

1 Introduction

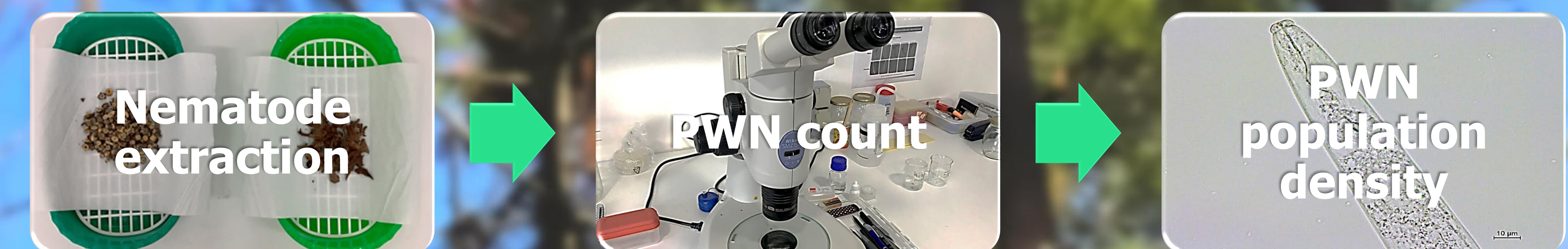
The pinewood nematode (PWN), *Bursaphelenchus xylophilus* (Steiner & Buhner, 1934; Nickle, 1970), is a quarantine organism in the European Union and the causal agent of pine wilt disease (PWD), a serious threat to pine forests worldwide, leading to rapid decline and death. However, relating the presence 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.

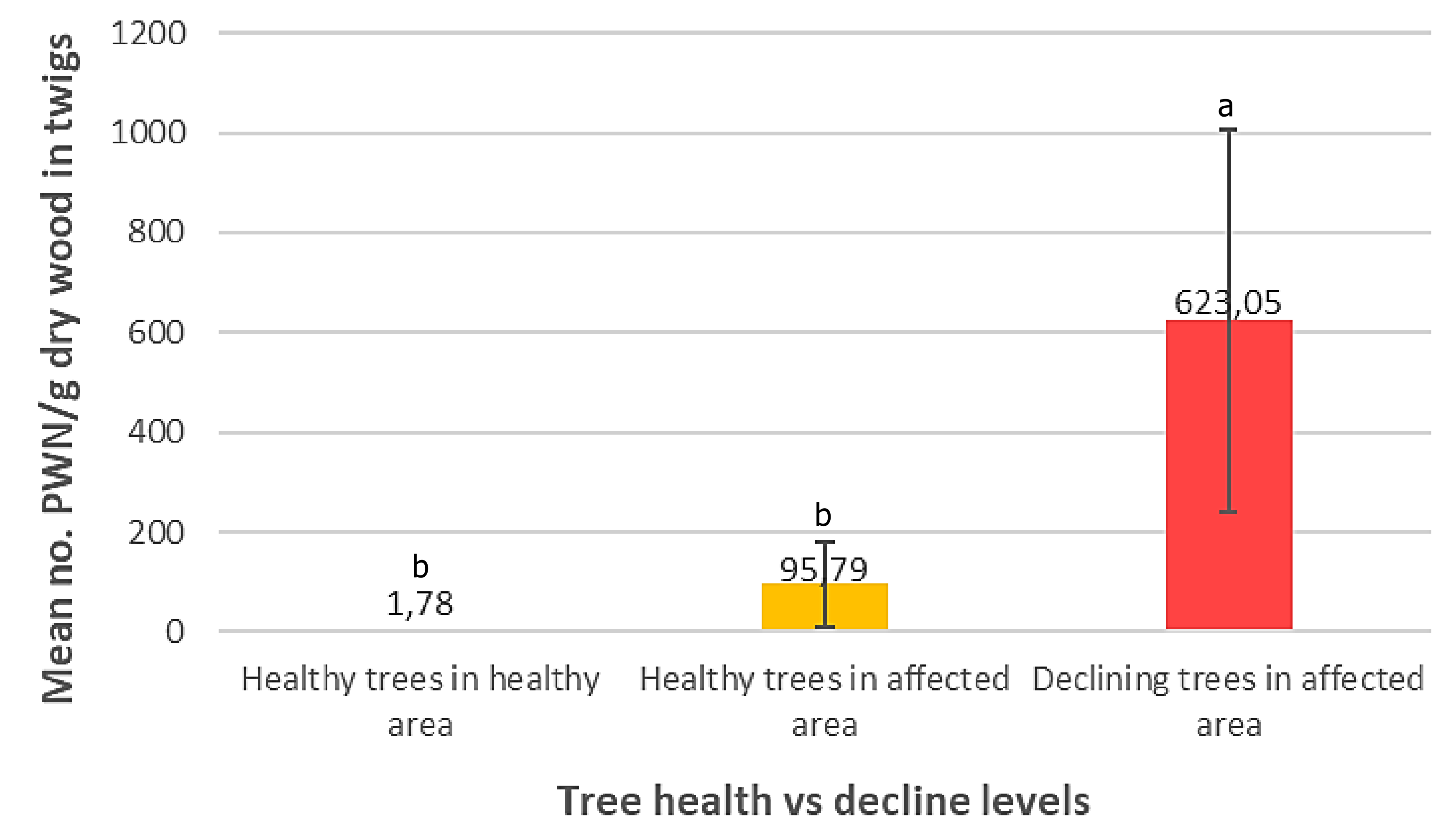
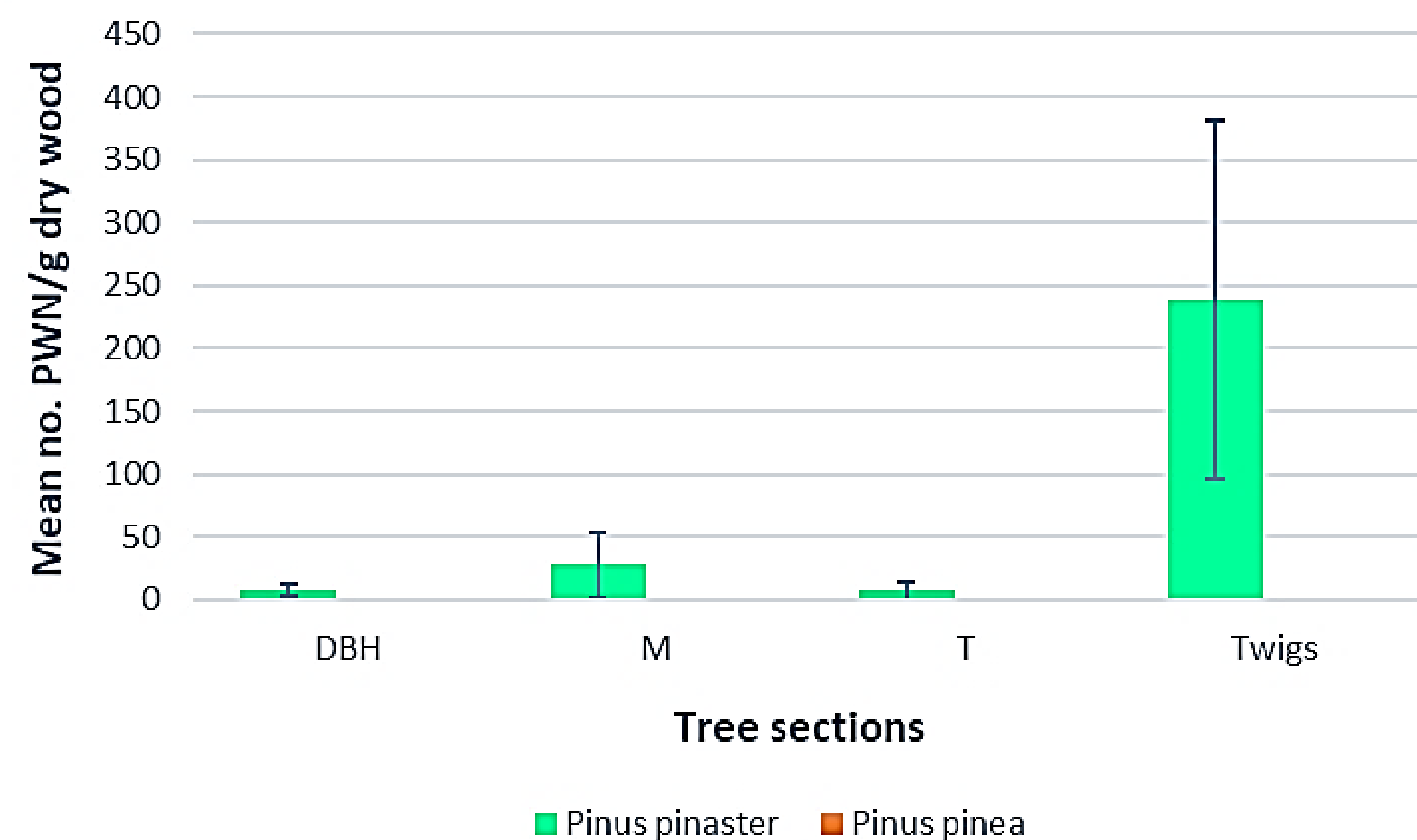
2 Material & Methods

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.



3 Results

- **Significant differences between areas with no decline and areas 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 \pm 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.