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Developing a national kangaroo strategy

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Key words: Macropod; kangaroo; wildlife management; policy.

Abstract

Macropods are important and treasured Australian animals. Several kangaroo species have increased due to land changes since European settlement, and overabundant populations require management to conserve biodiversity, production, and to protect human safety and property. Management is also necessary to avoid boom-bust cycles which have extremely poor animal welfare outcomes with mass starvation events and road trauma.

Current management practices, however, can also result in animal welfare, conservation and waste issues. A National Statement: Improving Kangaroo Management was developed from the symposia of two 2019 conferences, supported by a special edition of *Ecological Management & Restoration: Optimum management of overabundant macropods* (Read et al. 2021b). The key recommendation was for a National Kangaroo Taskforce to work with stakeholders to develop a National Kangaroo Strategy which will improve animal welfare, human safety, sustainability and reduce waste.

This research project, commencing March 2025, will expand on recommendations outlined in the National Statement to develop the case for a National Kangaroo Strategy. It will include consultation and engagement to integrate Indigenous, animal welfare, industry and conservation stakeholder priorities, set unified objectives, along with analysis of population dynamics, identification of appropriate foraging densities, steps to prevent extreme population cycles, non-lethal management options where appropriate, ethical standards to be maintained and included in a single National Code of Practice, opportunities to better integrate kangaroos into rangeland production systems, and recommendations to overcome barriers associated with regulatory limitations, lack of unified practices, and resource constraints.

Introduction

Conservation and management of macropods, particularly kangaroos, is complex with varying objectives across jurisdictions and diverse views amongst stakeholders.

In some developed areas kangaroo populations are under threat due to loss of habitat and safe connectivity. This can result in a range of animal welfare and human-wildlife conflict issues including morbidity, road

strikes and problematic individuals in places where dispersal opportunities are limited, such as golf courses and schools.

Across much of Australia, kangaroos have benefited from land use changes in the past 200 years with additional grazing habitat and watering points, reduction in dingo numbers and reduced traditional hunting. In these areas boom-and-bust cycles can occur, with periods of almost exponential growth in favourable conditions followed by mass starvation events in times of drought (see Figure 1). An overabundance of kangaroos can result in overgrazing, damage to vegetation and pastures, competition with other fauna and livestock, and an increased risk to road safety, food security and property damage.

Population management is therefore required to avoid animal welfare impacts in starvation events, conserve biodiversity, protect agricultural land and human safety.

A Joint National Statement was prepared by scientists experienced in applied ecology, conservation biology, primary production, veterinary science and environmental policy advocating for a coordinated national approach to management (Read et al. 2021a). Motivation for this was a shared belief that current kangaroo management is leading to detrimental consequences for kangaroo welfare, landscape sustainability, biodiversity conservation, resilient agricultural production and cultural values. They asserted that there is a need for a credible, collaborative approach to represent diverse stakeholders and challenge the viewpoint that commercial harvesting of overabundant macropods is contrary to welfare, conservation and cultural values, while acknowledging that treating kangaroos as pests to meet management objectives limits the values of managing kangaroos as a resource. The key recommendation was for a National Kangaroo Taskforce to work with ecologists and stakeholders to develop a National Kangaroo Strategy to support government and other stakeholders in decision-making.

A suite of other issues and topics are canvased in the 2021 paper including the implication for managers that overabundant kangaroo populations, along with other herbivores, must be managed to conserve minimum forage resources, such as grass cover, and to enhance conservation, production and for animal welfare outcomes. Where dingoes are not compatible with other land uses, regulated and accredited harvesting of overabundant macropods (as a resource) is preferable to culling (and wasting) or death by starvation. Kangaroo populations are best managed by informed, proactive and adaptive management at property, regional and national scales, so that waste is minimised and resources are used sustainably.

This research project aims to develop the case and considerations for a National Kangaroo Strategy.

Methods

This research program, supporting the development of a National Kangaroo Strategy, commenced in March 2025 and seeks feedback from attendees at IRC XII as priorities, scope and questions are refined. The options are numerous, and not all can be included. Potential topics include:

- Engaging with Indigenous, animal welfare, industry and conservation stakeholders to integrate the priorities of all stakeholders, establish unified objectives and practices, and build on existing successful initiatives.
- Analysing population dynamics including harvest quotas and factors contributing to population fluctuations over time (Figure 1), investigating foraging densities and thresholds to maintain healthy populations and landscapes.
- Identifying steps to prevent extreme population cycles including objectives, roles and responsibilities of stakeholders.

- Identifying when non-lethal management options are practical and appropriate.
- Detailing ethical and humane standards during harvesting/culling for a single National Code of Practice.
- Identifying opportunities to better integrate kangaroos into rangeland production systems in a complementary way with domestic stock as a low carbon, healthy protein with low impact on soils and vegetation. This climate-friendly income stream could mitigate income fluctuations by participating in programs for emissions reduction, soil carbon sequestration, and biodiversity stewardship. Sustainable harvesting can also limit future demand for intensive, factory-style farming practices which often have poor animal welfare outcomes. These opportunities could be promoted through a public awareness campaign.
- Identifying barriers to be addressed including regulatory limitations, lack of unified practices, and resource constraints, with recommendations for overcoming them.

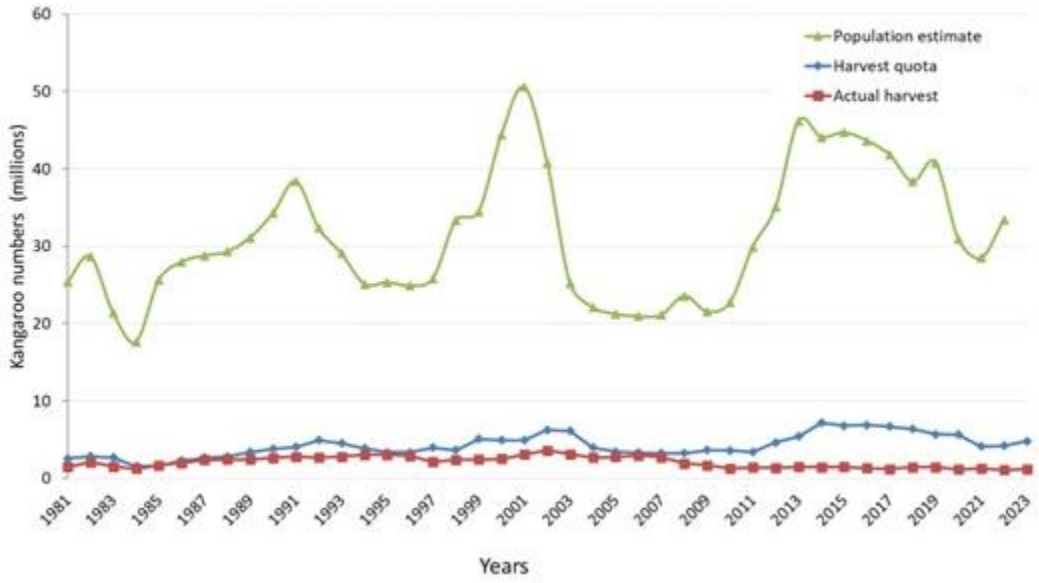

Figure 1 National Kangaroo Population and Harvest Statistics (Edwards & Wilson 2023).

Discussion

This research will contribute to a National Kangaroo Strategy integrating all stakeholder needs and objectives to enhance consistency, efficiency, ethical standards and sustainability in kangaroo management across Australia. Contributions by a broad range of government and non-government stakeholders will be critical to the success of the project. A national, collaborative approach, featuring evidenced-based decision making and education of the public is needed to build a broad social mandate for improved management of kangaroos in Australia.

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Local flora for ecological restoration: the FLoRE project

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Abstract
The territories of south-western Europe are still recognised as a biodiversity hotspot. However, it is very much subject to the dangerous consequences of the intensification of human activities, climate change, wild fires and the abandonment of the agricultural and forestry activities in marginal land areas, with the consequent degradation of the land, vegetation and the ecosystems. There, the Interreg SUDOE FLoRE project, started in January 2024, is being implemented to test, analyse and scale-up the implementation of different ecological restoration solutions based on native and locally sourced herbaceous plant seeds. We develop: a) practical tools adapted to the current needs of the target groups; b) create a network of pilot projects in sites with diverse environments and land degradation (due to wildfires, overgrazing, mining, invasive vegetation); and c) lead a multi-stakeholder participatory process to design and test new models of economic cooperation, aimed at the self-production of seeds by users or the supply of products and services to sector players. The project will engage public authorities, non-profit private organization and private companies with the ambition of introduce this type of species into their restoration processes and organise dissemination days for the general public.

Three working groups (WG) were created: WG1 - Operationalise and disseminate existing knowledge on ecological restoration using local seeds, to facilitate the information and learning process by stakeholders, and encourage their commitment and the implementation of good practices.; WG2-Test, monitor and evaluate different ecological restoration solutions from local seeds; and WG3-Develop a strategy to involve all the stakeholders in large-scale actions to support the sustainability of the ecological restoration solutions tested, and formulate recommendations for professionals and decision-makers on the different means of action available to them.

Introduction

Our lives depend on nature, but we are degrading it, and it is imperative that we reverse this trend. A number of factors are putting pressure on ecosystems and species populations, including: pollution, climate change, habitat loss and invasive species (80% of habitats are in poor condition, 10% of bee and butterfly species are in risk of extinction and 70% of soils are in an unhealthy state) (European Council 2024). Soil

degradation represents a major threat to ecosystem services and biodiversity conservation. In addition, degradation processes are continuing and worsening (EC 2023).

The semi-enclosed nature of the Mediterranean Sea and the complex topography result in unique physiographic and ecological features. The latest IPCC results show an increasingly arid future for the Mediterranean, with less rainfall and more frequent and longer heat waves (Ali et al. 2022). Some of the consequences of climate change are: reduction of river low flows and annual runoff by 5-70%; yields of rainfed crops may decrease by 64% in some places; desertification will affect more areas, especially in the south and south-east.

The EU Environmental Council adopted the Nature Restoration Law (NRL). They intend to intervene in at least 20 per cent of the EU's land and sea areas by 2030. Restoration plans are intended to cover the period up to 2050. One of the measures envisaged is to restore of at least 30% of the habitats that are in poor condition.

In this context, the FLoRE project was created as part of the INTERREG-SUDOE programme, which aims to consolidate South-West Europe as an area of territorial cooperation in the of innovation, competitiveness and environmental protection. The major challenge of the FLoRE project is to ensure the preservation of the quality of life and the attractiveness of rural areas by demonstrating the economic and organisational viability of scale-change in the implementation of various ecological restoration techniques aimed at valuing native and local wild herbaceous species.

Project Workplan

The Interreg SUDOE FLoRE project, started in January 2024 and will finish in December 2026. The consortium is made up of eight partners (three in France: Conservatoire d'Espaces Naturels d'Occitanie (project leader), FAB'LIM - Le Labo des Territoires Alimentaires Méditerranéens, Conservatoire d'espaces naturels d'Auvergne; three in Spain: Comunidad Autónoma de la Región de Murcia, Asociación Forestal de Soria, Cámara Oficial de Comercio, Industria y Servicios de Badajoz and two in Portugal: National Institute of Agricultural and Veterinary Research, MORE CoLAB on mountain regions. Three groups of tasks were drawn up into three working groups (WG 1, WG 2 and WG 3); all the beneficiaries will take part in each WG, but one beneficiary is responsible for coordinating each WG.

WG 1 - Operationalisation and dissemination of existing knowledge on ecological restoration

Here, the focus is disseminating and applying existing knowledge on ecological restoration techniques using native and locally sourced wild herbaceous species, to facilitate their use by stakeholders (professionals in the sector, landowners, managers, national bodies), in order to encourage their involvement in changing practices and identify the remaining gaps in technical and socio-economic knowledge. To do this, we will update the current state of knowledge on initiatives, scientific publications and public policies aimed at supporting ecological restoration. Then, to facilitate access to information, the most frequently asked questions by stakeholders will be identified and answered, along with other types of dissemination actions. The deficits and gaps in knowledge identified will be revealed and addressed at a later stage of the project. (INIAV is the responsible beneficiary).

WG 2 - Experimentation and evaluation of different solutions for seed production and ecological restoration

A network of demonstration sites is being set up in different environments to publicise different solutions (including different restoration and seed multiplication techniques). Most of our pilot sites are already in place and are located in:

- Occitanie: representing altered agricultural systems and highly anthropized environments and Auvergne: representative of wetlands, meadows and pastures in Auvergne (France)
- Soria: captures truffle farms, recently cleared environments and forest environments and Murcia: degraded natural spaces and eroded areas (Spain)
- Serra da Estrela: I an example of mountain burnt areas in the centre of Portugal and the left bank of the Guadiana river- south-east Portugal represent grasslands (Portugal). This last pilot site is the responsibility of INIAV.

Based on the mapping of grasslands of ecological interest carried out, different techniques for obtaining and recovering seeds will be developed (brushing, mowing, hay transfer). Transnational co-operation will enable us to provide a range of restoration solutions adapted to the regulatory contexts of each country and the realities of each territory, given the diversity of environments representative of the SUDOE area[7]. The experiments carried out and their monitoring (based on indicators developed by the consortium) will make it possible to consolidate protocols and identify the relevant adaptations to be made depending on the contexts and restoration objectives. We will also measure the real benefit or added value, as well as the possible impacts of the restoration operations carried out. (*Asociación Forestal de Soria* is the responsible beneficiary)

WG 3 - Development of a strategy to involve stakeholders in a large-scale action

A medium/long-term strategy (from three to eight years) will be developed jointly based on the sharing of results from the multi-stakeholder group animation work at a transnational level, i.e., from the workshops involving different types of stakeholders (from scientific researchers and public decision-makers to seed vendors and farmers) from various countries, specifically from the SUDOE European region (southwest of France, Spain, and Portugal). Its main objective will be to guide professionals (landscapers, consultants, public and private buyers, scientists, local development associations, site managers) and decision makers (elected representatives, company managers, etc.) towards the means of action available to them supporting long-term viability of the technical solutions tested during the project (collection, planting and monitoring of native and locally sourced wild herbaceous species, etc.). This strategy will define realistic objectives (taking into account the constraints of these stakeholders) but ambitious enough to support the development of the proposed solutions. This may be broken down into several action plans, tailored to each type of public concerned and their respective areas of competence. We will identify a number of economic and public policy levers that can support this strategy. To facilitate its implementation, the strategy will be accompanied by a number of resources available in open access e.g. training modules for field workers and decision makers, awareness-raising content, a letter of engagement, feedback from multi-stakeholder groups, etc. (*FAB'LIM* is the responsible beneficiary).

Goals to be achieved

By carrying out the different tasks (WG1-3), we aim to achieve the following goals:

-1.Obtain commitment from: (i) the managers of the pilot ecological restoration fields to guarantee the sustainability of the solutions tested, (ii) the professionals to collectively implement the economic and organisational models co-constructed in accordance with the initial ethics, (iii) the beneficiaries of the multiplied seeds for use in projects of collective interest and (iv) the communities and companies to introduce this type of seed in their ecological restoration processes in favour of biodiversity.

[7] Interreg Sudoe is a European Union funding programme to support regional development and cohesion in the regions of south-west Europe.

-2.Training organisations that adopt the tested solutions to manage them independently over time.

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