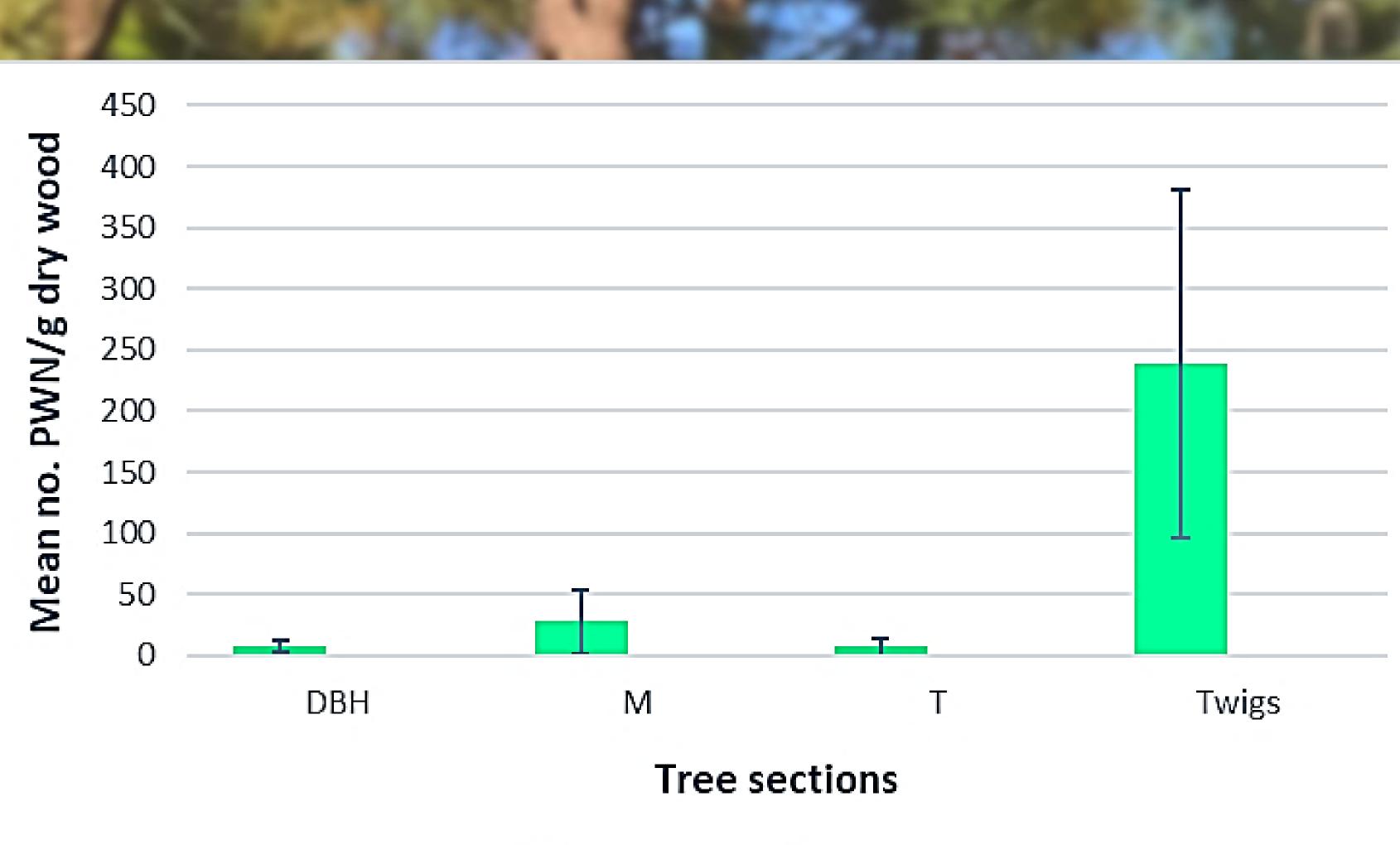


### Introduction

The pinewood nematode (PWN), Bursaphelenchus xylophilus (Steiner & Buhrer, 1934; Nickle, 1970), is a quarantine organism in the European Union and the causal agent of pine wilt disease (PWD), a serious threat to pine forests worldwide, leading to rapid decline and death. However, relating the presence and abundance of this pest with actual forest decline and mortality is not straightforward.

#### **Objectives**

Determine PWN densities from different sections of pine trees, to assess the interactions between B. xylophilus and pine decline at the tree and landscape level.



Pinus pinaster



# **Population dynamics of** *Bursaphelenchus xylophilus* associated with pine forest decline

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# **3** Results

- with severe decline (P<0.05);
- Twigs consistently had higher PWN densities than other sections;
- *Pinus pinea* samples were mostly free of the PWN;
- Values are mean ± SE;
- Means with different letters are significantly different (P<0.05).

(4) Final considerations Areas with a high incidence of *B. xylophilus* are significantly more prone to the complex dynamics shaping pine forest decline, with the PWN clearly playing a key role in this phenomenon. Areas with no decline seem to harbor PWN that persist in the canopy in low population densities. *P. pinea* proved to be a very resistant species.

Samples from healthy and declining *Pinus pinaster* and *P. pinea* were collected from lower (DBH), middle (M), upper (T) and twigs sections of trees, at Herdade da Apostiça (Portugal), a forest that exhibits areas with no decline, and areas with moderate to severe decline.

Significant differences between areas with no decline and areas

WIII

_	1200	
201	1200	
5	1000	
5		
WOUN III UNIGS	800	
u y u	600	
NIN/ 2	400	
L	200	
2	200	b
0	0	1,78
		Healthy trees in he

area

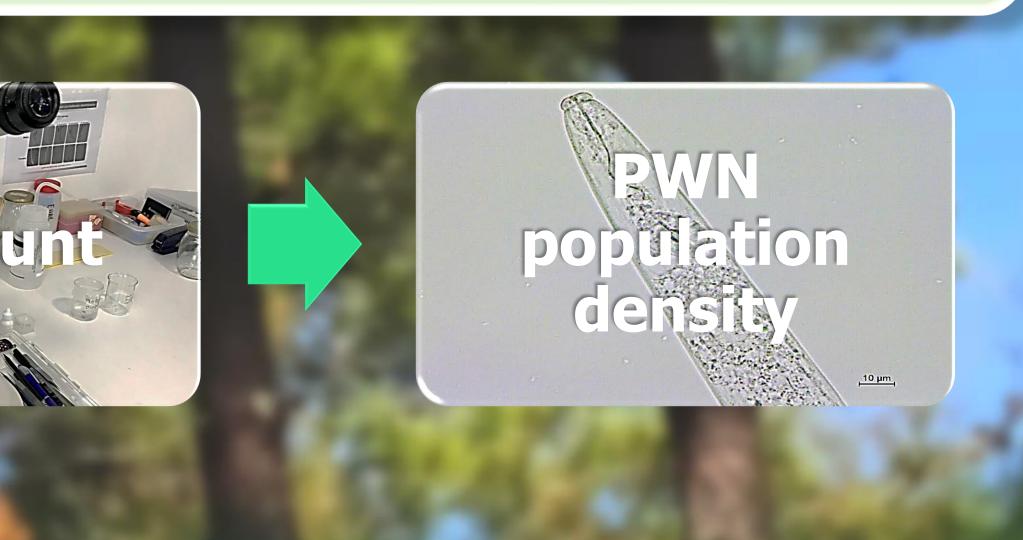
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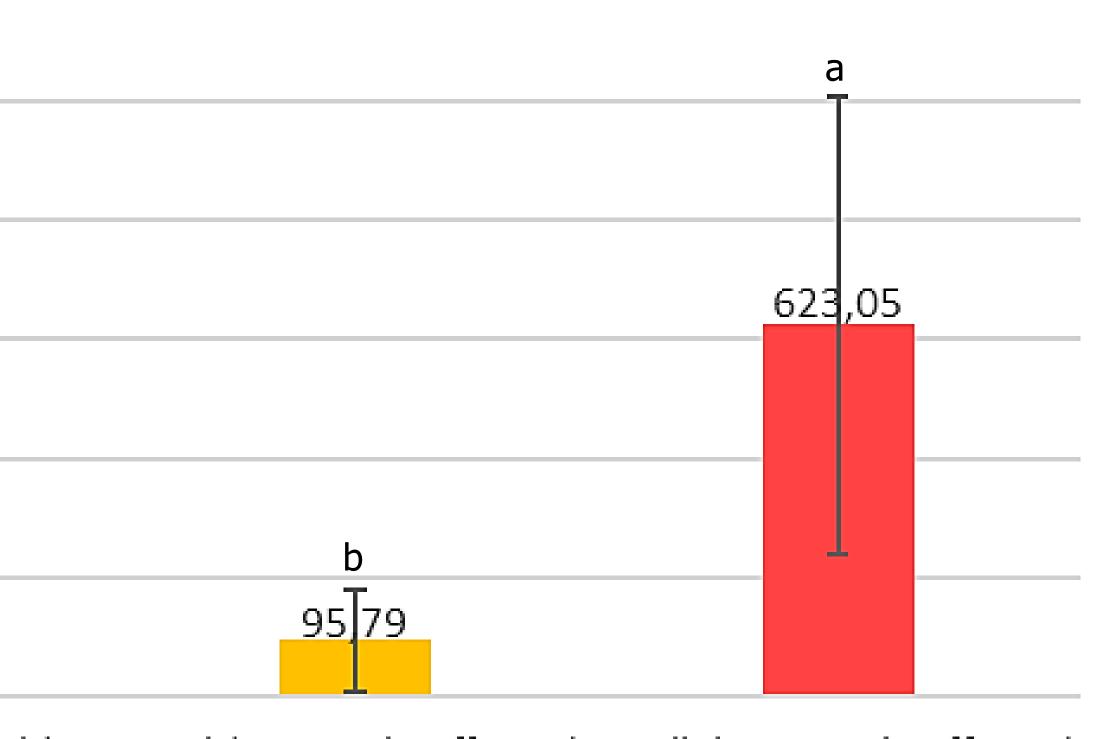




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## 2 Material & Methods





ealthy Healthy trees in affected Declining trees in affected area area

#### Tree health vs decline levels