A field guide

For eradicating Parkinsonia in the Fortescue River area

Department of Water
Government of Western Australia

Australian Government

RANGELANDS
NRM Co-ordinating Group

A big problem

Parkinsonia – sometimes known as the Jerusalem thorn or jelly bean tree – is an invasive and destructive weed. It is a big problem in the Fortescue River area.

Australia has declared it a Weed of National Significance due to its effects on sensitive riparian (near water) ecosystems and Aboriginal sites of significance.

Parkinsonia is thought to be native to tropical America and Africa and was brought to Australia over 100 years ago – probably to provide shade from the sun and as ornamental hedges for gardens.

Since then it has spread and is now found across the northern parts of Australia, infesting over 800 000 hectares of land, mainly along watercourses.

The weed is prevalent in the Pilbara and occurs in isolated pockets along large sections of the Fortescue River.

There are concentrated outbreaks within the Ngurrawaana lease and downstream on the Yalleen pastoral lease.

Parkinsonia affects biological communities close to rivers, damages other plants near the river and harms the habitat of native animal species. It also reduces the attractiveness of the natural bush.

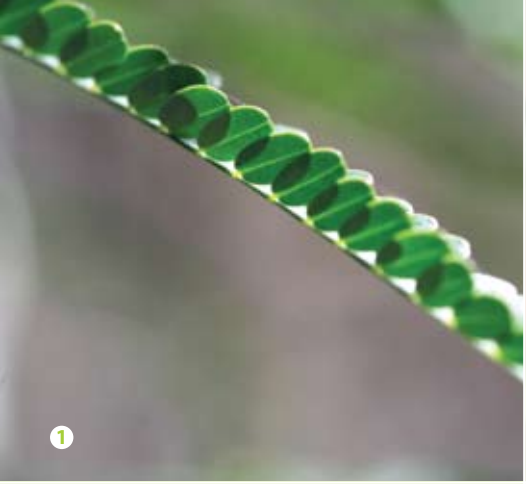
The weed reduces pasture and the capacity of the land to carry cattle and sheep; it makes it more difficult to muster; it restricts access to water by stock; and it can increase soil erosion. Cattle generally do not graze on Parkinsonia, but camels like the seed pods and can help reduce infestation by trampling on juvenile plants and killing them.

Parkinsonia also grows in places sacred to the Aboriginal people.

1 Parkinsonia

2 Note the characteristic zigzag appearance of the branches.

3–5 The trunk of more mature plants is bright green and straw coloured at the base.



1–4 The leaves are 10–50 cm long and flattened and covered with two rows of tiny, oblong leaflets.

1 The plant has sharp spines 7-12 mm long on the main trunk and at the base of the leaves.

2 Parkinsonia's zigzag growth

3 Parkinsonia in flower

About Parkinsonia

Parkinsonia is a hairless shrub or small tree, not more than 10 metres high, with green bark and sharp spines or thorns. When it flowers (generally May to June), its flowers have five yellow petals on a long thin stalk. It can form dense, often impenetrable thorny thickets along watercourses.

The seeds are oval, about 15 mm long, carried in pods 5–10 cm long. They have a hard coating and can lay dormant for many years, germinating only when conditions are favourable. They float well, so they are easily distributed by flooding after heavy rain – colonising new areas and quickly forming thick carpets of seedlings.

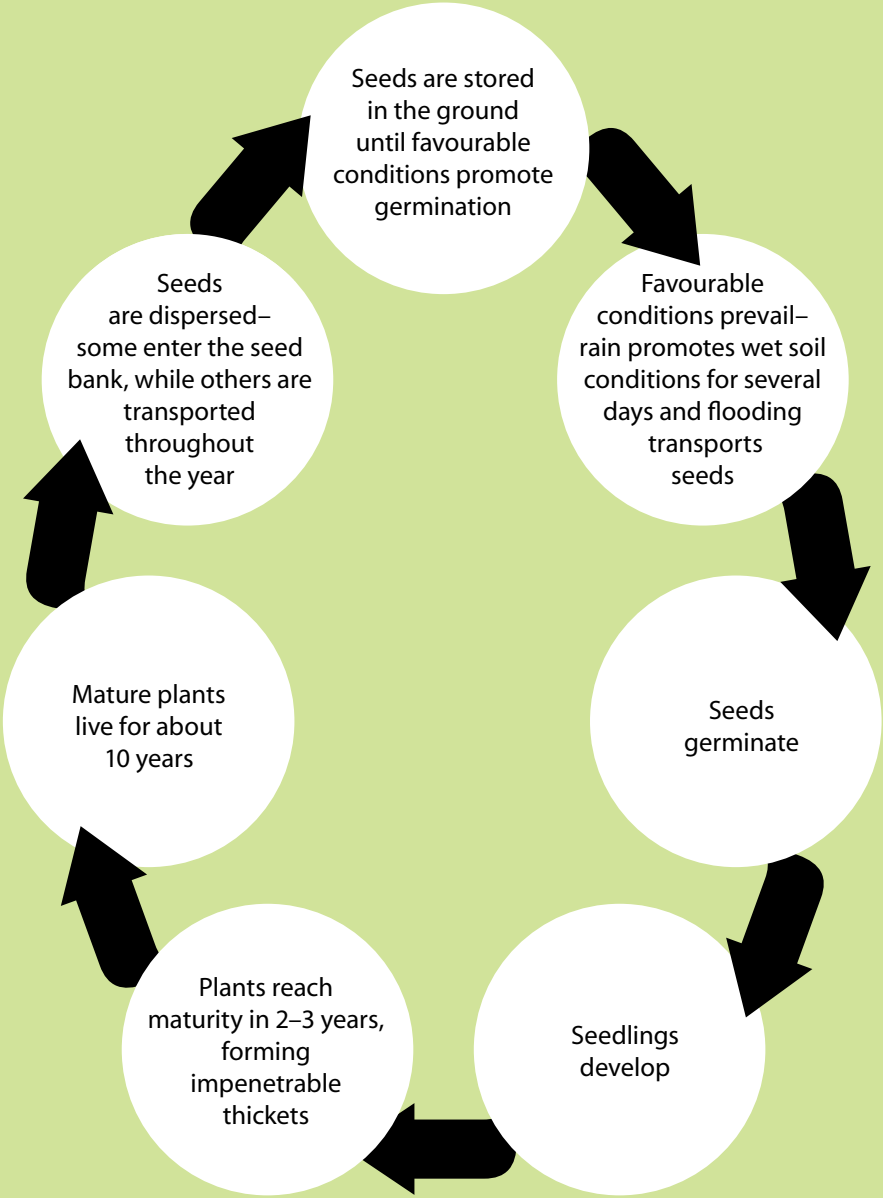
The seeds are also carried by humans, vehicles, machinery, animals and birds.

Parkinsonia germinates best near water sources, favouring areas that have experienced some form of disturbance. While the plants favour clay soils, they germinate and survive in a wide range of soil types.

The seeds can germinate at any time of the year, so the weed is able to take advantage of favourable conditions. While it is extremely drought resistant, too much shade limits its growth.

A single tree can produce more than 2000 seeds when it flowers.

Once the seed germinates, the plant establishes itself and grows quickly – out-competing native plant species and flowering by its second or third season. Under favourable conditions, mature plants will survive for up to 10 years and can reshoot from damaged or cut trunks.



The life cycle of Parkinsonia

The challenge for eradication

The challenge for those attempting to eradicate Parkinsonia is to stop it spreading within and between catchments, particularly after flood.

In the 2005–06 wet season, the Pilbara experienced an above-average number of cyclones and, subsequently, major flooding. It is likely that many new infestations of Parkinsonia will occur as a direct result of seed dispersal following this flooding.

Other issues to be addressed include:

- decreasing accessibility to waterways and riparian areas
- stock accessing riparian areas can spread seeds
- continual re-infestation from upstream areas
- the removal of weeds leading to erosion
- more tourists and visitors using the area leading to a potential spread of weeds and increase in erosion.

What we hope to achieve

By controlling and managing Parkinsonia, the Department of Water will enhance:

- biological communities (in riparian areas) and the processes that maintain them
- habitat for native fauna species
- the cultural significance of the area
- public recreation and visual appeal.

The aim is to control infestations and eradicate all mature Parkinsonia plants on the Fortescue River over the next 10 years.

We expect to achieve this by:

- treating larger impenetrable thickets first, followed by other outbreaks that we can reach easily
- working with other agencies to ensure the weed is treated upstream and in water catchment areas
- carefully removing weeds to limit the ground's exposure to erosion or re-infestation
- continuing the treatment program over several years to prevent saplings reaching maturity
- fencing areas around the river to exclude livestock and feral animals, and to stabilise such riparian areas
- consulting with the local Indigenous community to make sure we do not disturb sites of cultural significance
- considering use of controlled burning (in close consultation with the Department of Environment and Conservation), which may assist in killing small seedlings and seeds in shallow ground
- informing visitors through signs and leaflets

Parkinsonia is naturally controlled by:

- fire (kills seeds in the ground and small seedlings)
- grazing (e.g. by camels)
- drought (affects seedlings rather than well-established, mature plants)
- a form of dieback (little known; currently the subject of research).

The project area

The project area for the eradication program is mostly within the lower Fortescue River, which commences at the Goodiadarrie Hills and generally flows in a westerly direction to the coast, passing through the Ngurrawaana lease, which covers an area 48 700 hectares (487 square kilometres), and the Yalleen Station pastoral lease.

The project area is a 25 kilometre length of the lower Yarnda Nyirranha (Fortescue River) extending from the boundary of Millstream–Chichester National Park to Pilbara Iron's Cape Lambert to Pannawonica railway bridge. The main features of this area are permanent pools of water, the Gregory Gorge being the best known.

Vegetation

The project area has a wide variety of vegetation depending on the presence or absence of water.

Some general vegetation community types include:

- savanna over mixed spinifex hummock grass
- short grassland
- mixed snappy gum tree steppe and kanji shrub steppe
- kanji shrub steppe over spinifex
- snappy gum and bloodwood tree steppe over spinifex
- sclerophyll riverine woodland of coolabah and rivergum.

Weeds, other than Parkinsonia, include:

- buffel grass (*Cenchrus ciliaris*)
- date palm (*Phoenix dactylifera*)
- Indian water fern (*Ceratopteris thalictroides*)
- ruby dock (*Acetosa vesicaria*)
- Mexican poppy (*Argemone ochroleuca*)
- kapok bush (*Aerva javanica*)

The following weeds may also be found:

- tamarisk (*Tamarix aphylla*)
- albizia (*Albizia lebbeck*)
- cotton palm (*Washingtonia filifera*)
- giant reed (*Arundo donax*)
- oleander (*Thevetia peruviana*)
- water lilies (*Nymphaea sp.*)
- khaki weed (*Alternanthera pungens*)
- gallon's curse (*Cenchrus biflorus*).

Fauna

The Fortescue area has a diverse range of fauna due to the generally abundant food, water and shelter. A Department of Environment and Conservation study in 2006 identified 146 species of birds, 36 mammals, 97 reptiles and amphibians, 11 species of fish and an unknown but high number of invertebrates.

Most of the species are representative of fauna in the Pilbara, with implications for conservation and further research.

Control techniques and options

There are several control methods available:

- herbicide control using the basal bark spraying method
- stem injection method
- cut stump method
- injection of chemicals into the soil
- mechanical control
- burning.

Technical advice is available from the Department of Water, the Department of Environment and Conservation and the Department of Agriculture and Food about the most suitable treatment depending on the situation and resources available.

Herbicide control using basal bark spraying method

When mixing and handling herbicide, it is important to note the following:

- Ensure that the manufacturer's recommended mixing ratios are followed – material safety data sheets can be obtained from the herbicide distributor and supplier, or online.
- Observe all recommended safety precautions – wear gloves, aprons and face/eye protection when mixing. Wear overalls, gloves and eye protection when spraying. Wash hands after mixing and using herbicide, and before smoking or eating.
- Mix up only the amount that is required for the day. Measure herbicide and diesel using calibrated containers. In some situations, when using water and not diesel, using a wetting agent or other additives is recommended. Fill the tank to about two-thirds, add the herbicide concentrate, and then continue filling the tank.
- Make sure the herbicide is thoroughly mixed into the diesel. Do not use bare hands for mixing wettable powders or granules. Use a paddle or mechanical agitator to keep the solution in suspension for foliar herbicides.
- Dispose of unused mixed herbicide and used containers in a lawful and responsible manner.

Further information

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