

A brown and white dog, possibly a Weimaraner, is walking on a leash in a grassy field. The dog is wearing an orange collar and a blue leash. The background is a line of trees under a cloudy sky. The text 'Passing the SMELL TEST' is overlaid on the left side of the image.

# Passing the **SMELL TEST**

Scent detection dogs have proven to be useful in many fields—sniffing out illegal substances and smuggled animals at airports, helping rescuers search for survivors among the rubble of an earthquake, assisting with medical research in detecting certain cancers, and even helping commercial pest controllers to find bed bugs. Now, following successful trials, dogs will be used in WA and Australia as part of an innovative Saving Native Species Program to detect a ‘biological bulldozer’—*Phytophthora cinnamomi*.

by Alex Gore





**W**estern Australia is at the forefront of a new national program to help land managers better tackle invasive animals, weeds and diseases to protect threatened species.

The Federal Government's new \$11.4 million Threat Innovation Grants program is backing projects using innovative methods and technologies to better manage threats to our native plants and animals on a large scale and in remote places.

For example, modern drone technology is being used to detect and map invasive weeds, air sampling devices are being developed to detect invasive myrtle rust spores in botanical gardens (see 'Defending WA against myrtle rust', *LANDSCOPE* winter 2023), and artificial intelligence is being used in Felixer© traps

to identify native species so they're not treated as targets.

However, it is the natural ability of dogs to simply sniff out danger using their remarkable sense of smell that is of interest to plant scientists in Western Australia.

The Department of Biodiversity, Conservation and Attractions (DBCA) has been allocated \$1.3 million in funding from the Threat Innovation Grants program for the recruitment and training of scent detection dogs.

## FINDING PHYTOPHTHORA

DBCA's Ecosystem Health Branch is leading the tri-state project in which these dogs will be used to identify the dieback-causing plant disease Phytophthora dieback, which threatens many native plants, in Tasmania, New South Wales and Western Australia.

**Main** Scent detection dog Alice at work at Lowlands Nature Reserve.

*Photo – Shem Bisluk/DBCA*

**Left** Dieback kills plants in forests, woodlands and heathlands.

**Above** Dieback-affected hakea plants on the south coast.

*Photos – DBCA*



See the dieback detector dogs in action

Scan this QR code or visit Parks and Wildlife Service's 'LANDSCOPE' playlist on YouTube.







Phytophthora dieback is one of the greatest plant disease threats to Australia's natural environment and natural heritage and is considered the second greatest risk to threatened flora species in Australia, after rabbits.

DBCA's Parks and Wildlife Service Plant Diseases Program leader Dr Kylie Ireland described dieback as a "biological bulldozer" and said about 40 per cent of plant life in WA's south-west is susceptible.

"The department engages or invests about \$1.3 million each year on mapping and management around stopping the spread of dieback," Kylie said.

"It is a water mould, so it moves a lot in water, and infects the roots of plants, which can be fatal."

**Top left** Echo detects *Phytophthora* soil samples in Kensington.

Photo – Alex Gore/DBCA

**Above** Dog handler Ryan Tate with Alice in Lowlands Nature Reserve.

Photo – Shem Bisluk/DBCA

**Left** Alice (left) and Echo (right) at DBCA's Kensington HQ.

Photo – Alex Gore/DBCA

Plant scientists in WA have completed several weeks of testing, which confirmed the ability of scent detection dogs to sniff out *Phytophthora*.

Two dogs—Echo, a three-year-old Brittany Spaniel, and Alice, a two-year-old English Springer Spaniel—were trained in New South Wales and were brought over to WA in late 2024 to demonstrate their skills.

Professional dog handler Ryan Tate said Alice and Echo performed well in their *Phytophthora* dieback detection trials.

"To get the dogs to where they are now has taken two years," Ryan said. "But it only took a couple of months for the dogs to discriminate between pure soil and soil infected with *Phytophthora* in a clinical setting.

"The real challenge is getting out into the field, finding *Phytophthora* in the field and working with a variety of different soil samples from all around the country.

"At this stage, we're just working on the *Phytophthora* genus, specifically *cinnamomi*. One of the dogs, Alice, has been generalising to other species within the genus, whereas Echo just seems to, at the moment, only 'alert' the *cinnamomi*."





## A SPECIAL BREED

Ryan said the spaniel breeds are particularly adapted for scent detection roles.

“The breeding of them is more around what we would call working line, or hunting line dogs that have been bred for hundreds of years to have a high desire to use their nose to find small things,” he said.

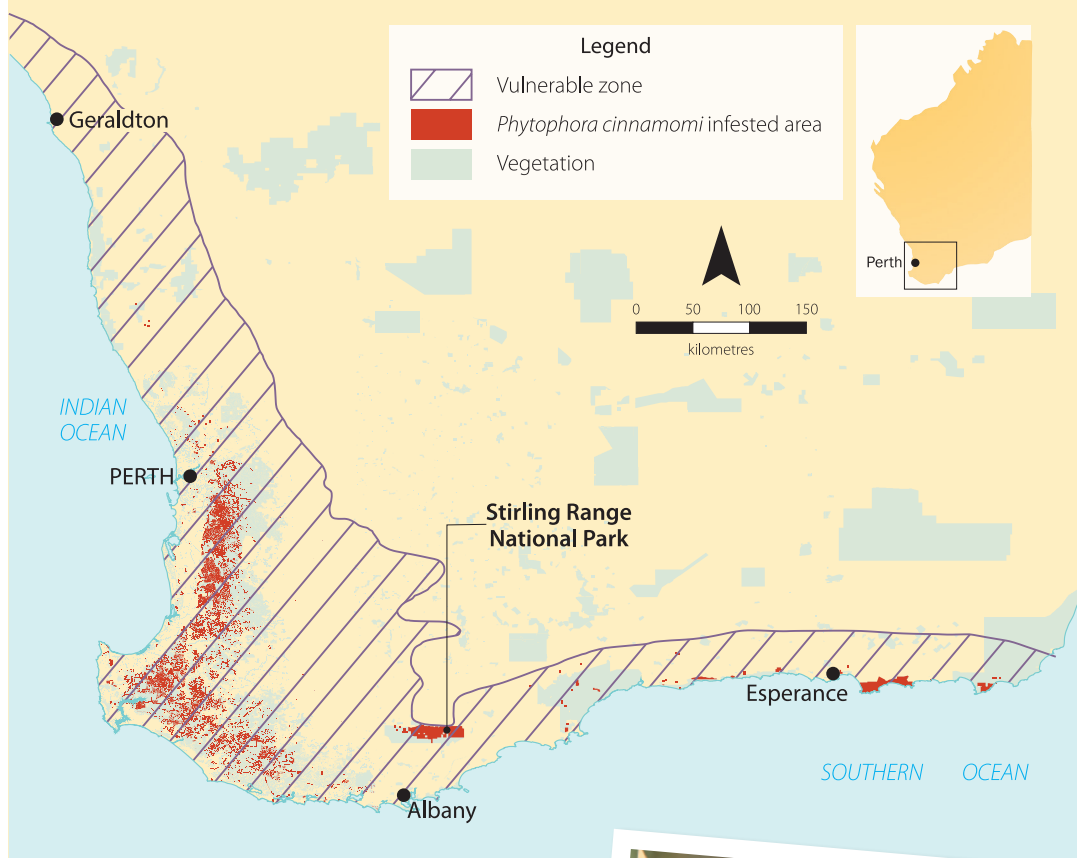
“So, we have a dog that likes using their nose. The next trait that we really select for is a very high reward drive. So, a dog that loves to play, loves treats, loves to engage with their handler so we can communicate to them, ‘hey, this really small boring thing is a good thing for you to find’.”

To date, detecting and confirming dieback has mainly involved identifying potential areas of risk by sight, and then collecting soil samples and testing them in a laboratory, which can take up to a fortnight.

The use of scent detection dogs could help to dramatically speed up this process and allow measures to be put in place more quickly to prevent dieback spread.

## LOCAL TEAM

The aim is to have a WA-based detector dog team by the end of 2025.



## What is dieback?

- Phytophthora dieback is a soil-borne plant disease caused by 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.



“The use of scent detection dogs could help to dramatically speed up this process and allow measures to be put in place more quickly to prevent dieback spread.”

**Top left** Dieback affected forest.

**Above left** Signage for visitors to minimise spread of dieback at Mt Lindesay National Park.

**Inset above** *Banksia baxteri* impacted by dieback disease.  
Photos – DBCA





## What can you do to help?

- Ensure all soil or plant material is sourced from pits and nurseries that are certified to be free of *Phytophthora* dieback.
- Stay on established roads and tracks.
- Schedule activities for low rainfall months and avoid wet or muddy conditions.
- Inspect and clean vehicles, equipment and footwear of soil and plant material before entering bushland.
- Be aware of *Phytophthora* dieback signage and do not enter restricted areas.
- Seek up-to-date information and further advice at [dieback.net.au](http://dieback.net.au)
- Check with Parks and Wildlife Service about recent road closures and suitable areas for your activity.



"It's so amazing to be working with these dogs. We're excited about setting up our own program in WA and we've already had a lot of interest from local dog handlers," Kylie said.

"It's an absolute game changer in terms of the tools we have to try and identify where *Phytophthora* is and manage it in the field.

"In the short term, we're just making sure the dogs can work effectively to determine where and how we can use them in the field.

"We can already see there's potential to use the dogs after bushfire events and quickly detect *Phytophthora* without relying on lab results that can take up to two weeks."

The project also aims to support recovery of threatened species and communities impacted by dieback, as well as using the dogs to assess the dieback status of established and proposed plant translocation sites.

Identifying samples at an early stage would have a direct benefit in the lab to help detect areas of concern, saving time and resources. Once identified, measures can be put in place to prevent spread of dieback.

"There's so rarely innovation in this space. So having a tool like this buoys us a little bit because it's not the easiest topic to discuss at times, and we really want to protect our natural spaces."

## TEAM EFFORT

The project is led by DBCA, with animal handling leadership from TATE Animals, NSW leadership from NSW National Parks and Wildlife Service, and Tasmanian leadership from Enviro-dynamics.

NSW-based dog handler Ryan Tate added that testing the dogs, Alice and Echo, in a different environment has been a beneficial experience for everyone involved.

"Working from NSW to WA has been a real game changer because the impacts of dieback in WA are so dramatic," Ryan said.

"So going back further east or south, we'll have a lot more confidence in the way the dogs work and alert, thanks to these experiences we've had out here."

There is now much greater potential for new knowledge about dieback to be gained and disseminated.

"We've been managing dieback in WA since the 1970s and 1980s and it's hard to keep people engaged," Kylie said.

"The dogs are really helping us to start that engagement again. They give us an option to really be able to move a little quicker and smarter about how we tackle this issue. It's a really exciting time to be doing dieback research."

**Top left** Alice scents something in the air.  
Photo – Shem Bisluk/DBCA

**Inset top** Boot cleaning stations are placed in parks that are under threat from dieback.  
Photo – Peter Nicholas/DBCA

**Inset above** Vehicles need to be sprayed down and cleaned thoroughly before entering bushland to prevent the spread of dieback.  
Photo – DBCA

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