Collaborative prescribed burning benefits threatened mammals in northern Australia

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Despite substantial investment in prescribed burning for biodiversity conservation in northern Australia there has been surprisingly little demonstration of its efficacy in achieving intended conservation aims. In the case of northern Australia's declining mammal fauna, most studies have reported negative responses to fire.

We used satellite-derived fire imagery and small mammal survey data to compare fire regimes and threatened mammal abundance before and after broad-scale prescribed burning in north-western Australia. Specifically, we tested (1) whether fire management was effective in changing fire regimes; (2) whether mammals responded to changed fire management; and (3) what fire and environmental variables explained changes in mammal status.

Ngauwudu (Mitchell Plateau) is Wunambal Gaambera land, managed by its traditional owners with some collaborative management of conservation reserves with the WA Parks and Wildlife Service (PWS). Pre-2011 there was little fire management aside from limited small-scale infrastructure protection burns. In 2011 Wunambal Gaambera Aboriginal Corporation (WGAC) secured Native Title, declared the Uunguu Indigenous Protected Area, launched a Healthy Country Plan and registered a Savanna Burning project under the Carbon Farming Initiative (now Emissions Reduction Fund). The Healthy Country Plan identified 'Right Way Fire' as a conservation target whereby burning is led by Traditional Owners and from 2011 to 2016, WGAC and PWS collaborated to implement broad-scale prescribed burning.

Prescribed burning in the early dry season reduced the extent of high intensity late dry season wildfires. In sandstone habitats the abundance of mammals increased due to increases in the extent of early dry season prescribed burning. Mammals in open woodland habitats increased during the fire-managed period but this was related to changes in ground layer vegetation cover, not directly to prescribed burning.

These results support the efficacy of low intensity, prescribed early dry season burning for conservation of threatened mammals, provided that an average of 20–30 % of the region is burnt annually, and that prescribed fires retain unburnt ground layer vegetation.

Our work also highlights the importance of collaborative and targeted biodiversity monitoring to assess the efficacy of prescribed burning aimed at reducing wildfires. This information can be used by WGAC to demonstrate the biodiversity co-benefits of burning to reduce greenhouse gas emissions.

Speaker bio

Ben Corey is an ecologist with the Department of Biodiversity, Conservation and Attractions. He has lived in northern Australia for the last 15 years and worked with Aboriginal people in Arnhem Land and the Kimberley, on various wildlife and land management projects, but has a particular interest in fire management and threatened species conservation.

Troy Bidd is an Uunguu Ranger with Wunambal Gaambera Aboriginal Corporation based in Kalumburu Community in the remote north-west Kimberley. Fire management is a key activity for the Uunguu Rangers and Troy plays a leading role as a trained aerial bombardier.