

Description of the marine nematode *Hopperia australis* sp. n. (Comesomatidae) from mangroves in Darwin, Australia, with a pictorial key to *Hopperia* species

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Abstract : A new free-living marine nematode *Hopperia australis* sp. n. is described from muddy sediment amongst mangroves in Darwin, Northern Territory, Australia. It is the first *Hopperia* species found in Australia. *H. australis* sp. n. differs from the other three known *Hopperia* species by its pointed tail tip. The presence of papilloid cephalic sense organs and somatic papillae is shared with the type species *H. massiliensis* Vitiello, 1969, but *H. australis* sp. n. is also distinguished by regularly distributed cuticular dots in lateral field, and smaller copulatory apparatus and smaller teeth than found in *H. massiliensis*. A pictorial key is provided as an aid to identify the four *Hopperia* species.

Résumé : Une nouvelle espèce de nématode libre marine *Hopperia australis* sp. n. est décrite dans des prélèvements de sédiments vaseux de la mangrove de Darwin, Territoires du Nord, Australie. Première espèce du genre trouvée en Australie, *H. australis* diffère des trois autres espèces connues par sa queue à extrémité pointue. La disposition des soies céphaliques papilloïdes et des soies somatiques est comparable à celle observée chez l'espèce type *H. massiliensis* Vitiello, 1969. L'espèce s'en distingue par la disposition régulière des punctuations cuticulaires des champs latéraux, un petit appareil copulateur et des dents plus petits que chez *H. massiliensis*. Une clé pictoriale est proposée comme aide à l'identification des quatre espèces connues de *Hopperia*.

INTRODUCTION

During a preliminary survey of the nematode fauna in Australian mangroves Hodda & Nicholas (1987) found a comesomatid species belonging to *Hopperia* Vitiello, 1969 from muddy sediment amongst *Rhizophora stylosa* Griff. mangroves in Darwin harbour. Up to now only three *Hopperia* species were known ; i.e. *H. americana* Pastor de Ward, 1984 from the coast of Santa Cruz, Argentina, *H. massiliensis* Vitiello, 1969 from the French shelf in Mediterranean, and *H. muscatensis* Warwick, 1973 from the Indian Ocean deep-sea off SE Arabia. The *Hopperia* species from Darwin turned out to be new to science and is herein described as *H. australis* sp. n. The differentiating characters of all four *Hopperia* species are illustrated and discussed.

MATERIAL AND METHODS

Specimens of *Hopperia australis* sp. n. were examined using a Leitz Dialux microscope with a camera lucida and an Olympus microscope attached with interference contrast equipment. Specimens are deposited in the South Australian Museum, Adelaide, Australia

(SAMA) and The Natural History Museum, London, England (BMNH). The formula used herein follows Jensen (1979).

The comesomatid collection included four other species from mangroves in Heyn's inlet, Queensland, Clyde River estuary and Hunter River estuary, New South Wales (cf. Nicholas *et al.*, 1991). Two of these species are *Comesoma arenae* Gerlach, 1956 - reported from NSW by Murphy (1964) - of which one slide with eleven males and seven females is deposited in SAMA with catalogue number AHC 22856, and *Sabatieria wieseri* Platt, 1985 of which three slides with 3 males, 9 females and 1 juvenile are deposited in SAMA with catalogue numbers AHC 22857 a-c, and one slide with 6 males, 12 females and 1 juvenile is deposited in BMNH with catalogue number 1992.1.2. The third species is an un-identified *Sabatieria* species belonging to the *Sabatieria pulchra* group of species (cf. Jensen, 1981; Platt, 1985) of which three slides with 5 males and 1 juvenile are deposited in SAMA with catalogue numbers AHC 22860 a-b and AHC 22861, and two slides with 3 males, 1 female and 1 juvenile are deposited in BMNH with catalogue numbers 1992.1.3-4. The fourth species is a *Sabatieria* species of which only females are available.

DESCRIPTION

Hopperia australis sp. n. (Figs 1-2, Table I)
Hooperia in Hodda and Nicholas (1987)

Material : Three males and one female.

Type locality : The Northern Territory Museum of Arts and Sciences collecting site on Creek "H" in Darwin harbour, Australia.

Measurements :

Holotype

δ_1 5 85 163 M 1 305

13 28 33 34 26

a = 42 ; b = 8.7 ; c = 11.4

1 431 μm (SAMA AHC V 4182)

Paratypes

δ_2 6 92 182 M 1 307

13 28 32 33 26

a = 43 ; b = 7.8 ; c = 12.6

1 420 μm (SAMA AHC 22855)

δ_3 5 108 183 M 1 425

10 31 33 34 28

a = 46 ; b = 8.6 ; c = 10.3

1584 μm (BMNH 1992.1.5 together with φ_1)

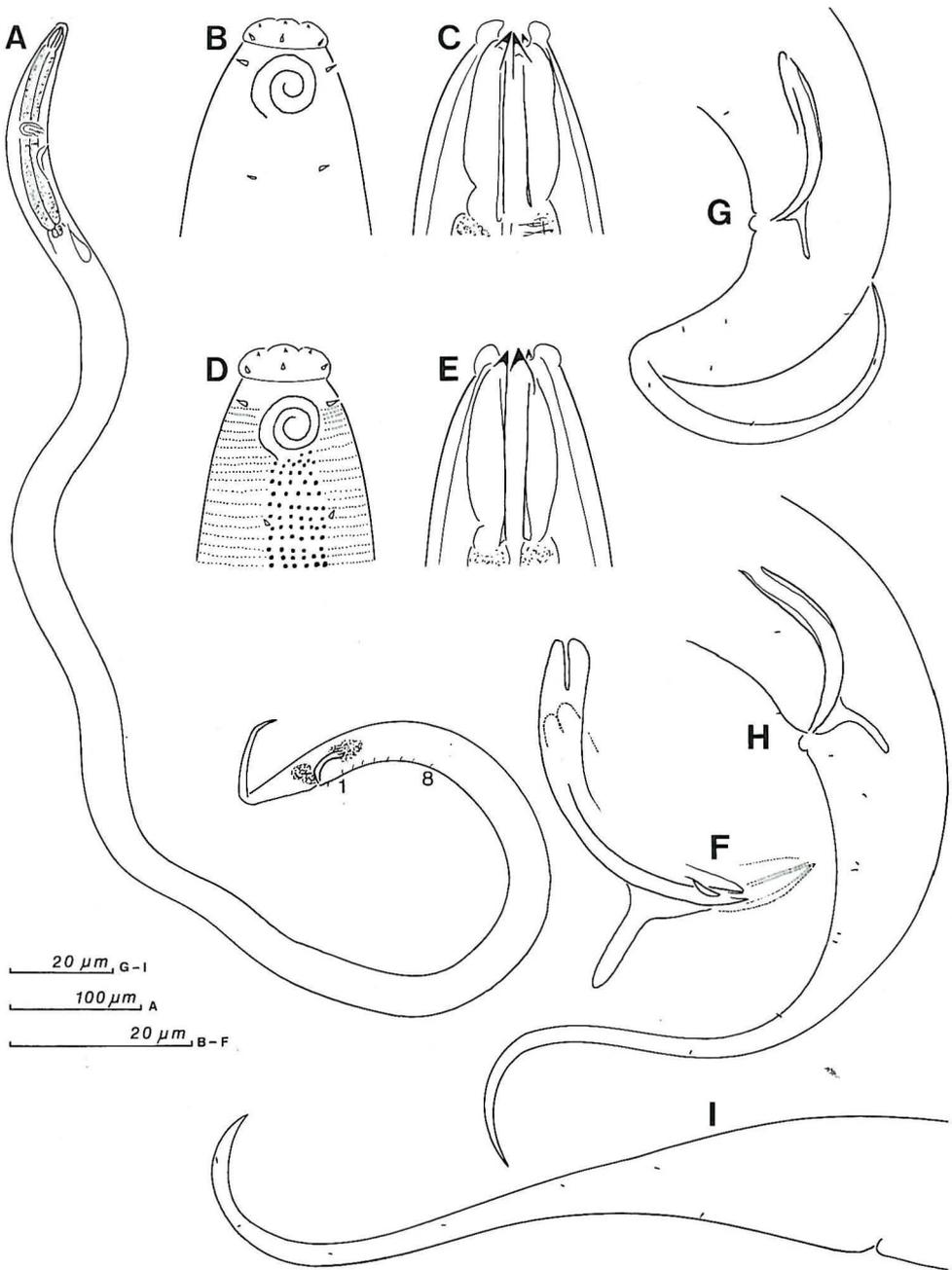


Fig. 1 : *Hopperia australis* sp.n.

A : Total view of δ_1 ; B-C : Anterior end of δ_1 in surface view (B) and in longitudinal view (C) ;
 D-E : Anterior end of φ_1 in surface view (D) and in longitudinal view (E) ; F : Copulatory apparatus of
 δ_1 ; G-I : Posterior end of δ_2 , δ_3 and φ_1 , respectively.

φ_1	7	95	186	823	1 491	
	12	32	33	40	27	1538 μm (BMNH 1992.1.5 together with δ_3)
	a = 41 ; b = 8.8 ; c = 11.0 ; V = 50 %					

Description

Males. Body slender and attenuating towards the ends. Lips swollen and set-off from the body by a constriction ; tail tip pointed without setae or papillae. Cuticle ca. 2 μm thick and decorated with transverse rows of dots ; lateral field consists of coarser and more irregularly spaced dots than elsewhere. Somatic papillae along borders of lateral field. Cephalic sense organs in three separate crowns and papilloid. Amphids spiralized describing 2 1/2 turns, occupying 50-55 % of corresponding body diameter with anterior border 5 μm from front end. Buccal cavity consisting of a shallow, weakly sclerotized cup-shaped portion followed by a narrow cylindrical portion with strongly sclerotized walls, 18-20 μm deep ; three sclerotized and equally large pointed teeth insert at junction between the two compartments. Cylindrical part of buccal cavity surrounded by non-granulated pharyngeal musculature ; elsewhere pharyngeal musculature is interrupted and with granules without forming a bulb. Cardia small. Ventral gland cell behind cardia and opening through a pore behind nerve ring. Caudal gland cells not observed. Spicules curved, 37-44 μm along the arc, 33-35 μm from tip to tip ; gubernaculum with a 10-12 μm long caudal apophysis. Copulatory gland cells present. A small seta present in front of cloaca. Preanal supplements indistinct ; δ_1 has eight faint ducts opening through small pores. Testes opposite and outstretched with anterior branch to the left of intestine and posterior branch to the right.

Female. Female is similar to male. Ovaries opposite and outstretched with anterior branch to the left of intestine and posterior branch to the right.

Differential diagnosis

Main characteristics of the four known *Hopperia* species are shown in Fig. 2 and Table I. *H. australis* sp. n. is closely related to the type species *H. massiliensis* Vitiello, 1969 sharing papilloid cephalic sense organs and somatic papillae. The two species differ by the smaller copulatory apparatus, smaller teeth, regularly distributed cuticular dots in lateral field and pointed tail tip of *H. australis* sp. n. The two other species *H. americana* Pastor de Ward, 1984 and *M. muscatensis* Warwick, 1973 are united by possessing a setose third crown of cephalic sense organs, the presence of somatic setae and a swollen tail tip. *H. americana* has small and regularly distributed cuticular dots in lateral field opposed to coarse and irregularly distributed dots in *H. muscatensis*, and *H. americana* has smaller copulatory apparatus and distinct preanal papillae compared to *H. muscatensis*.

A pointed tail tip, as in *Hopperia australis* sp. n. is a highly unusual feature of Comesomatidae species which are known to have a rounded tail tip and mostly swollen (Jensen, 1979).

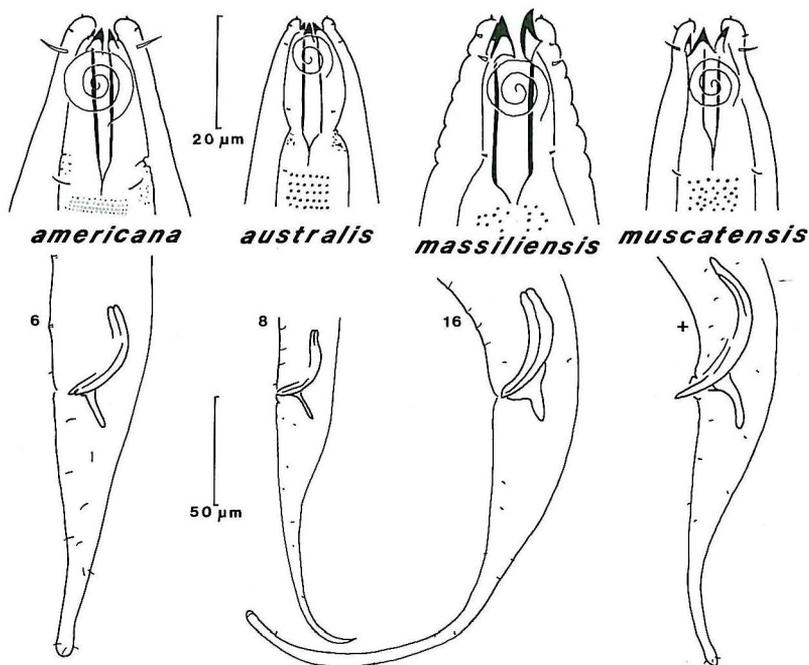


Fig. 2 : Pictorial key to the identification of *Hopperia* species.

All drawings in left lateral view. *H. massiliensis* and posterior end of *H. muscatensis* redrawn from Vitiello (1969) and Warwick (1973), respectively.

TABLE I

Male morphometrics (minimum and maximum values) and geographical distribution of *Hopperia* species.

*) From original text and deduced from figures.

	Body length (mm)	a	De Man's ratios		Dimensions of copulatory apparatus (µm)			Distribution
			b	c	spicules arc	apophysis tip to tip		
<i>H. americana</i>	1.32-1.65	29-30	7.5-9.2	9.4-13.2	54	45	24-25	Intertidal Argentina
<i>H. australis</i>	1.42-1.58	42-46	7.8-8.7	10.3-12.6	37-44	33-35	10-12	Intertidal N. Australia
<i>H. massiliensis</i> *	1.97-2.00	38-39	7.6-8.0	8.5-9.1	52-54	47-49	19	310-650 m depth Mediterranea
<i>H. muscatensis</i> *	1.88	44	8.7	14.1	87	68	32	1 305 m depth SE Arabia

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