



Gilbert's potoroo translocated to new areas find their fungi

by Neale Bougher and Tony Friend, DEC Science Division

neale.bougher@dec.wa.gov.au, tony.friend@dec.wa.gov.au

Background

Western Australia's critically endangered mammal – Gilbert's potoroo (*Potorous gilbertii*) was presumed to be extinct until being rediscovered in 1994 at Two Peoples Bay Nature Reserve - the animal's only known natural refuge. A recovery program led by DEC aims to establish potoroos in areas where they may have occurred in the past.

Fungi largely determine the survival and breeding of potoroos because truffles are their major food. Therefore we need to be sure that potoroos translocated into new areas can find enough fungi to survive and breed. We also need to know what types of areas and vegetation may be suitable for translocations.

- Potoroos feed on dozens of species of truffles.
- The truffles need animals to disperse their spores.
- The fungi are beneficial mycorrhizal partners of many plants.
- 95% of our 100s of truffle species are unique to Australia.



Truffles occur below the ground. Potoroos have perfectly adapted claws for unearthing them

Findings

The first translocation of Gilbert's potoroos was undertaken in 2005, to Bald Island off the south coast of WA. Consumption of fungi by these pioneers was assessed by examining their scats within days after their release, and again one and two years later.

Potoroos find fungi immediately after translocation

Four potoroos released onto Bald Island only four to eight days previously were found to have consumed 23 species of fungi. No plant material, insects or other animal material was present in the scats. Four soft, fleshy species of truffles were eaten by all four of the potoroos: two *Hysterangium*, and one each of *Protoglossum* and *Pogisperma*.



Mesophellia truffles are buried in clusters deep (10-20cm) underground. Potoroos dig them up and leave a trail of discarded shells along their way

Consumption of fungi is sustained over time

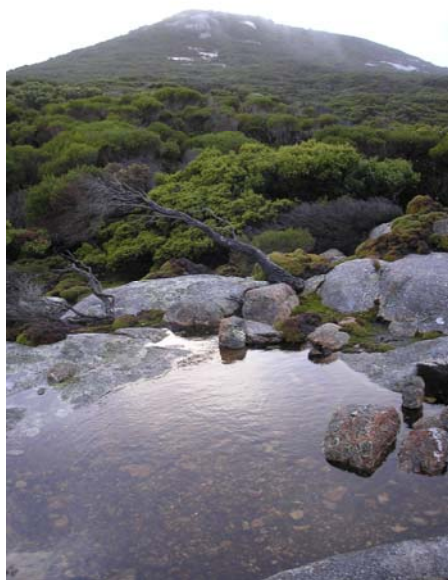
Three potoroos released onto Bald Island one to two years previously and one island-born individual were found to have consumed 27 species of fungi during a two day sampling period. One of the translocated individuals alone consumed 20 species. Thirteen of the 27 fungi were the same as those that had been consumed by the potoroos within days after their release onto the island. This shows that consumption of fungi by potoroos is sustained at least one to two years after translocation, and includes successfully reproducing individuals.

Areas with different vegetation are suitable for potoroos

Bald Island has areas of shrubby and heath vegetation and exposed granite rock similar to areas at Two Peoples Bay Nature Reserve. It was not known if such areas would be the only areas suitable for translocating Gilbert's potoroos. To test this, potoroos were translocated in 2007 to a fenced site on the mainland dominated by eucalypt woodland. Within 29 days after release two potoroos were consuming six species of truffles, and 14 species within three months. Four fungi were common in all scats sampled – *Hysterangium*, *Pogisperma*, *Elaphomyces*, and *Austrogautieria*. Plant material comprised less than 1% of the scat's volume.



Fungi consumed by potoroos can be assessed by spore types in their scats



Bald Island - new habitat for Gilbert's potoroos



Elaphomyces from Bald Island



Hysterangium from a mainland translocation site

Management implications

That Gilbert's potoroos rapidly acquire fungi in new areas including different vegetation types is not surprising as potoroos were once spread widely. This study confirms that sustained survival and breeding of translocated potoroos at translocation sites with at least two different vegetation types parallels sustained production and consumption of a wide diversity of fungi. Based on this, a wider selection of vegetation types and areas rather than only areas similar to where potoroos occur at Two Peoples Bay can be targeted for future translocations. Natural and translocated individual potoroos similarly consume a wide taxonomic diversity of truffles. We need to assess the abundance and diversity of fungi present at translocation sites before committing to release potoroos.

Bougher, N.L., Friend, J.A. and Bell, L. (2008). Fungi available to and consumed by translocated Gilbert's potoroos: Preliminary assessments at three translocation sites in Western Australia. Department of Environment and Conservation report.