

**Species of Bursaphelenchus Fuchs, 1937 (Nematoda: Parasitaphelenchidae) and other nematode genera associated with insects from Pinus pinaster in Portugal**

PENAS A. C. ; BRAVO M. A. ; NAVES P. ; ...

**Abstract**

Insects associated with maritime pine, *Pinus pinaster*, in Portugal were collected and screened for the presence of *Bursaphelenchus* species. Nematodes were identified using Internal Transcribed Spacers-Restriction Fragment Length Polymorphism (ITS-RFLP) analysis of dauer juveniles and morphological identification of adults that developed from dauer juveniles on fungal cultures or on cultures in pine wood segments at 26°C. Several associations are described: *Bursaphelenchus teratospicularis* and *Bursaphelenchus sexdentati* are associated with *Orthotomicus erosus*; *Bursaphelenchus tusciae*, *B. sexdentati* and/or *Bursaphelenchus pinophilus* with *Hylurgus ligniperda* and *Bursaphelenchus hellenicus* with *Tomicus piniperda*, *Ips sexdentatus* and *H. ligniperda*. An unidentified *Bursaphelenchus* species is vectored by *Hylobius* sp. The previously reported association of *Bursaphelenchus xylophilus* with *Monochamus galloprovincialis* was confirmed. The association of *Bursaphelenchus leoni* with *Pityogenes* sp. is not definitively established and needs further studies for clarification. Other nematode genera besides *Bursaphelenchus* were found to be associated with the insects sampled, including two different species of *Ektaphelenchus*, *Parasitorhabditis* sp., *Parasitaphelenchus* sp., *Contortylenchus* sp. and other unidentified nematodes. The *Ektaphelenchus* species found in *O. erosus* is morphologically similar to *B. teratospicularis* found in the same insect; adults of both the species are found in cocoon-li.

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