

DBCA MEDIA PACK – Dieback Detector Dogs – Useful information

Dieback - Background

- *Phytophthora* dieback is caused by a microscopic plant pathogens in the genus *Phytophthora*.
- The main cause of *Phytophthora* dieback in Western Australia is *Phytophthora cinnamomi*. It is known as a biological bulldozer.
- *Phytophthora cinnamomi* lives in the soil, where it attacks the roots of many native plants.
- *Phytophthora* dieback is the greatest disease threat to the flora of the south-west bioregion of Western Australia.
- There is no cure for dieback, but its spread can be controlled.
- Humans are the main source of dieback spread, with vehicles, boots and equipment all able to spread dieback by carrying spores in dirt or mud.
- Industries, government and landowners spend considerable time and money minimising the spread and mitigating the impacts of dieback.

Dieback - Impacts

- The impacts of dieback are negative, permanent and irreversible.
- It can destroy animal habitats and plant communities.
- More than 40 % of native plant species in the Southwest Bioregion are considered susceptible to the disease, including many from the Proteaceae (banksias and hakeas), Ericaceae (heaths), Myrtaceae (eucalypts) and Xanthorrhoeaceae (grass-trees) families. Threatened flora are at even greater risk with around 56 % of species considered susceptible.
- Dieback affects environmental as well as social, cultural and economic values.
 - Environmental impacts include reduced biodiversity, reduced biomass and reduced food/shelter for native animals, as well as increased weed invasion and increased areas of bare soil.
 - Social and cultural values are also impacted with the disease causing the loss of natural heritage values, culturally significant species, and cultural and heritage sites.
 - Economically, the disease increases land management costs and has a significant impact on tourism when natural attractions are degraded.
- Dieback primarily occurs in an area termed the “vulnerable” zone in Western Australia, which includes all areas of the south-west land division, west and south of the 400mm rainfall isohyet.
 - Dieback is a water-mould, so it has greatest impact in areas where there is plenty of water to spread and reproduce in.

Dieback detector dogs

- Dieback detector dogs are proving to be an accurate, rapid method of detecting *Phytophthora* dieback.
- They have the capacity to deliver cost-effective rapid detection of *Phytophthora cinnamomi* in the lab and the field.
- Potential applications include:
 - Sample triaging and diagnostics (at the lab or in the field)
 - Hygiene checkpoints to clear machinery during operations (e.g. mining, forestry)
 - Nursery hygiene checks prior to planting for revegetation
 - Real-time detection ahead of emergency response disturbance activities (e.g. fire breaks during active fires in un-mapped areas)
 - Improved dieback field-mapping (interpretation)
 - Verification of dieback-free materials (e.g. gravel, sand)
 - Driving public awareness and engagement in dieback management.
- In 2022, NSW National Parks and Wildlife Services partnered with experts at Tate Animal Training Enterprises and to train the first dieback detector dogs in Australia. In collaboration with leading

plant pathology experts at the University of Sydney and the Royal Botanic Garden's PlantClinic, the team demonstrated the efficacy of detection dogs in proof-of-concept trials.

- Field testing of the dieback detector dogs is now underway.
- DBCA is investing in a short feasibility study to explore dieback detector dog applications in Western Australia. The dogs will be tested in the laboratory and the field to see how accurate they are and explore how they could be integrated into current mapping and management. This will include a half-day workshop with dog handlers, registered dieback Interpreters and research partners to discuss the best use of the dogs.

What does DBCA do to combat dieback on the conservation estate?

- Dieback has been actively managed on DBCA estate since the 1970s, largely in response to protecting the profitable jarrah forestry industry at the time. This has had a positive and enduring legacy and DBCA continues to manage dieback as a part of all soil disturbance on DBCA-managed lands within the vulnerable zone.
- Disturbance activities that move soil on DBCA estate in the vulnerable zone need to undergo dieback mapping and management planning.
 - For example, if a new trail is being planned, dieback mapping can be used to plan the trail to only be in areas already known to have dieback, or to incorporate signage when moving from infested to uninfested sites, so people remember to clean their shoes, equipment and vehicles – those “clean on entry/exit” points are good spots for signage and shoe/bike cleaning stations.
- Dieback Management Plans (DMPs) outline hygiene and movement controls to reduce the risk of dieback spreading during disturbance activities.
 - They typically include a requirement for all relevant staff to undergo “Green Card” training to ensure they understand the basics of dieback biology, management and hygiene, as well as advise on control points where hygiene interventions such as washing down vehicles or incorporation of green bridges with clean gravel or fill is required to remove or reduce the chance of dieback infested soil sticking on carriers such as vehicles and machinery to reduce spread.
- The DBCA also maintain a system for the registration and auditing of dieback Interpreters, to ensure the Interpretation and dieback mapping conducted is of a consistent standard across our estate.
- In high-value conservation areas where dieback is already established, including areas within the South Coast Region near Albany, the Department also undertakes targeted treatment with Phosphite. Phosphite can help to protect against or mitigate the impact of dieback, preserving sensitive species and communities at risk of extinction due to the disease.

What's the current situation of dieback in WA?

- While dieback is widespread in the south-west of WA, there are vast tracts of land where it isn't known to occur.
 - Large parts of the Fitzgerald National Park remain free of dieback.
 - Even in highly disturbed or more frequented areas you can still get dieback-free areas – which can be just as important to preserve, especially when they occur in threatened or priority communities like Jarrah or Banksia Woodland in the Perth metro and Hills regions, or montane heath and thicket in the Stirling Range National Park.
- Natural spread still occurs, so mapping and management need regular updating.
 - Dieback can move naturally through soil about 1m per year upslope by root-to-root contact or as much as 100m per year when following downslope drainage.
- On lands managed by the DBCA all activities that are likely to move dieback are assessed. Dieback mapping and planning is undertaken, with controls such as road blocks or management points with wash downs planned and implemented to prevent the spread of dieback.

What still needs to be done?

- Education and engagement are key. Dieback has been around for a long time – while the dieback literacy in WA is amazing, it wanes over time. So, we need to think of how to engage everyone, consistently, to keep it from spreading. Biosecurity is a shared responsibility, so the more dieback advocates we have in our communities and land management agencies, the better our chances of keeping it on the agenda and keeping it contained.
 - Detector dogs can help us engage a wide range of stakeholders, improving understanding, proactive management and compliance.
- Innovation in the way we map and measure change in our ecosystems. As the old saying goes – you can't manage what you can't measure. We need to know where dieback is if we're to plan to reduce its spread. What new (or old) technologies are coming online that could help us detect and map dieback faster and more accurately – new tech in remote sensing, or can we “sniff” out dieback with detector dogs?

What can people do to help?

- We can all take actions to reduce the spread of dieback – “arrive clean, leave clean”.
 - If your boots or camping gear have dirt stuck to them - clean them.
 - Keep a sturdy brush and spray bottle of 70% methylated spirits in the boot of your car. Brush well and spray your boots or bike after your hike/bike, before you leave the site.
 - Reconsider hiking in dieback risk areas when it's wet – mud sticks better in the wet and it is harder to clean properly, so even if you clean down well you may still spread dieback.
 - If you drive through muddy tracks while hiking or camping, stop by and wash the car down before entering new areas – be sure to get up and under the body of the car and around wheels, and clean out foot wells of cars (easy places to forget!)
- Support dieback education and innovation initiatives.
 - Partner with the DBCA to pool resources and support dieback management and innovation efforts. The DBCA regularly partner with not for profits such as the Dieback Working Group and NRMs to seek additional funding to better understand, manage and protect our natural areas from the impacts of dieback.
 - This could include partnering with WA-based dog trainers to develop local dieback detector dogs!