



Tennant Creek Regional Weeds Strategy

2021-2026

Department of
ENVIRONMENT, PARKS AND WATER SECURITY





Rubber bush leaves and flowers

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Cover photo: Prickly acacia

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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 Tennant Creek Region covers an area of approximately 283,648 km² and encompasses the Barkly tableland (see Figure 1).

There is a continued risk of new weed incursions throughout the Tennant Creek Region and the spread of existing weeds by the deliberate and accidental actions of people. A major threat of new weed incursions derives from movement of stock and people between Queensland and the Northern Territory. While these risks are ongoing, their impacts can be mitigated and reduced by strategic management.

Purpose

The purpose of the Tennant Creek 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 Tennant Creek Region over the period 2021-2026. It succeeds the Barkly Regional Weed Management Plan 2015-2020.

Aims

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

- Identifying the principal weed threats to the Tennant Creek 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/goals.



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

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 amongst 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.



DEPWS Strategic Plan (2021–2024)

The DEPWS Strategic Plan (2021–24) provides a clear vision for the sustainable management of the Northern Territory's natural resources informed by the best available science. 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. supporting sustainable economic development
2. fostering and strengthening partnerships
3. protecting and managing our natural assets

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

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 of 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.



Mesquite fruit and seeds

‘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 Barkly Regional Weed Working Group has been integral to its development.

Key stakeholders

The Barkly Regional Weed Working Group (BRWWG) is a forum which provides an opportunity for a wide range of stakeholders in the Tennant Creek 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.

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 the Strategy

Key stakeholder group	Name
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	Barkly Regional Council
Traditional Owners	Central Land Council Maru-warinyi Ankkul Rangers
Landcare / Natural Resource Management	Territory Natural Resource Management (TNRM)
Industry	NT Cattlemen’s Association (NTCA)
Education and research	Charles Darwin University CSIRO Ecosystem Sciences
Private landholders	Town and rural block owners
Pastoral Companies	Australian Agricultural Company (AACo) Consolidated Pastoral Company (CPC) Northern Australia Pastoral Company Bilba Group Baldy Bay



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 of 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 six statutory weed management plans relevant to the Tennant Creek Region:

1. Athel pine
2. Mesquite
3. Prickly acacia
4. Bellyache bush
5. Gamba grass
6. Neem

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
Bellyache bush	nt.gov.au/bellyachebush
Gamba grass	nt.gov.au/gamba
Mesquite	nt.gov.au/mesquite
Neem	nt.gov.au/neem
Prickly acacia	nt.gov.au/pricklyacacia

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 Tennant Creek 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 mesquite 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.

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 BRWWG 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 BRWWG provides a forum for key stakeholders to collaborate and discuss weed management issues in the Tennant Creek Region.

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 BRWWG used their expert local knowledge as well as the outputs from the NT WRMS to determine the priority lists. The WRMS provided an evidence-based tool to assist with the prioritisation process and was actively used by the BRWWG 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. Note that 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/scientific expectations and concerns about a range of current and emerging weed threats to the Region not restricted to the declared weed list.

Bellyache bush fruit



Weed species that are listed as requiring priority management attention within the Region were determined by consensus during BRWWG 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 Tennant Creek 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 Tennant Creek Region and are widely considered feasible to eradicate from the Region. They are typically evaluated as very high risk and have isolated and restricted distributions.

Table 2: Priority weeds for eradication in the Tennant Creek Region

Common name	Botanical name	NT Declared class	Weed Risk (NT)
Bellyache bush	<i>Jatropha gossypifolia</i>	A	Very high
Gamba grass	<i>Andropogon gayanus</i>	A	Yes
Mesquite	<i>Prosopis</i> spp.	A	Very high
Prickly acacia	<i>Vachellia nilotica</i>	A	Very high
Prickly pears	<i>Opuntia</i> spp.	A	Very high
Rope cactus	<i>Cylindropuntia</i> spp.	A	Very high
Rubber vine	<i>Cryptostegia grandiflora</i>	A	Very high

Bellyache bush

Bellyache bush (*Jatropha gossypifolia*) is targeted for eradication in the Tennant Creek Region and is the subject of a statutory weed management Plan. Bellyache bush is under monitoring within Tennant Creek and Elliott townships and an eradication program is underway on one pastoral lease.

Gamba grass

Occurrences of gamba grass have been recorded on the Stuart Highway south of Elliott and on the Adelaide to Darwin Railway line south of Elliott. All known occurrences have been controlled and are currently under monitoring.

Mesquite

Mesquite (*Prosopis* spp.) is targeted for eradication in the Northern Territory and is the subject of a statutory weed management plan. Mesquite infestations in the Tennant Creek 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 10 years) before a population can be considered locally eradicated.

Prickly acacia

Prickly acacia (*Vachellia nilotica*) is targeted for eradication in the Northern Territory and is the subject of a statutory weed management plan. Prickly acacia is predominantly found on pastoral leases and poses a significant risk to the Tennant Creek's Mitchell Grass bioregion.

Prickly pears and Rope cactus (Opuntoid cacti)

Not all cacti species are invasive and they 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 *Austrocylindropuntia* spp.) have been listed as Weeds of National Significance due to their invasive potential. It is possible that new species of opuntoid cacti may arrive in the Tennant Creek Region that have not been detected before.

Coral cactus (*Cylindropuntia fulgida*) has established populations at historical mine sites around Tennant Creek. 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.

Rubber vine

Rubber vine (*Cryptostegia grandiflora*) was discovered and is under eradication on a pastoral lease towards the Queensland border. Since the discovery, regular monitoring has occurred. The only other known rubber vine incursion in the Northern Territory (Katherine Region) is also under an eradication program.

Priority Weeds for Eradication

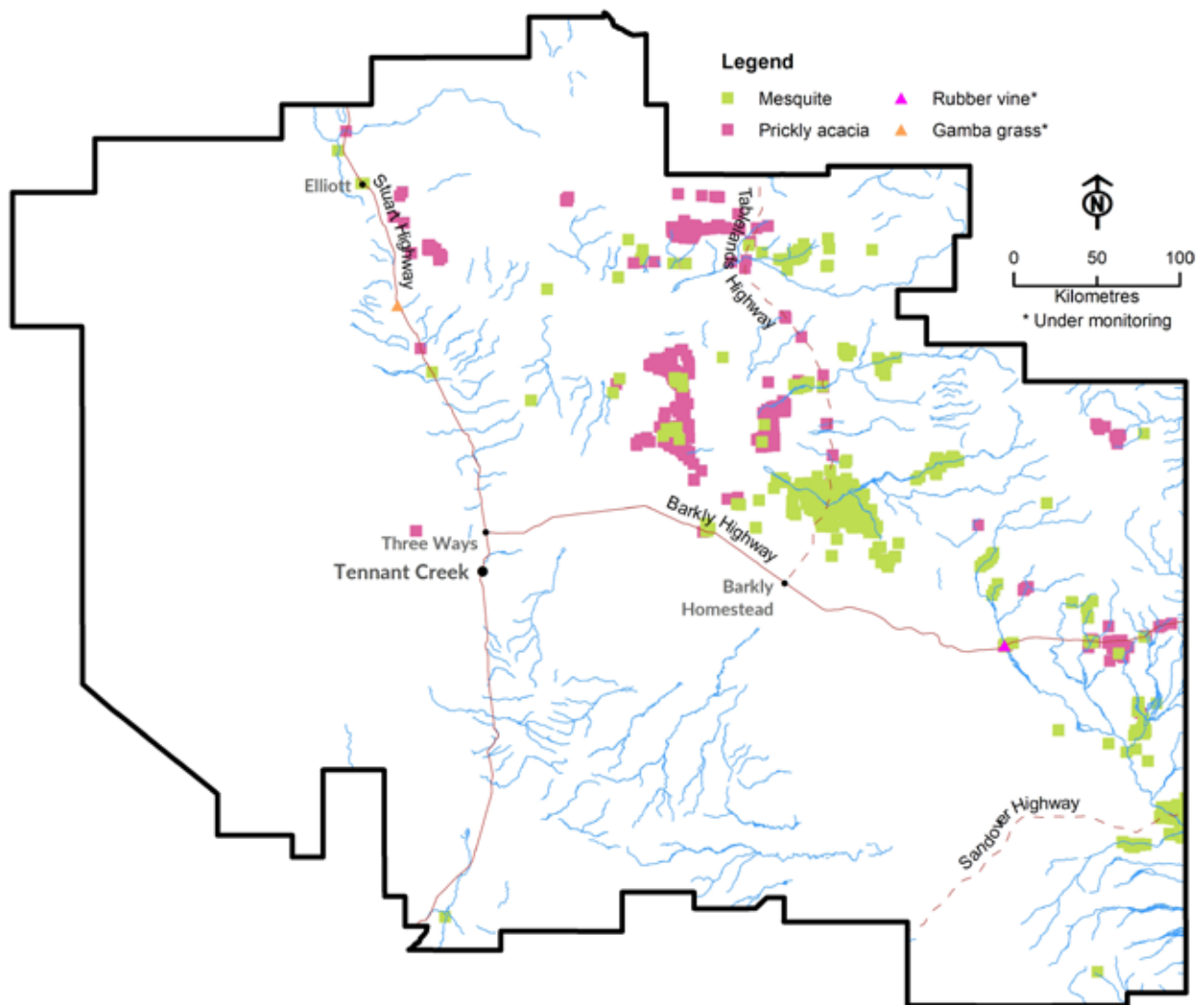


Figure 2. Distribution of priority weed species for eradication in the Tennant Creek Region.

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 and impact in clean areas – particularly around corridors that may assist movement such as roads. Secondly, eradication of outliers also 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 parkinsonia (*Parkinsonia aculeata*) around Lake Woods, the Northern Territory’s largest ephemeral Lake. Lake Woods is also culturally significant and internationally recognised as a wetland of importance. For all of these management 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 Tennant Creek Region

Common name	Botanical name	NT Declared class	Weed Risk (NT)
*Athel pine	<i>Tamarix aphylla</i>	A/B	Very high
Neem	<i>Azadirachta indica</i>	B	Very high
Parkinsonia	<i>Parkinsonia aculeata</i>	B	Very high
Rubber bush	<i>Calotropis procera</i>	B	High

* Wild or naturalised athel pine is required to be controlled. Amenity plantings are required to have a permit to be retained.



Priority Weeds for Strategic Control

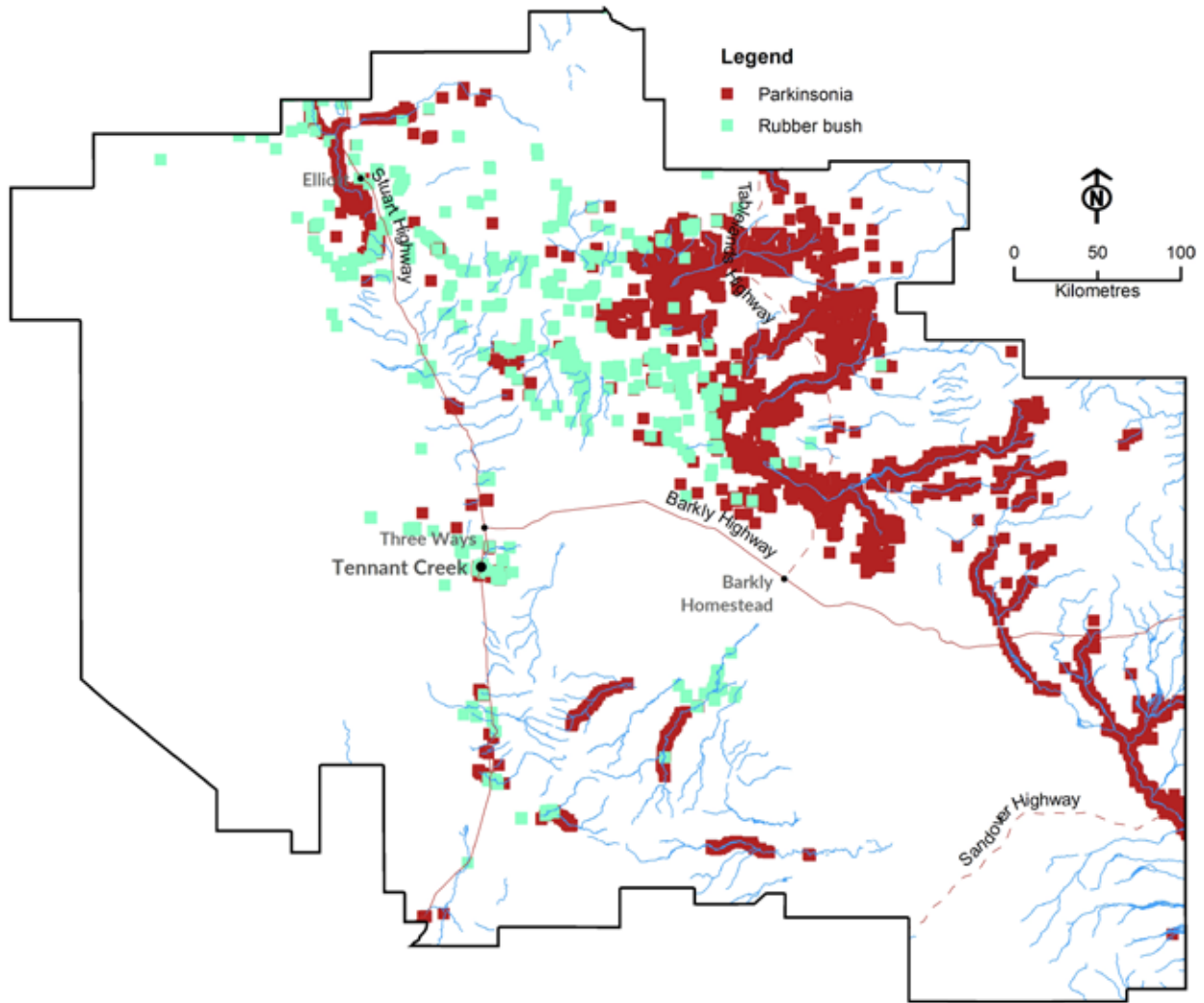


Figure 3. Distribution of priority weed species for strategic control in the Tennant Creek Region (parkinsonia and rubber bush only).

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) and have been identified by stakeholders as posing a threat to the values of the Tennant Creek Region. The list is not comprehensive. There are no plans or strategies to manage any of them as a species across the landscape. They are typically managed on a 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 Tennant Creek Region

Common name	Botanical name	NT Declared class	Weed Risk (NT)
Mimosa bush	<i>Vachellia farnesiana</i>	Not declared (native)	N/A
Asbestos grass	<i>Cenchrus basedowii</i>	Not declared (native)	N/A
Buffel grass	<i>Cenchrus ciliaris</i>	Not declared	Very high
Mossman River grass	<i>Cenchrus echinatus</i>	B	Medium
Noogoora burr	<i>Xanthium strumarium</i>	B	High

N/A = Not assessed

Mimosa bush

The Tennant Creek Region's mimosa bush (*Vachellia farnesiana*) biotype has larger thorns and a larger growth habitat than some other biotypes, and is a concern among some landholders, often mistaken for prickly acacia. It is considered native vegetation and not recommended for control at the landscape scale. Changes in land management practices may reduce the impacts of mimosa bush. Further investigation may be warranted into its impacts where it may be transforming vegetation.

Asbestos grass

Asbestos grass (*Cenchrus basedowii*) is an unpalatable increaser in native pastures that is a concern to several landholders in the Tennant Creek Region. It is considered a native species and therefore generally unsuitable for strategic landscape control.

Buffel grass

Buffel grass (*Cenchrus ciliaris*) is 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 the Tennant Creek Region. 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 have infrastructure and economic costs, while social and cultural amenity are affected by, for example, compromised health or loss of significant sites.

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 Tennant Creek Region

Common name	Botanical name	NT Declared class	Weed Risk (NT)
Caltrop	<i>Tribulus cistoides</i>	B	Low
Coffee senna	<i>Senna occidentalis</i>	B	Medium
Kapok	<i>Aerva javanica</i>	Not Declared	N/A
Mexican poppy	<i>Argemone ochroleuca</i>	B	Medium
Mission grass - annual	<i>Cenchrus pedicellatus</i>	Not declared	Very high
Sicklepod	<i>Senna obtusifolia</i>	B	Very high

N/A = Not assessed

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: Regional ‘Alert’ weeds in the Tennant Creek Region for eradication on detection

Priority weed	Scientific name	NT Declaration status	Weed of National Significance?
Giant rats tail grass	<i>Sporobolus natensis</i> and <i>S. pyramidalis</i>	Not Declared	No
Grader grass	<i>Themeda quadrivalvis</i>	B	No
Parthenium weed	<i>Parthenium hysterophorus</i>	A	Yes
Siam weed	<i>Chromolaena odorata</i>	A	No

Giant rats tail grass

Giant rats tail grass is currently an alert species for the Tennant Creek Region as it poses a significant risk to the pastoral industry and in particular the Mitchell grass bioregion. Exploration activities, contaminated fodder and vehicles have been identified as likely spread vectors for giant rats tail grass.



Grader grass

Grader grass is an established weed within the Katherine Region and poses a risk to the Tennant Creek Region. Grader grass has been found to be spreading south along the Stuart Highway with incursions as south of Larrimah. Grader grass has also been found along the Carpentaria Highway. Stakeholders have worked hard in preventing the spread of grader grass south from the Katherine Region and are well aware of the threat it poses to the environment.

Parthenium weed

Parthenium weed is the target of a current eradication program at a single infested property in the Katherine Region. Historically, there have been eight confirmed and three anecdotal incursions of parthenium weed in the Northern Territory. The furthest south that it has occurred in the Northern Territory to date is at Tennant Creek. This incursion, at the Tennant Creek showgrounds, was monitored for many years and is now considered eradicated. The source of these incursions is likely to be accidental spread from the large core infestations in central Queensland.

Siam weed

Siam weed was detected in the Northern Territory for the first time in July 2019 in the Darwin Region. Siam weed has the potential to cause catastrophic damage to the environment in the Northern Territory. Weed Management Officers are assisting the landholders with control and eradication.

Priority landscape areas

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

- a. low incursions of weeds
- b. sites of significance for biodiversity conservation
- c. significant commercial values
- d. very high visitation areas
- e. significant cultural and heritage values
- f. susceptibility to invasion
- g. weed source areas including top of streams and up-wind areas
- h. high value assets.

Table 7: Priority landscape areas

Landscape area	Nested values	Threats
All sites of significance for biodiversity conservation in the NT (Lake Woods, Tarrabool Lake, Wood Duck Swamp, Frew River Floodout Swamp)	Biodiversity Tourism Recreational users Pastoral Cultural	Parkinsonia Prickly acacia Rubber bush
Water courses including but not limited to the Lake Eyre Basin (including the Georgina River Catchment), Frew River Catchment, Elkerdra River Catchment, ephemeral lake systems including Lakes de Burgh, Sylvester, Corella, Tarrabool and Woods	Biodiversity Tourism Recreational users Pastoral Cultural	Parkinsonia Prickly acacia Rubber bush Mesquite
Key sites of community value	Biodiversity Tourism Recreational users Cultural	All priority weeds
Rangelands e.g. Mitchell Grass Downs bioregion	Biodiversity Pastoral Cultural	All
Beetaloo basin	Biodiversity Tourism Recreational users Pastoral Cultural	New weeds with increased onshore shale gas development.

¹Sites 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.



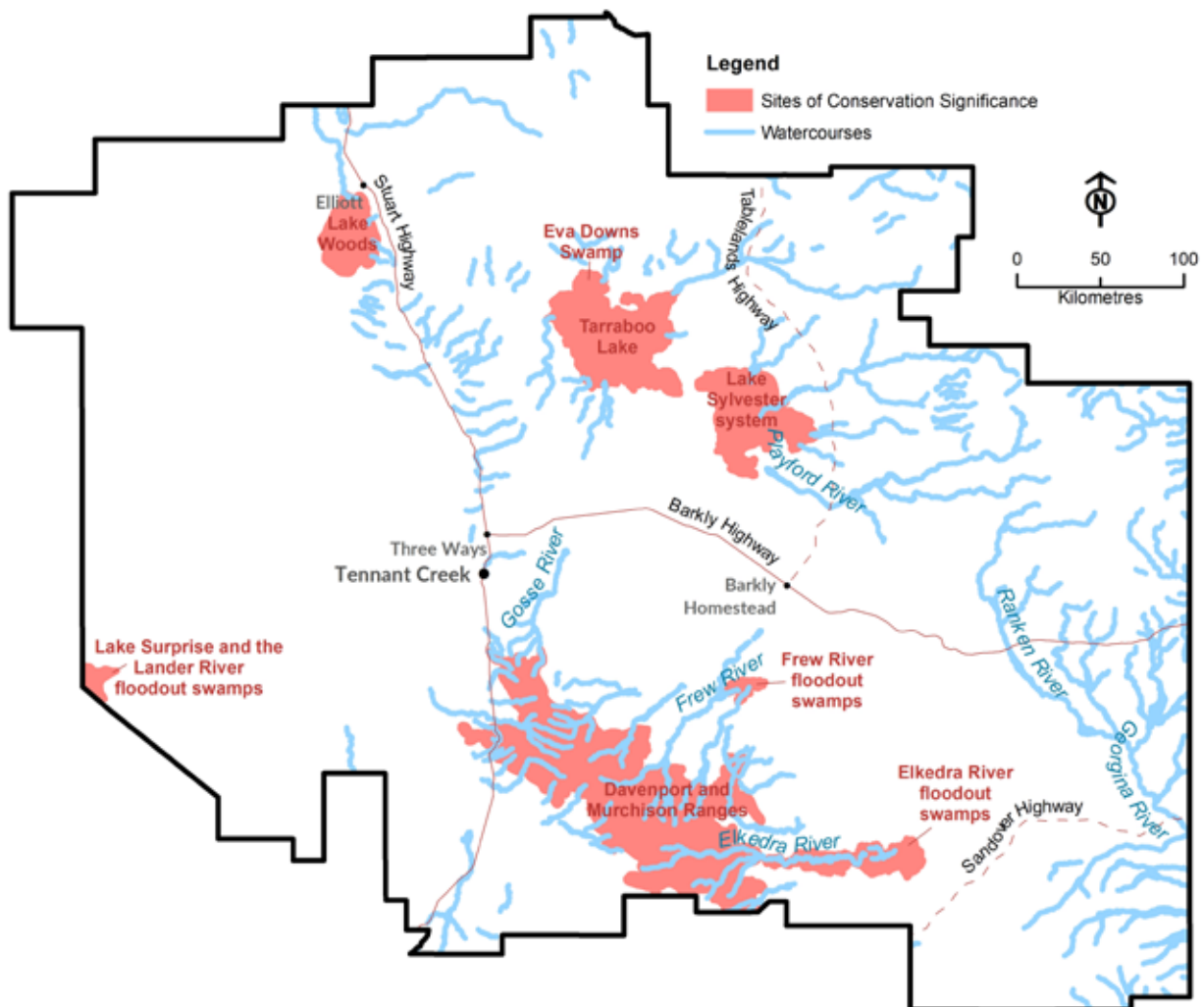


Figure 4. Priority Landscape Areas

Priority pathways of spread

Following consultation with a wide range of government, non-government and industry bodies, the Northern Territory Weed Management Branch prepared education and technical material 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 previous the Northern Territory Regional Weed Management Plans. The Barkly Regional Weed Management Plan 2015-2020 is available at: territorystories.nt.gov.au/10070/825502

The BRWWG discussed the pathways for spread that require priority management attention in the Region and considering 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 Tennant Creek Region
- c. human activities most likely to spread weeds
- d. presence of a physical corridor assisting weed spread.

Two main weed issues relating to spread pathways were identified the BRWWG as the spread of:

1. grassy weeds
2. prickly acacia from interstate and within the Territory.

The BRWWG identified the risk transportation of contaminated fodder to help supplement livestock poses a risk of spreading grassy weeds. Of real concern was the risk of spreading giant rats tail grass, gamba grass and grader grass. None of these weeds are currently present in the Tennant Creek Region, however they would pose a significant risk to the Barkly’s Mitchell Grass Downs bioregion. Sourcing clean fodder to supplement livestock is key to the Tennant Creek Region preventing the establishment of grassy weeds.

Transportation of livestock from Queensland to the Tennant Creek Region has the potential to spread weeds such as prickly acacia. Weed control programs across the Tennant Creek Region have reduced the impacts of prickly acacia; however the transportation of livestock continues to be a threat. The BRWWG reiterated the need for landholders to closely monitor areas which have received livestock from Queensland.

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	Livestock, wind, water, fire, recreation activities	Parkinsonia, prickly acacia, mesquite, noogoora burr, rubber bush
Native or feral animals	River corridors	Feral and native animal movements	Parkinsonia, prickly acacia, mesquite, noogoora burr, rubber bush
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. buffel grass, mexican poppy, kapok bush, rubber bush, parkinsonia)
	Gas pipeline	Construction and maintenance activities	
	Rail corridors	Construction and maintenance activities	
	Pastoral holdings	Cattle and hay	Parthenium weed, rubber vine, prickly acacia, mesquite
	Roads	Construction and maintenance, such as slashing and grading, 4WD tourism, livestock, fodder, haulage and wind	Gamba grass, grader grass
Tourism	Accidental	Cleaning of vehicles at camp grounds and river crossings	Prickly acacia, gamba grass
Use by industry	Deliberate plantings Nursery industry Garden plantings	Beautification projects and development	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	Australian Government	Northern Territory Government	Local Government	Aboriginal	Environment and community	Landcare / Territory Natural Resource Management	Industry	Education and Research	Private landowners	Time frame
Mesquite (Class A)	Eradication	Pastoral holdings										2025
Prickly acacia (Class A)	Eradication of outlier plants Strategic management of core infestations	Pastoral holdings Walhollow, Brunette Downs, Rockhampton Downs										2025
Bellyache bush (Zone A)	Eradication	Phillip Creek and Kraut Downs										2025
Gamba grass (Zone A)	Monitor and eradication	Stuart Highway										2021



Prickly acacia flower

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

Weed	Action	Priority landscape or infestation areas	BRWRG	Weed Management Branch	Northern Territory Government	Local Government	Pastoral Industry	NT Farmers	Indigenous groups	Landcare Groups / TNRM	Charles Darwin University	Bushfires NT	Rural block owners	Time frame
Neem (Class B)	Focus on seedling control and strategic control of outliers	Towns, rural blocks, communities and pastoral										2025		
Athel pine (Zone A)	Remove athel pine that is at risk of spread	Pastoral holdings										2023		
Rubber bush (Class B)	Containment of core infestations and eradication of outliers	Numerous locations												2025
Parkinsonia (Class B)	Containment of core infestations and eradicate outliers	E.g. Lake Tarrabool, Lake Sylvester catchments												2025



Mossman river grass



Objective 3: To prevent the introduction and spread of the Region’s priority weeds

Action	BRWRG	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												2021
Implement regional activities to increase awareness and adoption of weed spread prevention procedures such as quarantining livestock and cleaning machinery												2022
Develop and adopt a code of practice for weed spread prevention												2021
Conduct up-skilling of ground level working groups to identify and report priority and alert weeds												2023
Monitor priority pathways for new and spreading weeds												2025
Identify and implement activities that increase awareness of weed spread prevention to encourage adoption of best practice management												2021

Objective 4: To improve adaptive weed management

Action	BRWRG	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 Barkly Regional Weed Working Group												2021
Share landscape rehabilitation learnings including what makes a weed resilient landscape												2025
Provide weed datasets to the Weed Management Branch												2025
Map distribution of priority weeds and monitor change in their density												2025
Identify and support the trials of new weed management techniques and biological control agents												2021
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												2021
Identify and record knowledge gaps for future investigations												2025
Introduce a register of known amenity plantings of priority and/or declared weed species that considers the risk of spread and/or management options												2021



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

Action	BRWRG	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												2023
Identify priority programs for funding prior to funding announcements												2021
Create awareness of landholder legal responsibilities with attention to new landholders and managers to the Region who may be unaware of their obligations												2021
Participate in local, regional and national NRM forums where weeds are discussed												2025
Coordinate planning activities at a catchment scale												2025
Maintain cross-border partnerships in support of national programs												2021
Develop priority species management plans (where none exist)												2025

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

Action	BRWRG	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												2023
Provide inductions and regular training to identify priority and 'alert weeds' to volunteers and staff												2025
Support land managers to develop and improve weed management capacity through on ground demonstration and incentive programs												2025
Continue to develop regional and targeted communication materials, including students as a targeted audience group												2023
Expose community members to the impact of 'alert' weeds in neighbouring states												2025
Develop a 'working together' role in detection, management and prevention of spread of weeds												2024

Appendix A. Barkly Regional Weed Working Group August 2020

Name	Organisation
Nathan Mills, Executive Officer, BRWWG	Regional Weed Officer, Weed Management Branch, Department Environment, Parks and Water Security
Chris Brown	Regional Weed Officer, Weed Management Branch, Department Environment, Parks and Water Security
Louis Elliott	Weed Scientist, Weed Management Branch, Department Environment, Parks and Water Security
Dan Chapman	Senior Rangelands Manager, Australian Agricultural Company
Jessica Burdon	Regional Land Management Officer, Central Land Council
Scott Spurling	Environmental Officer, Barkly Regional Council
Alan Roe	Program Manager, Territory Natural Resource Management
Jane Douglas	Pastoral Extension Officer, Department Industry, Tourism and Trade
Suzie Shearer	Rangelands Officer, Consolidated Pastoral Company
Jonny McGannon	Park Ranger, Parks & Wildlife, Department Environment, Parks and Water Security

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 (TENNANT CREEK WEED MANAGEMENT REGION)	
		HIGH – VERY HIGH	LOW - MEDIUM
WEED RISK ASSESSMENT (NT)	VERY HIGH	A: Prevent movement; Regional eradication; Contain regional spread; Protect priority sites	B: Targeted control (incl. Biocontrol); Protect priority sites
		Prickly acacia (<i>Vachellia nilotica</i>) Coffee bush (<i>Leucaena leucocephala</i>) Mesquite (<i>Prosopis</i> spp.) Athel pine (<i>Tamarix aphylla</i>) Parthenium (<i>Parthenium hysterophorus</i>) Bellyache bush (<i>Jatropha gossypifolia</i>) Mission grass annual (<i>Cenchrus pedicellatum</i>)	Buffel grass (<i>Cenchrus ciliaris</i>) Prickly pear (<i>Opuntia</i> spp.) Parkinsonia (<i>Parkinsonia aculeata</i>) **Sheda grass (<i>Dichanthium annulatum</i>)
	HIGH	C: Prevent movement; Contain regional spread; Protect priority sites	D: Targeted control
		Hyptis (<i>Mesophaerum suaveolens</i>) Castor oil plant (<i>Ricinus communis</i>)	Noogoora burr (<i>Xanthium occidentale</i>) Sida (<i>Sida</i> spp.) Rubber bush (<i>Calotropis procera</i>)
	MEDIUM	E: Targeted control; Improve general weed management; Monitor; Protect priority sites	F: Improve general weed management
		Mexican Poppy (<i>Argemone ochroleuca</i>) Longspine Thornapple (<i>Datura ferox</i>) *Kapok (<i>Aerva javanica</i>)	Mossman River grass (<i>Cenchrus echinatus</i>) *Coffee senna (<i>Senna occidentalis</i>)
	LOW	G: Monitor; Assist interested parties	H: Assist interested parties
		Sabi grass (<i>Urochloa mosambicensis</i>)	Caltrop (<i>Tribulus</i> spp.) Khaki weed (<i>Alternanthera pungens</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.

**This weed risk assessment 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.





Prickly acacia seeds

Appendix C. Maps of priority weeds

This strategy has identified priority weeds for eradication and strategic control in the Tennant Creek 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 manual¹.

Category 1: Priority species for eradication:

- Mesquite (Class A, WoNS)
- Prickly pears (Class A, WoNS)
- Rope cactus (Class A, WoNS)
- Bellyache bush (Class A/B, WoNS)
- Rubber vine (Class A, WoNS)

Category 2: Priority species for strategic control:

- Athel pine (Class A/B, WoNS)
- Parkinsonia (Class B, WoNS)
- Rubber bush (Class B)

¹McNaught I, Thackway R, Brown L and Parsons M (2006). A field manual for surveying and mapping nationally significant weeds. Bureau of Rural Sciences, Canberra.

Mesquite

Legend

- Mesquite (*Prosopis* spp.)
- ▭ Region outline
- ▭ 50 km Grid

Weed Distribution

- ▭ 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

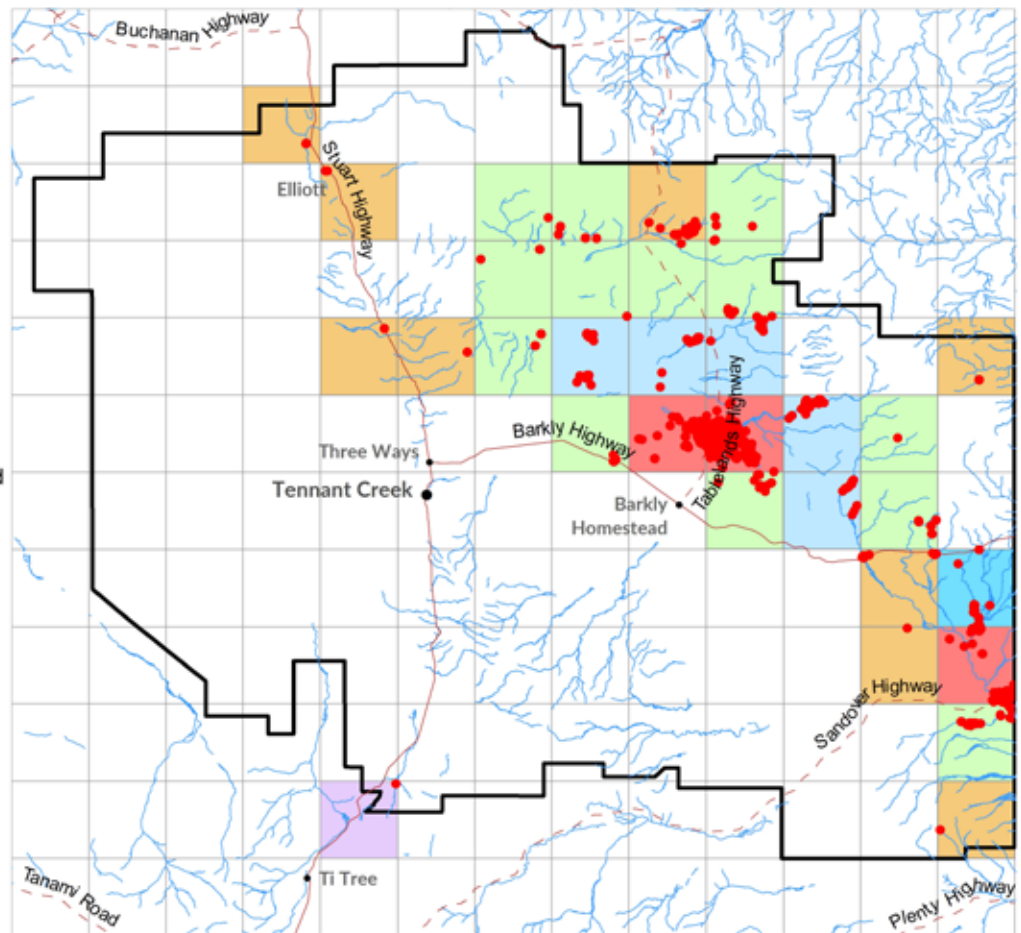
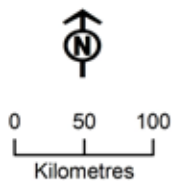


Figure 5. Current and historic records of mesquite (*Prosopis* spp.) in the Tennant Creek Region of the Northern Territory (NT Weed Management Branch 2020).

Prickly acacia

Legend

- Prickly acacia (*Vachellia nilotica*)
- ▭ Region outline
- ▭ 50 km Grid

Weed Distribution

- ▭ 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

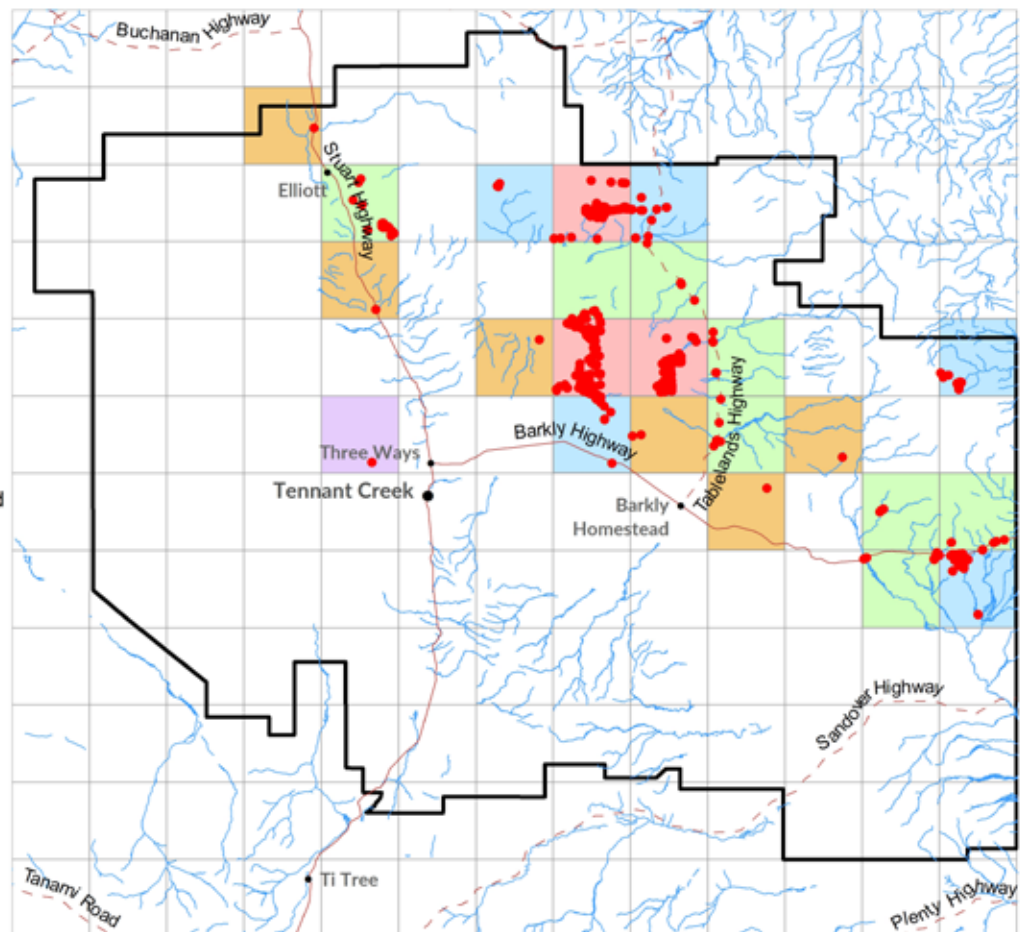
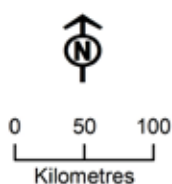


Figure 6. Current and historic records of prickly acacia (*Vachellia nilotica*.) in the Tennant Creek Region of the Northern Territory (NT Weed Management Branch 2020).



Prickly pear

Legend

- Prickly pear (*Opuntia* spp.)
- ▭ Region outline
- ▭ 50 km Grid

Weed Distribution

- 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

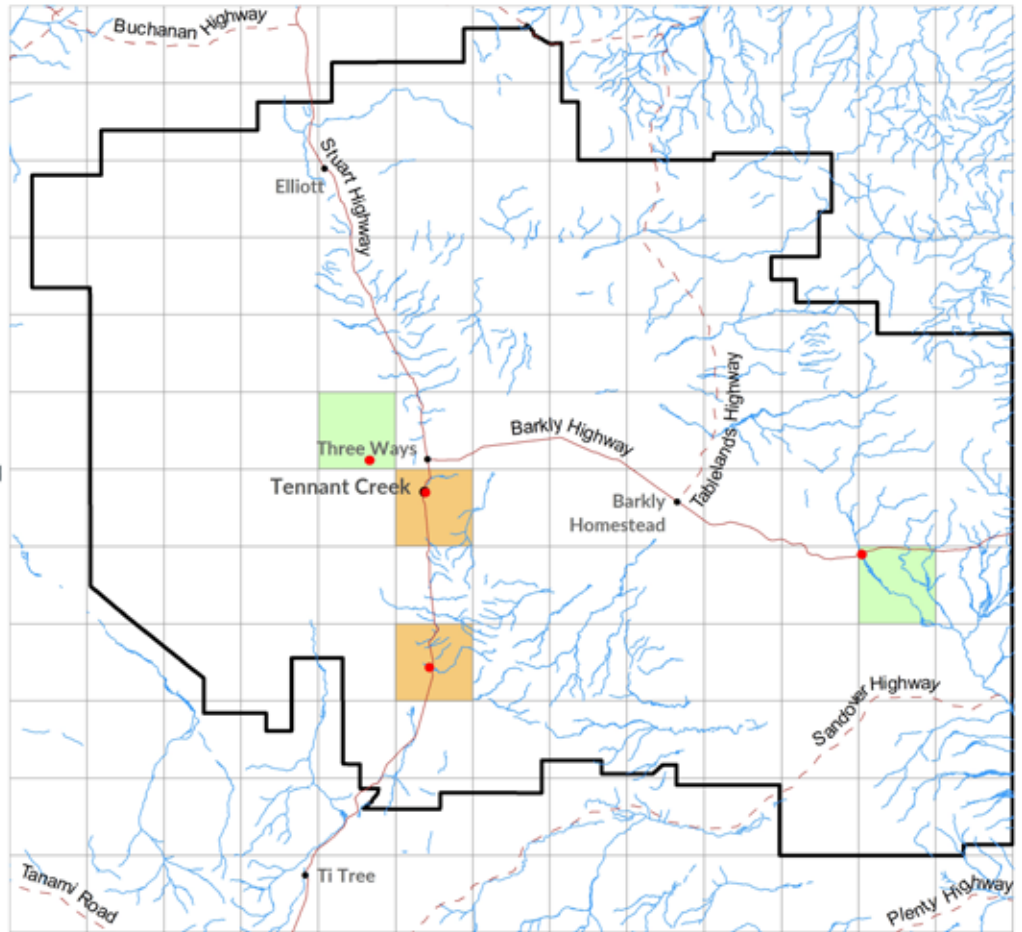
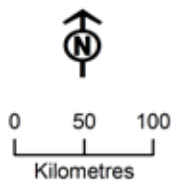


Figure 7. Current and historic records of prickly pear (*Opuntia* spp.) in the Tennant Creek Region of the Northern Territory (NT Weed Management Branch 2020).

Rope cactus

Legend

- Rope cactus (*Cylindropuntia* spp.)
- ▭ Region outline
- ▭ 50 km Grid

Weed Distribution

- 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

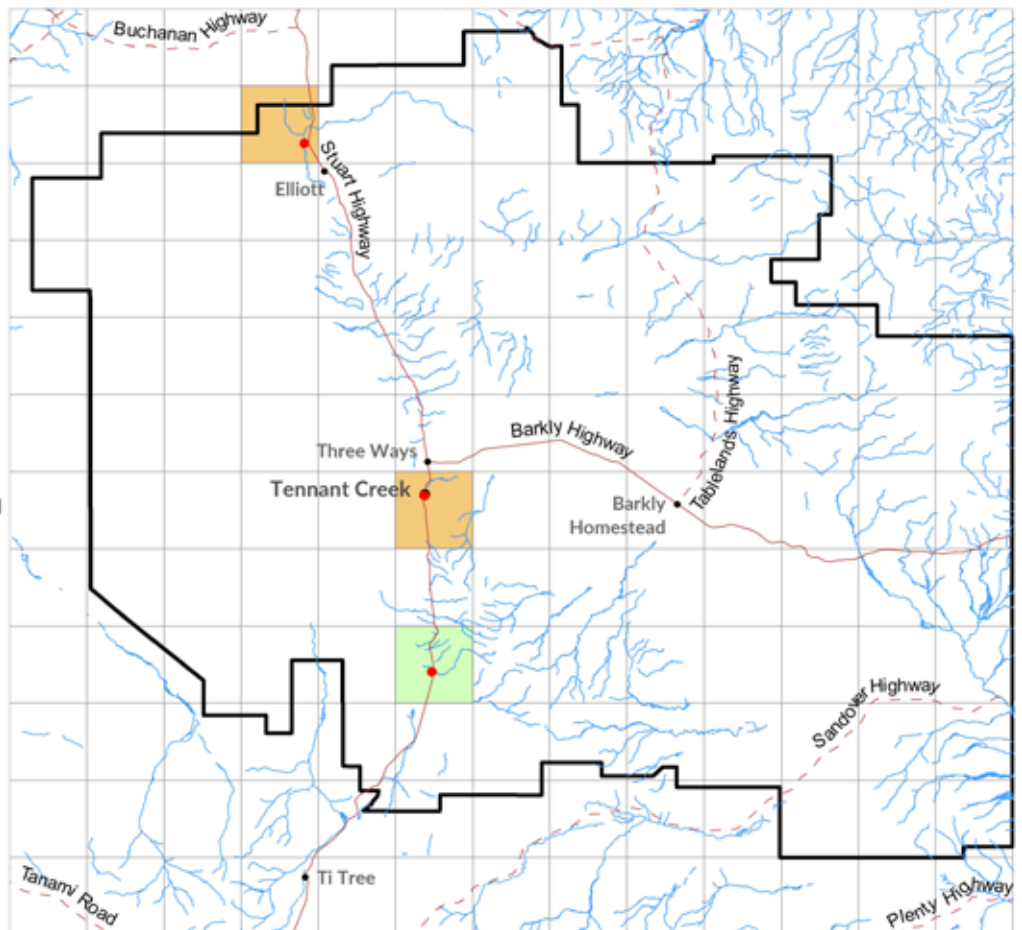
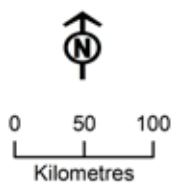


Figure 8. Current and historic records of rope cactus (*Cylindropuntia* spp.) in the Tennant Creek Region of the Northern Territory (NT Weed Management Branch 2020).



Athel pine

Legend

- Athel pine (*Tamarix aphylla*)
- ▭ Region outline
- ▭ 50 km Grid

Weed Distribution

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

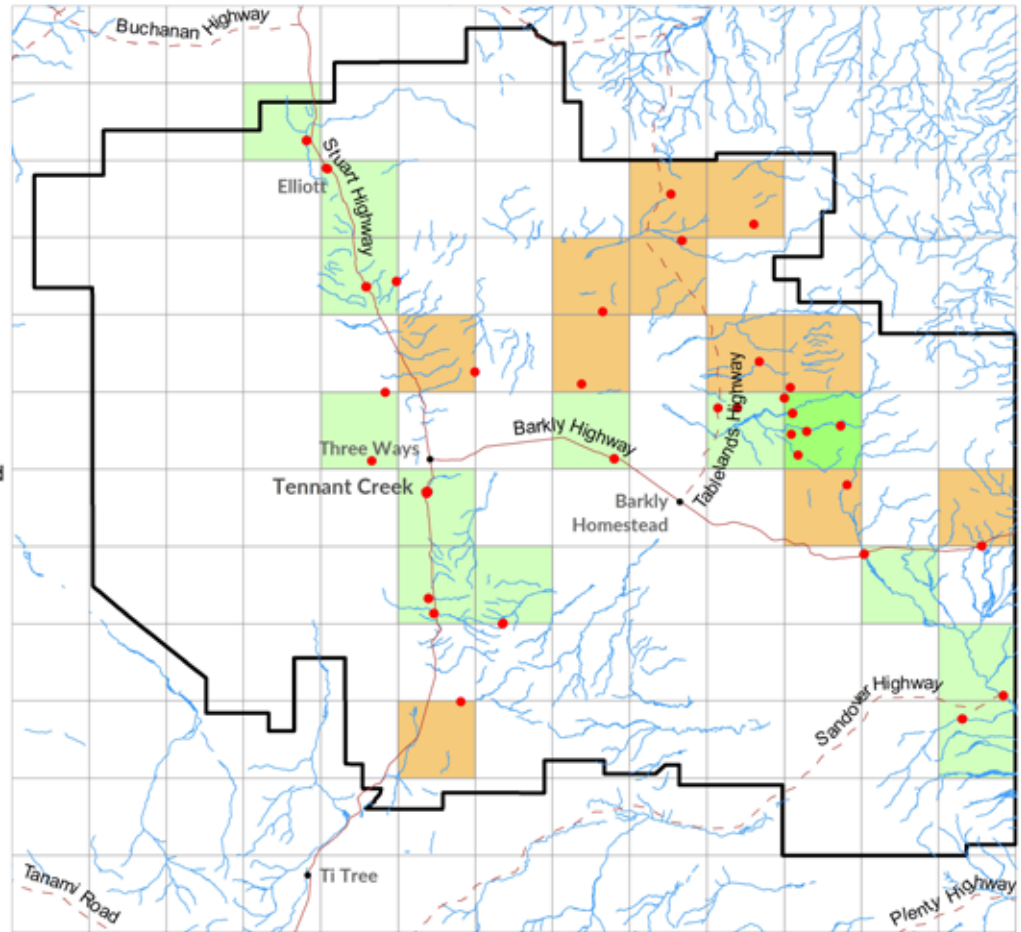
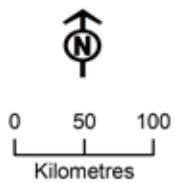


Figure 9. Current and historic records of athel pine (*Tamarix aphylla*) in the Tennant Creek Region of the Northern Territory (NT Weed Management Branch 2020).

Parkinsonia

Legend

- Parkinsonia (*Parkinsonia aculeata*)
- ▭ Region outline
- ▭ 50 km Grid

Weed Distribution

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

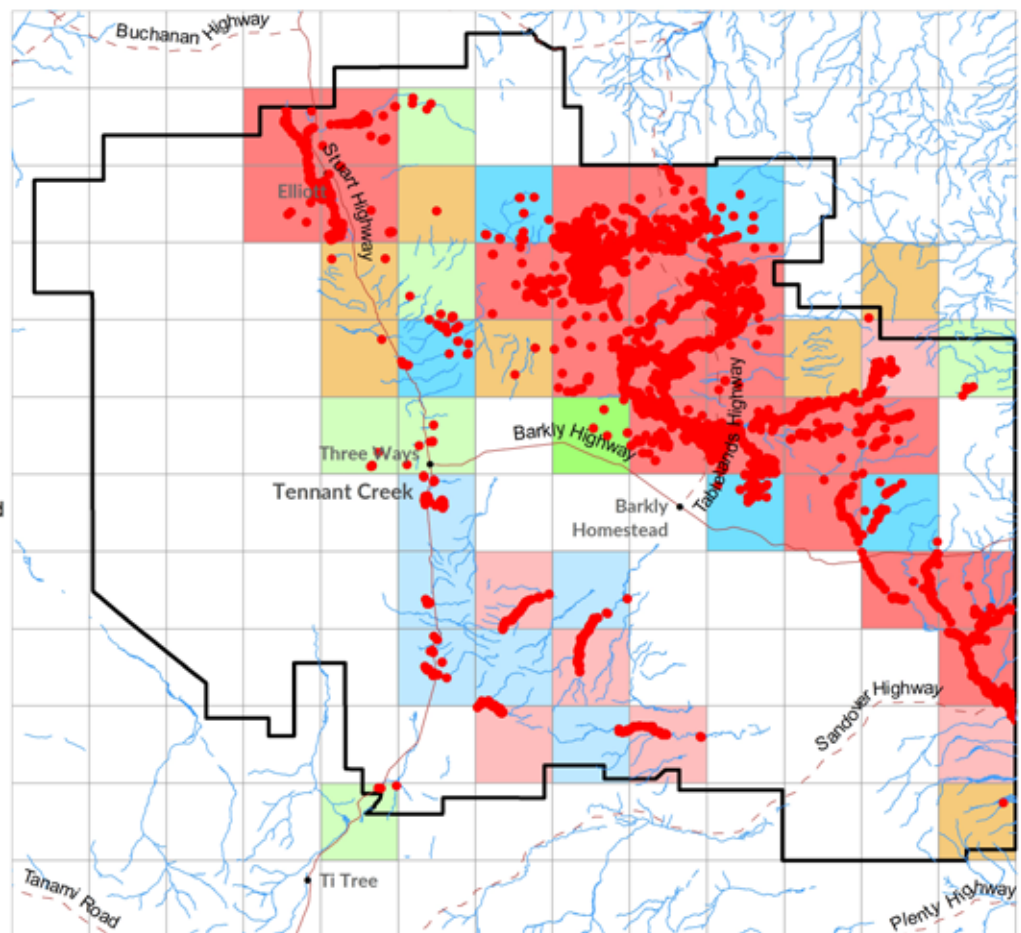
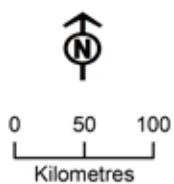


Figure 10. Current and historic records of parkinsonia (*Parkinsonia aculeata*) in the Tennant Creek Region of the Northern Territory (NT Weed Management Branch 2020).



Rubber bush

Legend

- Rubber bush (*Calotropis procera*)
- Region outline
- 50 km Grid

Weed Distribution

- 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

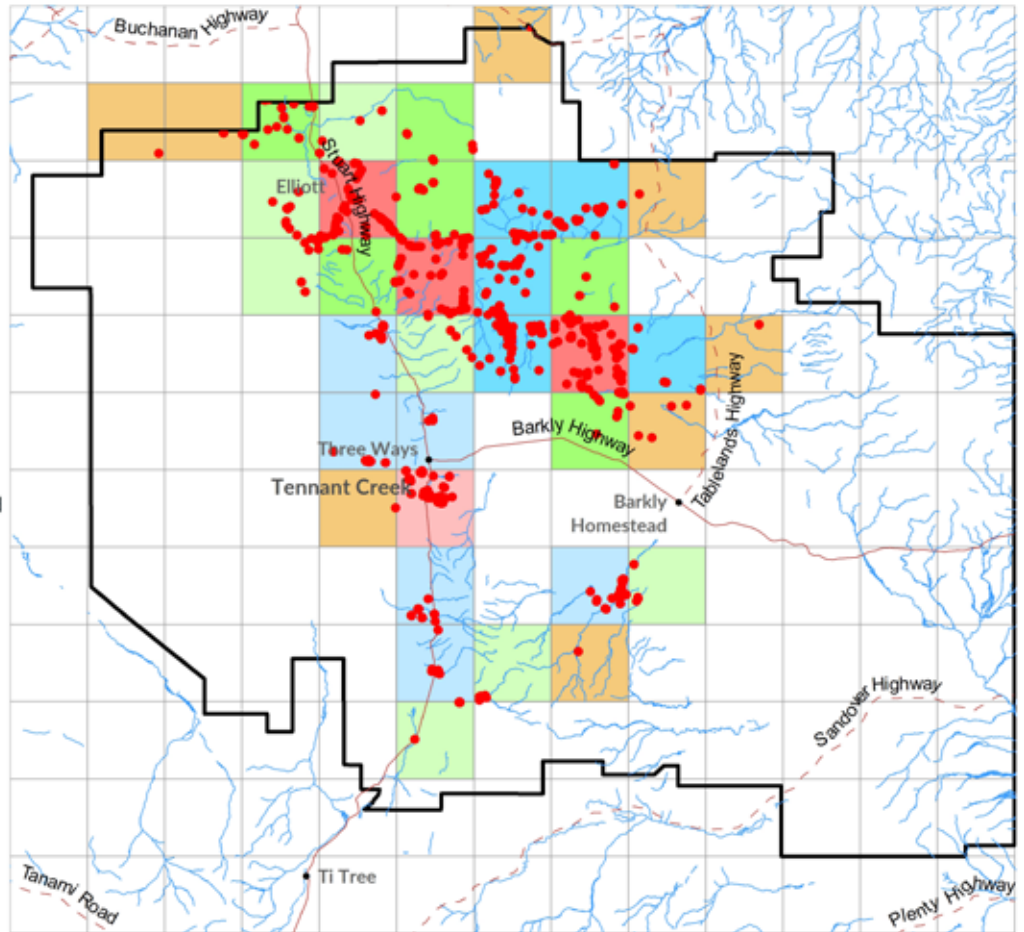
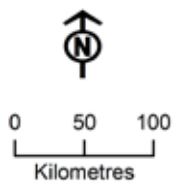


Figure 11. Current and historic records of rubber bush (*Calotropis procera*) in the Tennant Creek region of the Northern Territory (NT Weed Management Branch 2020).



Prickly pear





Rubbervine flower



Coffee senna flower



Contact

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