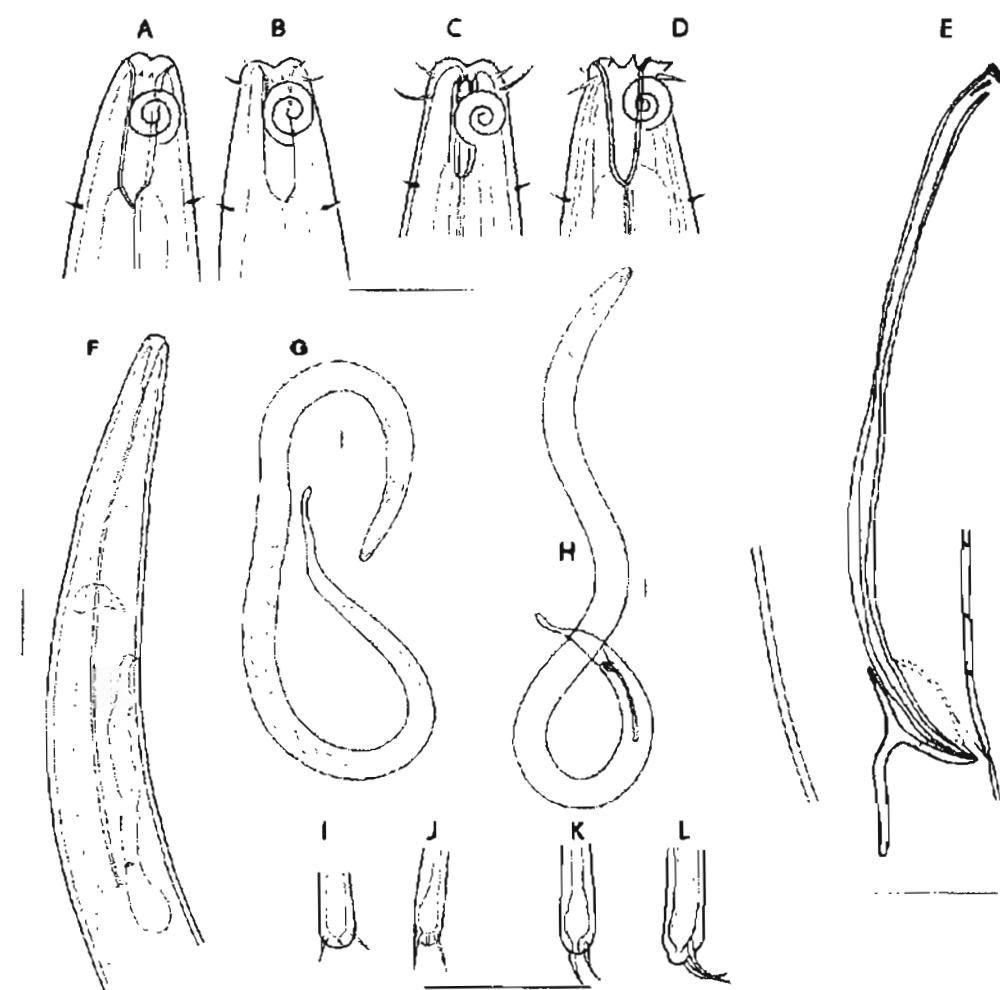


Figure 3. *Vasostoma vietnamica* sp.n.

Holotype: A, B. Anterior of male; C, D. Anterior end of males; E, F. Oesophagus and posterior region of male; I, J. Posterior of females; H. Entire male. Paratype G. Entire female; K- L. Posterior of females. Scale bars: 30 μm .

Table 4

Measurements of *Vasostoma vietnamica* sp.n. (all measurements in μm , except ratio's)

Parameter	Male (n = 5)					Female (n = 4)					Juveniles (n = 6)					
	Mean	SD	Max	Min	Mean	SD	Max	Min	Mean	SD	Max	Min	Mean	SD	Max	Min
L	1545	141.5	1739	1389	1865	82.46	1959.6	1812.4	37.9	35.3	36.5	1.1				
a	32.9	3.2	35.8	28.1	28.7	9.5	39.6	21.8	6.7	5.8	6.2	0.4				
b	6.7	2.3	11.3	5.1	7.2	0.9	8.2	6.6	9.8	8.8	9.3	0.5				
c	9.5	0.5	10.4	9.2	9.2	0.9	9.7	8.2	11.0	10.4	10.7	0.3				
Head dia	11.4	1.1	12.6	9.9	15.3	1.8	17.1	13.5	4.3	3.9	4.0	0.2				
Cephalic setae	5.1	1.5	8.1	4.5	9.5	7.1	17.6	5.4	25.7	24.6	25.3	0.5				
Bucal cav: 1-dia	26.1	0.9	27.4	25.2	22.5	1.6	23.4	20.7								
length-width	10.2	0.7	10.8	9.5	9.4	0.8	10.4	8.8	10.2	8.9	9.6	0.6				
c.b.d	14.8	0.9	16.2	13.5	15.6	0.9	16.8	13.2	166.1	15.6	53.3	75.2				
Never ring: from ant	125.4	14.2	142.2	101.2	136.5	23.6	156.4	110.4								
c.b.d	39.8	4.3	45.9	35.1	44.4	4.3	47.7	39.6								
Oesophagus: length	243.6	51.0	280.6	142.2	260.7	19.2	276.4	239.2	252.0	245.0	248.8	2.9				
c.b.d	47.1	4.9	53.1	38.7	54.2	10.6	64.4	43.2	47.5	42.5	44.5	1.9				
Max dia.	47.2	4.6	53.1	39.6	68.7	17.5	83.7	49.5								
Vulva: from ant.					855.6	31.9	874.5	818.8								
V%					45.9	1.81	47.9	44.6								
c.b.d					69	16.9	83.7	50.4	43.6	40.5	42.0	1.4				
Spicule length	170.3	17.9	190.9	136.8												
a.b.d	38.9	2.2	42.3	36.8	37.7	6.6	43.7	30.6	42.5	39.6	41.0	1.3				
Gubernaculum	39.9	2.7	43.2	35.4												
Supplements	15	0.5	16	15												
Tail length	162.4	12.1	180.9	151.2	204.3	30.2	239.2	186.3	169.3	162.4	165.2	3.1				
Terminal setae	6.5	0.4	7.2	6.3	8.4	1.4	9.9	7.2								
c'	4.2	0.2	4.5	4	5.6	1.9	7.8	4.3	4.3	3.8	4.0	0.19				

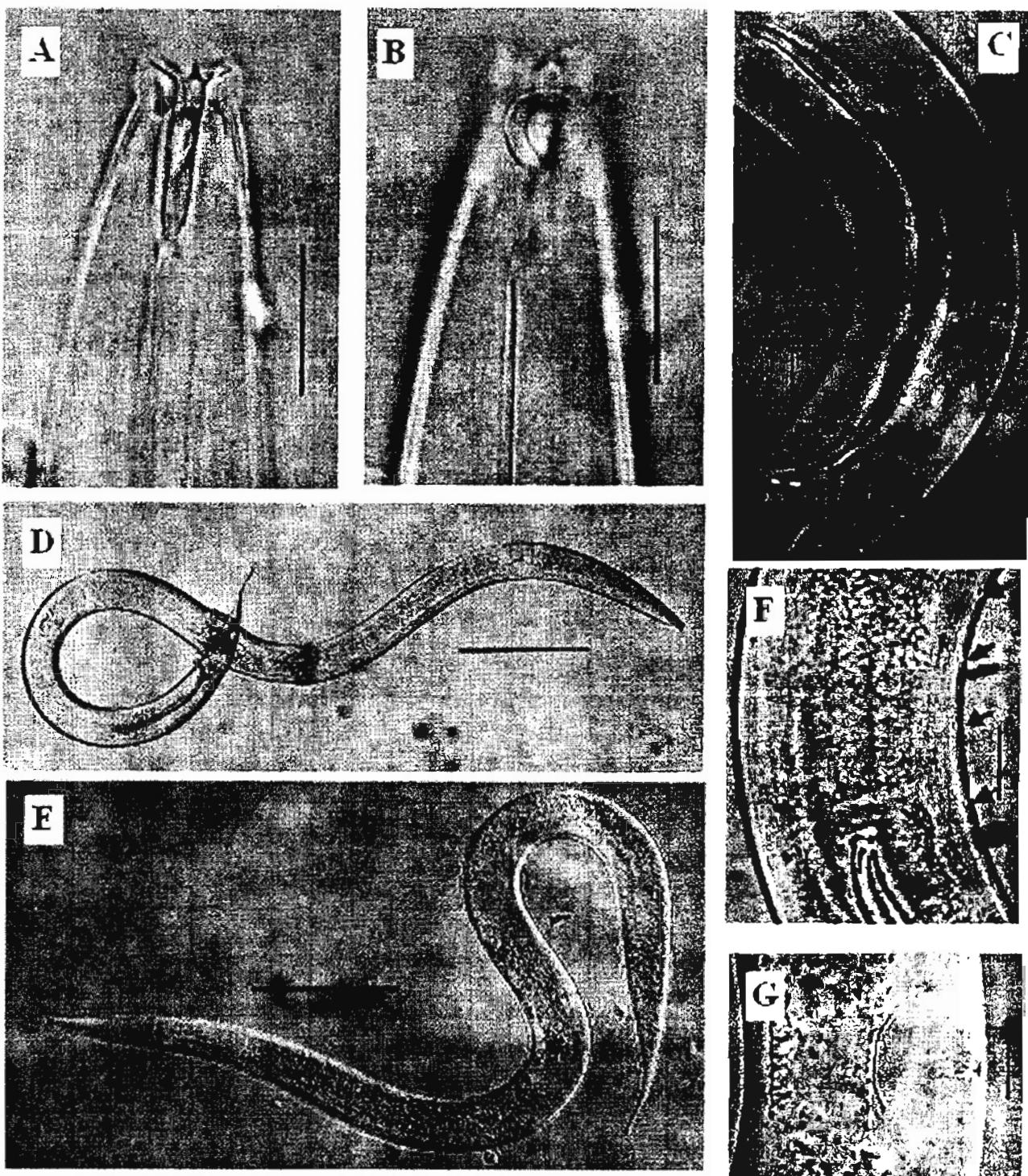


Figure 4. *Vasostoma vietnamica* sp.n.

A. Head region of male; B. Amphid on head of female; C. Copulatory apparatus; D. Entire male; E. Entire female; F. Supplements; G. Vulva and uterus. Scale bars: A, B, F, G = 20 µm; C = 10 µm; D-E = 200 µm.

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HAI LOÀI TUYẾN TRÙNG MỚI THUỘC HỘ COMESOMATIDAE FILIPJEV, 1918 (NEMATODA: CHROMADORIDA) Ở VỊNH HẠ LONG, VIỆT NAM

NGUYỄN ĐÌNH TỰ, NGUYỄN VŨ THANH,
NIC SMOL, ANN VANREUSEL

TÓM TẮT

Họ Tuyến trùng biển Comesomatidae Filipjev, 1919 đã được nhiều tác giả nghiên cứu và tu chỉnh như: de Coninck, 1965; Vitiello, 1969; Jensen, 1979; Platt, 1985; Lorenzen, (1981, 1994); Smolyanko & Belogurov, 1991; Hope & Zhang, 1995 và Muthumbi et al., 1997. Trong bài này các tác giả mô tả hai loài tuyến trùng biển mới cho khoa học là các loài *Sabatieria doucanchi* sp.n. và loài *Vasostoma vietnamica* sp.n.. Theo Jensen, 1979, họ Comesomatidae được phân thành 3 phân họ là Dorylaimopsinae de Coninck, 1965 (gồm các giống: *Dorylaimopsis* Ditlevsen, 1918, *Expressionema* Smolyanko et al., 1991, *Hopperia* Vitiello, 1969, *Metasabatieria* Timm, 1961, *Paramesonchium* Hopper, 1967, *Vasostoma* Wieser, 1954), Sabatierinae Filipjev, 1934 (gồm các giống: *Actarjania* Boucher, 1973, *Cervonema* Wieser, 1954, *Laimella* Cobb, 1920, *Purasabatieria* de Man 1907, syn. Filipjev 1922, *Pierickia* Vitiello, 1970, *Sabatieria* De Rouville, 1930, *Scholpaniella* Sergeeva, 1973 và *Setosahatieria* Platt, 1985) và Comesomatinae Filipjev, 1918 (gồm các giống: *Comesonoides* Gourbault, 1980, *Comesoma* Bastian, 1865, *Metacomesoma* Wieser, 1954, *Paracomesoma* Hope and Murphy, 1972).

Loài mới *Sabatieria doucanchi* sp.n. thuộc nhóm *Sabatieria praedatrix* và khác biệt với các loài hiện có bởi các đặc điểm sau: gai sinh dục hình chữ S, trợ gai luôn thẳng theo cơ thể, với 13-18 nhú phụ sinh dục dạng nhú.

Loài mới *Vasostoma vietnamica* khác biệt với các loài đã biết thuộc giống này bởi các đặc điểm sau: gai sinh dục rất dài (176 µm, dài gấp 4,5 lần chiều rộng tại hậu môn), mấu trợ gai luôn mảnh và thẳng theo đuôi.