

Rewilding ecosystems through wildlife rehabilitation – a successful trial in Western Sydney

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Abstract

Can wildlife release be adapted not only to save lives but to also save ecosystems? For four years we modified the release of rehabilitated Bare-nosed Wombats in a project to rewild 350 hectares of Cumberland Plain Woodland in Western Sydney. We successfully re-established the breeding population and generated an 80% increase in the activity of other wildlife species through associated ecosystem services. We report significant opportunities to adapt wildlife rehabilitation to restore wild ecosystems

Keywords: Bare-nosed Wombat, rewilding, ecosystem services

Introduction

Each year over 5,000 native animals are rescued, recuperated and returned to the wild in NSW^[1]. The outstanding work of carers restores life, dignity and freedom to native animals. Carers efforts also offer the potential to address the dramatic decline of native wildlife populations^[2] and to address the decline of ecosystem health as ecosystem services such as grazing are lost. However there has been limited use of this potential to date.

Beginning in 2014 Greater Sydney Local Land Services and WIRES led a partnership with the aim of improving the outcomes for Wombats released from care while also restoring ecosystem function to critically endangered Cumberland Plain Woodlands. Wombats were targeted because we suspected their grazing or burrowing may be key ecosystem services for woodland health, we could identify and reverse the factors responsible for their local decline, and in response to the success of wombat establishment using rehabilitated animals in Wingello^[3].

Materials and Methods

Over four years a total of 13 local rescue wombats were released to supplement a near-extinct population of wombats in eastern Mulgoa, NSW. After extensive rehabilitation by WIRES volunteers to a minimum weight of 20 kg each wombat was released at an artificial burrow seeded with the individual's scats and located outside existing territories. Releases were concentrated within a 50-hectare private conservation reserve and coordinated to achieve optimal group size, pairing, age and gender. Each burrow was monitored with automated wildlife cameras. All activities complied with the NSW Rehabilitation of Protected Fauna Policy 2010^[4]. The wombat release program was undertaken in conjunction with a regional-scale intensive fox control campaign to minimise the likelihood of foxes introducing sarcoptic mange to the healthy release population.

The surrounding habitat was also intensively monitored with eight automated cameras. Because artificial wombat burrows were located randomly this allowed comparison of other wildlife species activity between areas with and without wombats. Three pairs of vegetation monitoring plots (grazed & grazing exclusion) were installed and surveyed monthly to quantify the impact of grazing by wombats and other species. Volunteers undertook monthly inspections to record each wombat burrow and its status.

Results

Wombat survival was 92% with one wombat being taken back into care after traveling some distance into a development site. All other wombats established wild burrows between 6 weeks to 6 months of release. By 2018 there were 24 active burrows and an estimated population of 18 wombats i.e. a 38% increase. Vegetation monitoring in grazed and grazing-excluded plots demonstrated no measurable impact on vegetation from the grazing of wombats or other native or exotic fauna present.

The program collected over 106,000 records of native wildlife. Comparison between randomly-located wombat releases and adjoining habitat demonstrated an 80.0% increase in activity of other wildlife species where wombats were returned (paired one-tail t-test, $P < 0.03$). This activity included sheltering (including maternity use by macropods), feeding (both geophagia for minerals and predation on invertebrates exposed in excavated soil) and increased predator activity attracted to the feeding wildlife (by Goshawks & Sparrowhawks).

Discussion

This project repeats the success of similar programs ^[3] to reinvigorate wombat populations through coordinated release of rehabilitated wildlife. We further demonstrate that wombats are a key ecosystem engineer whose burrowing activities significantly maintain the broader Cumberland Plain Woodland fauna. Indeed, soil turnover at burrows provided such a substantial resource for woodland birds and reptiles that it resulted in a significant increase in local raptor activity.

Burrows also provided frequent refuge for numerous species during inclement weather. With the number of days above 35°C in Western Sydney more than doubled since 1970 due to Urban Heat Island effect ^[5] wombat burrows are likely to be an increasingly critical resource for other native fauna. However, wombats were themselves observed to never leave burrows at temperatures over 30°C despite nights regularly exceeding this temperature. This raises concerns for the future of wombats as development continues to exacerbate Western Sydney's Urban Heat Island effect. Wombat burrows were also found to be a major nursery site with Swamp Wallaby, Eastern Grey Kangaroo and Common Wallaroo regularly recorded using burrow entrances as a safe place to evict pouch young learning to stand and hop, a behaviour observed only once outside the burrow environment.

Conclusions

Our trial shows that more strategic release and greater support of release animals can provide opportunities to secure outcomes for release animals while also generating significant ecological benefits. We strongly encourage further coordination of rehabilitation releases to maximise the ecological benefit of carers dedicated work.

Rewilding native wildlife also provides substantial engagement & education opportunities. Our small project generated dozens of media reports, engaged over 50 volunteers and significantly contributed to the momentum of local conservation efforts which during the trial added more than 50 hectares to the conservation estate including a land donation named 'Wombat Reserve' ^[6]. By better coordinating wildlife releases and aligning with broader conservation needs rehabilitated fauna in NSW offer considerable untapped opportunities to reverse the devastating decline of our native wildlife populations.

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