

Healthy soil, healthy planet

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On World Environment Day 2021, national conservation not-for-profit [Bush Heritage Australia](#) is spotlighting soil and the critical ecological functions it provides for our planet.

Understanding soil is central to Bush Heritage's work safeguarding landscapes and the species that call them home. If soil is ignored or not managed well, ecosystems risk becoming vulnerable to desertification, drought and invasive species. Healthy ecosystems need healthy soil.

An active part of the ecosystem, soil sustains plants, animals and humans. Up to 90% of living organisms spend at least part of their lifecycle in soil including species of fungi, algae, bacteria and protozoa as well as fauna like earthworms, ants, and burrowing rodents.

Soil provides nutrients for plants to grow, regulates water levels and decomposes organic matter. Healthy soil is more fertile and sequesters more carbon than unhealthy soil, contributing to food security and working against the impacts of climate change.

Bush Heritage is involved in a range of soil science projects across its network of reserves and partnerships including two key projects in Victoria and Western Australia.

1. If soil could talk

At Nardoo Hills Reserve on Dja Dja Wurrung country in central Victoria, Monash University Masters student Luke Richards, in collaboration with Japan-based tech company Freaklabs, is seeking to develop a remote soil monitoring system. Like a Google Home for soil, the team's design features sensors for soil to be monitored at low cost, in real time and with the least labour.

‘Soil is the foundation upon which all life is built and simply must play a pivotal role in environmental restoration work,’ says Luke. ‘Soil monitoring and sampling practises have at times been neglected but we need a proper understanding of the health of our environment’s foundation to manage it most effectively.’

2. The secret life of soil

In WA’s Great Southern region, Noongar country, Flinders University PhD candidate Shawn Peddle is researching the soil microbiome, a teeming community made up of microorganisms like bacteria, fungi and archaea.

Shawn’s research focuses on how the soil microbiome responds following ecological restoration as well as how soil microbes can be used to facilitate restoration efforts. His research sites include three restored Bush Heritage reserves in the area between the Fitzgerald River and Stirling Range national parks.

‘Soil is critical to healthy ecosystems but often gets overlooked,’ says Shawn. ‘By using DNA sequencing to compare soil samples from restored sites with samples from untouched bushland we can find out if the success of above-ground restoration efforts is carrying through to the soil microbiome.’

Tomorrow’s World Environment Day also marks the launch of the UN’s Decade on Ecosystem Restoration, a movement to prevent, halt and reverse the degradation of ecosystems on every continent and in every ocean.

[Download images of Luke Richards and Shawn Peddle's research sites as well as other key animals and plants linked to soil health here.](#)