

# A NEW SPECIES OF *HYPOCRISTATA* (NEMATODA, TRICHOSTRONGYLINA, HELIGMOSOMOIDEA) A PARASITE OF *SIGMODON HISPIDUS* (CRICETIDAE, SIGMODONTINAE) FROM VENEZUELA

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## Summary:

Description of *Hypocristata tercera* n. sp. (Heligmonellidae, Nippostrongylinae) a parasite of the small intestine of *Sigmodon hispidus* (Rodent, Sigmodontinae) from Venezuela. Two other species were described in the genus, both from Colombia and parasitic in Sigmodontinae. *H. thomasomysi* Durette-Desset, 1970, a parasite of *Thomasomys* sp. has about the same number of cuticular ridges at mid-body but differs by ridges having chitinous struts, a caudal bursa pattern of type 2-2-1 (vs 1-3-1). *H. anguillula* Durette-Desset, 1970, a parasite of *Sigmodontomys alfari* (= *Nectomys alfari*) has the same caudal bursa pattern (type 1-3-1) but differs by the presence of ridges at mid-body in both sexes (absent at that level in *H. tercera*) and by ridges having chitinous struts in female. This is the first report of the genus *Hypocristata* Durette-Desset, 1971 in Venezuela and in the genus *Sigmodon* (Sigmodontinae).

**KEY WORDS :** *Hypocristata tercera* n. sp., Nematoda, Trichostrongylina, Heligmosomoidea, *Sigmodon hispidus*, Venezuela.

**Résumé :** UNE NOUVELLE ESPÈCE D'*HYPOCRISTATA* (NEMATODA, TRICHOSTRONGYLINA, HELIGMOSOMOIDEA) PARASITE DE *SIGMODON HISPIDUS* (CRICETIDAE, SIGMODONTINAE) AU VENEZUELA

Description d'*Hypocristata tercera* n. sp. (Heligmonellidae, Nippostrongylinae) parasite de l'intestin grêle de *Sigmodon hispidus* (Rodent, Sigmodontinae) au Venezuela. Deux autres espèces sont décrites dans le genre, toutes deux de Colombie et parasites de Sigmodontinae. *H. thomasomysi* (Durette-Desset, 1970), parasite de *Thomasomys* sp. possède au milieu du corps un nombre équivalent de crêtes cuticulaires mais se différencie par des crêtes ayant un soutien chitinoïde, par le pattern de la bourse caudale qui est de type 2-2-1 (au lieu de 1-3-1). *H. anguillula* (Durette-Desset, 1970), parasite de *Sigmodontomys alfari* (= *Nectomys alfari*) possède le même pattern bursal (type 1-3-1) mais se différencie par la présence de crêtes cuticulaires au milieu du corps (absentes à ce niveau chez *H. tercera*) et par des crêtes ayant un soutien chitinoïde chez la femelle. Le genre *Hypocristata* Durette-Desset, 1971 est signalé pour la première fois au Venezuela et comme parasite du genre *Sigmodon* (Sigmodontinae).

**MOTS CLÉS :** *Hypocristata tercera* n. sp., Nematoda, Trichostrongylina, Heligmosomoidea, parasite de *Sigmodon hispidus*, Venezuela.

## INTRODUCTION

During a rat extermination programme in the suburbs of Caracas (Venezuela) many *Rattus norvegicus* and *Mus musculus* were collected but also a single *Sigmodon hispidus* Say & Ord, 1825. The latter host was parasitized by *Litomosoides sigmodontis* (Chandler, 1931) and a new species of *Hypocristata* Durette-Desset, 1971 (Heligmonellidae) described below. The genus *Hypocristata* is known only by two species, both parasites of Sigmodontinae from Colombia.

## MATERIAL AND METHODS

The host was euthanased and examined for ecto and endoparasites. The worms were collected and put in an isotonic physiological solution,

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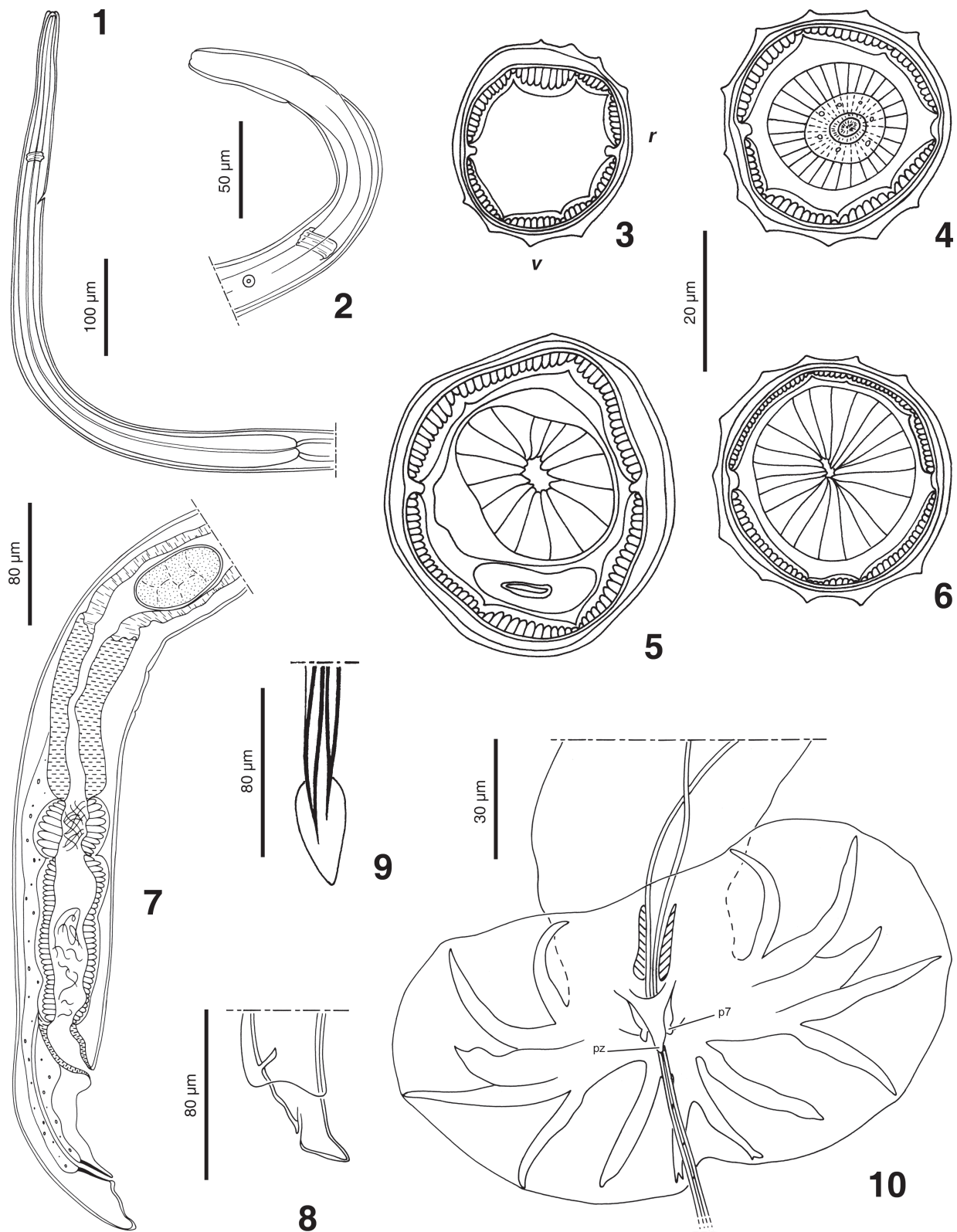
fixed and conserved in 70 % ethanol for morphological studies.

The nomenclature which is used above the family group is that of Durette-Desset & Chabaud (1993). The synopse was studied following the method of Durette-Desset (1985). The nomenclature of the caudal bursa is that of Durette-Desset & Chabaud (1981). Measurements are in micrometers except where otherwise stated. The material is deposited in the Parasitological collections of the Museo de Biología, Universidad Central de Venezuela (CP- MBUCV) and in the Helminthological collections of the Muséum national d'Histoire naturelle de Paris (MNHN).

## RESULTS

### *HYPOCRISTATA TERCERA* N. SP. (Figs 1-10)

Type material: holotype male n° 4183, allotype female n° 4184, 30 male, 65 female paratypes CP-MBUCV n° 4185, 20 male, 20 female paratypes MNHN 327 MQ. Studied material: holotype male, allotype female, 10 male, 10 female paratypes



Figs 1-10. – *Hypocristata tercera* n. sp. 1 – Female, anterior part of body, right lateral view. 2 – Female, detail of nerve ring and excretory pore, ventral view. 3-6 – Transverse sections of body. 3-5 – Paratype male, 2.85 mm long; 3, 100 µm anterior to oesophageal intestinal junction; 4, at oesophageal junction; 5, at mid-body (1.3 mm from apex). 6 – Female, at oesophageal junction. 7 – Female, posterior part of body, right lateral view. 8 – Other female, tail, left lateral view. 9 – Male, spatulate tip of spicules. 10 – Male, caudal bursa, ventral view.

Abbreviations: v, ventral side; r, right side; Pz, papilla zero; p7, papilla 7. All sections orientated as 3.

Host: *Sigmodon hispidus* Say & Ord, 1825 (Rodentia: Muridae: Sigmodontinae).

Site: small intestine.

Geographic origin: Potrerito, San Antonio de los Altos, Estado Miranda, (10° 22' 43" N, 66° 56' 30" W) Venezuela, 1.300 mts. R. Guerrero, coll.

#### DESCRIPTION

Very thin nematodes uncoiled but curved along ventral side. Cephalic vesicle very thin and strongly striated. Excretory pore situated within anterior third of oesophagus. Deirids not observed. Oesophagus very long, about 20 % of body length in male, 15 % in female. Vestibule and infundibulum of similar length.

Synlophe: (studied in two male and two female paratypes). In both sexes, presence of very thin, uninterrupted longitudinal ridges, appearing posterior to cephalic vesicle and present only in anterior quarter of body in male and anterior third in female. Right lateral side free of ridges. Ridges without chitinoid struts. Number of ridges: 8 (4 dorsal right, 4 ventral left) posterior to cephalic vesicle (Fig. 3), 11 at level of oesophageal-intestinal junction by arising of three left lateral ridges (Figs 4, 6). Number unchanging up to disappearance of ridges (Fig. 5). Ridges sub-equal in size. Tips of ridges orientated perpendicularly to body surface.

Holotype male: 2.7 mm long and 48 wide at mid-body; cephalic vesicle 34 long and 16 wide. Nerve ring and excretory pore situated at 92 and 120 from apex, respectively. Oesophagus 490 long.

Caudal bursa slightly asymmetrical, left lobe larger. Pattern of type 1-3-1. Rays 4 smallest. Rays 2 and 3 similar size to rays 5 and 6. Rays 8 arising at base of dorsal ray. Dorsal ray divided into two branches within anterior half. Each branch divided at extremity into two small branches, rays 9 (external branches) and rays 10 (internal branches) (Fig. 10).

Thin alate subequal spicules, 450 long with sharp tips enclosed in a spatulate membrane (Fig. 8). Gubernaculum 21 long and 20 wide in median view. Genital cone with ventral triangular-shaped lip, more developed than dorsal lip. Papilla zero not observed. Papillae 7 rounded (Fig. 10). Spicules length/body length, 15.1 %. Measurements of 10 paratypes (average and range): 2.5 (2.1-3.0) mm long and 48.8 (47-50) wide at mid-body; cephalic vesicle, 36.7 (32-40) long and 14.4 (13-16) wide; nerve ring (n = 7) and excretory pore (n = 8) situated at 89 (85-95) and 121 (105-130) from apex, respectively; oesophagus, 470 (400-550) long; spicules, 374.5 (240-420) long; spicules length/body length, 15.1 % (11.4-16.1).

Allotype female: 2.75 mm long and 48 wide at mid-body, 50 anterior to anus level; cephalic vesicle 40 long and 15 wide. Nerve ring and excretory pore situated at 105 and 140 from apex, respectively (Fig. 2). Oesophagus 500 long (Fig. 1).

Monodelphic. Vulva situated at 98 from caudal extremity. *Vagina vera* 32 long. Ovejector 210 long with vestibule 90 long, sphincter 30 long and 35 wide, infundibulum 90 long (Fig. 8). Uterus 300 long with six eggs, 60 long and 30 wide on average, at morula stage. Uterus length/body length, 11 %. Tail 28 long, rounded at extremity and invaginated (Fig. 8). In some paratypes, tail not invaginated (Fig. 7).

Measurements of 10 paratypes (average and range): 3.3 (2.6-4.3) mm long and 46 (40-50) wide at mid-body to 51 (42-60) anterior to anus level; cephalic vesicle, 39.4 (28-45) long and 17.5 (15-20) wide; nerve ring and excretory pore situated at 103 (90-150) and 139.5 (120-200) from apex, respectively; oesophagus, 620 (500-675) long; vulva situated at 94 (70-115) from caudal extremity; vestibule, 92 (82-110) long; sphincter, 35.8 (28-40) long and 40 (32-44) wide; uterus 450 (300-700) long with 8.7 (6-12) eggs, 58 (50-70) long and 30 (28-40) wide; uterus length/body length, 13.8 % (11.2-17.9 %); tail, 33 (28-40) long.

#### DIAGNOSIS

The specimens described above belong to the genus *Hypocristata* Durette-Desset, 1971 (Heligmosomoidea, Heligmonellidae, Nippostrongylineae) characterised by the length of the oesophagus and a poorly developed synlophe. The genus is made up of two species described from Colombia by Durette-Desset, (1970): *H. anguillula* a parasite of *Nectomys alfari* (now *Sigmodontomys alfari* Allen, 1897) and *H. thomasomysi*, a parasite of *Thomasomys* sp.

*H. thomasomysi* has about the same number of cuticular ridges at mid-body but is differentiated by ridges with chitinoid struts, a larger right lobe, a caudal bursa pattern of type 2-2-1 and rays 4 and 5 of equivalent size. *H. anguillula* has the same caudal bursa pattern and very short rays 4 but is differentiated by the presence of dorsal ridges at mid-body in the male and only three left cuticular ridges at mid-body in the female. In addition, in the female, the ridges have a chitinoid strut. We separate the specimens of *Sigmodon hispidus* in a new species we have named *Hypocristata tercera* n. sp, this species being the third described in the genus.

This is the first report of the genus *Hypocristata* in Venezuela and in the genus *Sigmodon* which suggests that the genus has a distribution and a host spectrum wider than expected. As indicated by Durette-Desset, 1971, the slenderness of the worm, the lengthening of the oesophagus (as in other nematodes like *Capillaria* or *Strongyloides*) and the atrophy of the synlophe evoke an intra-tissular life. The slenderness of the worm along with its transparency and its location inside the mucosa may well explain the difficulties experienced in observing and collecting it. From a phyletic point of view, the genus could be interpreted as an hyper-evolution of the genus *Hassalstrongylus* Durette-Desset, 1971, the pattern of the caudal bursa being similar.

## ACKNOWLEDGEMENTS

The authors wish to thank Giovany Yudice for his help in field work.

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Reçu le 25 mai 2006  
 Accepté le 29 juin 2006