A New Species Of Serpinema (Nematoda: Camallanidae) From A Captive False Map Turtle (*Graptemys pseudogeographica pseudogeographica*) In Portugal

Adrian Cruz[1], João T. Cruz[2], Carla Maia[2,3], Vanessa Carvalho[4], Ricardo Parreira[2,3], David W. Ramilo[5,6], André Pereira[1,3,5,6]

[1] Instituto Politécnico da Lusofonia, Escola Superior de Saúde e Bem Estar Animal, Lisbon, Portugal.
[2] Instituto de Higiene e Medicina Tropical (IHMT) Universidade NOVA de Lisboa (UNL), Lisbon, Portugal.
[3] Global Health and Tropical Medicine (GHTM), Associate Laboratory in Translation and Innovation Towards Global Health (LA-REAL), IHMT, UNL, Lisbon, Portugal.
[4] Vanessa Carvalho Veterinary Clinic, Lisbon, Portugal.
[5] Animal and Veterinary Research Center (CECAV), University of Trás-os-Montes and Alto Douro (UTAD), Vila Real, Portugal
[6] I-MVET (Research in Veterinary Medicine), Faculty of Veterinary Medicine, Lusófona University - Lisbon University Center, Lisbon, Portugal

Objectives: The genus *Serpinema* (Yeh, 1960) comprises parasitic nematodes of freshwater turtles. This study describes a potentially novel *Serpinema* species recovered from a false map turtle (*Graptemys pseudogeographica pseudogeographica*), based on integrated morphological and molecular data.

Materials and Methods: A false map turtle rescued with traumatic injuries underwent assisted feeding as part of clinical care. During the procedure, the animal regurgitated several nematodes, which were collected for examination. Five specimens were obtained, and DNA was extracted from one male and one female. Morphological analysis was performed using a compound microscope. PCR assays targeting *cox1* and *18S* rDNA were conducted using specific primers. Phylogenetic trees were inferred using the maximum likelihood method implemented in IQ-TREE.

Results: Phylogenetic analyses suggest that the collected specimens may represent a distinct species. The *18S*-rDNA tree showed that the obtained sequences share a common ancestor with *S. cayennensis*, the only *18S*-rDNA *Serpinema* spp. sequences available in public databases, supporting its placement within the genus. The *cox1* tree reveals a well-supported monophyletic cluster composed exclusively of the obtained sequences, suggesting significant genetic divergence from previously described *Serpinema* spp. Morphologically, the collected specimens exhibit distinguishing features that do not overlap with those of other *Serpinema* spp.
Conclusions: The integration of morphological and molecular data suggests the potential existence of a novel species. Future studies should explore host-parasite interactions, transmission routes, and phylogeographic patterns.

Keywords: *Serpinema* sp.; false map turtle; *Graptemys pseudogeographica pseudogeographica*; taxonomy; Portugal.