



Darwin Regional Weeds Strategy

2021-2026

Department of
ENVIRONMENT, PARKS AND WATER SECURITY





Salvinia infestation

Published by the Department of Environment, Parks and Water Security

© Northern Territory Government, 2021

ISBN 978-1-74350-319-5



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Cover photo: Siam weed in flower

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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 Darwin Region covers an area of more than 150,000 km² of the Top End, including the city of Darwin, south to (just north of) Pine Creek, east to Arnhem Land and Nhulunbuy, and west to the Timor Sea. It also incorporates the Tiwi Islands and Groote Eylandt (see Figure 1).

In the Darwin 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 Darwin 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 Darwin Region over the period 2021-2026. It succeeds the Darwin Regional Weed Management Plan 2015-2020.

Aims

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

- Identifying the principal weed threats to the Darwin 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.

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 Weeds Strategy 2017-27, as well as the Northern Territory Biosecurity Strategy 2016-2026. These 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 this 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:

- supporting sustainable economic development;
- fostering and strengthening partnerships;
- 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:

- Effective weed management is a responsibility shared between landholders, community, industry and government.
- Evidence-based decision-making should underpin the approach to weeds.
- Risk-based prevention and early intervention is generally the most cost-effective approach for managing weeds.
- Prioritisation of weed management must be informed by a risk-based approach, considering feasibility, likelihood of success and impact.
- Coordination amongst landholders, community, industry and government is necessary to manage weeds at a landscape scale.
- Sustaining capability and capacity across landholders, community, industry and government is fundamental to effective weed management.
- 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.

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:

- Prevention – minimising the likelihood of entry and establishment of new pests.
- Elimination – detecting, containing and eradicating significant pests.
- 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.



Grader grass

‘Working together’ approach

A ‘working together’ approach is one way of describing the importance of making shared partnerships the central pillar of this 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 in the Darwin Region has been integral to its development. This Strategy also links to the Northern Territory NRM Plan (Top End Region) which provides an overarching direction, scope and prioritisation for natural resource management activities within the Region (see territorynrm.org.au).

Key stakeholders

There are numerous opportunities in the Darwin Region for a wide range of stakeholders to discuss and collaborate on regional priorities and weed management-related topics. For example, a statutory weed advisory committee was formed in 2020 to draft the new Weed Management Plan for Gamba Grass 2020-2030. Targeted consultation for this Strategy was conducted with key stakeholders and a comprehensive list of those with an interest in weed management is presented in the table below.

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

| Key stakeholder group | Name |
|--|--|
| Australian Government | Department of Defence |
| Northern Territory Government | Department of Environment, Parks and Water Security: Weed Management Branch Bushfires NT Flora and Fauna Parks and Wildlife Department of Industry, Tourism and Trade Department of Infrastructure, Planning and Logistics Road Network Crown Land Estate NT Police, Fire & Emergency Services, Fire and Rescue Service |
| Local Government | Local Government Association of the NT City of Darwin City of Palmerston Litchfield Council Coomalie Community Government Council Tiwi Islands Regional Council West Daly Regional Council Victoria Daly Regional Council East Arnhem Regional Council West Arnhem Regional Council Belyuen Community Government Council Wagait Shire Council |
| Aboriginal Land Trust | Northern Land Council Tiwi Land Council Anindilyakwa Land Council Aboriginal Ranger Groups |
| Environment and community | Pew Charitable Trust (Gamba Grass Roots) Environment Centre NT North East Arnhem Region – Weeds Group |
| Landcare / Natural Resource Management | Landcare NT Territory Natural Resource Management (TNRM) |
| Industry | NT Cattlemen’s Association (NTCA) – Top End Branch NT Farmers NT Nursery and Garden Industry |
| Education and research | Charles Darwin University |
| Private landholders | Town and rural block holders |



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 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 eight statutory weed management plans relevant to the Darwin Region:

1. Bellyache bush
2. Cabomba
3. Chinee apple
4. Gamba grass
5. Grader grass
6. Mimosa
7. Neem
8. Prickly acacia

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:

| | |
|----------------|--|
| Bellyache bush | nt.gov.au/bellyachebush |
| Cabomba | nt.gov.au/cabomba |
| Chinee apple | nt.gov.au/chineeapple |
| Gamba grass | nt.gov.au/gamba |
| Grader grass | nt.gov.au/gradergrass |
| Mimosa | nt.gov.au/mimosa |
| Neem | nt.gov.au/neem |
| Prickly acacia | nt.gov.au/pricklyacacia |

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

In 2009 the Australian Government Department of Agriculture, Water and the Environment listed 'Ecosystem degradation, habitat loss and species decline due to invasion of northern Australia by introduced Gamba Grass (*Andropogon gayanus*), Para Grass (*Urochloa mutica*), Olive Hymenachne (*Hymenachne amplexicaulis*), Mission Grass (*Cenchrus polystachios*) and Annual Mission Grass (*Cenchrus pedicellatus*)' as a 'key threatening process' under the EPBC Act. Subsequently, in 2012, a [national threat abatement plan](#) was developed to reduce the impacts on northern Australia's biodiversity by the five listed grasses.

Threat abatement plans describe the research, management, and any other actions necessary to reduce the impact of a listed key threatening process on native species and ecological communities.

Local government by-laws

Some NT local government authorities (e.g. City of Darwin) have by-laws addressing weeds (and other plants) that tend to be enforced to address overgrown, unsightly and hazardous vegetation. Councils may also have site-specific management plans for important areas.



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 Darwin Region have been included in this Strategy; data and maps for other species are available on request. A subset of the weed data can also be viewed online with the NTG's web mapping tool NR Maps (see nrmaps.nt.gov.au).

Special care must be taken when interpreting distribution maps and data. 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 may 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 Australian Weeds Strategy (2017-2027) 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.

Bellyache bush

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.

Outputs from the WRMS, including results for individual species assessments and management matrices (see Appendix A), were used to inform species prioritisation for this Strategy.

The Strategy

The development of this Darwin Regional Weeds 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, this 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

Weed species that are listed as requiring priority management attention within the Region were determined 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 to be the focus for the Darwin Regional Weeds Strategy are listed in Tables 2 and 3, and maps for these species are provided in Appendix B.

Note that some weeds identified as priorities in this Strategy are not listed as declared weeds under the *Weeds Management Act 2001*. This reflects community/scientific expectations and concerns about a range of current and emerging weed threats to the Region not restricted to the declared weed list.

Category 1 – Priority weeds for eradication

These species are (or were) present in the Darwin Region and have been assessed as feasible to eradicate. They are typically evaluated as very high risk and have isolated and restricted distributions.

Table 2: Priority weeds for eradication in the Darwin Region

| Common name | Botanical name | NT Declared class | Weed Risk (NT) |
|----------------|---------------------------------|-------------------|----------------|
| Cabomba | <i>Cabomba caroliniana</i> | A | High |
| Pond Apple | <i>Annona glabra</i> | A | Very high |
| Water hyacinth | <i>Eichhornia crassipes</i> | A | Very high |
| Sagittaria | <i>Sagittaria platyphylla</i> | A | High |
| Rubber vine | <i>Cryptostegia grandiflora</i> | A | Very high |
| Water mimosa | <i>Neptunia plena</i> | A | High |

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

These species warrant strategic control across the landscape due to their high impact on land managers, other economic and environmental values. Typically assessed as very high weed risk. The key for these species is that outlier populations are practical to eradicate, but there are core infestations that are subject to control and containment. They are typically covered by

Table 3. Priority weeds for strategic control (including eradication of outliers)

| Common name | Botanical name | NT Declared class | Weed Risk (NT) |
|-------------------------|--------------------------------------|-------------------|----------------|
| Siam Weed | <i>Chromolaena odorata</i> | C | Very high |
| Mimosa | <i>Mimosa pigra</i> | *A/B | Very high |
| Gamba grass | <i>Andropogon gayanus</i> | *A/B | Very high |
| Ornamental rubber vine | <i>Cryptostegia madagascariensis</i> | A | Very high |
| Bellyache bush | <i>Jatropha gossypifolia</i> | *A/B | Very high |
| Grader grass | <i>Themeda quadrivalis</i> | B | Very high |
| Salvinia | <i>Salvinia molesta</i> | B | Very high |
| Olive hymenachne | <i>Hymenachne amplexicaulis</i> | B | Very high |
| Parkinsonia | <i>Parkinsonia aculeata</i> | B | Very high |
| Perennial mission grass | <i>Cenchrus polystachios</i> | B | Very High |

*Species with zoned declarations (A/B) have zones that reflect the distribution and abundance of the weed and inform strategic management. Local eradication is a higher priority in Zone A, while containment and eradication of outliers is the objective in Zone B.

Category 3 - Weeds of concern

These species have been assessed by the weed risk management system as a medium to very high risk (or have not been assessed) and have been identified by stakeholders as posing a threat to the values of the Darwin 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 basis and to prevent further spread. In some cases there may be local strategies to manage these weeds.

Table 4. Weeds of Concern

| Common name | Botanical name | NT Declared class | Weed Risk (NT) |
|--------------------------|--|-------------------|----------------|
| Cats claw creeper | <i>Dolichandra unguis-cati</i> | A | Not assessed |
| Lantana | <i>Lantana camara</i> | B | Very high |
| Thatch grass | <i>Hyparrhenia rufa</i> | A | High |
| Chinee apple | <i>Ziziphus mauritiana</i> | A | Very high |
| Mesquite | <i>Prosopis</i> spp. | A | Very high |
| Prickly acacia | <i>Vachellia nilotica</i> | A | Very high |
| Annual mission grass | <i>Cenchrus pedicellatus</i> | Not declared | Very high |
| Giant rats tail grass | <i>Sporobolus pyramidalis</i> | Not declared | High |
| American rats tail grass | <i>Sporobolus jacquemontii</i> | Not declared | High |
| Coffee bush ¹ | <i>Leucaena leucocephala</i> | Not declared | Very high |
| Para grass ² | <i>Urochloa mutica</i> | Not declared | Very high |
| Tully grass | <i>Urochloa humidicola</i> | Not declared | Very high |
| Guinea grass | <i>Megathyrus maximus</i> | Not declared | Very high |
| Neem | <i>Azadirachta indica</i> | B | Very high |
| Curry bush | <i>Murraya koenigii</i> | Not declared | Not assessed |
| Ochna | <i>Ochna integerrima</i> , <i>O. serrulata</i> | Not declared | Not assessed |
| Ivy gourd ³ | <i>Coccinea grandis</i> | Not declared | Not assessed |
| African mahogany | <i>Khaya senegalensis</i> | Not declared | Medium |

¹ Coffee bush, or leucaena, is increasing in popularity as a fodder species. If left ungrazed or unmanaged, leucaena has the potential to form dense thickets which can be difficult and time-consuming to eradicate. A producer group, the Leucaena Network, is currently revising its Best Management Code of Practice for the establishment and management of leucaena pastures.

² Although not a declared weed in the Northern Territory, para grass is one of five invasive pasture grasses listed as a key threatening process by the Australian Government and is subject to a national threat abatement plan (see p7).

³ Ivy gourd is considered to be native to East Arnhem Land by the NT Herbarium and introduced elsewhere in the NT. It is cultivated as a vegetable from SE Asia in local gardens and has escaped around urban and periurban areas in the Darwin region. It has the potential to invade other areas (e.g. Kakadu National Park).



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.

Table 5: Hygiene and biosecurity weeds in the Darwin Region

| Common name | Botanical name | NT Declared class | Weed Risk (NT) |
|-----------------------|--|-------------------|----------------|
| Hyptis | <i>Mesosphaerum suaveolens</i> | B | High |
| Sida | <i>Sida</i> sp. | B | High |
| Snake weed | <i>Stachytarpheta</i> spp. | B | Not assessed |
| Coffee senna | <i>Senna occidentalis</i> | B | Not assessed |
| Mossman River grass | <i>Cenchrus echinatus</i> | B | Medium |
| Sickle pod | <i>Senna obtusifolia</i> | B | Very high |
| Candle bush | <i>Senna alata</i> | B | Low |
| Noogoora burr | <i>Xanthium strumarium</i> or <i>Xanthium occidentale</i> | B | High |
| Sesame | <i>Sesamum orientale</i> | Not declared | Not assessed |
| Barleria | <i>Barleria prionitis</i> | A | Low |
| Water hyssop | <i>Bacopa caroliniana</i> | Not declared | Low |
| Prickly pears | <i>Opuntia</i> spp. | A | Very high |
| Lions tail | <i>Leonotis nepetifolia</i> | B | Medium |
| Poinciana | <i>Delonix regia</i> | Not declared | Low |
| Fringed spider flower | <i>Cleome aculeata</i> | Not declared | Low |
| Panicle joint-vetch | <i>Aeschynomene paniculata</i> | Not declared | Low |

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 Darwin Region for eradication on detection

| Common name | Botanical name | NT Declared class | Weed Risk (NT) |
|-----------------|---------------------------------|-------------------|----------------|
| Limnocharis | <i>Limnocharis flava</i> | C | Very high |
| Parthenium weed | <i>Parthenium hysterophorus</i> | A | Very high |
| Amazon frogbit | <i>Limnobium laevigatum</i> | C | High |



Gamba grass

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 conservation¹
- 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 ¹ e.g. Finnis River Coastal floodplain, Anson Bay and associated coastal flood plains, Daly River middle reaches. | Biodiversity Tourism Recreational users Pastoral Cultural | Category 1, 2 and 3 weeds |
| Water courses including Daly River, Mary River and Goyder River | Biodiversity Tourism Recreational users Pastoral Cultural | Category 1 and 2 weeds |
| Key sites of community value | Kakadu National Park NT Parks and Reserves (e.g. Litchfield National Park) Arnhem land Darwin rural area | Grassy weeds including gamba grass and grader grass |

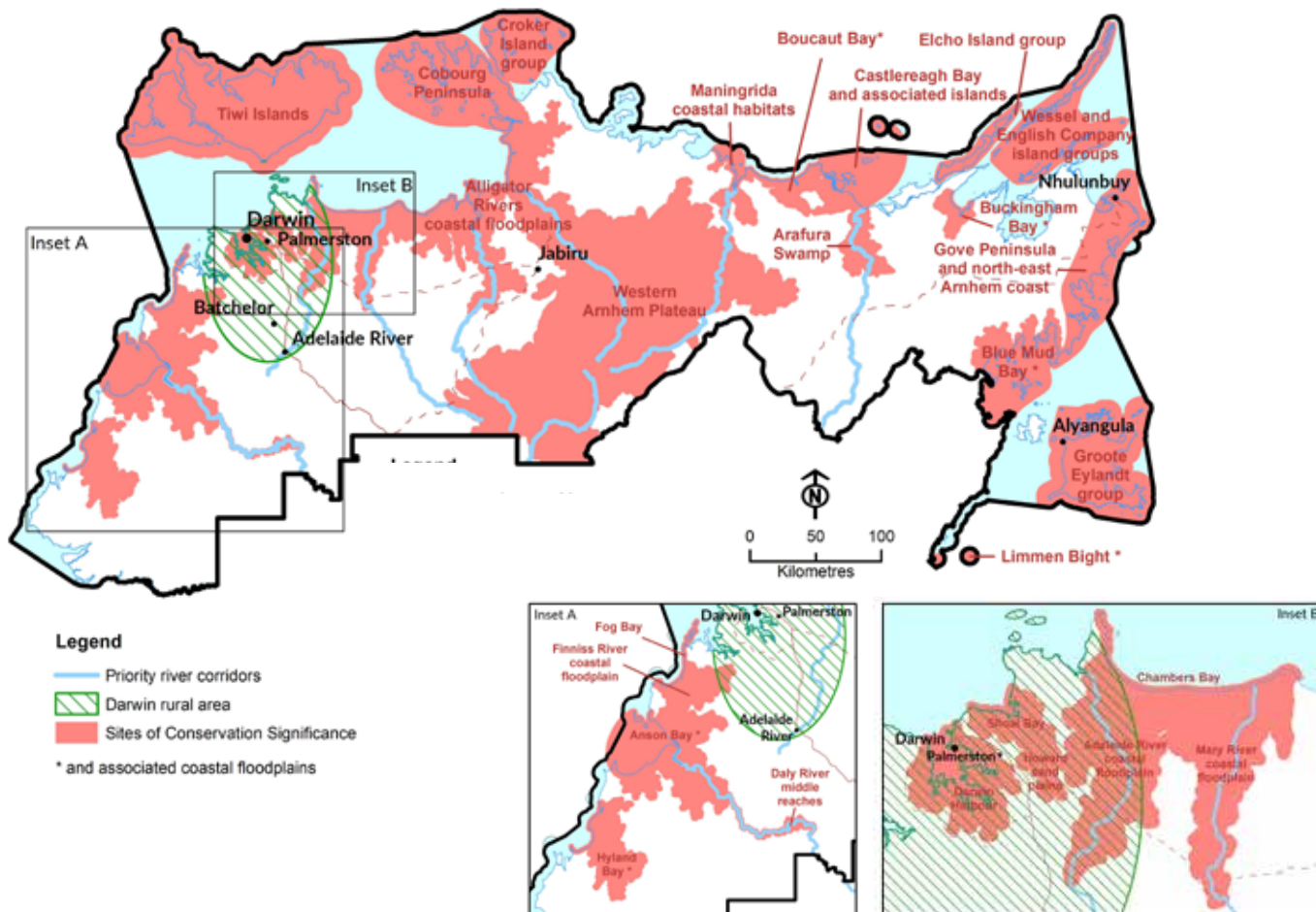


Figure 2. Priority Landscape Areas – including sites of conservation significance, water courses and the Darwin rural area.

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 (<https://territorystories.nt.gov.au/10070/622060/0/0>).



Priority pathways of spread

Following consultation with a wide range of government, non-government and industry bodies, the Northern Territory Weed Management Branch prepared extension material to assist with the strategic mitigation of weed spread. The resulting document 'Preventing weed spread is everybody's business' is available for download here: territorystories.nt.gov.au/10070/265425. The document lists the main pathways of spread in the Northern Territory and was informed by regional weed management plans, including the previous version of this Strategy.

The pathways for spread that require priority management attention in the Region (Table 8, Figure 3) were considered in line with the following factors:

- physical characteristics of weeds that are likely to be transported by human or natural means
- which weeds are most likely to be transported into or within the Darwin Region
- human activities most likely to spread weeds
- 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 and gulf coastline | Wind, water, fire, and ocean currents | Rubber vine, mimosa, gamba grass, Siam weed |
| Native or feral animals | River corridors | Feral and native animal movement | Siam weed, mimosa |
| Land use and development | Mining and exploration areas | Construction and maintenance of mines and access roads, including land clearing, slashing and grading | Grader grass, thatch grass All category 4 weeds |
| | Gas pipeline | Maintenance activities | Gamba grass, grader grass |
| | Rail corridors | Maintenance activities | Gamba grass, grader grass |
| | Pastoral holdings | Cattle, hay and contractors | Mimosa, Siam weed, gamba grass, parthenium weed |
| | Roads | Construction and maintenance, such as slashing and grading, 4WD tourism, livestock, and fodder haulage | Gamba grass, grader grass, thatch grass |
| Tourism | Accidental | Camping, recreation activities | Parthenium weed, mimosa, grader grass |
| Use by industry | Nursery industry Garden plants Pasture introductions | Deliberate plantings, garden plants | Cacti, bellyache bush, ornamental rubber vine, ochna, water hyacinth, sagittaria, pasture grasses |

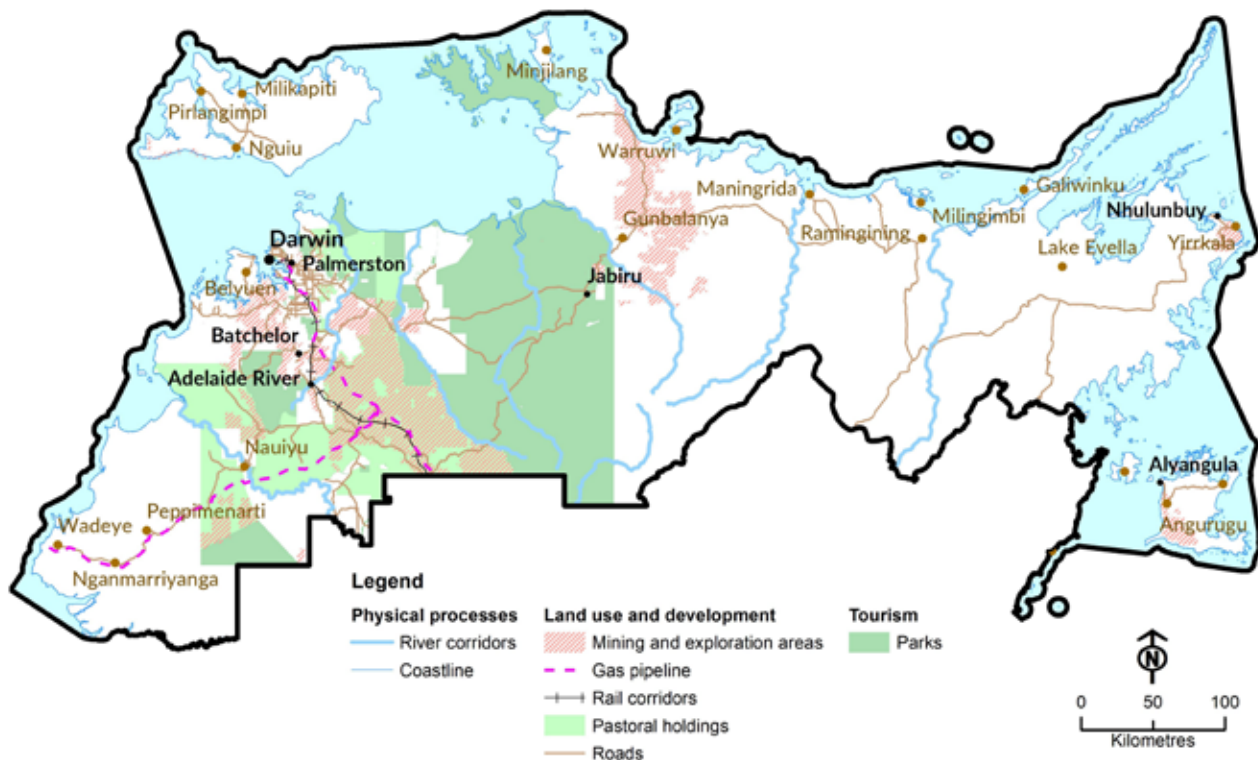


Figure 3. Priority pathways for the mitigation of weed spread in the Darwin Weed Management Region.





Mimosa flea beetle

Objectives and actions

The following six objectives in this 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 |
|---|---|---|-----------------------|-------------------------------|------------------|------------|---------------------------|--|----------|------------------------|--------------------|------------|
| | | | | | | | | | | | | |
| Cabomba | Continue with monitoring phase of eradication program | Lok Landji (Darwin River) | | | | | | | | | | 2027 |
| Pond apple | Continue eradication and monitoring program | Darwin rural area, historic plantings in remote communities | | | | | | | | | | ongoing |
| Water mimosa | Continue eradication and monitoring program | Darwin rural area, Nhulunbuy Town Lagoon | | | | | | | | | | ongoing |
| All category 1 priority weeds for eradication | Education and awareness | All NT | | | | | | | | | | ongoing |
| | Report suspect sightings | All NT | | | | | | | | | | ongoing |



Objective 2: To make progress towards the control and containment 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 |
|---|---|--|-----------------------|-------------------------------|------------------|------------|---------------------------|--|----------|------------------------|--------------------|------------|
| | | | | | | | | | | | | |
| Siam weed | Control, survey and monitor satellite infestation aiming for local eradication | Daly/Reynolds catchments | | | | | | | | | | 2031 |
| | Survey, control and monitoring; Refine / develop effective control methods; Implement biological control | Core infestation in Daly / Reynolds catchment | | | | | | | | | | ongoing |
| | Surveillance; Education and awareness; Report suspect sightings. | Other parts of the NT climatically suitable for Siam weed (>1000 mm annual rainfall) | | | | | | | | | | ongoing |
| Gamba grass | Eradicate and monitor outliers | Gamba grass Zone A, roadsides | | | | | | | | | | 2023 |
| | Statutory weed management plan education and compliance | Gamba grass Zone B; Periurban areas | | | | | | | | | | ongoing |
| | Gamba Action Program (GAP) and related programs | Gamba grass Zone B; Periurban areas | | | | | | | | | | ongoing |
| Mimosa | Control and monitor outlier infestations prior to seeding; Redistribute biological control agents | Mimosa Zone A; Kakadu; Arnhemland | | | | | | | | | | ongoing |
| | Contain core infestations, control and monitor outliers | Mimosa Zone B | | | | | | | | | | ongoing |
| Bellyache bush | Contain core infestations, control and monitor outliers | Bellyache bush Zone A | | | | | | | | | | ongoing |
| | Implement new biological control agent when available (leaf miner) | Bellyache bush Zone B | | | | | | | | | | 2025 |
| Salvinia | Surveillance for salvinia in clean areas; respond to new reports | Mary River Catchment (e.g. Corroboree Billabong) | | | | | | | | | | ongoing |
| | Improve condition of key waterways using chemical and biological control in priority areas; monitor; | Kakadu; Palmerston Lakes | | | | | | | | | | ongoing |
| All category 2 priority weeds for strategic control | Contain core infestations; eradicate outliers; compliance action; educate community; report suspect sightings | Darwin Weed Management Region | | | | | | | | | | ongoing |

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 | Landscape 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 | | | | | | | | | | | | 2022 |
| Develop and adopt a code of practice for weed spread prevention | | | | | | | | | | | | 2023 |
| 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 | | | | | | | | | | | | 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 | BRWRG | Weed Management Branch | Northern Territory Government | Local Government | Pastoral industry | NT Farmers | Indigenous groups | Landscape 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 | | | | | | | | | | | | ongoing |
| 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 | | | | | | | | | | | | 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 | | | | | | | | | | | | 2025 |



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 | | | | | | | | | | | | 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 | | | | | | | | | | | | 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 | | | | | | | | | | | | ongoing |
| 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. Weed Risk Management Matrix (Darwin Region)

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 (DARWIN WEED MANAGEMENT REGION) | |
|---------------------------|-----------|--|---|
| | | HIGH - VERY HIGH | LOW - MEDIUM |
| WEED RISK ASSESSMENT (NT) | VERY HIGH | A: Prevent entry; Contain regional spread; Regional eradication; Protect priority sites Lantana (<i>Lantana camara</i>) Rubber vine (<i>Cryptostegia grandiflora</i>) *Prickly acacia (<i>Vachellia nilotica</i>) *Mesquite (<i>Prosopis</i> spp.) Siam weed (<i>Chromolaena odorata</i>) Amazon frogbit (<i>Limnobium laevigatum</i>) Parkinsonia (<i>Parkinsonia aculeata</i>) Water hyacinth (<i>Eichhornia crassipes</i>) Parthenium (<i>Parthenium hysterophorus</i>) Ornamental rubber vine (<i>C. madagascariensis</i>) Chinese apple (<i>Ziziphus mauritiana</i>) Bitter melon (<i>Momordica charantia</i>) Pond apple (<i>Annona glabra</i>) **Cat's claw creeper (<i>Dolichandra unguis-cati</i>) **Alligator weed (<i>Alternanthera philoxeroides</i>) | B: Targeted control (inc. Biocontrol); Protect priority sites Coffee bush (<i>Leucaena leucocephala</i>) Gamba grass (<i>Andropogon gayanus</i>) Prickly pears (<i>Opuntia</i> spp.) Perennial mission grass (<i>Cenchrus polystachios</i>) Mimosa (<i>Mimosa pigra</i>) Para grass (<i>Urochloa mutica</i>) Guinea grass (<i>Megathyrus maximus</i>) Neem tree (<i>Azadirachta indica</i>) Tully grass (<i>Urochloa humidicola</i>) Salvinia molesta (<i>Salvinia molesta</i>) Bellyache bush (<i>Jatropha gossypifolia</i>) Olive Hymenachne (<i>Hymenachne amplexicaulis</i>) Sicklepod (<i>Senna obtusifolia</i>) Grader grass (<i>Themeda quadrivalvis</i>) Annual mission grass (<i>Cenchrus pedicellatus</i>) |
| | HIGH | C. Prevent entry; Contain regional spread; Protect priority sites Sagittaria (<i>Sagittaria platyphylla</i>) Thatch grass (<i>Hyparrhenia rufa</i>) Cabomba (<i>Cabomba caroliniana</i>) Water mimosa (<i>Neptunia plena</i> , <i>N. oleracea</i>) Parrots feather (<i>Myriophyllum aquaticum</i>) Castor oil plant (<i>Ricinus communis</i>) | D. Targeted control; Improve general weed management; Monitor; Protect priority sites Noogoora burr (<i>Xanthium occidentale</i>) Giant rats tail grass (<i>Sporobolus natalensis</i> , <i>S. pyramidalis</i>) Hyptis (<i>Mesosphaerum suaveolens</i>) Rubber bush (<i>Calotropis procera</i>) Sida (<i>Sida acuta</i> , <i>S. cordifolia</i> , <i>S. rhomboidea</i>) Devils Claw (<i>Martynia annua</i>) **Curry bush (<i>Murraya koenigii</i>) |
| | MEDIUM | E. Targeted control Giant reed (<i>Arundo donax</i>) Cutch tree (<i>Senegalia catechu</i>) Candlenut (<i>Aleurites molluccana</i>) Lions Tail (<i>Leonotis nepetifolia</i>) Singapore daisy (<i>Sphagneticola trilobata</i>) Acacia mangium (<i>Acacia mangium</i>) Creeping lantana (<i>Lantana montevidensis</i>) Spigelia (<i>Spigelia anthelmia</i>) Mother-of-Millions (<i>Bryophyllum houghtonii</i>) | F. Improve general weed management Coral Vine (<i>Antigonon leptopus</i>) Mossman River grass (<i>Cenchrus echinatus</i>) African mahogany (<i>Khaya senegalensis</i>) Knob weed (<i>Hyptis capitata</i>) **Rangoon creeper (<i>Quisqualis indicus</i>) **Ivy gourd (<i>Coccinea grandis</i>) **Itch grass (<i>Rottboellia cochinchinensis</i>) **Ochna (<i>Ochna integerrima</i>) **Snakeweed (<i>Stachytarpheta</i> spp.) |
| | LOW | G. Assist interested parties; Monitor Caltrop (<i>Tribulus terrestris</i> and <i>T. cistoides</i>) Star burr (<i>Acanthospermum hispidum</i>) Candle Bush (<i>Senna alata</i>) Molasses grass (<i>Melinis minutiflora</i>) Water Hyssop (<i>Bacopa caroliniana</i>) African tulip tree (<i>Spathodea campanulata</i>) Barleria (<i>Barleria prionitis</i>) Indian Rosewood (<i>Dalbergia sissoo</i>) Fishtail palm (<i>Caryota mitis</i>) Poinciana (<i>Delonix regia</i>) Pannicle joint vetch (<i>Aeschynomene paniculata</i>) Mother-in-Laws Tongue (<i>Sansevieria trifasciata</i>) Erect spiderling (<i>Boerhavia erecta</i>) Siamese Cassia (<i>Senna siamea</i>) Golden Rain Tree (<i>Cassia fistula</i>) Spider flower (<i>Cleome aculeata</i>) | H. Assist interested parties Khaki weed (<i>Alternanthera pungens</i>) Sabi grass (<i>Urochloa mosambicensis</i>) Gambia pea (<i>Crotalaria goreensis</i>) Cavalcade (<i>Centrosema pascuorum</i>) |

*Feasibility of control has been estimated for the Darwin Weed Management Region

**Weed risk and feasibility of control have not been formally assessed and have been estimated.

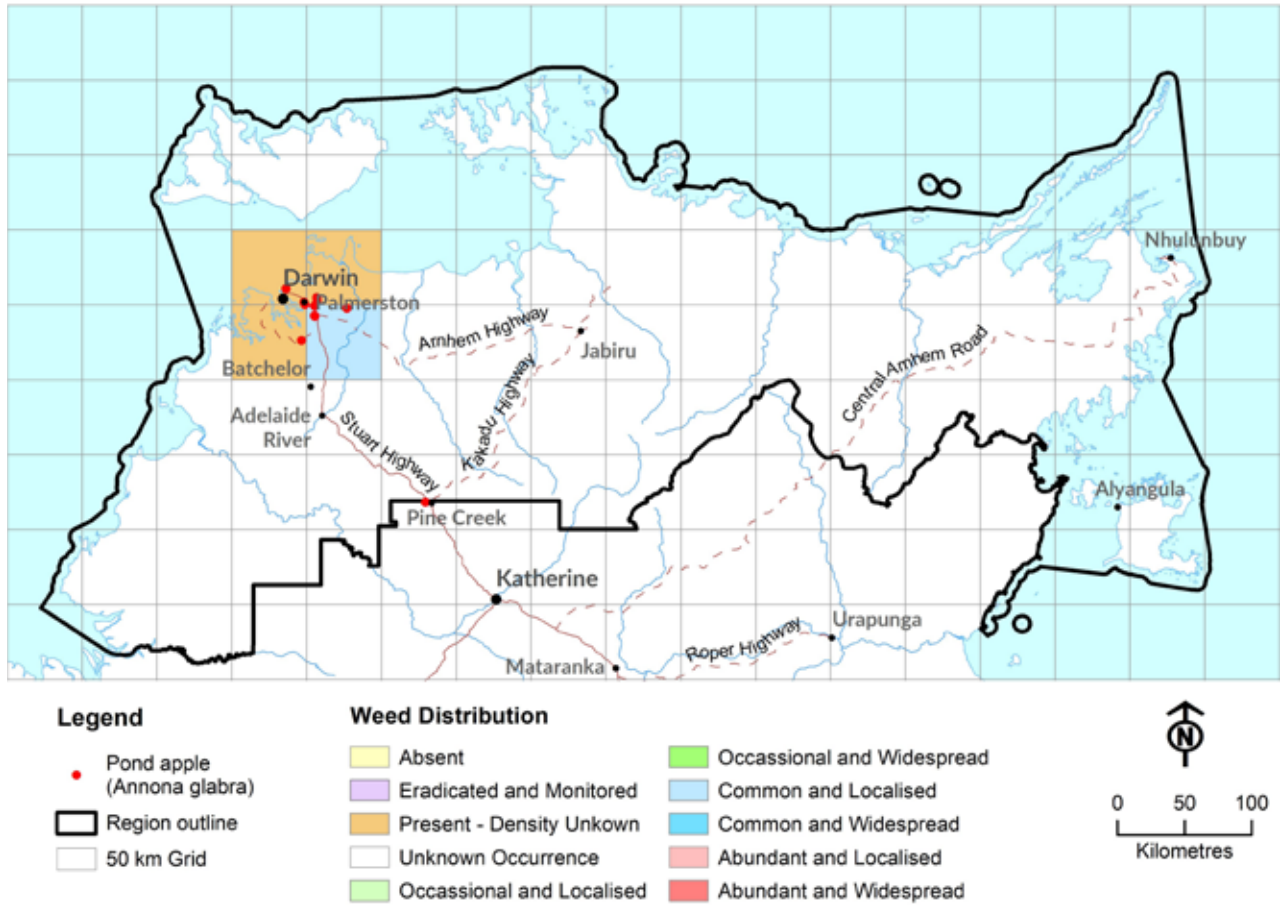




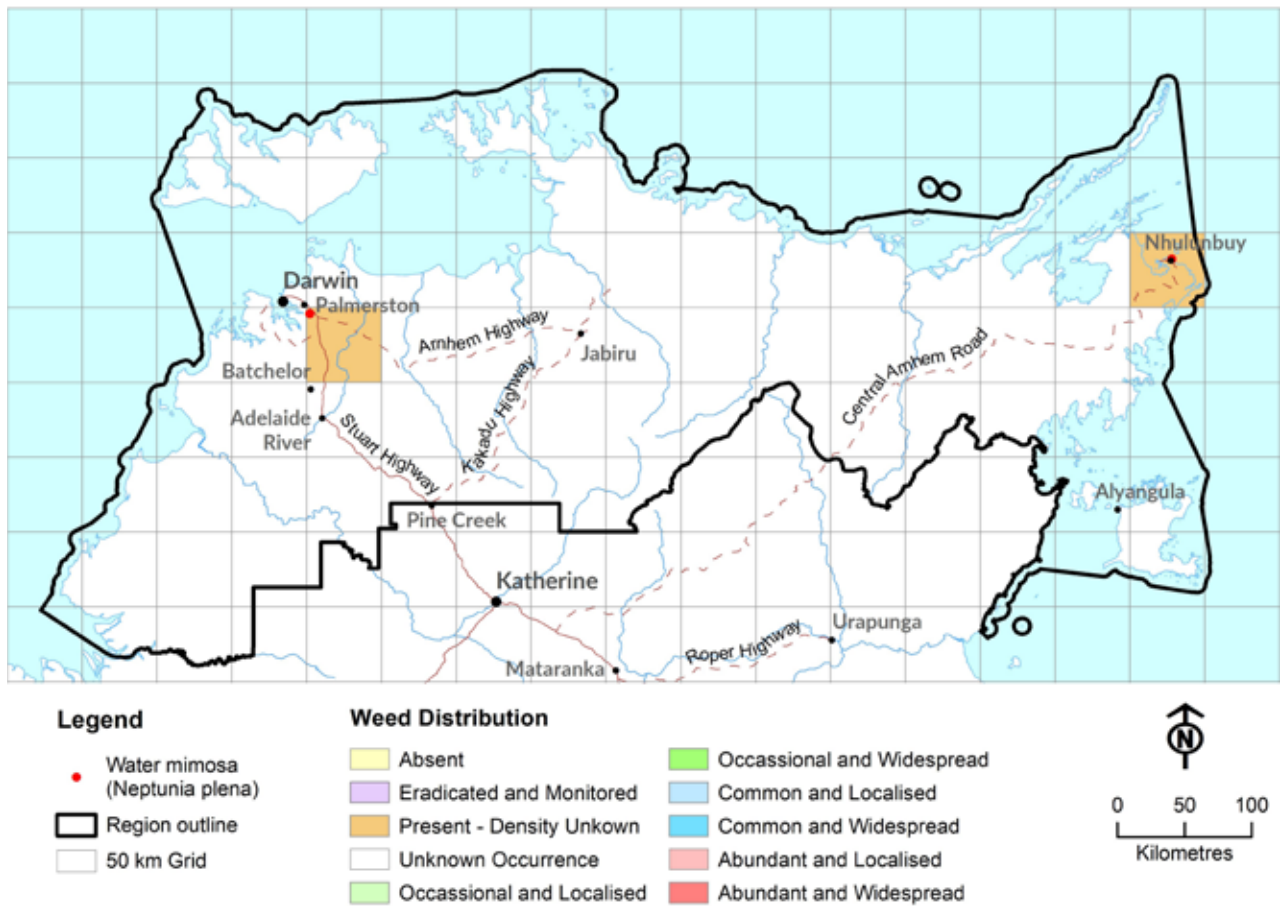
Cabomba C. 2005

Appendix B: Priority Weeds Distribution Maps

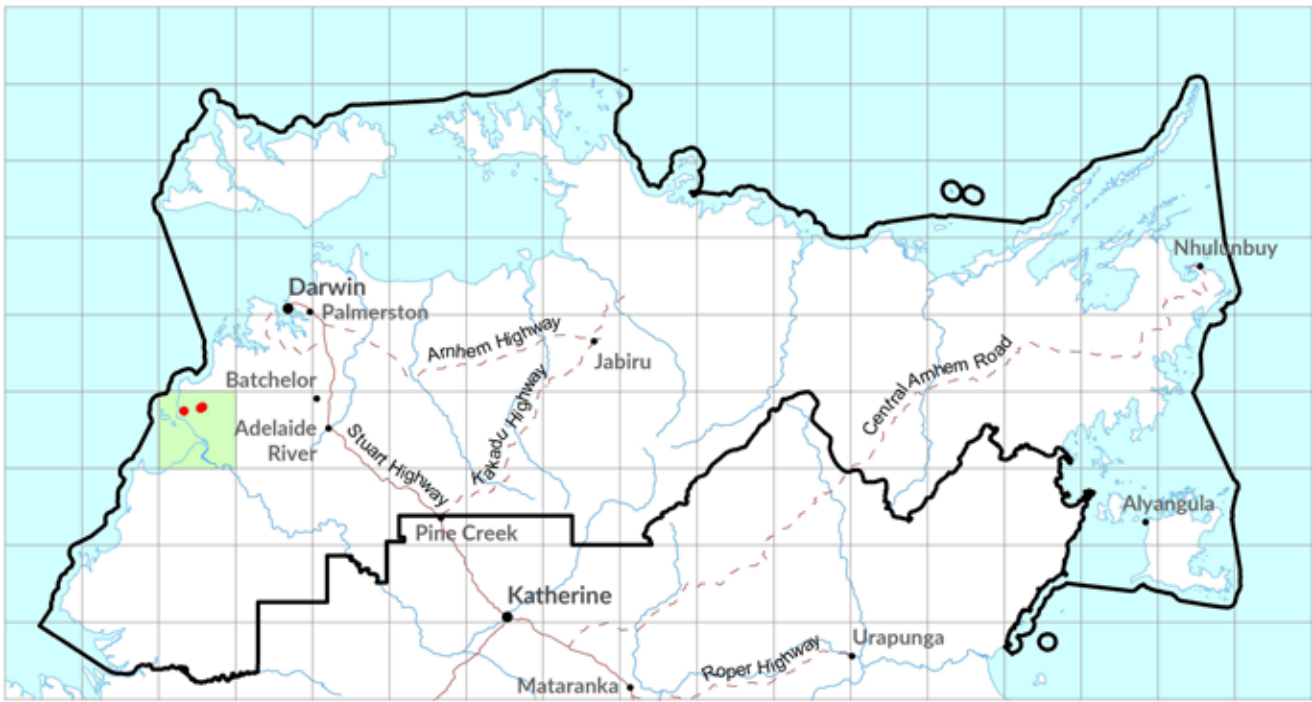
Category 1: Priority weed for eradication – Pond apple



Category 1: Priority weed for eradication – Water mimosa



Category 2: Priority weed for strategic control – Siam Weed

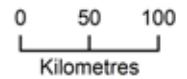


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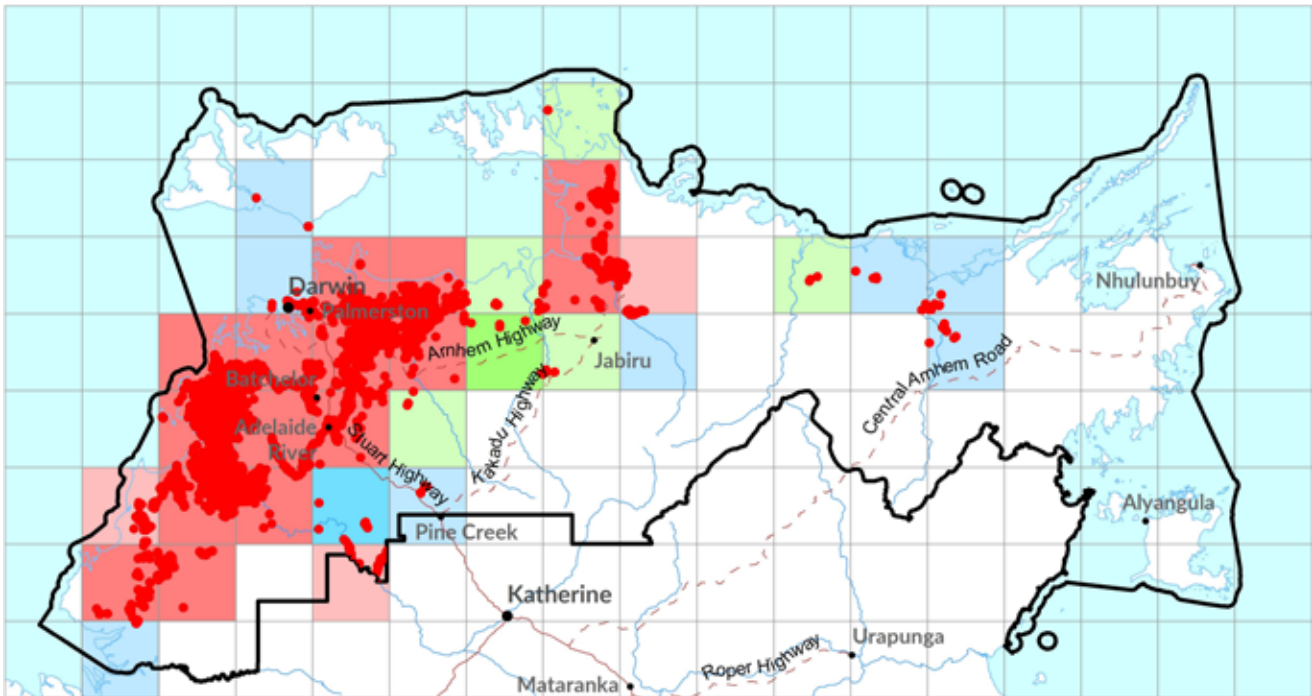
- Siam weed (*Chromolaena odorata*)
- ▭ Region outline
- 50 km Grid

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



Category 2: Priority weed for strategic control – Mimosa

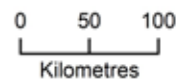


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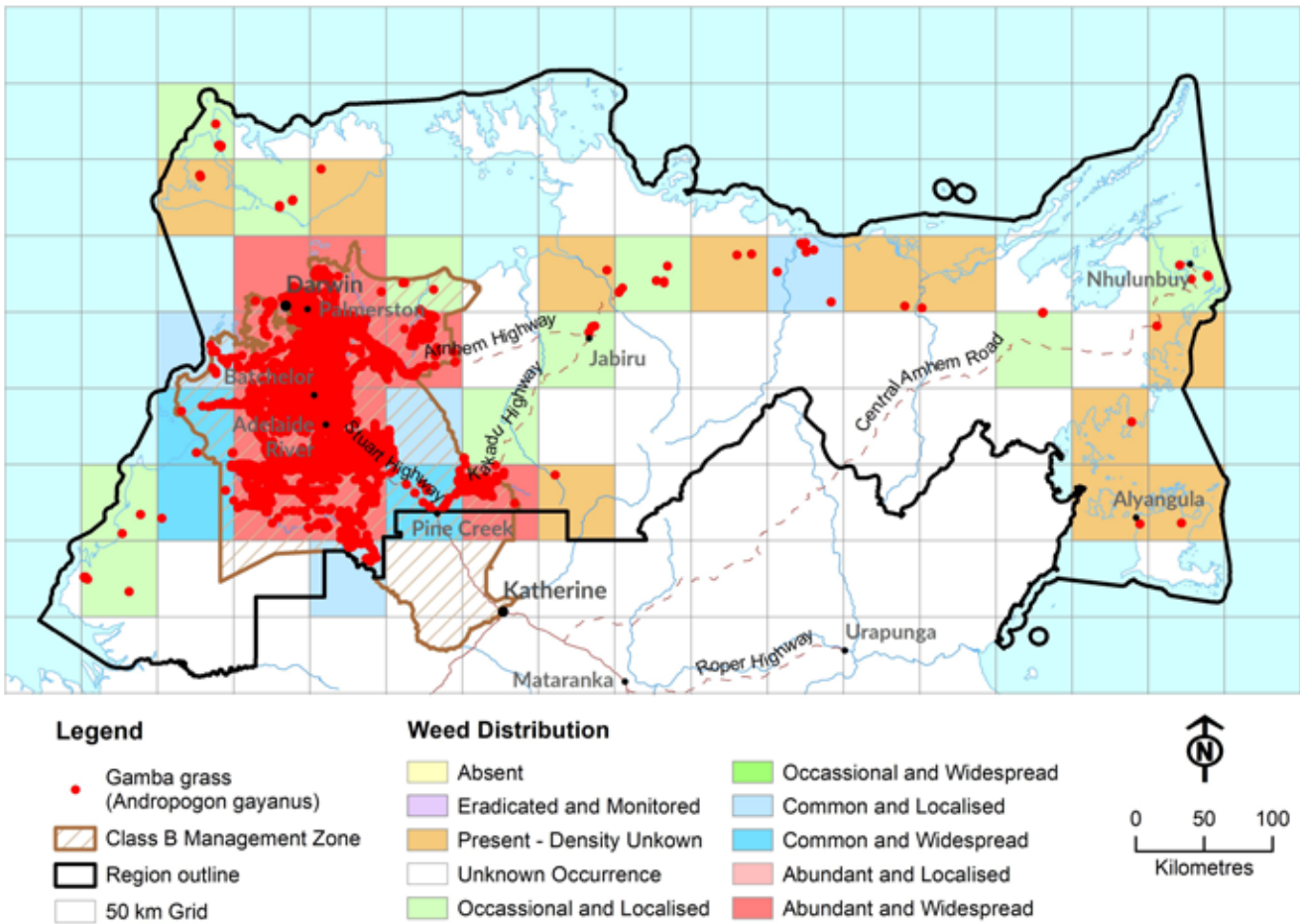
- Mimosa (*Mimosa pigra*)
- ▭ Region outline
- 50 km Grid

Weed Distribution

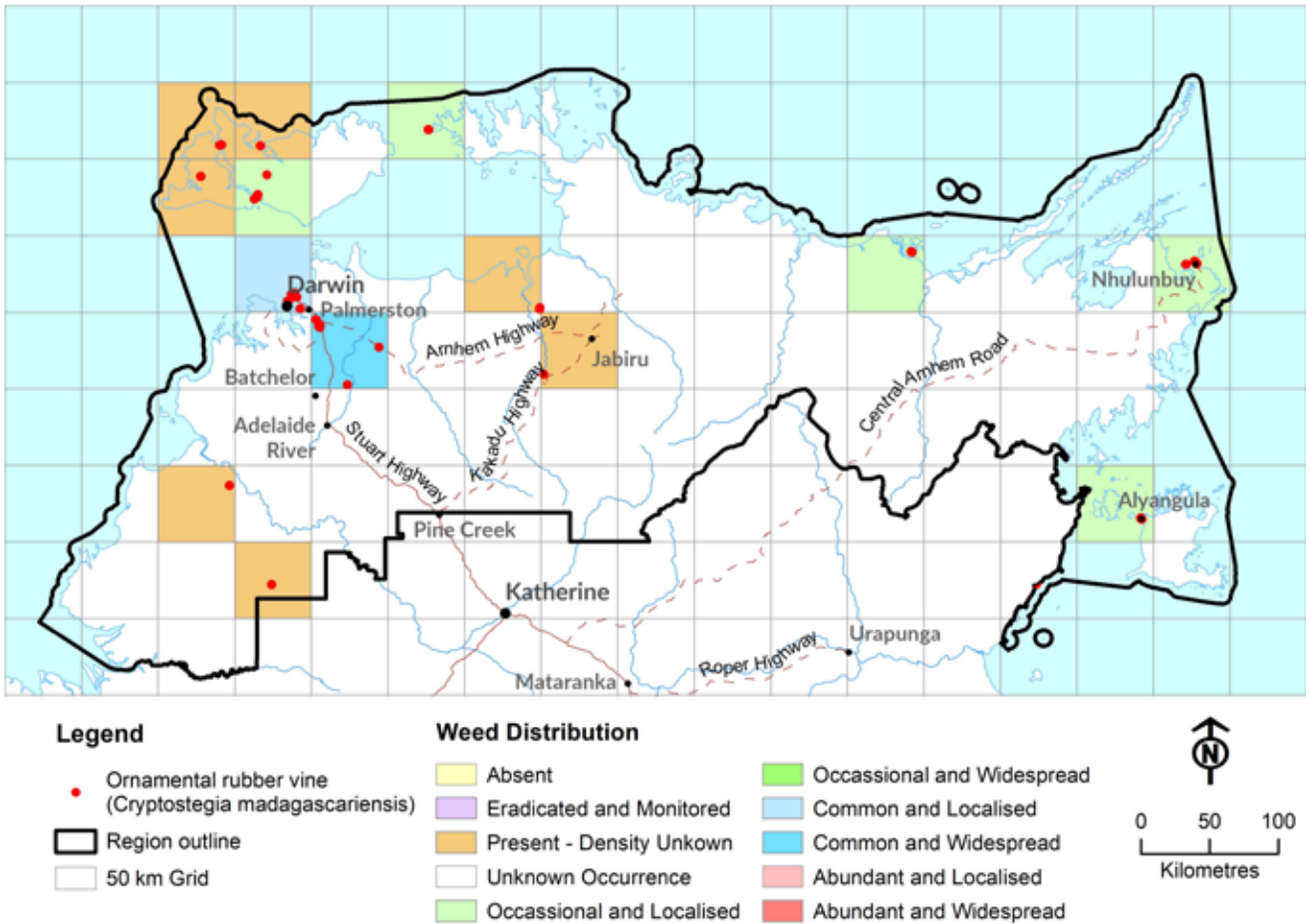
- ▭ Absent
- ▭ Eradicated and Monitored
- ▭ Present - Density Unknown
- ▭ Unknown Occurrence
- ▭ Occasional and Localised
- ▭ Occasional and Widespread
- ▭ Common and Localised
- ▭ Common and Widespread
- ▭ Abundant and Localised
- ▭ Abundant and Widespread



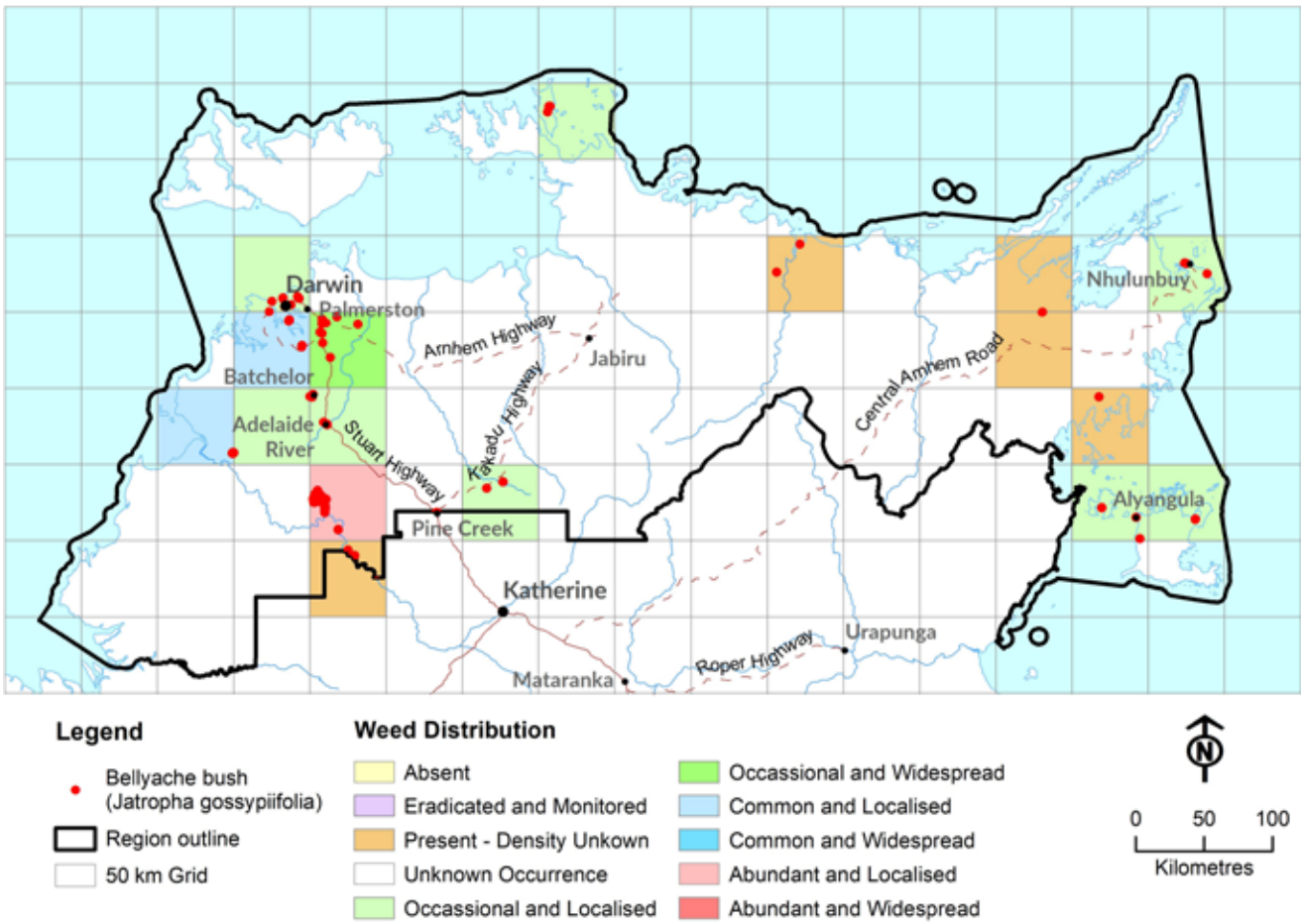
Category 2: Priority weed for strategic control – Gamba grass



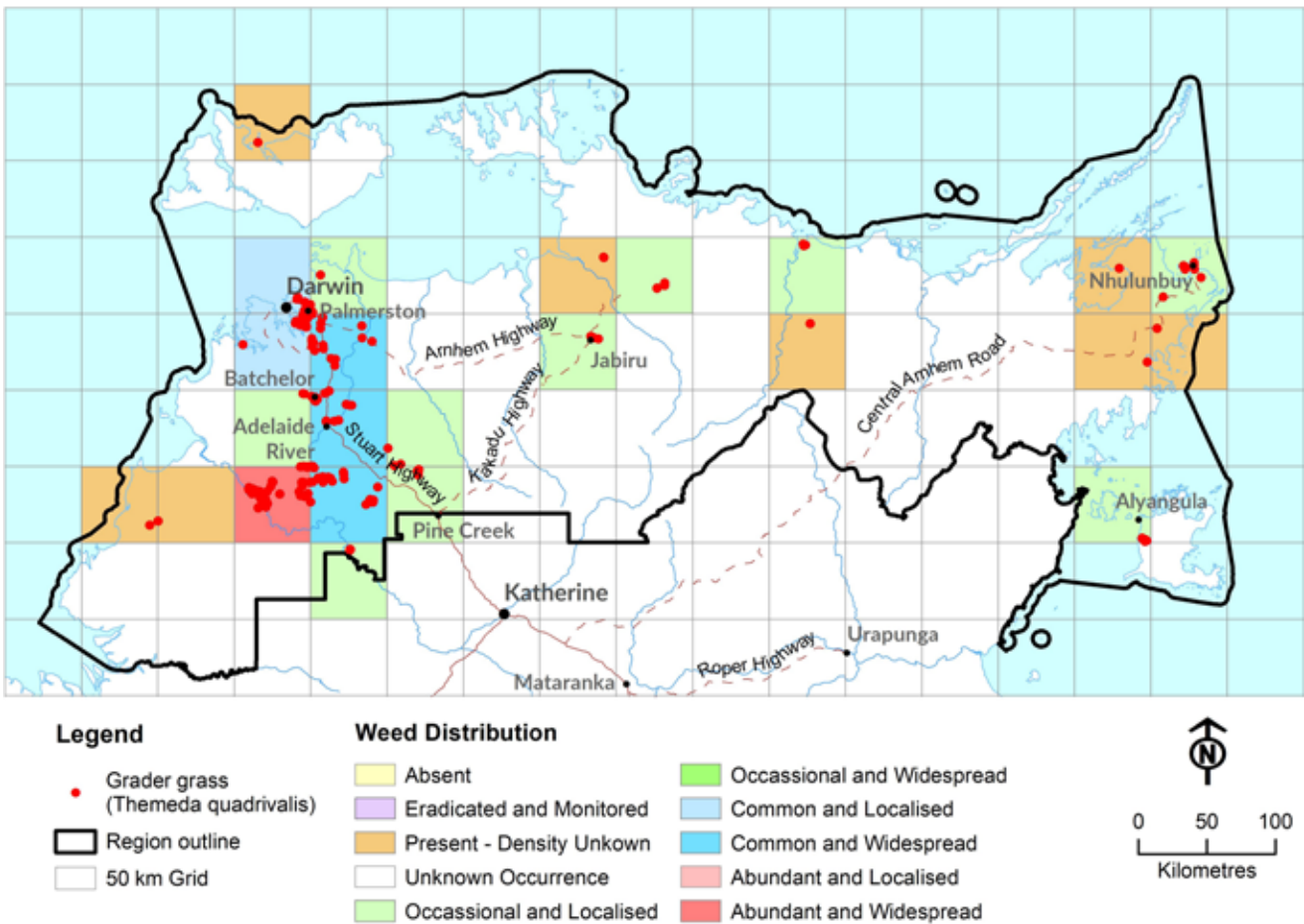
Category 2: Priority weed for strategic control – Ornamental rubber vine



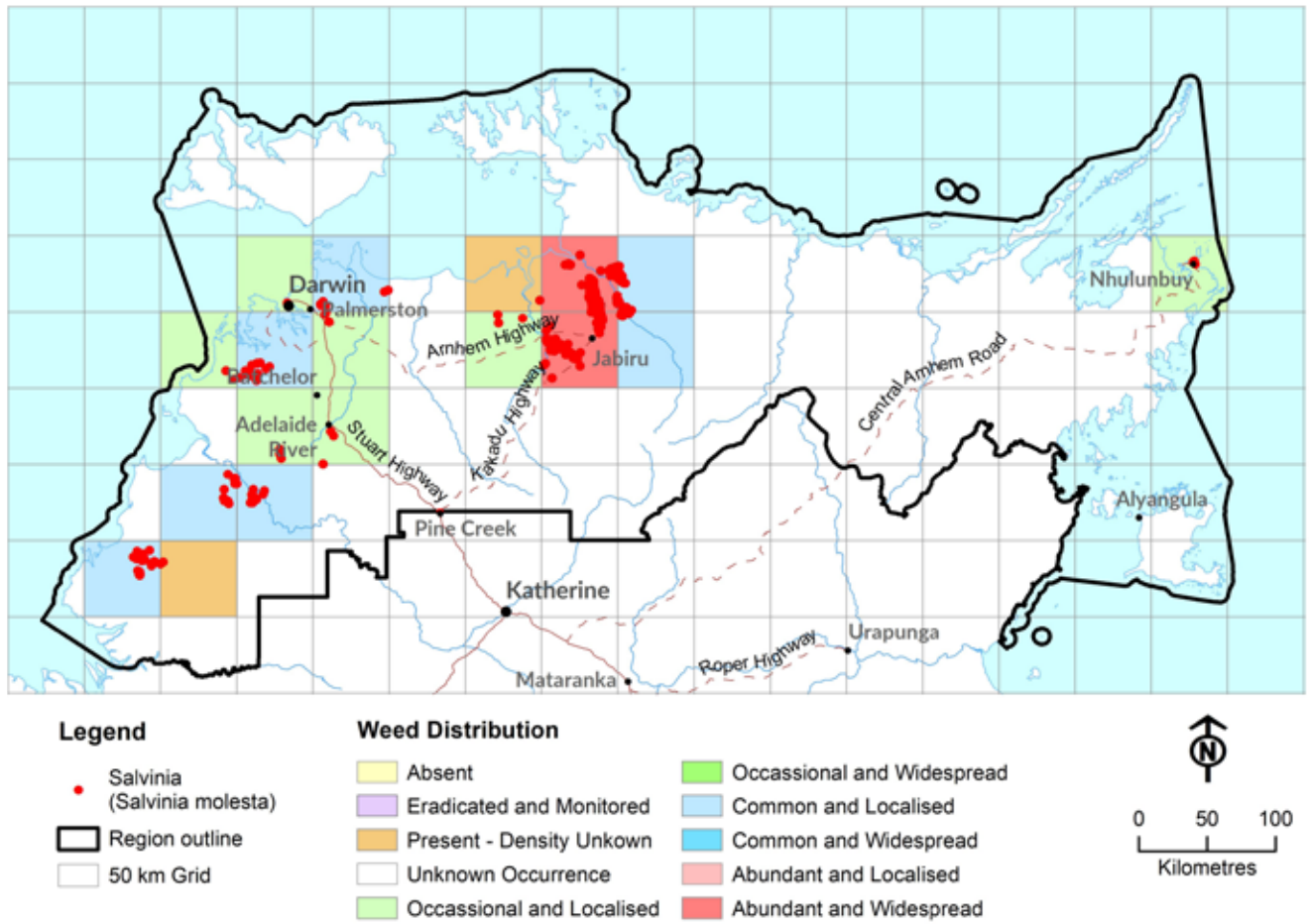
Category 2: Priority weed for strategic control – Bellyache bush



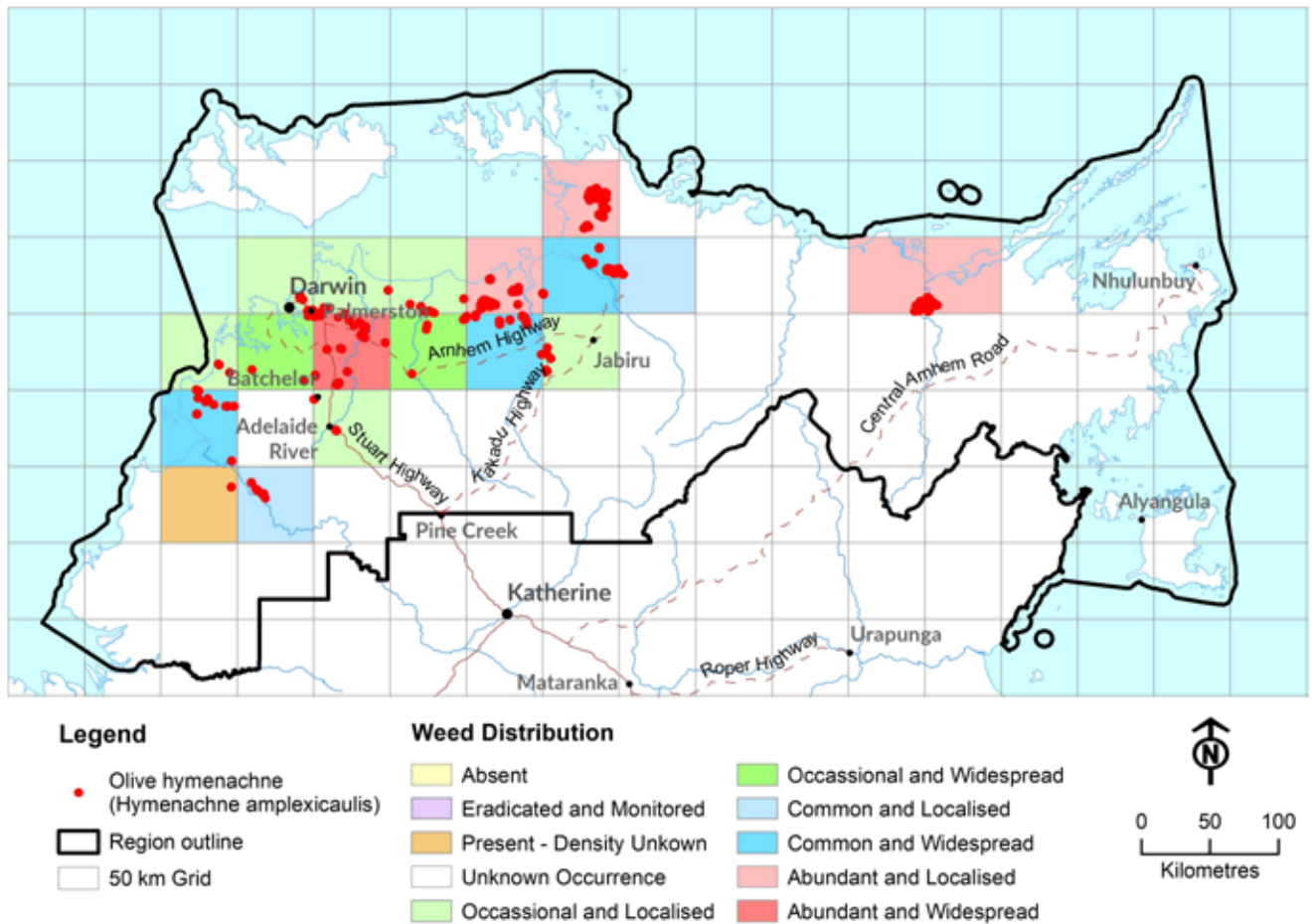
Category 2: Priority weed for strategic control – Grader grass



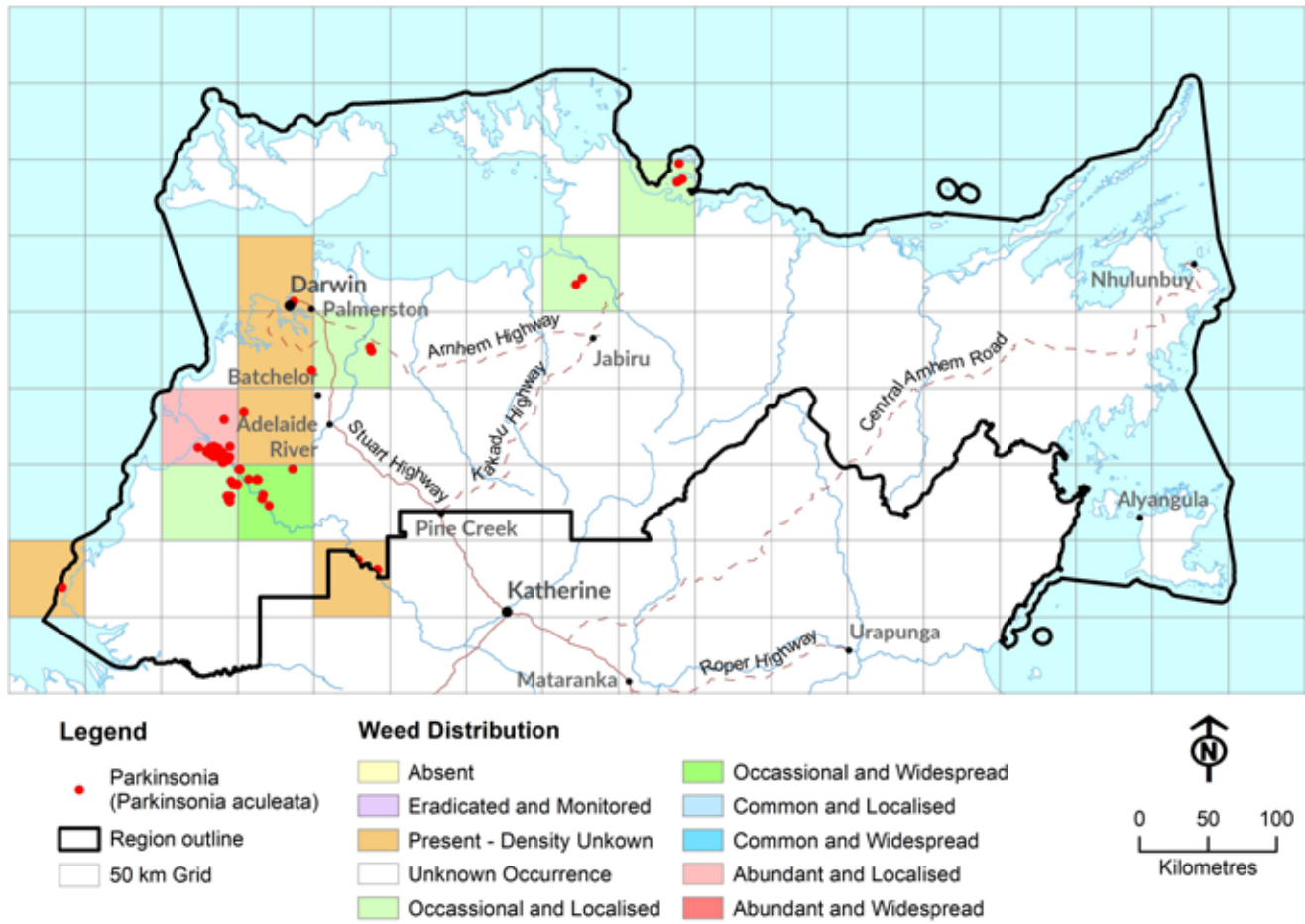
Category 2: Priority weed for strategic control – *Salvinia*



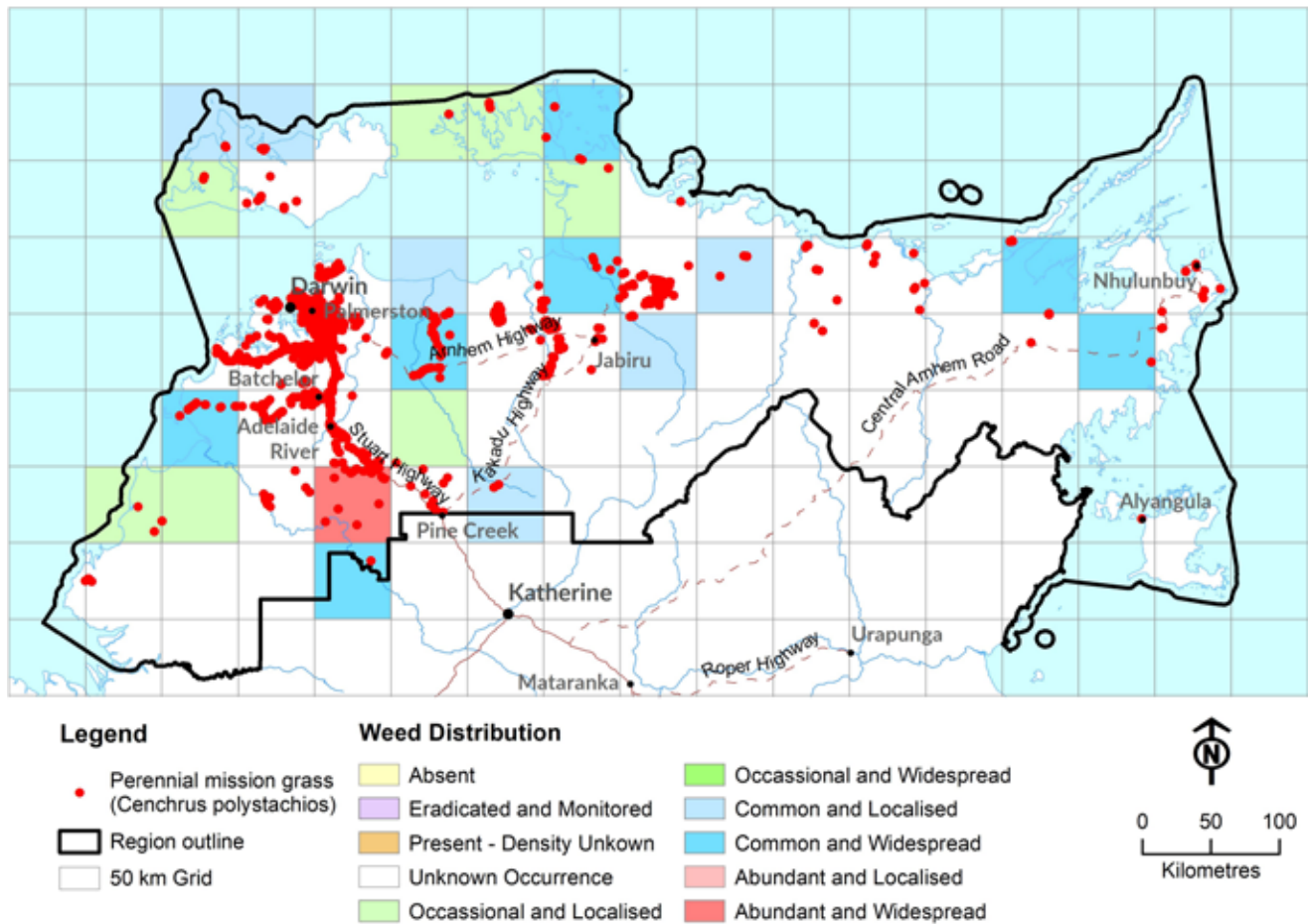
Category 2: Priority weed for strategic control – Olive hymenachne



Category 2: Priority weed for strategic control – Parkinsonia



Category 2: Priority weed for strategic control – Perennial mission grass





Olive hymenachne



Mimosa seed



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