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PSHB WA Host List Susceptibility Methodology

Polyphagous shot-hole borer (PSHB, *Euwallacea fornicatus*) has been recorded as infesting over 200 host plant species in Western Australia. Host species are added to this list when PSHB or its fungal symbiont (*Fusarium* sp. [AF-18]) is detected. The methodology for determining susceptibility is summarised below. This susceptibility rating is intended to be used as a guide only, to assist landholders in planting PSHB resilient landscapes.

Susceptibility assessment

All host species on the list have had their susceptibility determined by a multi-criterion weighted sum. The criteria considered include:

- Total number of PSHB positive trees
- Total number of distinct Infested Premises (IPs) at which the host species was found to be infested.
- Spatial distribution of positive detections, including the number of suburbs in which the host species has been found to be positive for PSHB.
- Association with a high-risk site, meaning a site with an existing, significant PSHB infestation.
- Reproductive status in WA.
- Reproductive status on the Global Host List.

Note: The nominal criteria, such as reproductive status and high-risk association, were assigned numerical values to enable appropriate weighting.
The susceptibility rating for each species was assigned based on their total points:

Susceptibility rating	Description
Extreme	• Species that are extremely susceptible to infestation. • Can amplify PSHB populations, increasing the risk of infestation to surrounding trees.
Very High	• Very highly susceptible to infestation. • Can increase surrounding PSHB populations if left untreated for too long.
High	• Highly susceptible to infestation. • Can increase surrounding PSHB populations if left untreated for too long.
Moderate	• Moderately susceptible to infestation.
Low	• Significantly less prone to PSHB attack. • Trees are generally not expected to die due to infestation.
Negligible	• Few infestations recorded. • Trees are generally not expected to die due to infestation.

Key observations

- Three host species (*Acer negundo*, *Erythrina x sykesii* and *Robinia pseudoacacia*) have significantly higher total points than all other species.

- Host species in the **Extreme** to **Moderate** susceptibility ratings are **reproductive hosts**, in which both the beetle and fungus can successfully establish and reproduce.
- Host species in the **Low** to **Negligible** susceptibility ratings are **non-reproductive hosts**, which may be attacked by the beetle, but in which PSHB is not reported to be able to successfully establish galleries and complete its lifecycle.
- The susceptibility categories are further split into Introduced, Australian Native and West Australian Native to improve clarity.
- Within native status groups, the hosts are listed in **alphabetical order**, this order does not reflect susceptibility ranking.
- Sorting order:
    - Susceptibility rating (Extreme to Negligible)
        - Native status (Introduced, Aus Native, WA Native)
            - Alphabetical order (A to Z)
- As the response to PSHB is ongoing, new host species may be added to the list as new detections occur and some species may move in the susceptibility ratings. The published host list will be updated accordingly.

Determining current name and native status

To determine the current name and native status of a host species, multiple databases are consulted. This is because species may be listed under outdated names in some databases and assessments of their native status can vary between sources. The databases used include:

- Atlas of Living Australia (ALA 2024)
- Florabase (Western Australian Herbarium 2024)
- Global Biodiversity Information Facility (GBIF) (GBIF Secretariat 2024)
- Kew Gardens (Royal Botanic Gardens) (Royal Botanic Gardens 2024)

References

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