Attack of the clones? Or maybe not… What's happening with Gilbert's Potoroo genetics?

Kym Ottewell[1], Jackie Courtenay[2], Tony Friend[1]

[1] Biodiversity and Conservation Science, Department of Biodiversity, Conservation and Attractions

[2] Gilbert's Potoroo Action Group

Following its re-discovery in 1994, Gilbert's potoroo has been subject to intensive conservation efforts to increase the known population size and expand its range. With protection and stabilisation of the single remnant population at Two Peoples Bay, further populations were established at Waychinicup National Park and on two islands, Bald Island and Middle Island through translocation. Understanding the impact of these management activities on the genetic diversity of this critically endangered species is vital for informing long-term conservation planning. Between 2020 and 2023 DBCA, in collaboration with GPAG and funded by the Western Australian government's State NRM Program, undertook a comprehensive genetic analysis of DNA samples taken from potoroos between 1994 and 2021. The aims of the analysis were to assess levels of genetic diversity within the species and to elucidate changes across time. The analyses revealed that Gilbert's potoroo, despite contracting to a population size of 30 individuals, retains high levels of genetic diversity (heterozygosity). The unusual pattern of linkage observed in the genetic data may be attributed to a genetic mechanism termed associative overdominance, that is hypothesised to support maintenance of genetic diversity in small populations, although further work is required to confirm this. Comparisons of genetic diversity and inbreeding levels across contemporary samples indicated that Bald Island is the most suitable source population to support re-stocking of the Two Peoples Bay population following its decline from wildfires in 2015.