



Alice Springs Regional Weeds Strategy 2021-2026

Department of
ENVIRONMENT, PARKS AND WATER SECURITY





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Cover photo: Prickly pear located on the outskirts of Alice Springs

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Introduction

Weeds have major economic, environmental and social impacts in Australia, causing damage to natural, economic and cultural assets. In the present day, weeds are spreading around the globe at an ever increasing rate, primarily through human activities and related economic development.

The Alice Springs Region, also known as Central Australia, covers an area of approximately 554 000 km² from the South Australian border north to Lajamanu and from the Queensland border across to Western Australia (see Figure 1).

In the Alice Springs Region, there is a continued risk of introduction of new weeds and spread of existing weeds by the deliberate and accidental actions of people. For example, weeds can escape from gardens, be accidentally transported with livestock, be spread by slashers and be sold in hay or landscaping products. While these risks are ongoing, their impacts can be mitigated and reduced by strategic management.

Purpose

The purpose of the Alice Springs Regional Weeds Strategy (the Strategy) is to set out a strategic approach for the Northern Territory Government and key stakeholders to reduce the adverse impact of weeds in the Alice Springs Region over the period 2021-2026. It succeeds the Alice Springs Regional Weed Management Plan 2013-2018.

Aims

The Strategy aims to protect the Alice Springs Region's natural, economic and cultural assets from the adverse impacts of weeds by:

- Identifying the principle weed threats to the Alice Springs Region and describing best practice weed management strategies to mitigate these threats.
- Providing clear regional weed management priorities through an evidence-based consultative decision making process.
- Providing clear, achievable and measurable regional management actions and goals.

Development principles

The Strategy has been developed in line with the Department of Environment, Parks and Water Security (DEPWS) Strategic Plan 2021-24, and the Australian Weed Strategy 2017-27. These two documents highlight the importance of coordination and consultation among landholders and other stakeholders for effective weed management at a landscape scale. These concepts underpin the development of the strategy and can be described as a 'working together' approach.



Figure 1. Weed Management Regions of the Northern Territory (NT Weed Management Branch 2020).

DEPWS Strategic Plan (2021-2024)

The DEPWS Strategic Plan (2021–24) provides a clear vision to use evidence-based advice and regulation to support the sustainable use of the Northern Territory's natural resources, and to protect and present our wildlife, parks and reserves. There are four goals that are directly relevant to the Strategy and a range of strategies that can be used in order to realise these goals. In relation to weed management, the goals and strategies fall into three broad classes:

1. support sustainable economic development
2. fostering and strengthening partnerships
3. protecting and managing our natural assets

This Strategy has incorporated the goals and strategies of the DEPWS Strategic Plan into its development.





Parkinsonia flower

Australian Weeds Strategy (2017–2027)

The Australian Weeds Strategy (2017-2027) (AWS) identifies seven key principles that underpin effective weed management in Australia. It recommends that these principles be used to guide cost-effective weed management planning, investment and actions:

1. Effective weed management is a responsibility shared between landholders, community, industry and government.
2. Evidence-based decision making should underpin the approach to weeds.
3. Risk-based prevention and early intervention is generally the most cost-effective approach for managing weeds.
4. Prioritisation of weed management must be informed by a risk-based approach, considering feasibility, likelihood of success and impact.
5. Coordination amongst landholders, community, industry and government is necessary to manage weeds at a landscape scale.
6. Sustaining capability and capacity across landholders, community, industry and government is fundamental to effective weed management.
7. Individuals, organisations and industry groups that create risks that may result in a weed entering, emerging, establishing or spreading in Australia have a role in minimising the impacts and contributing to the costs of management.

These seven principles have been used to guide the development of this strategy.

The AWS provides clear principles, goals and priorities to assist with strategic weed management in Australia. These provide a valuable resource to any stakeholder developing strategic weed management priorities.

Northern Territory Biosecurity Strategy (2016-2026)

The Northern Territory Biosecurity Strategy 2016-2026 (NTBS) recognises that minimising the threat and impact of pests and diseases to the Northern Territory is a responsibility that all Territorians share. Success in achieving good biosecurity outcomes is only possible with the cooperation and joint commitment from all stakeholders and the community. It identifies three fronts that biosecurity, including weed management, must address to reduce the impacts pests:

1. Prevention – minimising the likelihood of entry and establishment of new pests
2. Elimination – detecting, containing and eradicating significant pests
3. Management – reducing the impact of established pests on the economy, environment and community

Activities included in this Strategy also contribute and link directly to the goals and purpose of the NTBS.

‘Working together’ approach

A ‘working together’ approach is one way of describing the importance of making shared partnerships the central pillar of the Strategy. The DEPWS Strategic Plan, AWS and NTBS emphasise the need for fostering effective coordination between stakeholders, community and government to achieve effective weed management at a landscape scale. This is why consultation with key stakeholders through the Alice Springs Regional Weed Reference Group has been integral to its development.

Key stakeholders

The Alice Springs Regional Weed Reference Group (ASRWRG) is a forum that provides an opportunity for a wide range of stakeholders in the Alice Springs Region to discuss and collaborate on regional priorities and related topics relating to weed management, including the development of the Strategy. Stakeholders coming together to discuss and develop the Strategy is a part of the ‘working together’ approach.

The ASRWRG has been operating since 2009, and in various incarnations before that. It is supported by the Weed Management Branch within the Rangelands Division of DEPWS and is an important source of expertise and advice. Membership currently comprises representation from, among others, the Northern Territory Government, Alice Springs Town Council, Central Land Council and Arid Lands Environment Centre (see Appendix A).

A full list of key stakeholders who contributed to the development of the Strategy, and who will be responsible for its implementation, is presented in Table 1 below.

Table 1: Key stakeholders consulted in the development of this Strategy

Key stakeholder group	Name
Parks Australia, Australian Government	Uluru-Kata Tjuta National Park and World Heritage Area
Northern Territory Government	Department of Environment, Parks and Water Security: <ul style="list-style-type: none"> • Weed Management Branch • Bushfires NT • Flora and Fauna • Parks and Wildlife Department of Industry, Tourism and Trade Department of Infrastructure, Planning and Logistics <ul style="list-style-type: none"> • Road Network NT Police, Fire & Emergency Services, Fire and Rescue Service
Local Government	Alice Springs Town Council MacDonnell Regional Council Central Desert Regional Council
Aboriginal	Central Land Council Aboriginal Ranger Groups
Environment and community	Arid Lands Environment Centre Olive Pink Botanic Gardens
Landcare / Natural Resource Management	Alice Springs Landcare Centralian Land Management Association (CLMA) Lhere Mparntwe (Todd and Charles Rivers) working group Territory Natural Resource Management (TNRM)
Industry	NT Cattlemen’s Association (NTCA) – Alice Springs Branch NT Nursery and Garden Industry
Education and research	Charles Darwin University CSIRO Ecosystem Sciences
Private landholders	Town and rural block owners



Weed legislation

There are legal requirements for land managers and land occupiers in the Northern Territory in relation to declared weeds. These requirements are described in the *Weeds Management Act 2001*. Some weeds have statutory weed management plans, which describe additional legal requirements for these species.

Weeds Management Act 2001

The *Weeds Management Act 2001* describes the legal requirements and responsibilities that apply to land owners and land occupiers regarding declared weeds.

The general duties are described in section 9 and include the requirement to take all reasonable measures to prevent land being infested with a declared weed and to prevent a declared weed from spreading.

There are additional duties including a prohibition on the buying, selling, cultivating, moving or propagating any declared weed, and the requirement to notify the Weed Management Branch of a declared weed not previously present on the land within 14 days of detection.

Statutory weed management plans

All landholders must also meet the management requirements described in statutory weed management plans. A statutory weed management plan establishes and clearly articulates the objectives, management requirements and management actions to be achieved by landholders for a specific declared weed. The Minister responsible for the *Weeds Management Act 2001* approves statutory weed management plans.

There are two statutory weed management plans relevant to the Alice Springs Region:

1. Athel pine
2. Mesquite

This strategy should be considered in conjunction with these statutory weed management plans. They can be viewed on the Northern Territory Government website, visit the relevant species page for further information:

Athel pine	nt.gov.au/athelpine
Mesquite	nt.gov.au/mesquite

Weed data

Spatial data

The Weed Management Branch routinely provides maps including the current and historic distribution records of priority weeds to assist stakeholders with strategic weed management planning. Maps of some priority species in the Alice Springs Region have been included in the Strategy, however, data and maps for other species are also available on request.

Special care must be taken when interpreting distribution maps. For example, data for some species (particularly non-declared weeds) is not routinely collected and so maps for these species may under represent their true range. Other species, such as parkinsonia and prickly acacia, have been the target of local or regional control programs and so the map may include locations where adult plants have been managed in the past. In some cases, there may be some uncertainty as to whether there are seeds in the soil or whether regeneration has occurred at that location. The conservative approach is to include historic data as presence (which may overestimate the true extent) until there is sufficient evidence to conclude that local eradication has been achieved.

Weed risk assessment

Historically, decisions on weed management have frequently been based on perceptions or emotions, which is not necessarily a sound basis for determining long-term strategic priorities. Three of the seven principles of the AWS refer to the importance of evidence-based decision making, risk-based prevention and risk-based prioritisation for effective weed management.

In order to provide an evidence basis to decisions regarding strategic weed management, in line with other Australian jurisdictions and the AWS, the Northern Territory Government (in collaboration with other stakeholders including industry, community and research organisations) developed a NT Weed Risk Management System (WRMS).

The WRMS is a process that uses evidence to assess and rank the relative weed risk and feasibility of control for different weed species in the Northern Territory. Weed risk assessments involve an assessment of evidence and are made by a panel of experts from several government departments.



Rubber bush flower

The WRMS User Guide describes the development of the WRMS, its purpose and application and how assessments are undertaken. It lists the questions used for assessments and includes a section on using the results to assist with determining strategic priorities. The User Guide is available on request. Contact the NT Weed Management Branch at weedinfo@nt.gov.au if you would like a copy.

In order to assist the ASRWRG in the discussion of prioritisation and weed risk, the Weed Management Branch provided advice and outputs from the WRMS, including results for individual species assessments and management matrices to inform species prioritisation (Appendix B).

The Strategy

The ASRWRG provided a forum for key stakeholders to collaborate and discuss weed management issues in the Alice Springs Region. The ASRWRG met three times between June 2019 and August 2020 to discuss the review of the Alice Springs Regional Weed Management Plan and the subsequent development of this Strategy which replaces it. This included discussion of the weed threats to the Region, how to prioritise and to respond to them, and how to incorporate them into the Alice Springs Regional Weed Strategy 2021-2026.

The development of the Strategy started with asking questions about weed management including:

1. What priorities and actions were in previous weed plans for the region?
2. What are our priority weeds and where are they located?
3. What are our objectives for regional weed management and do we have the time and money to succeed?
4. What actions are most appropriate to achieve our objectives?

In order to effectively utilise the limited resources available to the Region to manage weeds, the Strategy identifies regional priorities in the following three areas:

1. Priority weeds
2. Priority landscape areas
3. Priority pathways of spread



Priority Weeds

Developing the priority lists

The ASRWRG used their expert local knowledge as well as the outputs from the NT WRMS to determine the priority lists. The NT Weed Risk Management System provided an evidence-based tool to assist with the prioritisation process and was actively used by the ASRWRG in developing the priority weed lists. Refer to Appendix B (Weed Risk Management Matrix) for the outputs of the Weed Risk Management System that were used to assist with the weed prioritisation process.

However, it was clearly acknowledged by the group that stakeholders may have different priorities at an individual, catchment or property scale. For example, some weeds identified as priorities or concerns in this Strategy are not recognised as declared weeds under the *Weeds Management Act 2001*. This reflects the community expectations and concerns about a range of current and emerging weed threats to the Region not restricted to the declared weed list.

Weed species that are listed as requiring priority management attention within the Region were determined by consensus during ASRWRG meetings with input from the NT Weed Management Branch using one or more of the following criteria:

- a. subject to a statutory weed management plan
- b. listed as a Weed of National Significance
- c. weed risk assessment concluded the species to be a high or very high risk to the Northern Territory
- d. weed risk at the regional level confirmed by local expert knowledge
- e. strategic management of isolated or core infestations regarded as feasible by local expert knowledge

The priority weeds for the Alice Springs Regional Weeds Strategy are listed in Tables 2 and 3, and maps for these species are provided in Figures 2 and 3 below.

Category 1 – Priority weeds for eradication

These species are present in the Region and are widely considered feasible to eradicate from the Alice Springs Region. They are typically evaluated as very high risk and have isolated and restricted distributions.

Common name	Botanical name	NT Declared class	Weed Risk (NT)
Mesquite	<i>Prosopis</i> spp.	A	Very high
Rope cactus	<i>Cylindropuntia</i> spp.	A	Very high
Prickly pears	<i>Opuntia</i> spp.	A	Very high

Table 2: Priority weeds for eradication in the Alice Springs region

Mesquite

Mesquite (*Prosopis* spp.) is targeted for eradication in the Northern Territory and is the subject of a statutory weed management plan. The few remaining infestations in the Alice Springs Region are a priority for control and monitoring. Mesquite has a persistent seed bank. Therefore, populations must be monitored for a long period (at least ten years) before a population can be considered eradicated.

Rope cactus and prickly pears (*Opuntoid* cacti)

Not all cacti species are invasive and some species are commonly grown in gardens due to their tolerance of water stress. However, the prickly pears (*Opuntia* spp.), and various rope cacti (*Cylindropuntia* spp. and *Austrocyllindropuntia* spp.) have been listed as Weeds of National Significance due to their invasive potential and are targeted for eradication. It is also possible that new species of *opuntoid* cacti may arrive in the Alice Springs Region that have not been detected before.

Coral cactus (*Cylindropuntia fulgida*) has established populations around the township of Alice Springs. Coral cactus poses a particularly high risk due to its ability to break off spiny pieces that can be moved by native animals. The spread of these pieces results in new plants establishing at a distance from the parent.

Priority Weeds for Eradication

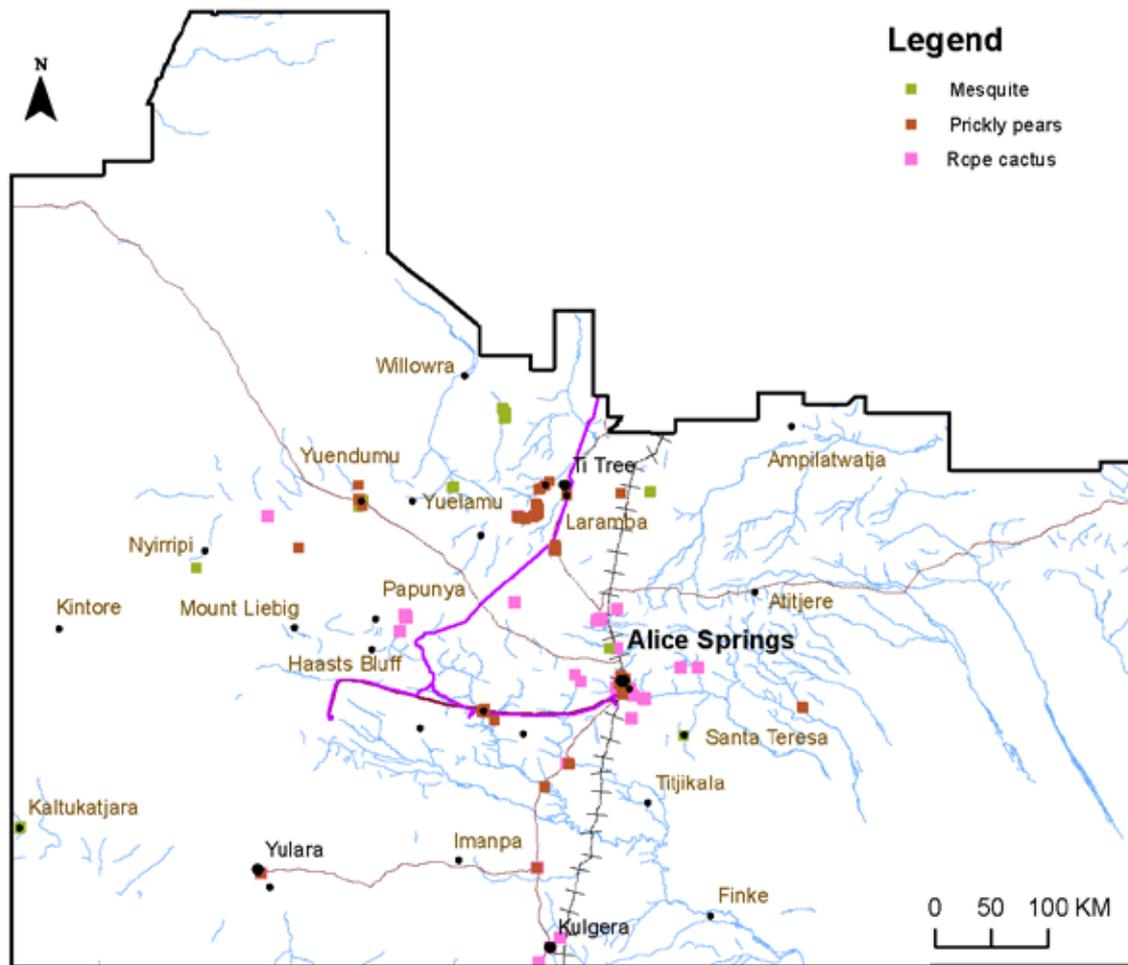


Figure 2. Distribution of priority weed species for eradication in the Alice Springs Region.

Category 2 - Priority weeds for strategic control (including eradication of outliers)

These species warrant strategic control across the landscape due to the high impact they have on land managers and on broader economic and environmental values. These species have outlier populations that may be practical to locally eradicate, and core infestations that are too large for eradication to be considered an option. These species are typically assessed as very high weed risk, subject to a statutory weed management plan, and may be the target of a specific management program. Often they are Weeds of National Significance.

There are typically three types of management strategies for these species. Firstly, control and containment can be used on core infestations to reduce the likelihood of spread into clean areas – particularly around corridors that may assist the movement of seeds such as roads. Secondly, local eradication of outliers reduces the threat of further spread. Thirdly, asset protection can be used even in areas where the target weed is widespread – for example to reduce the impact of buffel grass and fire around the iconic river red gums of the Todd and Charles Rivers. For all of these strategies, it is important to consider the feasibility and the cost-effectiveness of the approach prior to implementation.

Table 3. Priority weeds for strategic control in the Alice Springs Region

Common name	Botanical name	NT Declared class	Weed Risk (NT)
Athel pine	<i>Tamarix aphylla</i>	A/B	Very high
Parkinsonia	<i>Parkinsonia aculeata</i>	B	Very high
Rubber bush	<i>Calotropis procera</i>	B	High
Buffel Grass	<i>Cenchrus ciliaris</i>	Not declared	Very high

Buffel grass

Buffel grass (*Cenchrus ciliaris*) is not a declared weed in the Northern Territory, however this strategy recognises that it does have both negative and positive attributes for different land managers. Whether or not it is considered a 'weed' can depend on the land management context – where it is growing, the type of land tenure, who is managing the land and for what purpose.

Buffel grass comprises a complex group of cultivars that were introduced successfully to Central Australia for improved pasture production, soil stabilisation and dust suppression. These cultivars of varied palatability and suitability to the country appear to have hybridised and spread well beyond areas where they were planted and into places once thought unsuited to their survival.

Buffel grass is contentious because it is prized by many pastoralists but is also highly invasive and rates as a very high weed risk in Central Australia. It can impact directly on biodiversity values, for example through competition, and indirectly through increasing the frequency and intensity of fires. These altered fire regimes also impact on infrastructure and economic costs, while social and cultural amenity are affected by, for example, compromised health or loss of significant sites.

General Management Response – Asset protection

Because of its extensive distribution in Central Australia and value to pastoralists, buffel grass cannot readily be managed in the same way as other priority weeds listed in Table 3. Resources need to be targeted to areas of greatest need where potential for successful management is highest. Thus, where 'containment' is not feasible, resources are focused on asset protection.

Areas with high value areas of conservation or amenity assets that are threatened by buffel grass include the Todd River (Alice Springs Township), Uluru Kata-Tjuta National Park (UNESCO World Heritage) and Watarrka National Park.

Note that while buffel grass is not declared under the *Weeds Management Act 2001*, it is a declared plant in South Australia under the *Natural Resources Management Act 2004*.

Priority Weeds for Strategic Control

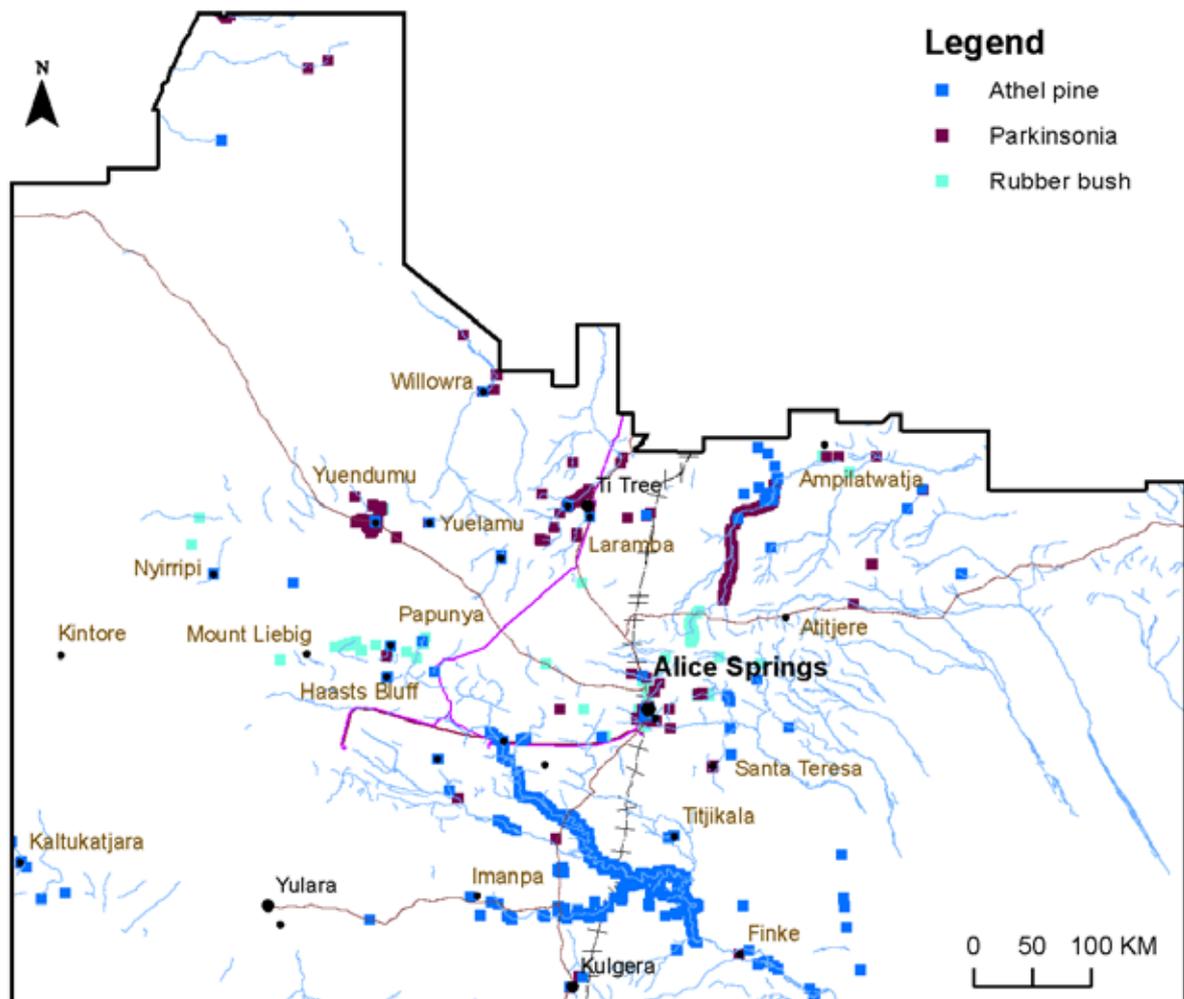


Figure 3. Distribution of priority weed species for strategic control in the Alice Springs Region (athel pine, parkinsonia and rubber bush only).

Category 3 – Weeds of concern

These species have been assessed by the weed risk management system as a medium to high risk (or have not been assessed) but have been identified by stakeholders as posing a threat to the values of the Alice Springs Region. The list is not comprehensive. There are no plans or strategies to manage any one of them as a species across the landscape. They are typically managed on a site by site basis and to prevent further spread. In some cases there may be local strategies to manage these weeds.

Table 4. Weeds of concern in the Alice Springs Region

Common name	Botanical name	NT Declared class	Weed Risk (NT)
Noogoora burr	<i>Xanthium strumarium</i> ,	B	High
African lovegrasses	Introduced <i>Eragrostis</i> spp. including <i>E. cilianensis</i> , <i>E. barreleri</i> , <i>E. cylindriflora</i> , <i>E. minor</i>	Not declared	*Medium
Coffee senna	<i>Senna occidentalis</i>	B	N/A
Mexican poppy	<i>Argemone ochroleuca</i>	B	Medium
*Mimosa bush	* <i>Vachellia farnesiana</i>	Not declared	N/A
Giant reed	<i>Arundo donax</i>	Not declared	Medium
Himalayan rain tree	<i>Dalbergia sissoo</i>	**Not declared	Low
Kapok	<i>Aerva javanica</i>	Not declared	N/A
Long-spine thornapple	<i>Datura ferox</i>	A	Medium
Neurada	<i>Neurada procumbens</i>	Not declared	Low
Ruby dock	<i>Acetosa vesicaria</i>	Not declared	Low
Saffron thistle	<i>Carthamus lanatus</i>	B	Medium
Umbrella sedge	<i>Cyperus eragrostis</i>	Not declared	N/A
Sheda grass	<i>Dicanthium annulatum</i>	Not declared	***Very high
Brown beetle grass	<i>Leptochloa fusca</i> ssp. <i>uninervia</i>	Not declared	***High
White cedar	<i>Melia azedarach</i>	Not declared	N/A

*Mimosa bush (*Vachellia farnesiana* formerly *Acacia farnesiana*) is considered a weed in some situations but is also classified as a native plant in the Northern Territory.

*Only *Eragrostis cylindriflora* has been assessed for weed risk.

***Dalbergia sissoo* is a declared weed north of 18 degrees latitude which is outside the Alice Springs Region.

***The *Dicanthium annulatum* and *Leptochloa fusca* ssp. *uninervia* weed risk assessments recognised that these species have characteristics associated with high and very high risk species, but also that significant uncertainty exists around the assessments of these species as they have not as yet manifested as significant weeds in the Northern Territory.

N/A = Not assessed

Category 4 – Hygiene and biosecurity weeds

These species are typically evaluated as low risk, however they do still have local impacts. There are no strategies in place for managing these species at a landscape scale. However, it is important for landholders to implement weed hygiene and other biosecurity measures to prevent the spread of weeds into clean areas, and to control these species where the opportunity arises. Typically, these weeds may become problems around infrastructure, drains and other disturbed areas.

Table 5. Hygiene and biosecurity weeds in the Alice Springs Region

Common name	Botanical name	NT Declared class	Weed Risk (NT)
Star burr	<i>Acanthospermum hispidum</i>	B	Low
Khaki Weed	<i>Alternanthera pungens</i>	B	Low
Mossman river grass	<i>Cenchrus echinatus</i>	B	Medium
*Fountain grass	* <i>Cenchrus setaceus</i>	A	*Very high
Umbrella Sedge	<i>Cyperus involucratus</i>	Not declared	N/A
Spiny emex	<i>Emex australis</i>	B	Low
*Coffee bush	* <i>Leucaena leucocephala</i>	Not declared	*Very high
Siratro	<i>Macroptilium atropurpureum</i>	Not declared	N/A
*Brazilian pepper	* <i>Schinus terebinthifolius</i>	B	*Very high
#Caltrop	* <i>Tribulus terrestris</i>	B	Low

*Brazilian pepper (*Schinus terebinthifolius*), fountain grass (*Cenchrus setaceus*) and coffee bush (*Leucaena leucocephala*) have been assessed as a very high risk to the Northern Territory based on its invasive characteristics and behaviour elsewhere. Despite being present in the Alice Springs Region these species have not spread into the broader landscape and are considered to be outside their preferred climate zone.

#It is uncertain whether caltrop (*Tribulus terrestris*) is considered native or introduced to the Northern Territory. It is a weed to be controlled around tracks, parks and other infrastructure because their spiny fruit can cause nuisance.



Category 5 – ‘Alert’ weeds

The Weed Management Branch uses a working definition of an ‘alert’ weed as a species:

- not yet naturalised in a Region
- with the potential to have a high level of impact should it become established
- having a reasonable likelihood of arriving in the Region (or of being present undetected).

Table 6. ‘Alert’ weeds in the Alice Springs Region

Priority weed	Scientific name	NT Declaration status	Weed of National Significance?
Prickly acacia	<i>Vachellia nilotica</i>	A	Yes
Parthenium weed	<i>Parthenium hysterophorus</i>	A	Yes

Prickly acacia

Prickly acacia (*Vachellia nilotica*) is not present in the Alice Springs Region, however it is present in the Tennant Creek Region and is a priority weed there. It is also the target of a statutory weed management plan with the long term aim of eradication.

Parthenium weed

Parthenium weed (*Parthenium hysterophorus*) is the target of a current eradication program at a single infested property in the Katherine Region. Historically, there have been eight confirmed and at least three anecdotal incursions of parthenium weed in the Northern Territory. The furthest south that it has occurred in the Northern Territory to date is Tennant Creek. The source of these incursions is likely to be accidental spread from the large core infestations in central Queensland.

Priority landscape areas

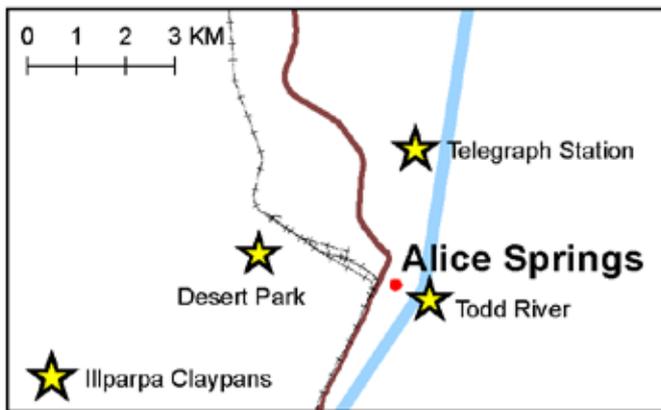
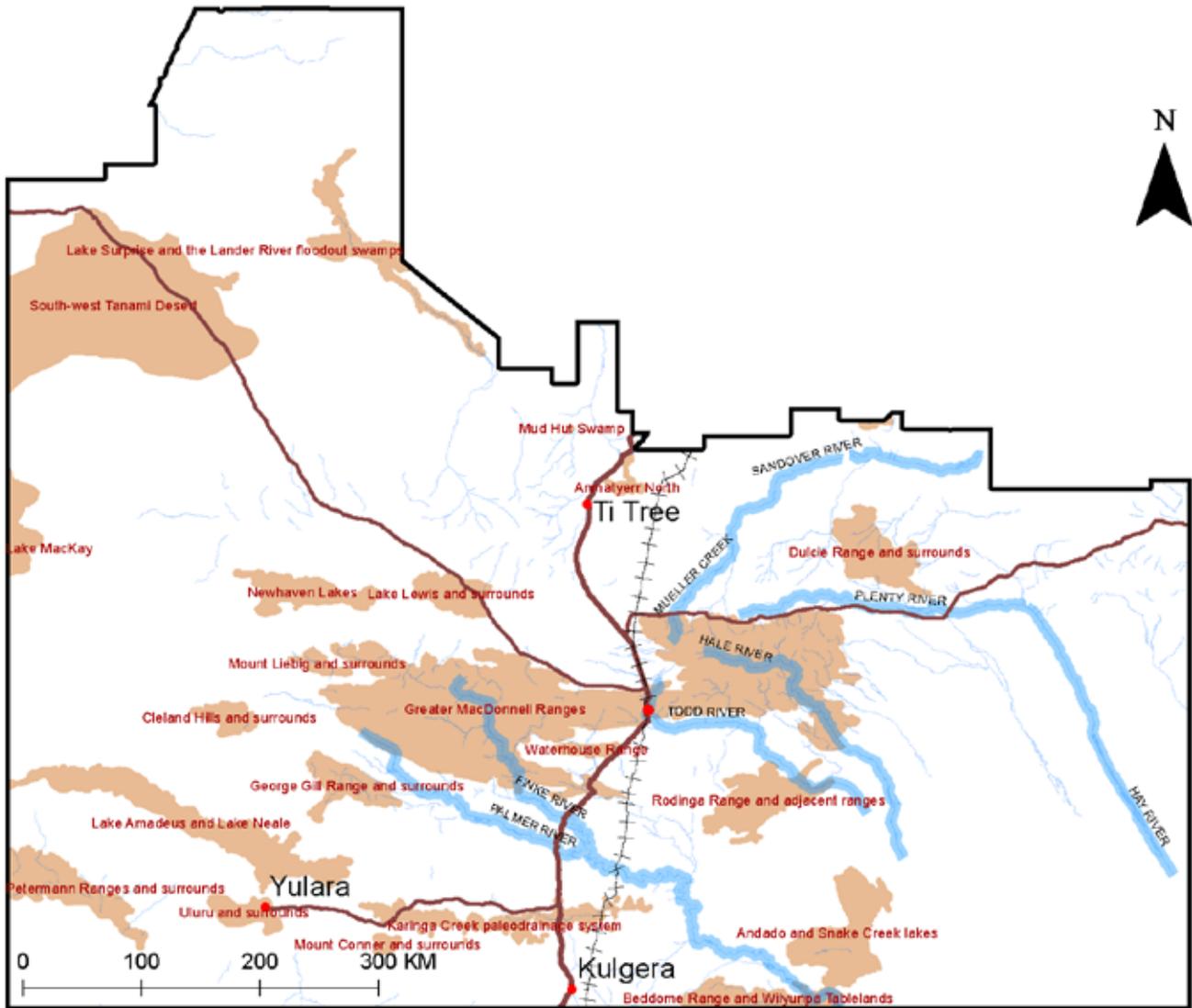
Landscape areas that require priority management attention within the Region were determined using one or more of the following criteria:

- few weed incursions
- sites of significance for biodiversity conservation
- significant commercial values
- very high visitation areas
- significant cultural and heritage values
- susceptibility to invasion
- weed source areas including top of streams and up-wind areas
- high value assets.

Table 7. Priority landscape areas

Landscape area	Nested values	Threats
All sites of significance for biodiversity conservation in the NT including Uluru-Kata Tjuta National Park, e.g. Greater MacDonnell Ranges, George Gill Range, Lake Amadeus	Biodiversity Tourism Recreational users Pastoral Cultural	Athel pine Buffel grass Parkinsonia Rubber bush
Water courses including Todd and Charles Rivers, Finke Catchment (incl. Finke, Palmer, Hugh Rivers) and Sandover River	Biodiversity Tourism Recreational users Pastoral Cultural	Athel pine Buffel grass Parkinsonia Rubber bush Mexican poppy
Key sites of community value	Alice Springs Telegraph Station Historical Reserve Todd River, Illparpa Claypans Alice Springs Desert Park Simpson's Gap and other significant waterholes and refugia	Cacti Buffel grass New weeds (e.g. hygiene and biosecurity weeds – see Category 4)

¹ Sites listed in ‘An inventory of sites of international and national significance for biodiversity values in the Northern Territory’ (Harrison *et al* 2009) because they support important wetland values, large aggregations of wildlife, concentrations of threatened species or endemic species, or are considered botanical hot-spots.



Legend

- Sites of conservation significance
- Water courses
- Key sites of community value

Figure 4. Priority Landscape Areas - including sites of conservation significance, water courses and key sites of community value.



Priority pathways of spread

Following consultation with a wide range of government, non-government and industry bodies, the Weed Management Branch prepared extension material and stakeholder list to assist with the strategic mitigation of weed spread. The results are summarised in “Preventing weed spread is everybody’s business”. This document lists the main pathways of spread in the Northern Territory (pp. 6-7) and was informed by Northern Territory Regional Weed Management Plans, including the previous version of this Strategy. It is available at territorystories.nt.gov.au/10070/462109/0/0

The ASRWRC discussed the pathways for spread that require priority management attention in the Region and considered the following:

- a. physical characteristics of weeds that are likely to be transported by human or natural means
- b. which weeds are most likely to be transported into or within the Alice Springs Region
- c. human activities most likely to spread weeds
- d. presence of a physical corridor assisting weed spread.

Table 8. Priority pathways of spread of weeds

Cause	Pathway(s) of Spread	Example mechanisms of spread along priority pathways	Examples of species that are likely to be spread by this pathway
Physical processes	River corridors, other	Livestock, wind, water, fire, recreation activities	Mexican poppy, buffel grass, parkinsonia, Athel pine
Native or feral animals	River corridors, animal tracks	feral and native animal movements	Coral cactus
Land use and development	Mining and exploration areas	Construction and maintenance of mines and access roads, including land clearing, slashing and grading	Invasive grasses (e.g. Mossman river grass, lovegrasses), Mexican poppy, kapok bush, rubber bush
	Gas pipeline	Construction and maintenance activities	
	Rail corridors	Construction and maintenance activities	
	Pastoral holdings	Cattle and hay	Thornapple, parthenium weed, prickly acacia, parkinsonia
	Roads	Construction and maintenance, such as slashing and grading, 4WD tourism, livestock, fodder, haulage and wind	New weeds (e.g. lovegrasses)
Tourism	Roads, camping areas, bushwalking tracks	Accidentally by vehicles, or attached to clothing	Neurada
Use by industry	Deliberate plantings Nursery industry Garden plantings	Escape from garden plantings.	Athel pine, fountain grass, invasive cacti

Objectives and actions

The following six objectives in the Strategy represent an achievable outcome within its five year timeframe. To achieve the objectives within that timeframe, significant investment in time and resources will be required by a range of stakeholder groups.

- Objective 1: To make progress towards the eradication of identified priority weeds.
- Objective 2: To make progress towards the control and containment of identified priority weeds.
- Objective 3: To prevent the introduction and spread of the Region’s priority weeds.
- Objective 4: To improve adaptive weed management.
- Objective 5: To ensure landholders act responsibly and support a ‘working together’ approach to weed management.
- Objective 6: To increase the Region’s awareness of its priorities and capacity to manage weed impacts and protection of high value assets.

Objective 1: To make progress towards the eradication of identified priority weeds

Weed	Action	Priority landscape or infestation areas	Alice Springs Regional Weed Reference Group	Weed Management Branch	Northern Territory Government	Local Government	Pastoral industry	NT Farmers	Indigenous groups	Landcare groups and TNRM	Charles Darwin University	Bushfires NT	Rural block owners	Time frame
Athel pine (Zone A)	Upper managed 420km of the Finke River	Continue with ongoing maintenance program in the Finke River corridor												ongoing
	Eradication of high priority amenity plantings	Amenity plantings in close proximity to riparian areas												2025
Mesquite (Class A)	Eradication as per statutory weed management plan	2 known infestations												2025
Rope cactus (Class A)	All known naturalised infestations under active management	7 known infestation areas												ongoing
	Eradication of all known amenity plantings	Ongoing as detected												ongoing
Prickly pears (Class A)	Eradication of all known naturalised infestations	Ongoing as detected												ongoing
	Eradication of all known amenity plantings	Yulara Resort – staff quarters, township of Alice Springs including rural area												2025



Coral cactus

Objective 2: To make progress towards the control and containment of identified priority weeds

Weed	Action	Priority landscape or infestation areas	Alice Springs Regional Weed Reference Group	Weed Management Branch	Northern Territory Government	Local Government	Pastoral industry	NT Farmers	Indigenous groups	Landcare groups and TNRM	Charles Darwin University	Bushfires NT	Rural block owners	Time frame
Athel pine (Zone B)	Horseshoe Bend Station	Continue with ongoing maintenance program in the Finke River corridor												ongoing
	Lower uncontrolled section of the Finke River	Survey/control of tributaries leading into and out of the Finke River												ongoing
Rubber bush (Class B)	Containment of core infestations and eradication of outlier plants	Numerous locations												ongoing
Parkinsonia (Class B)	Containment of core infestations and eradicate outliers	Sandover catchment, Yuendumu ALT												ongoing
Buffel grass (Not declared)	Buffel grass chemical trials to improve knowledge and applicability of control methods (e.g. flupropanate)	Todd River NT Parks Uluru Kata-Tjuta National Park												Dec 2022
	Targeted control in the Todd and Charles Rivers to protect river red gums	Todd and Charles Rivers												ongoing



Athel Pine

Objective 3: To prevent the introduction and spread of the region's priority weeds

Action	Alice Springs Regional Weed Reference Group	Weed Management Branch	Northern Territory Government	Local Government	Pastoral industry	NT Farmers	Indigenous groups	Landcare groups and TNRM	Charles Darwin University	Bushfires NT	Rural block owners	Time frame
Support the implementation of the Weed Spread Prevention Strategy, includes a summary of regional actions to prevent spread of individual species												ongoing
Implement regional activities to increase awareness and adoption of weed spread prevention procedures such as quarantining livestock and cleaning machinery												ongoing
Develop and adopt a code of practice for weed spread prevention												2025
Conduct up-skilling of ground level working groups to identify and report priority and alert weeds												ongoing
Monitor priority pathways for new and spreading weeds												ongoing
Identify and implement activities that increase awareness of weed spread prevention to encourage adoption of best practice management												ongoing

Objective 4: To improve adaptive weed management

Action	Alice Springs Regional Weed Reference Group	Weed Management Branch	Northern Territory Government	Local Government	Pastoral industry	NT Farmers	Indigenous groups	Landcare groups and TNRM	Charles Darwin University	Bushfires NT	Rural block owners	Time frame
Share the results of weed control success and failings with the Alice Springs Regional Weed Reference Group												ongoing
Share landscape rehabilitation learnings including what makes a weed resilient landscape												ongoing
Provide weed datasets to the Weed Management Branch												ongoing
Map distribution of priority weeds and monitor change in their density												ongoing
Identify and support the trials of new weed management techniques and biological control agents												ongoing
Maintain links with other regional weed reference groups, Northern Territory and interstate research institutes and continue to support a partnership approach to regional priority weed research												ongoing
Identify and record where there are gaps in knowledge for future investigations												ongoing
Introduce a registrar of known amenity plantings of priority and/or declared weed species that considers the risk of spread and/or management options												Dec 2021



Objective 5: To ensure landholders act responsibly and support a 'working together' approach to weed management

Action	Alice Springs Regional Weed Reference Group	Weed Management Branch	Northern Territory Government	Local Government	Pastoral industry	NT Farmers	Indigenous groups	Landcare groups and TNRM	Charles Darwin University	Bushfires NT	Rural block owners	Time frame
Develop and maintain regional partnership programs with all industry												ongoing
Identify priority programs for funding prior to funding announcements												ongoing
Create awareness of landholder legal responsibilities: attention to new landholders and managers to the region who may be unaware of their obligations are a priority												ongoing
Participate in local, regional and national NRM forums where weeds are discussed												ongoing
Coordinate planning activities at a catchment scale												ongoing
Maintain cross-border partnerships in support of national programs												ongoing
Develop priority species management plans (where none exist)												2022

Objective 6: To increase the region's awareness of its priorities and capacity to manage weed impacts

Action	Alice Springs Regional Weed Reference Group	Weed Management Branch	Northern Territory Government	Local Government	Pastoral industry	NT Farmers	Indigenous groups	Landcare groups and TNRM	Charles Darwin University	Bushfires NT	Rural block owners	Time frame
Promote regional priorities (weeds, landscape areas and pathways for spread) to land managers through key partners												ongoing
Provide inductions and regular training to identify priority and 'alert weeds' to volunteers and staff												ongoing
Support land managers to develop and improve weed management capacity through on ground demonstration and incentive programs												ongoing
Continue to develop regional and targeted communication materials, including students as a targeted audience group												ongoing
Expose community members to the impact of 'alert' weeds in neighbouring states												ongoing
Develop a 'working together' role in detection, management and prevention of spread of weeds												ongoing

Appendix A. Alice Springs Regional Weed Reference Group October 2019

Name	Organisation
Chris Brown, Executive Officer, ASRWRG	Alice Springs Regional Weed Officer, NT Weed Management Branch, Department of Environment, Parks and Water Security
Liz Bird	A/Coordinator, Centralian Land Management Association
Martin Campbell	Regional Land Management Coordinator, Central Land Council
Rod Cramer	Rural Resident, Illparpa
Wayne Gaskon	Chief District Ranger, Parks, Wildlife & Heritage Division, DTSC
Charlotte Klempin	Environmental Officer, Alice Springs Town Council
Jon Hodgetts	IPA Coordinator Angas Downs, Central Land Council
Peter Jobson	Senior Botanist, NT Herbarium, Department of Environment, Parks and Water Security
Alex Read	Policy Officer, Arid Lands Environment Centre
currently vacant	Coordinator, Barkly Landcare and Conservation Association

Appendix B. Weed Risk Management Matrix

The Northern Territory Weed Risk Management System is an evidence-based framework for assessing the relative weed risk and feasibility of control of weeds. The answers to questions relating to weed risk and feasibility of control are determined by consensus of a committee of experts representing different sectors of government.

		FEASIBILITY OF CONTROL (ALICE SPRINGS REGION)	
		HIGH - VERY HIGH	LOW - MEDIUM
WEED RISK ASSESSMENT (NT)	VERY HIGH	A: Prevent entry; Contain regional spread; Regional eradication; Protect priority sites Mesquite (<i>Prosopis</i> spp.) Prickly pears (<i>Opuntia</i> spp.) Rope cactus (<i>Cylindropuntia</i> spp.) ***Sheda grass (<i>Dicanthium annulatum</i>) ***Fountain grass (<i>Cenchrus setaceus</i>)	B: Targeted control (incl. Biocontrol); Protect priority sites Athel pine (<i>Tamarix aphylla</i>) Buffel grass (<i>Cenchrus ciliaris</i>) Parkinsonia (<i>Parkinsonia aculeata</i>)
	HIGH	C: Prevent entry; Contain regional spread; Protect priority sites ***Brown beetle grass (<i>Leptochloa fusca</i> ssp. <i>uninervia</i>)	D: Targeted control; Improve general weed management; Monitor; Protect priority sites Rubber bush (<i>Calotropis procera</i>) Noogoora burr (<i>Xanthium strumarium</i>)
	MEDIUM	E: Targeted control *Bathurst burr (<i>Xanthium spinosum</i>) *White cedar (<i>Melia azedarach</i>) Castor oil plant (<i>Ricinus communis</i>)	F: Improve general weed management Mexican poppy (<i>Argemone ochroleuca</i>) *Coffee senna (<i>Senna occidentalis</i>) *Kapok (<i>Aerva javanica</i>) Mossman River grass (<i>Cenchrus echinatus</i>)
	LOW	G: Assist interested parties; Monitor Khaki weed (<i>Alternanthera pungens</i>) Neurada (<i>Neurada procumbens</i>)	H: Assist interested parties *Mimosa bush (<i>Vachellia farnesiae</i>) Saffron thistle (<i>Carthamus lanatus</i>) Caltrop (<i>Tribulus</i> spp.) **Ruby dock (<i>Rumex vesicarius</i>)

*This species has not been had a formal weed risk assessment. The weed risk and feasibility of control have been estimated based on expert opinion and comparison with other weed species perceived to be similar in impact and behaviour.

**Also known by the synonym *Acetosa vesicaria*

***These weed risk assessments recognised that these species have characteristics associated with high and very high risk species, but also that significant uncertainty exists around the assessments of these species as they have not as yet manifested as significant weeds in the Northern Territory.





Mesquite flower

Appendix C. Maps of priority weeds

This strategy has identified priority weeds for eradication and strategic control in the Alice Springs Region. Distribution maps for these species are included here. The presentation of the data aggregated into 50km x 50km grid cells and the classification classes are consistent with the standardised reporting requirements for Weeds of National Significance (WoNS) as described in the WoNS field manual.

Category 1: Priority species for eradication:

- Mesquite (Class A, WoNS)
- Prickly pears (Class A, WoNS)
- Rope cactus (Class A, WoNS)

Category 2: Priority species for strategic control:

- Athel pine (Class A/B, WoNS)
- Parkinsonia (Class B, WoNS)
- Rubber bush (Class B)
- Buffel grass (Not declared)

Mesquite

Legend

-  Region outline
-  50km Grid

Weed Distribution Description

-  Absent
-  Eradicated and Monitored
-  Present - Density Unknown
-  Unknown Occurrence
-  Occasional and Localised
-  Occasional and Widespread
-  Common and Localised
-  Common and Widespread
-  Abundant and Localised
-  Abundant and Widespread

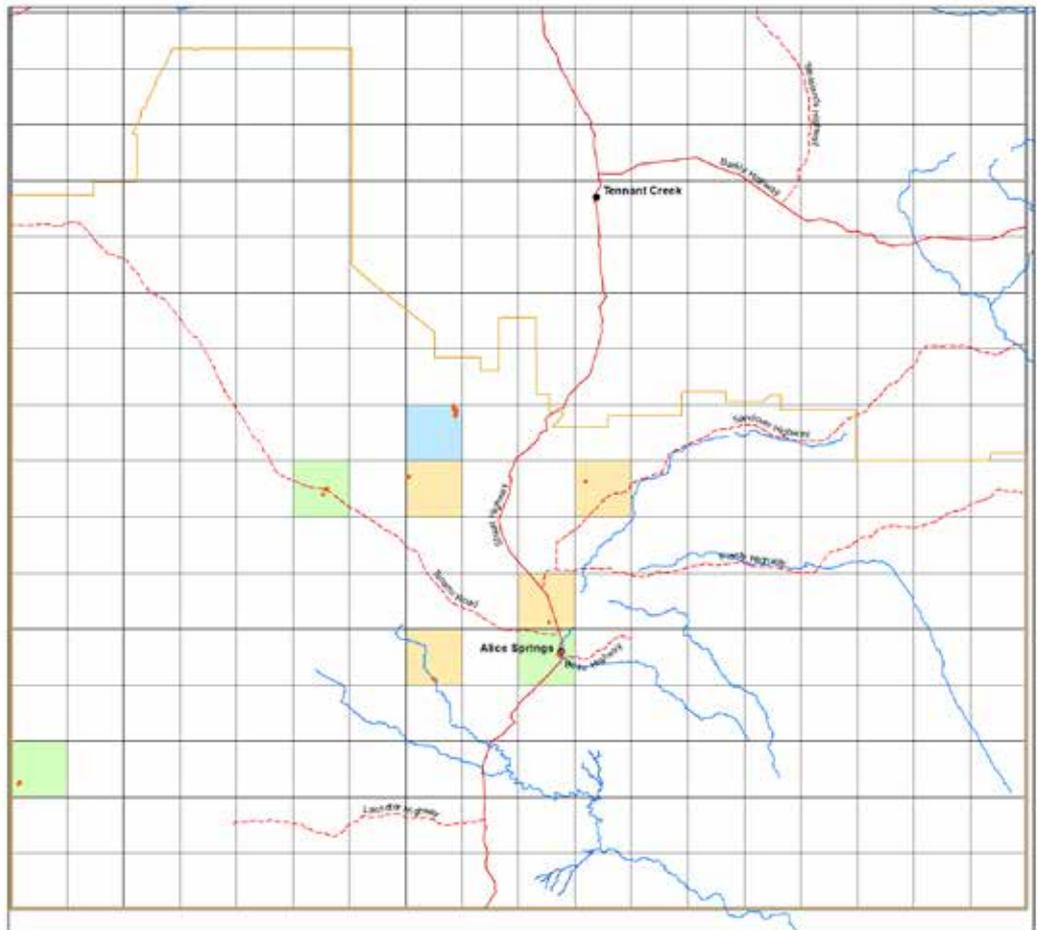
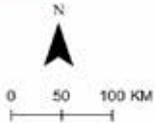


Figure 5. Current and historic records of mesquite (*Prosopis* spp.) in the Alice Springs region of the Northern Territory (NT Weed Management Branch 2020).

Rope cactus

Legend

-  Region outline
-  50km Grid

Weed Distribution Description

-  Absent
-  Eradicated and Monitored
-  Present - Density Unknown
-  Unknown Occurrence
-  Occasional and Localised
-  Occasional and Widespread
-  Common and Localised
-  Common and Widespread
-  Abundant and Localised
-  Abundant and Widespread

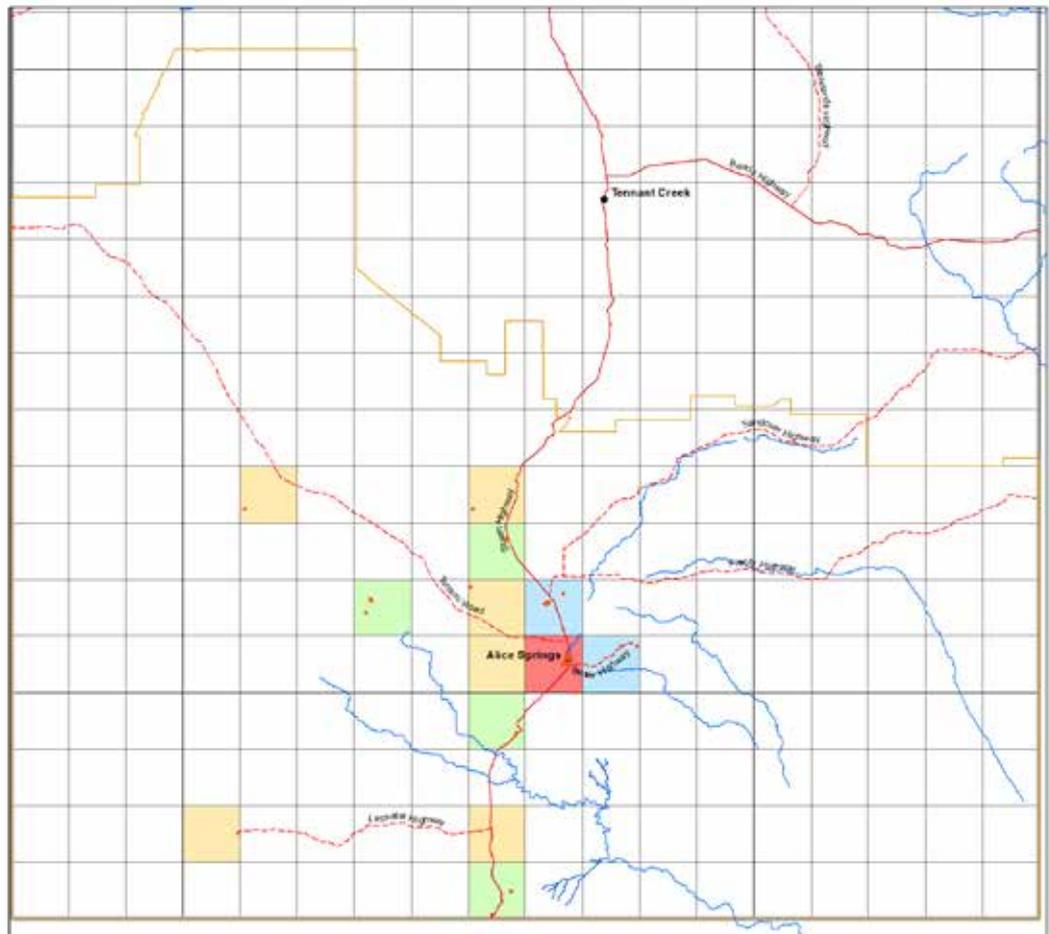
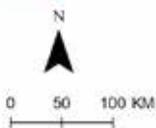


Figure 6. Current and historic records of rope cactus (*Cylindropuntia* spp.) in the Alice Springs region of the Northern Territory (NT Weed Management Branch 2020).

Prickly pear

Legend

-  Region outline
-  50km Grid

Weed Distribution Description

-  Absent
-  Eradicated and Monitored
-  Present - Density Unknown
-  Unknown Occurrence
-  Occasional and Localised
-  Occasional and Widespread
-  Common and Localised
-  Common and Widespread
-  Abundant and Localised
-  Abundant and Widespread

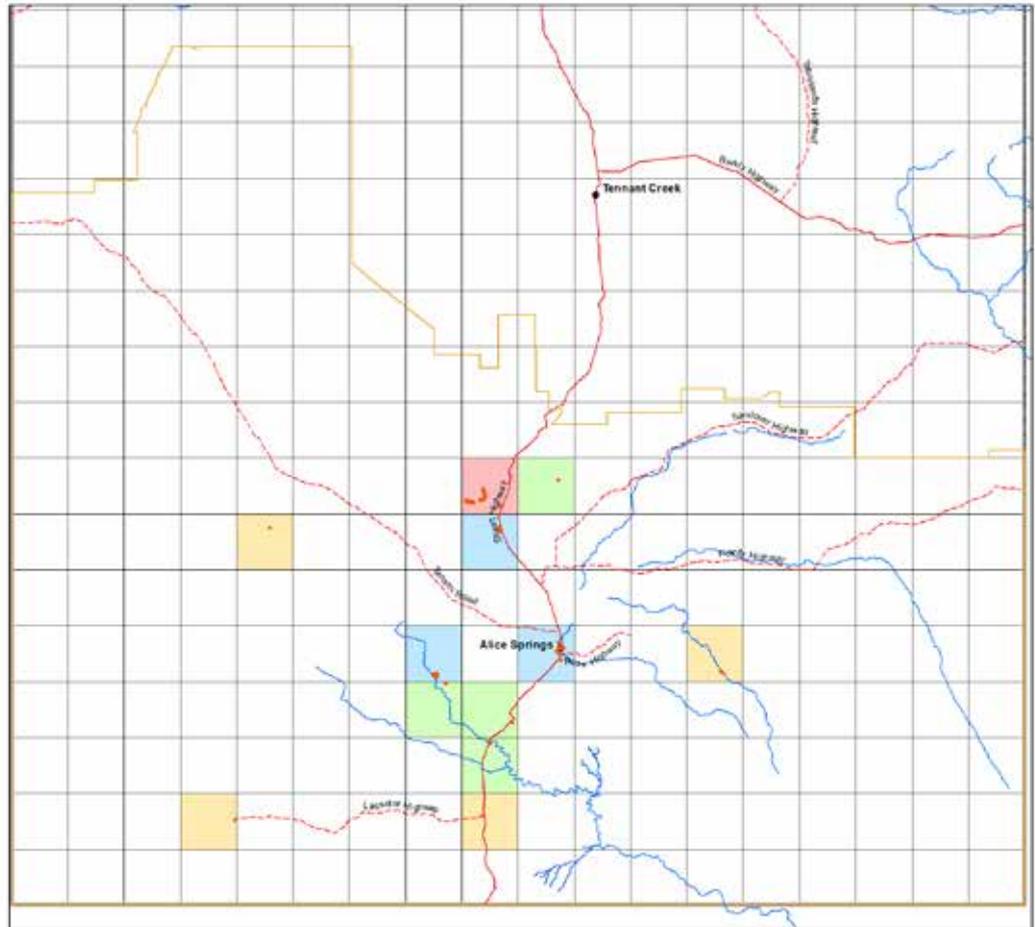
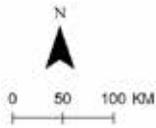


Figure 7. Current and historic records of prickly pear (*Opuntia* spp.) in the Alice Springs region of the Northern Territory (NT Weed Management Branch 2020).

Athel pine

Legend

-  Region outline
-  50km Grid

Weed Distribution Description

-  Absent
-  Eradicated and Monitored
-  Present - Density Unknown
-  Unknown Occurrence
-  Occasional and Localised
-  Occasional and Widespread
-  Common and Localised
-  Common and Widespread
-  Abundant and Localised
-  Abundant and Widespread

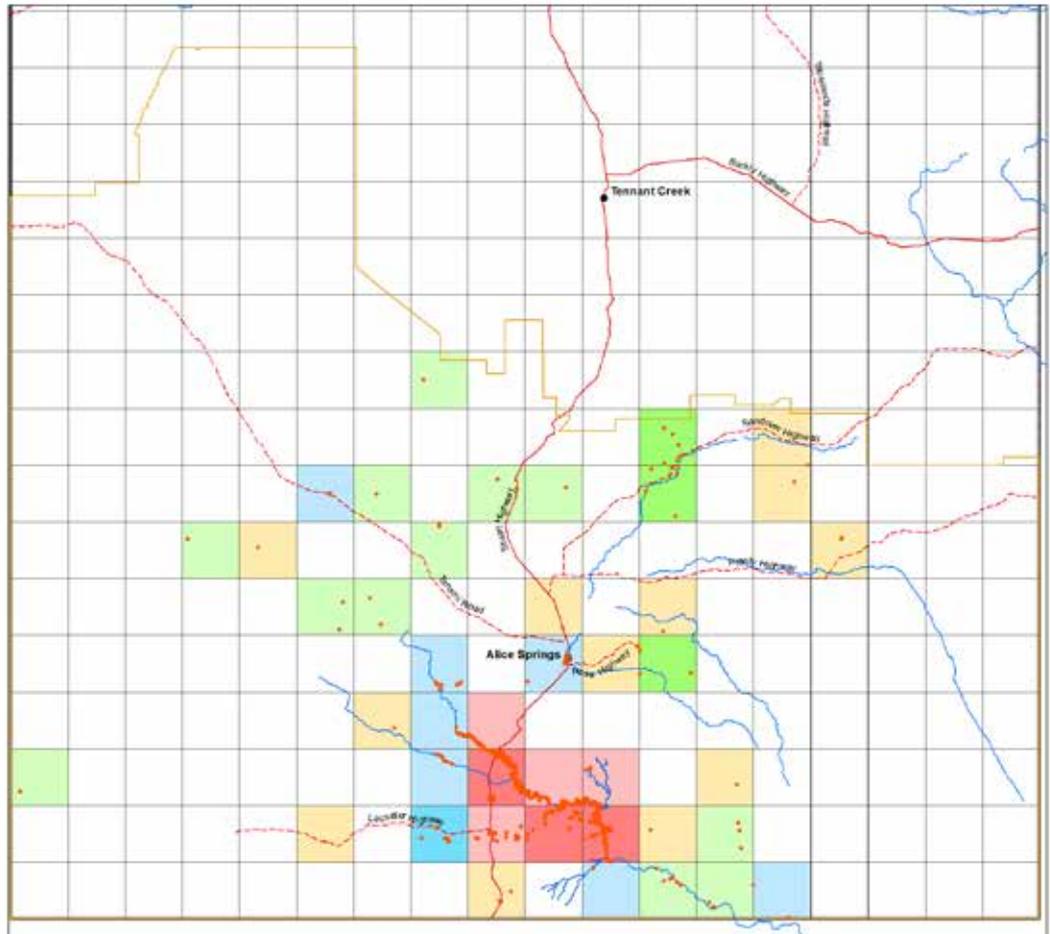
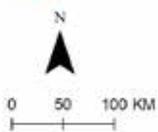


Figure 8. Current and historic records of athel pine (*Tamarix aphylla*) in the Alice Springs region of the Northern Territory (NT Weed Management Branch 2020).

Parkinsonia

Legend

-  Region outline
-  50km Grid

Weed Distribution Description

-  Absent
-  Eradicated and Monitored
-  Present - Density Unknown
-  Unknown Occurrence
-  Occasional and Localised
-  Occasional and Widespread
-  Common and Localised
-  Common and Widespread
-  Abundant and Localised
-  Abundant and Widespread

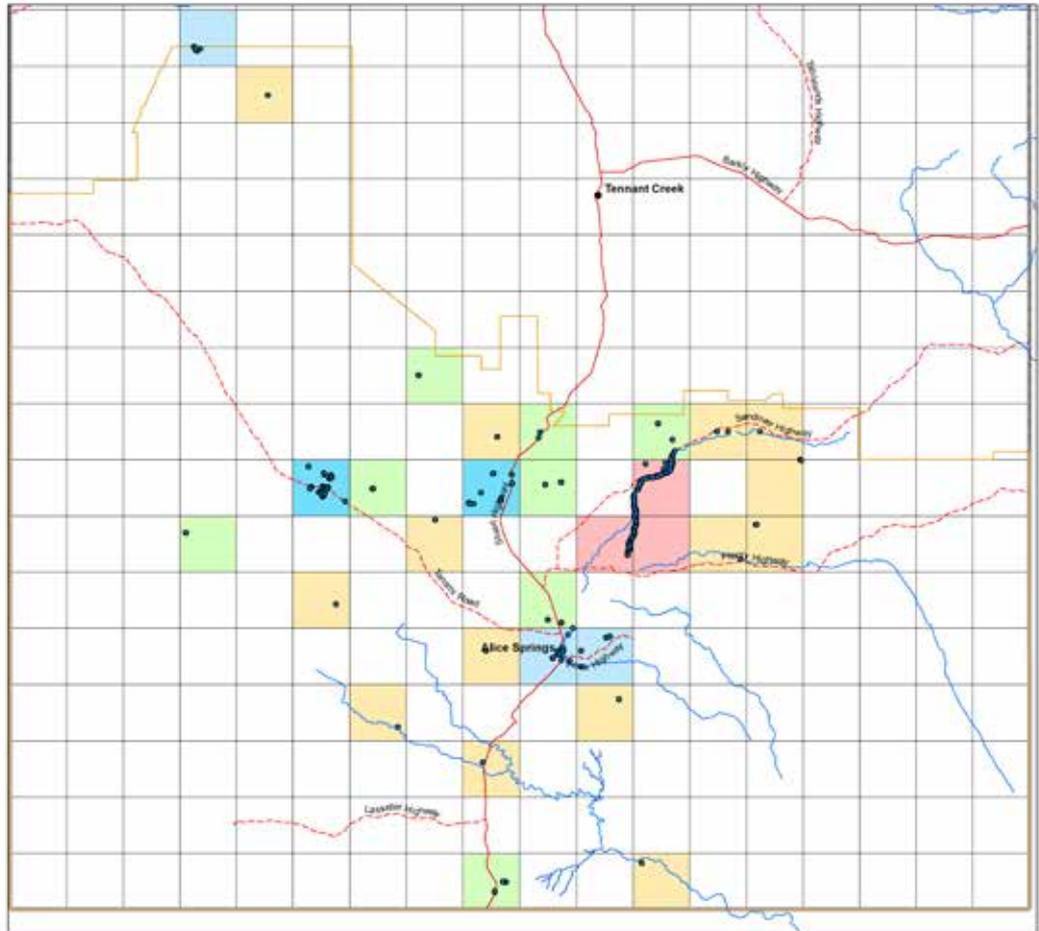
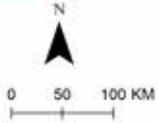


Figure 9. Current and historic records of parkinsonia (*Parkinsonia aculeata*) in the Alice Springs region of the Northern Territory (NT Weed Management Branch 2020).

Rubber bush

Legend

-  Region outline
-  50km Grid

Weed Distribution Description

-  Absent
-  Eradicated and Monitored
-  Present - Density Unknown
-  Unknown Occurrence
-  Occasional and Localised
-  Occasional and Widespread
-  Common and Localised
-  Common and Widespread
-  Abundant and Localised
-  Abundant and Widespread

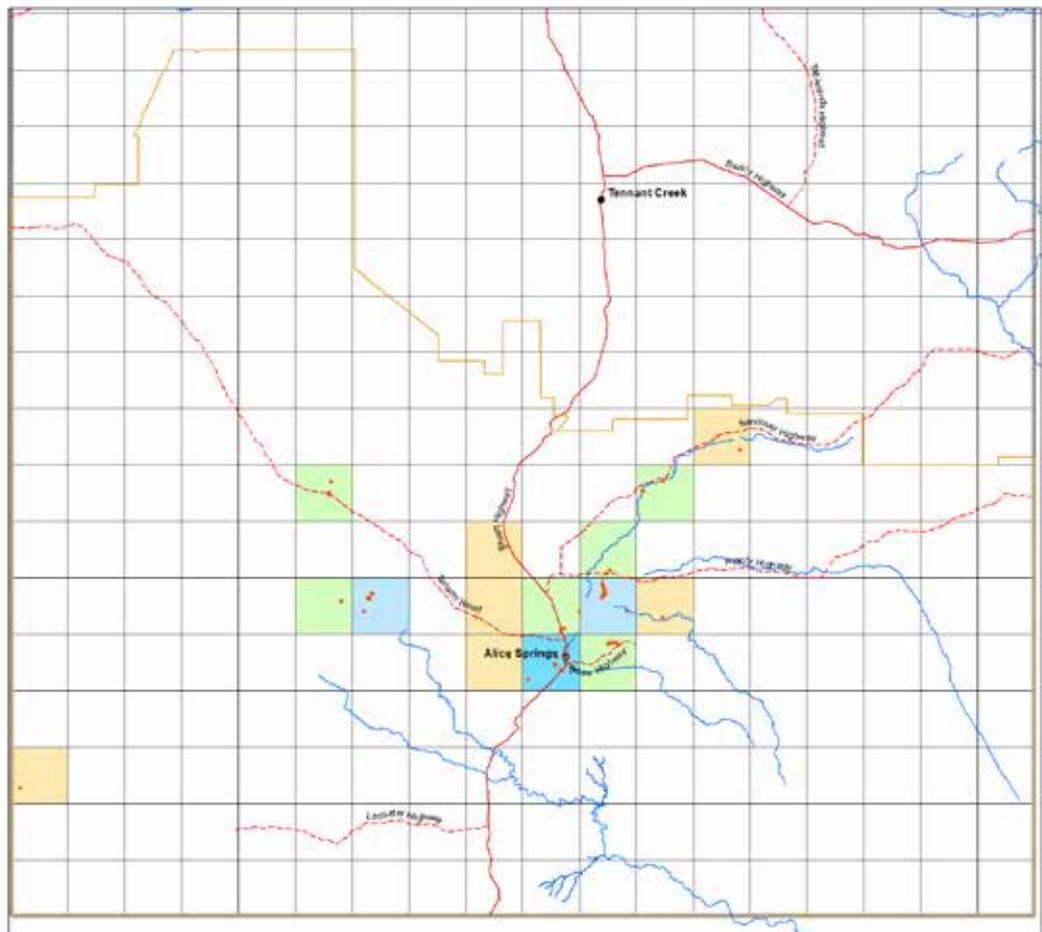
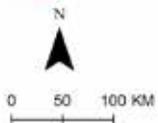


Figure 10. Current and historic records of rubber bush (*Calotropis procera*) in the Alice Springs region of the Northern Territory (NT Weed Management Branch 2020).

Buffel grass

Legend

- Region outline
- 50km Grid

Weed Distribution Description

- Absent
- Eradicated and Monitored
- Present - Density Unknown
- Unknown Occurrence
- Occasional and Localised
- Occasional and Widespread
- Common and Localised
- Common and Widespread
- Abundant and Localised
- Abundant and Widespread



0 50 100 KM

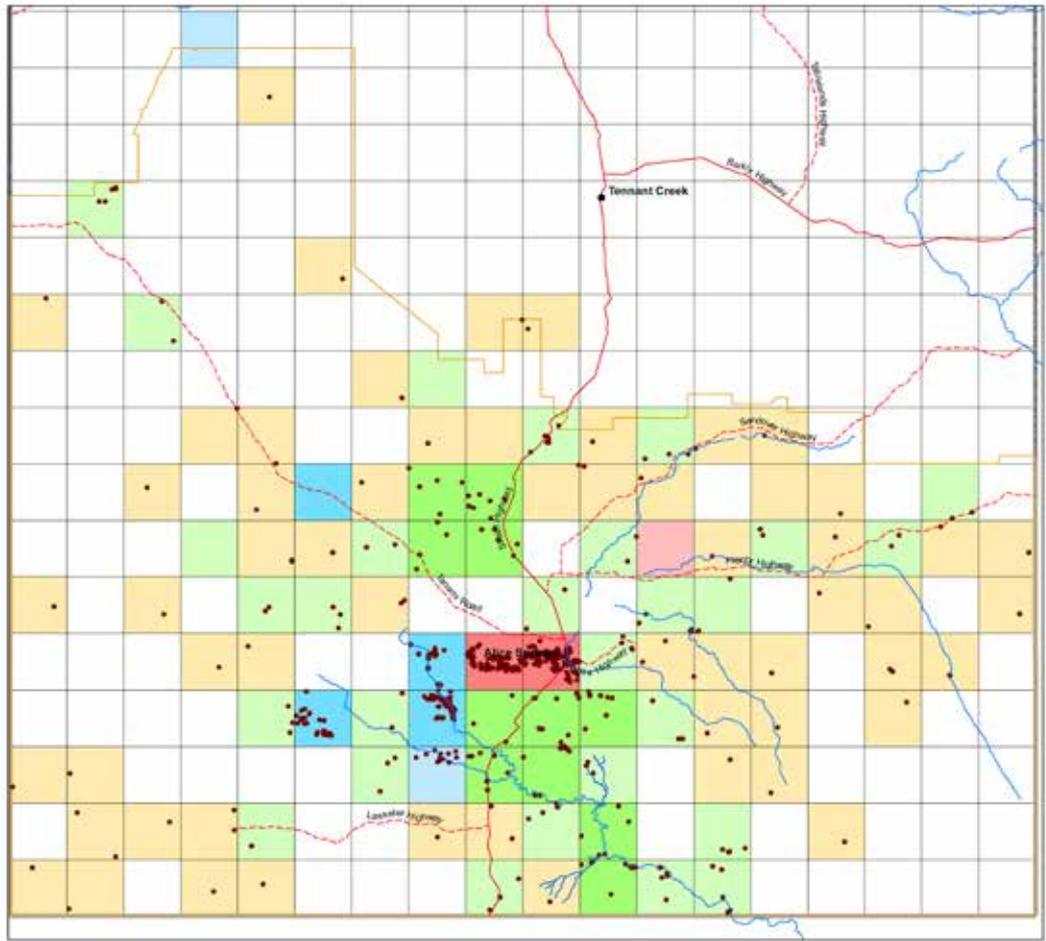


Figure 11. Current and historic records of buffel grass (*Cenchrus ciliaris*) in the Alice Springs region of the Northern Territory (NT Weed Management Branch 2020).



Buffel grass





Coral cactus



Athel pine



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