

National Biosecurity Reform Submission

Introduction

The Arid Lands Environment Centre (**ALEC**) is Central Australia's community environmental organisation that has been advocating for the protection of nature and growing sustainable communities in the arid lands since 1980. ALEC is committed to confronting key threats to nature, water and climate which impact the ecological health of the arid and semi-arid lands.

National Biosecurity directly impacts and shapes the health of huge areas of the arid and semi-arid landscapes which make up 70 percent of the Australian continent. A biosecurity system that is fit-for-purpose, effective and in the public interest is essential for thriving deserts and healthy arid landscapes and communities. Biosecurity impacts nature, First Nations cultures, community wellbeing, public safety, livelihoods and emerging economies. Climate change presents an existential threat which requires an all of government response, including biosecurity.



Figure 1. Buffel grass re-sprouting after a landscape scale buffel grass fire near Mparntwe Alice Springs on a pastoral lease within the MacDonnell Ranges, a priority place for national threatened species conservation. All the green grass is buffel amongst the burnt out mulga woodlands (© J. Doyle)

Why the Arid Lands Environment Centre is engaging with National Biosecurity Reform

The Arid Lands Environment Centre is pleased to provide comments on the National Biosecurity Reform 2026. Our submission responds to the priorities outlined in the *National Biosecurity Reform Agenda Discussion Paper*, as well as analysis of the *National Biosecurity Strategy 2022-2032*, *National Biosecurity Action Plan 2024*, *National Biosecurity Implementation Plan 2024* and *National Biosecurity Strategy Monitoring, Evaluation, Reporting and Improvement Framework 2026*. In addition our submission is focussed on how the National Biosecurity system is failing nature, communities and emerging economies across the arid lands due to the failure to address the buffel grass crisis. We use the buffel grass case study which demonstrates glaring gaps in the current biosecurity approach that is likely relevant across this entire continent.

Our submission is informed by living in a context in which biosecurity failure is driving ecosystem collapse, major public safety concerns, risks to infrastructure and impacts to First Nations cultures, human health, livelihoods and community wellbeing. A lack of national recognition and national coordination regarding the significant negative impacts of ongoing buffel grass invasion, which is continuing to get worse, is a catastrophic failure of the biosecurity governance to make decisions holistically, that are evidence based and in the public interest.

In addition, ALEC has been part of the National Established Weeds Priority Advisory Committee from November 2022 as one of two conservation stakeholders, and then on the National Established Weed Priorities Steering Committee as the sole conservation representative since April 2024. Nearly four years of participation in the national process for managing established weeds has been eye-opening.



Figure 2. Buffel grass monoculture near Kalka in South Australia. © Mike Gillam

National Biosecurity Strategy 2022-2032

The six priorities of the National Biosecurity Strategy are:

- Shared Biosecurity Culture
- Stronger Partnerships
- Highly Skilled workforce
- Sustainable Investment
- Coordinated preparedness and response
- Integration supported by technology research and data

Whilst these priorities are broad and sound like a reasonable basis for a national approach. The obvious question must be asked, a biosecurity culture for who, strong partnerships for what, a highly skilled workforce for who, sustainable investment in what, coordinated preparedness and response to what and integration supported by technology, research and data in what.

ALEC holds significant concerns that biosecurity issues that impact the environment, First Nations cultures, non-agricultural regional and remote communities and alternative and emerging economies are not prioritised, resourced and funded compared to the long shadow of agricultural governance and control.

National Biosecurity Reform 2026 is a key opportunity to ensure that a holistic all of government approach to biosecurity is prioritised and backed in by evidence and public interest.

Priorities in the Discussion Paper

The thematic priorities of the discussion paper are identified as 1. Preparedness 2. Response 3. Recovery 4. Workforce capability and capacity 5. Operational capability 6. Legislation and regulations and 7. Funding.



Figure 4. Buffel grass monoculture within Tjoritja West MacDonnell Ranges National Park, a priority place nationally for threatened species conservation. © A Vaughan.

ALEC's Submission

ALEC's submission focuses on

- The perils of a biosecurity system shaped by industry and politics, not risk, best available science and the public interest.
- A national biosecurity system that is truly national and addresses risks posed by environmental weeds
- Research priorities must include buffel grass in 2026
- National Biosecurity is failing First Nations communities in Central Australia
- Environmental and cultural harm is explicitly mentioned in cost sharing principles
- Regulatory harmonisation centres ambition and scientific evidence
- Climate change



Figure 3. River red gum burnt by a buffel grass fire in the Lhere Mparntwe (Todd River) in Mparntwe Alice Springs. © Mike Gillam

The perils of a biosecurity system shaped by industry and politics, not risk, best available science and the public interest.

For national Biosecurity to be truly national, it cannot be a system that privileges agricultural interests above all other stakeholders and sectors. When a biosecurity issue is caused by Government and industry, a biosecurity response that denies those impacts and is unable to respond highlights a catastrophic failure of governance and decision-making. It infiltrates across the entire biosecurity system, including all areas of the proposed reform, from preparedness, response recovery, workforce capability and capacity, operational capability and capacity, legislation and regulation and funding.

The pertinent case study to demonstrate this is buffel grass invasion across inland Australia. Buffel grass is already found in every mainland state and the Northern Territory and may be suitable to spread across 68 percent of the continent. Buffel Grass is one of Australia's worst weeds, however (most) Governments across this country after decades of intentional spread, continue to fan the buffel grass flame or ignore the problem, and as a result continue to make the issue worse. Inaction is fuelling the spread of buffel grass across this continent, as is government support for the ongoing trade, sale and planting of buffel grass seed.

As such, buffel grass is the canary in the coal mine in a biosecurity system that is not fit for purpose, that is not serving the public interest, that is not making evidence based decisions, and where there are issues of conflict, agricultural industry interests are prioritised over environmental, cultural, social, public safety and other economic impacts despite the significant consequences.

This is no accident, this is Australia's National Biosecurity system as it was meant to function; to serve and prioritise the interests of industry and big agriculture.

It is time that we speak directly once again, to the Australian Government and the biosecurity establishment, that enough is enough: people may die, threatened species may go extinct, and catastrophic fire events will continue to happen while it is mused whether buffel grass (an invasive weed) is a national biosecurity issue. It is!

This is a major problem for a Biosecurity System that relies on buy-in and support of other groups (environment, First Nations, other land managers and community) but reject their concerns when it is in conflict with an industry problem and industry pollution. It severely undermines efforts that ensure there is a shared and truly national biosecurity culture, and that biosecurity issues are managed, impacts mitigated and lessons learnt.

Figure 5. Buffel grass was intentionally planted by the CSIRO, state and Territory Governments and pastoralists across this continent since the early to mid 1900's. This photo was taken near Mparntwe Alice Springs in the 1960's



A national biosecurity system that is truly national and addresses risks posed by environmental weeds

Australia's biosecurity system will preside over the very catastrophic events it is designed to prevent if it continues to be compromised by narrow agricultural interests, rather than a holistic risk-based approach that considers environment, cultures, industry, public safety and human health.

The current National Biosecurity system that cannot act on an environmental weed that affects public safety, infrastructure, First Nations cultures, environments, and alternative economies reflects a governance approach and biosecurity system that is fundamentally failing.

Across inland Australia, there are dozens and dozens of remote communities and towns like Mparntwe Alice Springs that are totally surrounded and suffocating in fire-promoting buffel grass. This is a major public safety issue. A catastrophic fire disaster is waiting to happen and inter-government agencies are not adequately prepared across Australia's states and territories. Buffel grass also presents a major risk to infrastructure, housing, cultivated cropping areas and alternative economies in tourism, bushfoods, conservation and carbon.

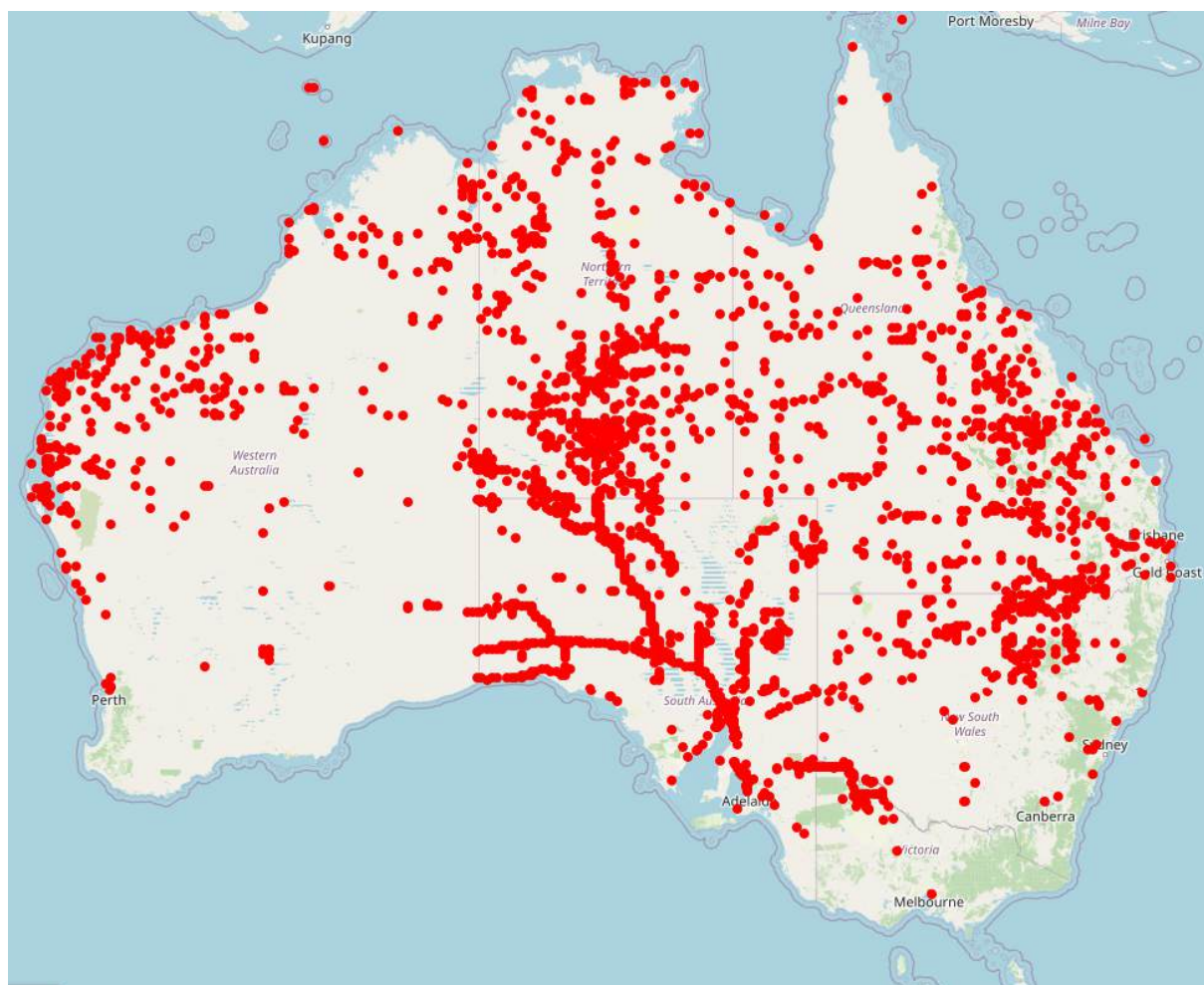


Figure 6. Citizens science documentation of buffel grass spread via Atlas of Living Australia. The infestation of buffel grass is greater than is documented here. No national buffel grass mapping program or efforts currently exist

Hawaii Fires: A sombre warning from across the pacific

The world watched on in horror when a deadly grass wildfire spread across Maui in 2023. After the smoke had cleared, and an investigation had begun into its cause, it was discovered that this fire was fuelled by invasive grasses, including buffel grass, and resulted in the death of at least 102 people.

Similar to Australia, fire-promoting buffel grass had invaded large parts of Maui, Hawaii. Researchers noted that growth occurs rapidly after rain, creating a highly flammable fuel load and risk.

This fire was devastating. It took lives, property, and extensively damaged animal habitats. Buffel grass has one of the highest fire risk ratings of all invasive plants in Hawaii. This tragic event is a warning to Australia on the impact of buffel grass to human life and natural habitats.



Figure 7. Buffel grass fires on the edge of Mparntwe Alice Springs in winter 2023 when temperatures could be sub-zero overnight. Instead above average temperatures and major buffel grass fires that closed a national highway, national park and world-class hike in the Larapinta Trail (© A Vaughan)

Iconic places are at risk due to biosecurity failure'

Iconic and loved places are at risk of buffel grass invasion. From the Victorian mallee, Kati Thanda-Lake Eyre and Uluru-Kata Tjuta to the Larapinta Trail, Kimberley and most of Australia's 10 deserts. One of Australia's most damaging environmental weeds is already found in Victoria, New South Wales, Queensland, South Australia, Western Australia and the Northern Territory and risks spreading across 68 percent of the continent.

Huge areas of Australia's conservation estate are already invaded by buffel grass, and even more places are at risk of future buffel grass invasion. There are at least 28 Indigenous Protected Areas at

risk. Across the NT, WA and SA. Rangers are combatting huge workloads and balance of priorities. Rangers need support. There are at least 16 Jointly Managed National Parks already impacted across NT, QLD, SA, WA and NSW. There are at least 31 *Environment Protection and Biodiversity Conservation Act* 1999 listed threatened species and ecological communities that have buffel grass as a threat in their recovery plans or threat abatement plans. Many more threatened species are likely impacted.

Buy-in exists to conserve and care for these places, but urgent national coordination, national recognition, a national buffel grass mapping program and research solutions are absent or rolling out too slowly. Rangers are already working on the ground but they are not being supported with strategic research, fit for purpose equipment, and support around coordination, prioritisation and more effective on-ground management. Instead, ranger groups that are increasingly First Nations ranger groups, are lumped with the responsibility to manage buffel grass when they are not responsible for its spreads, and have other land management and custodial priorities.

A biosecurity revamp is required to care for and protect some of this continent's most significant natural and cultural landmarks. This support can boost the capability and capacity of the workforce that already exists across IPA's, National Parks, Conservation Area, Aboriginal Land and road and rail corridors, including in World Heritage Areas like Uluru-Kata Tjuta National Park jointly managed by Parks Australia and Traditional Owners.



Figure 8. Buffel grass management at Uluru-Kata Tjuta National Park. © Mike Gillam.

Buffel grass invasion is a key test to demonstrate a fit-for-purpose biosecurity system

Proposed reforms must draw a line in the sand. They should make clear that the National Biosecurity Reforms are taking a holistic, fit-for-purpose, evidence based biosecurity approach that includes rather than excludes so-called conflict species.

Research priorities must include buffel grass in 2026

The discussion paper highlights that research and innovation priorities will be agreed upon in 2026. Research and innovation priorities must include buffel grass due to its high-impact nature, its pervasiveness across the Northern Territory, South Australia, Victoria, Queensland, New South Wales and Western Australia, the opportunities to improve buffel grass management and the significant benefits from national coordination and improved management.

National Buffel Grass Mapping Program

A national buffel grass mapping program is a major gap which would assist on-ground land managers as well as policy and research prioritisation.

It is very difficult to make informed and strategic land management decisions to improve buffel grass management if we do not have a holistic understanding of the extent and spread of buffel grass. This is a major issue for Indigenous Protected Areas, National Parks, Crown Land, public road and rail corridors, conservation areas, Aboriginal Land as well as Native Title Holder rights and interests.

Research from Central Australia published in 2026 demonstrates an accurate and cost-effective method for mapping buffel grass¹. The method was able to:

- Model and map buffel grass occurrence at two sites in central Australia using Sentinel-2 satellite imagery. Buffel grass could be mapped with at least 85% accuracy.
- The study areas were up to 2800 km², much larger than previous attempts to map buffel grass in both Australia and overseas with comparable accuracy.
- The method uses free, open-source software, making it more cost effective than drone or aerial surveys.
- In the Tjoritja / West MacDonnell National Park study area, buffel grass was predicted to occur in over 87% of alluvial floodplains landscapes.

This study shows that we have the tools to deliver a national mapping program right now. If we understand the scale of the problem, we can:

- Know how much harm buffel grass is doing
- Identify threatened species to protect
- Communicate the problem to those who can help fix it
- Identify and prioritise sensitive places for buffel grass removal
- Coordinate management across different land tenures

¹ Box, P., Leiper, I., Nano, C., Young, L., Caron, V., Gibson, S., Guest, T., Cobban, D., Treilubs, C. and Brim Box, J., 2026. High-resolution mapping of introduced buffel grass (*Cenchrus ciliaris*) in central Australia. *Environmental Monitoring and Assessment*, 198(4), p.404.

- Aid land managers who are working on very large areas of land

Biological Control

Since 1930, the CSIRO has introduced 126 different agents for biological control for 34 weed species across Australia.² The Commonwealth Scientific and Industrial Research Organisation (CSIRO) states 'biological control is a demonstrably sustainable and a relatively cost-effective method for managing many of Australia's most pressing agricultural and environmental weeds in the long-term'.³ The benefits outweigh the costs by between 3-1 to 23:1.⁴⁵ There is no doubt that biological control is an integral part of invasive species management in Australia.

For an issue such as buffel grass, the application of a biological control is necessary to combat the landscape scale impacts⁶, the catastrophic fire threat to human lives, threatened species, potential extinctions and the loss of language and intergenerational knowledge sharing. This was emphasised in the Federal Government's Threat Abatement Advice where it stated that biological control research for buffel grass management should be promoted and supported.⁷

There is currently limited research investigating the positive use of biological control to effectively manage the threat posed by buffel grass, instead 'the focus of current research is to minimise the effects of endemic buffel biocontrols'.⁸

Significantly, there are a number of biological control agents that already exist in Australia that may positively reduce buffel grass mass, spread and impacts, including:

- Pasture mealybug (*Heliococcus summervillei*)
- Buffel-grass seed caterpillar
- Buffel grass blight or pyricularia leaf spot
- White ground pearl

Whilst research and development pipelines for biological control take many years, it is imperative that this process is initiated and buffel grass is prioritised in the biological control pipeline. Given the length of time required to progress through the pipeline, that buffel grass is prioritised urgently considering the scale of impacts.

² CSIRO, 2017. 'Research impact evaluation: Biological control of invasive plants'.

³ CSIRO. 'Biological control of weeds'. Accessed April 2023: <https://www.csiro.au/en/research/plants/water-marine/weed-biocontrol>.

⁴ CSIRO, 2017. 'Research impact evaluation: Biological control of invasive plants'.

⁵ Referenced in Centre for Invasive Species Solutions (2022) 20-year National Weed Biocontrol Pipeline Strategy: Consultation Draft, Centre for Invasive Species Solutions, Canberra.

⁶ Read, J.L., Firn, J., Grice, A.C., Murphy, R., Ryan-Colton, E. and Schlesinger, C.A., 2020, p.12748. Ranking buffel: Comparative risk and mitigation costs of key environmental and socio-cultural threats in central Australia. *Ecology and Evolution*, 10(23), pp.12745-12763.

⁷ Department of Environment, 2015, p.6. 'Threat Abatement advice for ecosystem degradation, habitat loss and species decline in arid and semi-arid Australia due to the invasion of buffel grass (*Cenchrus ciliaris* and *C. pennisetiformis*). Australian Government.

⁸ Read, J.L., Firn, J., Grice, A.C., Murphy, R., Ryan-Colton, E. and Schlesinger, C.A., 2020, p.12748. Ranking buffel: Comparative risk and mitigation costs of key environmental and socio-cultural threats in central Australia. *Ecology and Evolution*, 10(23), pp.12745-12763.

BUFFEL GRASS DIEBACK AND BIOLOGICAL CONTROLS

Biological controls are already contributing towards buffel grass dieback in Queensland (e.g. pasture mealybug and buffel grass blight). Environmental stress and poor land management practices increase the pathogenic threat.

PASTURE MEALYBUG

Buffel grass is susceptible to pasture mealybug (*Heliococcus summervillei*), which is increasingly recognised as a key cause of pasture dieback in Queensland and NSW. They are a sap-sucking invertebrate that may be contributing to pasture dieback across 4.4 million hectares. Early symptoms of pasture dieback include purple streaks and root rot.

Dry conditions favour survival in the soil where mealybugs have been found below pasture affected dieback at a soil depth of nearly a metre. It appears that mealybugs can persist through cold and dry times and may reemerge in spring to re-infest pastures. Warm spring conditions and rain may bring mealybug populations to the surface to breed and disperse. Heavy flooding may kill mealybugs.

Industry is currently investigating methods to control and destroy pasture mealybug



BUFFEL GRASS BLIGHT

Buffel grass blight is caused by the fungal pathogen *Pyricularia grisea*, and ergot (*claviceps* spp.) affects seed production and can cause extensive losses in monocultures. Up to 90% of individual plants can be damaged and seed quantities reduced by 33%.

Wetter and hotter conditions favour its growth and spread. Epidemics of buffel grass blight occurred in Mexico during 27-30°C mean temperature, 300mm of rainfall per annum and evenings with 75% relative humidity. Buffel grass blight already occurs in the NT.

Buffel grass blight has been confirmed as a problem globally, from the United States and Mexico to Tanzania.



Baker, S. Buck, S. Jennings, Boscham. 2021.

BUFFEL GRASS SEED CATERPILLAR

Mamestra rhodoneura is a native species of snout moth found in Queensland. Its larvae feed on the seed heads of buffel grass (*Cenchrus pennisetiformis*) by webbing together the heads of the buffel plants. The species can have adverse impacts on buffel grass reproduction due to the consumption of seed heads, but it does not impact the health of the host plant. This species has been recorded in warmer and wetter areas of Queensland.



WHITE GROUND PEARL

Margarodes australis is currently under investigation for its role in pasture dieback in Queensland and NSW. It is a small insect that lives in the soil and roots of pasture grasses. Foliage discoloration of affected plants will increase after rainfall events.

Buffel Grass Dieback

We cannot ignore that extensive buffel grass dieback is occurring in Queensland and New South Wales (Figure X). Monocultures of any species reflect sick and unhealthy landscapes. Native agents will eventually find ways to make use of an available resource over time. It appears that local species such as the mealybug and fungus are able to impact buffel grass health, in accordance with poor land management practices, overstocking, and above average rainfall.

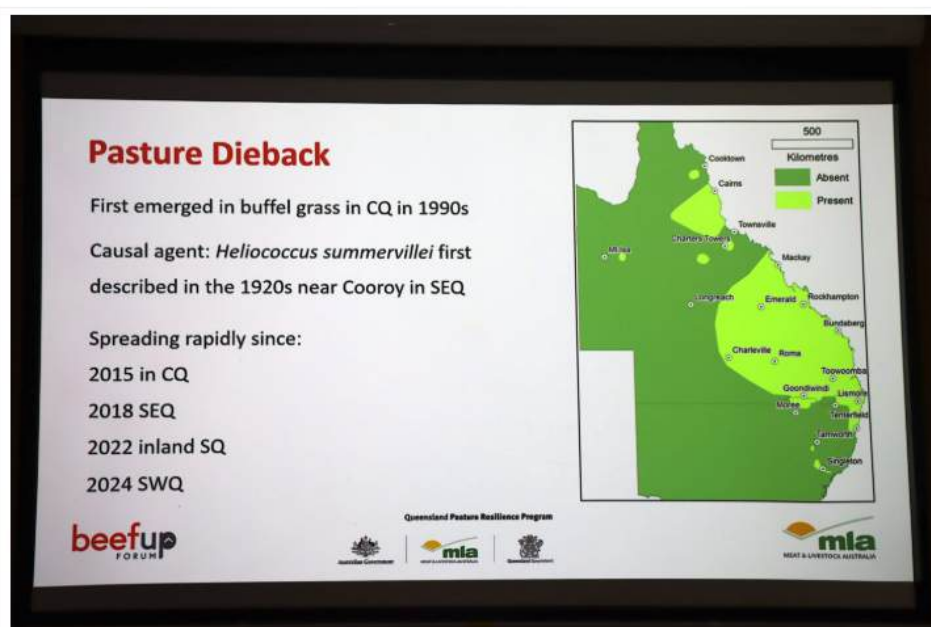
Currently, ALEC understands that only industry groups are conducting research into these native species to better understand how to destroy them.

Biological control research should not be controlled by industry priorities and profit motives. It is integral with buffel grass dieback already occurring, that the Federal Government shows leadership and demonstrates that it seeks to better understand these native species and the opportunities they may offer.

Biological control research takes decades and there are many safety nets in the process. It is essential that this process starts right now.

Dieback spread widens, but pasture systems offer way forward

James Nason 22/04/2026



This map presented at last week's Morven BeefUp forum was produced last year, with expanded spread expected to be confirmed when it is updated for 2026.

Figure 10. Source Beef Central, James Nason, image from the Morven BeefUp forum.

Current biosecurity approach fails First Nations communities in Central Australia

Buffel grass is a useful case study to demonstrate this point.

Buffel grass is the greatest invasive species threat to cultural values across the arid and semi-arid lands (Read et al., 2020). It has been described as a mamu tjanpi or tjanpi kura (devil grass) in Pitjantjatjara, as a diabolical grass, like a disease, evil, makes people feel sick and something that must be killed.

Buffel grass invasion across arid and semi-arid lands disproportionately impacts Indigenous people, who make up the majority of residents in very remote regions of the Northern Territory, north-western South Australia and the western deserts of Western Australia, and who are traditional custodians of the land.

Bush foods, bush medicines, hunting practices and culturally significant animals and plants

Buffel grass invasion can result in the permanent and irreversible disappearance of bush foods, bush medicines and plant materials that are culturally important to Indigenous people. In addition, Buffel grass invasion inhibits hunting practices in locally impacted areas. Buffel significantly impacts species and culturally significant Country for Indigenous groups across Australia.

Accessing Country

The ability of buffel grass to monocrop entire landscapes inhibits the capacity of Indigenous people to access and walk on Country, including culturally significant Country where intergenerational transmission of knowledge takes place. Buffel grass impedes access for traditional owners and custodians to sacred sites and to broad swathes of their country. The 'ability of people to visit, gain access to, and engage with their ancestral sites and landscapes is regarded as the most important aspect of healthy Country'.

Intergenerational knowledge sharing

Buffel invasion has a 'cascading negative effects on cultural transmission to younger generations and maintaining options for cultural practice'. As the authors of the Umuwa Statement on Buffel Grass make clear, '[t]he plants and animals, the special and sacred places are covered in Buffel where once many native plants grew. We can't take our kids out to learn culture, the hunting tracks are covered and the plants that sustained us for thousands of years are disappearing. Our kids are growing up seeing only Country with Buffel Grass and it's getting harder to teach our kids the stories for this country'.

Cultural burning

Buffel grass invasion is changing the fire regimes across the arid lands, making it much harder for Indigenous land managers and custodians to care for Country via cultural burning. Ruscalleda-Alvarez et al. describe right-way fire in Australia's spinifex deserts as: 'Right-way fire is most consistently described as small fires of varying intensity every year, resulting in a fine-scale mosaic of spinifex at different seral stages, and including mature and long-unburnt spinifex. Conversely, wrong-way fire is

Environmental and cultural harm is explicitly mentioned in cost sharing principles

It is essential that the principles for national cost sharing across preparedness, surveillance, response and recovery explicitly includes environmental and cultural harm.

Regulatory harmonisation centres ambition and scientific evidence

ALEC is cautious around the focus on regulatory harmonisation and states that it is imperative that this regulatory harmonisation is based on evidence and science, rather than an approach to dumb down biosecurity regulation to the lowest common denominator. This is essential for buffel grass where ambition should be raised that states recognise the threat and declare buffel grass as a weed in their jurisdiction.

Climate change

The Discussion Paper fails to mention climate change and how this is a biosecurity threat. National Biosecurity Reform must acknowledge and confront the reality that climate change will compound biosecurity issues.

Kind Regards,

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