

Wellesley Islands Indigenous Protected Area Management Guidelines



Introduction

The Carpentaria Land Council Aboriginal Corporation

The CLCAC was established in 1982 in Burketown to represent the rights and interests of Traditional Owners. It represents nine language groups whose traditional lands and waters are located in the Gulf of Carpentaria.

With the successful determination of Native Title, the CLCAC vision has evolved to include land and sea management with the formal establishment of a dedicated land and sea unit in 2007. This unit now employs a number of rangers and project officers who care for country across the region. The CLCAC has formed a partnership with Reef Catchments to develop and deliver best practice management guidelines for the Wellesley Islands area.

The Gulf Regional Aboriginal Corporation

The GRAC is the Native Title Body Corporate for the Wellesley Islands region. It is a legally recognised body that holds the Native Title rights and interests on behalf of the Traditional Owners. GRAC has responsibility to administer the sea surrounding the Wellesley Island group and exclusive Native Title to many of the islands. GRAC's main job is to help native title holders look after country and deal with government, mining companies, tourism operators and other individuals and organisations.

Reef Catchments

Reef Catchments is a community based, not-for-profit organisation that has a proven track record in advancing natural resource management in the Mackay Whitsunday

Isaac region. Reef Catchments works seamlessly across private and all levels of the public sectors to deliver proven results. Reef Catchments, in partnership with the CLCAC, has taken up the challenge of providing these best-practice management guidelines to direct the day-to-day operations of organisations undertaking natural resource management operations in the Wellesley Island region.

Using these guidelines

These guidelines have been developed for the seven landscape types that occur within Wellesley Islands. They focus on the use of fire on vegetation types that require similar prescriptions, including reducing the impact of weeds within the landscape. These guidelines are not intended to account for all circumstances in planning these types of activities and care must be taken to ensure conditions are suitable.

Four important factors to consider when planning for fire management are:

- **Fire frequency** – how often should an area be burnt
- **Fire intensity** – how hot does the fire need to be
- **Season** – what time of year will usually provide the desired conditions for a planned burn
- **Burning mosaic** – the percentage of ground cover remaining unburnt after a fire

Other important factors to consider are fuel loads, wind speed, humidity, fuel curing, slope and aspect. These guidelines are not intended to account for all circumstances. Seasonal, yearly and even daily conditions can vary dramatically. Plan ahead, to carry out burns when conditions are suitable, and always obtain and adhere to conditions of a permit from your fire warden.

Frequency

GREEN – Under most circumstances the number of years between burns should fall within the GREEN range. This range is generally considered appropriate for hazard management, production and conservation outcomes.

ORANGE – Under some circumstance there may be a need for more or less frequent fire, but this should fall within the ORANGE range. Generally, this would occur as a 'one off' e.g. two fires in three years to reduce a rubber vine infestation.

RED – Generally, it would be considered undesirable for fire frequency to fall within the RED range. For example long periods of time between fires would result in undesired vegetation thickening and loss of pasture productivity.

NOTE: Defining frequency by 'years' can be misleading e.g. in times of drought or particularly high rainfall. An average year would be defined by having received +/- 20% of the local average annual rainfall by May.

Season

GREEN – Under most circumstances the desired conditions will be available within the GREEN season/s.

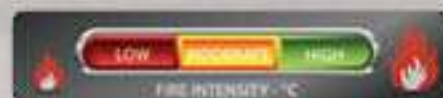
ORANGE – Desired fire conditions will sometimes fall within the ORANGE season/s. Specific requirements for a particular burn will vary under different circumstances e.g. storm burning requires relatively high soil moisture.



RED – Under most circumstances, conditions within the RED range of seasons would result in damaging fire and/or fire that is difficult to control.

Mosaic

Patchy fuels produced by mosaic burns can be very effective in reducing the intensity and spread of wildfire, without risking the complete loss of pasture grasses, soils and nutrients. This will also protect the land from weed infestations or environmental damage that sometimes results from complete removal of the ground layer from large areas.



Intensity

LOW intensity fire is < 1m in height.

MODERATE intensity fire is < 2m in height.

HIGH intensity fire is > 2m in height.

The Bushfire Consortium is a Reef Catchments initiative with funding support from the Australian Governments' Caring for Our Country program.

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Wellesley Island Indigenous Protected Area

Goals of the Indigenous Protected Area Program

The goals of the Indigenous Protected Areas element of the Caring for our Country initiative are to:

1. Support Indigenous land owners to develop, declare and manage Indigenous Protected Areas on their lands as part of Australia's National Reserve System.
2. Support Indigenous interests to develop cooperative management arrangements with Government agencies managing protected areas.
3. Support the integration of Indigenous ecological and cultural knowledge with contemporary protected area management practices.

Cultural and Natural Values of the Wellesley Islands

The Wellesley Islands are an integral part of the Dreaming across northern Australia. The pathways of the ancestral dugong, Bijarra, the Shark Dreaming, and the Rainbow Serpent Thuwathu or Bujimulla remain an integral part of the land and seascape.

Story places guide ongoing management of country as the focal point for rituals that recall significant events that happened in the past, and ensure their continuity. Division of country into estates and allocating management responsibility to language groups to family groups remains a key management practice.

These practices have ensured that the natural values of the Wellesley's are amongst the most important of all islands in Australia. Seabird rookeries and turtle nesting beaches are of international importance for conservation of these species.



The Wellesley Islands are the Traditional homelands of the Lardil, Yangkaal, Kaiadilt & Gangalidda peoples. These management guidelines have been produced by the Carpentaria Land Council Aboriginal Corporation for, and in consultation with these Traditional Owners to guide management of their Indigenous Protected Area.

Manowar Island; One of the most important seabird nesting islands in Australia (lesser frigate birds and brown boobies)

Island Landscapes



Beach Dunes



Beach Front



Island Plateau



Sand Cays

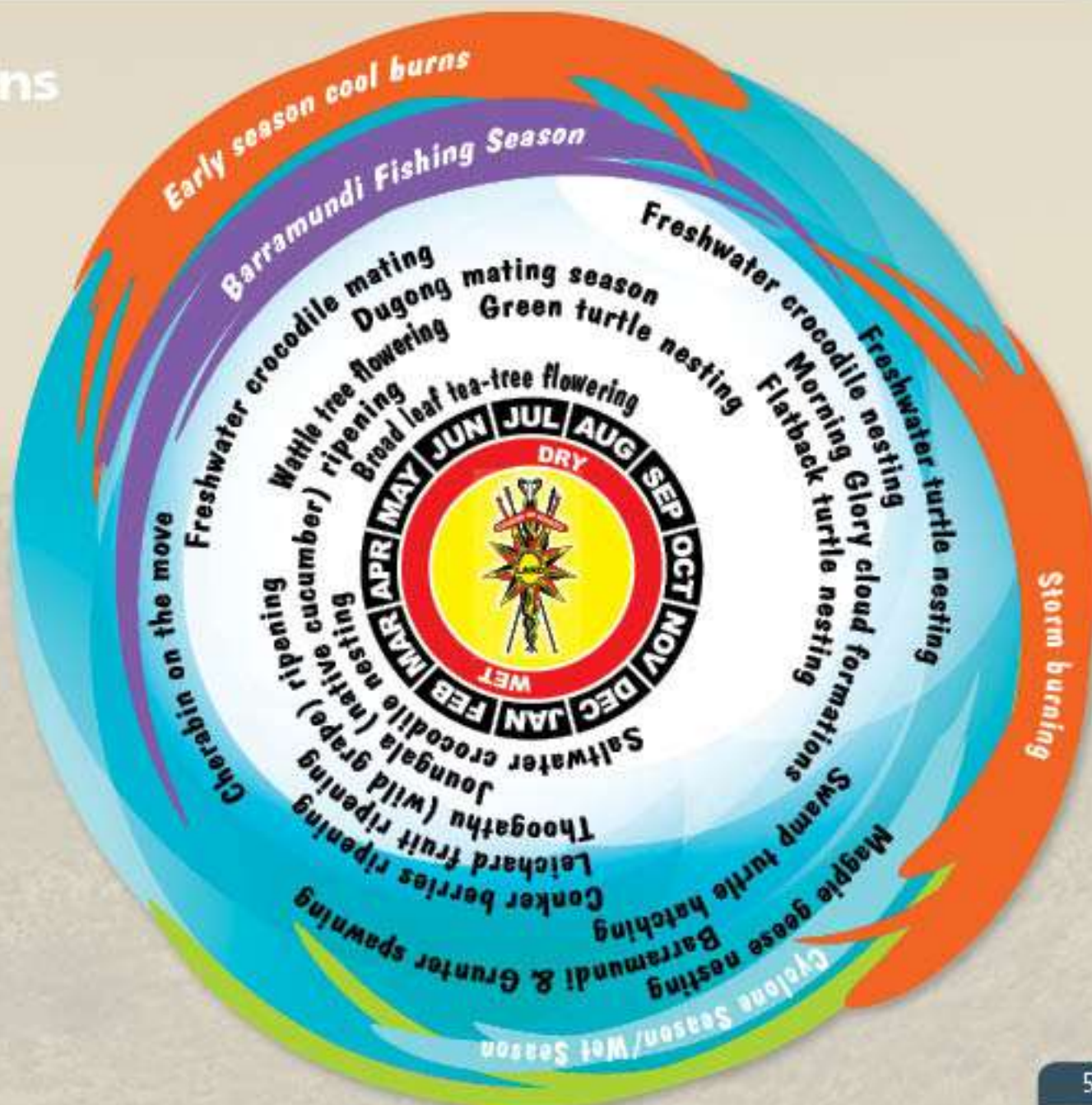
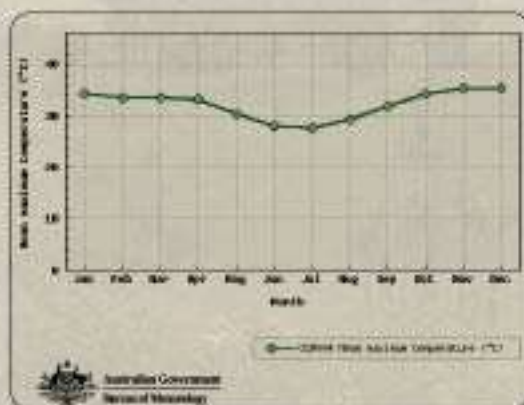
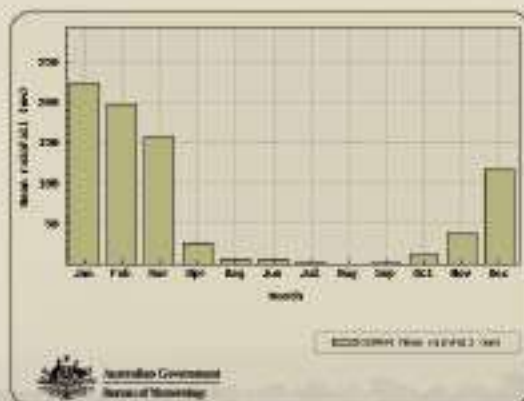


Rocky Outcrops
Man'o'war Island



Gununu

Climate and Seasons



The Importance of the Wellesley Islands – Natural Features



↑
Bentick Island has the only
Queensland, and possibly the
only island population of the
Brush-Tailed Rabbit Rat



Manowar and Rocky
Islands support the
largest Brown Noddy
nesting populations in
Eastern Australia and the
Coral Sea



Manowar Island supports
60% of the nesting
population of Lesser
Frigate birds in Australia



North Bontiful Island
supports the second
largest breeding colony of
Roseate Terns in Eastern
Australia and the largest
colony of Crested Terns in
the world



The region has a nationally
significant dugong
population. The main
mating season in the
region is from June
to August



The Bontiful Islands and Pisonia Island (and Rocky Island)
support major breeding populations of
Green and Flatback Turtles



Cultural Values

Fish traps on Bentinck and Sweers Islands are the work of the ancestral Black Crane and Seagull. On Mornington Island they are attributed to the first three Lardil People Maambil, Jim Jirn and Diwaldiwal. Many other cultural sites are present amongst the islands and these are associated with story places and other sacred areas. The maintenance and protection of all these sites is of utmost importance because it allows rituals to continue that ensure land and sea country is used and managed correctly.

Many, if not all story places and other important areas also have features of high conservation value. The continued management of cultural values will compliment and support the protection of natural values. It will be very important, that visitors to the Wellesley Islands respect the wishes of the Traditional Owners to manage the way in which people use the area, and permission to enter a particular area should always be sought from the relevant person.



Sea Birds

Key seabird breeding areas	Breeding times for key seabirds											
	J	F	M	A	M	J	J	A	S	O	N	D
The world's largest breeding colony of Crested Terns occurs on North Bountiful Island.												
South Bountiful Island supports the second largest breeding colony of Roseate Terns in eastern Australia.												
The Lessor Frigatebird colony on Manowar Island supports c.60% of this species in Australia and is the largest rookery in Eastern Australia.												
Rocky and Manowar Islands have the largest Brown Booby nesting populations found anywhere in Eastern Australia and the Coral Sea.												
	Principal breeding					Incidental breeding			Nil breeding			

Management Issues

Crested and Roseate Terns lay eggs on the ground, whilst Lessor Frigate Birds and Brown Boobies construct a stick nest in shrubs or low trees. Regardless, the success of the nestling is compromised if the adults are frequently disturbed. Nestlings are also vulnerable to introduced predators such as rats and this is a leading cause of decline in seabird populations. Visitation to breeding areas should be minimised and great caution should be taken to avoid introduction of predators (see page 27). Effective management of surrounding sea country is also important to ensure the food supply of these birds.



Marine Turtles

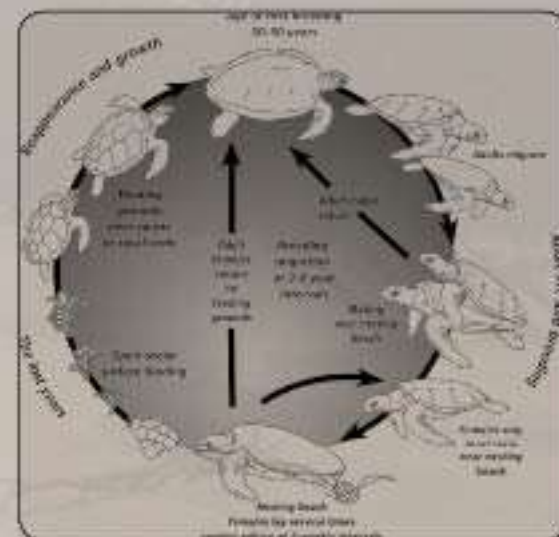
Key Turtle Nesting Areas

- Beaches on North Bountiful, South Bountiful, Pisonia and Rocky Islands are major green turtle nesting rookeries, one of only four in Australia. This population is genetically different from east coast populations.
- The Wellesley Islands are the only remaining site in Australia where major inter-tidal basking of inter-nesting green turtles occurs.
- Larger islands are also nesting areas for Olive Ridley turtles.
- Bountiful and Pisonia Islands are major nesting areas for Flatback turtles, one of only six significant breeding sites in Australia.

Management Issues

Marine turtles are an invaluable resource for the Traditional Owners and one they wish to protect. Many management challenges exist and some are being addressed. Ongoing management should include:

- Ongoing removal of ghost nets that entrap turtles.
- Development of egg harvesting rules
- Control of feral predators such as dogs and pigs
- Ongoing efforts to reduce the downstream impacts of adjacent land use to reduce erosion of river banks and other sources of silt
- An ongoing need to monitor turtle numbers.



Turtle Species	Maturity (ave. # years)	Nesting times in Wellesley Islands	Incubation period (ave. # days)	Years between nesting
Green	40 – 50	Jul – Sep	60	4 – 6
Loggerhead	30	No	45 – 70	2 – 10
Hawksbill*	30 – 35	Not Recorded	60	2 – 5
Olive Ridley	15	Jun – Sep	45 – 51	1
Flatback	20	Sep – Nov	42	1 – 5
Leatherback	15	No	63 – 93	2 – 3

* Anecdotal evidence provided by Traditional Owners suggests that Hawksbill Turtles nest within the Wellesley Islands region, though this has not been scientifically recorded.



Coral Reefs



Coral Reefs

The presence of coral reefs around the Wellesley Islands is a relatively new discovery, and in fact, these reefs represent a newly identified coral reef province in Australia. There are as many as 50 patch reefs (1–10km in diameter), plus a large elongated platform reef up to 100km in length. It is thought that this reef might have been growing for up to 100,000 years or more.

Seagrass Beds

Seagrass beds are a critically valuable resource. Not only are these areas vital as nursery habitat for many fish and prawn species, they are also the principal feeding areas for dugong, and some marine turtles. Rangers currently undertake regular monitoring of this habitat using the Seagrass Watch methodology.



Dugong

As with most north Australian Indigenous people, dugongs are important to the Traditional Owners of the Wellesley Islands and there is an inherent right to care for this species as with all other sea country. Dugongs belong to country. Traditional Owners do not distinguish between the sea and the plants and animals that live there. All plants and animals are part of a complex system of traditional laws and customs that link people to country.

Dugongs are an integral part of traditional culture and a valuable food source. Traditionally dugongs are harvested for ceremonies and food and shared throughout the community. This is a practice that still occurs today.

Over the past ten to fifteen years hunters from the Wellesley Islands have reported sick and under-weight dugongs, many of which have unusually coloured fat. There is some evidence that this could be related to starvation events caused by the smothering of seagrass meadows or the presence of other foreign material within the seawater.

Historically these occurrences were the result of extreme weather events such as cyclones that would rip seagrass from the sea floor or cover the meadow with sediments washed from the mainland. What is becoming more evident is the increasing amount of sediment covering the meadows, not associated with such extremes, but on a regular basis with the flush of mainland rivers.

This annual event, known as estuarine outwelling is a natural process, however is being exacerbated by the loss of riparian corridors and other incompatible land uses on the mainland. Traditional Owners are now concerned that other resource users are possibly contaminating the sea with by-products that could be causing this strange phenomenon in their waters.

Dugongs are slow breeding, only reaching maturity between 6–17 years of age, and only reproducing every 3–7 years. Each pregnancy takes between 13–15 months with generally only one calf being produced. Each calf is suckled by its mother for 14–18 months. Together this makes dugongs extremely vulnerable to human impacts.

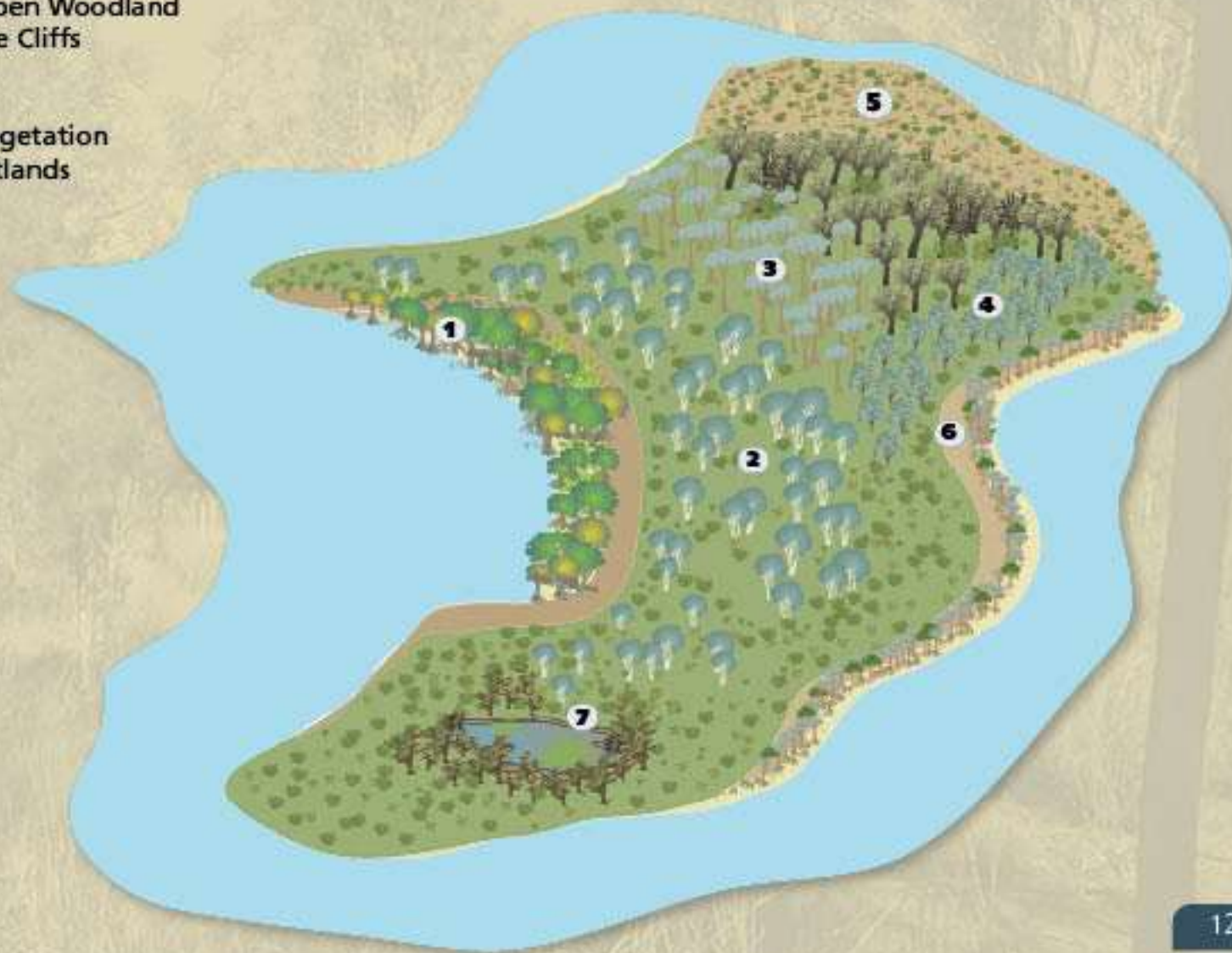
The Gulf of Carpentaria is estimated to have the second largest population of dugongs in Queensland, with most found in the shallow waters surrounding the Wellesley Islands. In a 2007 aerial survey it was estimated there were over 6,000 dugongs in the region. In an aerial survey conducted in 2010 by the Wellesley Islands Rangers a pod of over 500 dugongs were sighted. However, these figures are only estimates and seasonal variations affect the abundance of dugong in an area.

Dugongs usually only eat seagrass, uprooting whole plants when possible. Researchers have suggested that dugongs can encourage the growth of the seagrass species they prefer to eat by grazing. By extension dugongs can be said to actively farm seagrass.



Vegetation of the Wellesley Islands

1. Mangroves and Salt-flats
2. Broad-leaved Tea Tree Low Open Woodland
3. Tall Eucalypt Woodland Above Cliffs
4. Silver Box Open Woodland
5. Hind Dune Vegetation
6. Dune Cap and Beach Front Vegetation
7. Red Gum Woodlands and Wetlands



Mangroves and Salt-flats

Landscape 1



Tidal low coastal rises of shells, sand or mud, and associated gutters usually with mangroves (Regional Ecosystem 2.1.2). Tidal channels and associated levees, usually with mangroves (RE; 2.1.3). Infrequently inundated clay plains and low samphire rises (RE 2.1.4).



Mangroves and Salt-flats

Mangroves and salt-flats associated with estuaries and coasts are a key feature of the Wellesley Islands and adjacent mainland. Mangroves are the link between land and sea country and perform many vital ecosystem functions. The roots of mangroves support the trees in soft mud and silt and in doing so stabilise these, preventing erosion of river banks and shores.

Mangrove forests protect against storm surges and heavy seas because their trunks and above ground roots greatly reduce the velocity of water flows.

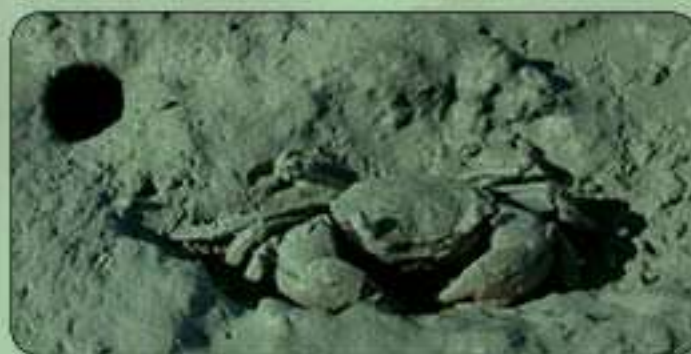
Mangroves and saltmarsh are vital nursery areas for many fish species that are harvested by Traditional Owners. The complex habitat provides refuge from predators and food sources for the juvenile fish.

Salt marsh and saltwater couch do not need fire to stay healthy. Migratory waders and other shorebirds use these habitats as roosts during high tide, and to seek food. Although many of these plants will recover after fire, the burnt habitats are much less useful for these birds, and do not provide nursery habitats for fish until they recover. If saltwater couch is burnt, sometimes the adjacent mangroves will be scorched and may not recover. This can result in soil being unprotected from erosion, and in turn more silt and other sediments being washed into estuaries and nearby sea country.

Sometimes weeds can invade saltmarsh, saltwater couch and mangrove margins particularly in areas which are less saline. Some of these weeds such as rubber vine can be controlled by fire. However, extensive use of fire in these habitats, whilst reducing rubber vine infestations in the short term, can result in disturbance that favours further spread of weeds.

If fire is to be used for weed control in these areas, it should be done very carefully, and only if resources are available for follow-up control. An alternative method may be to introduce rubber vine rust, a biological control agent. Whilst the rust does not kill established plants, it significantly reduces the strength of plants, often prevent them flowering and producing more seed, and may kill smaller plants. Combined with chemical control, the rust may be an effective way to reduce rubber vine infestations where burning is not desirable.

In general, it is highly recommended that fire be avoided in this landscape, and if adjacent areas are being burnt, tactics should be selected to avoid scorching of mangrove margins.



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Mud crab is one of the most important resources provided by mangroves. The number, sex and size of mud crabs caught, when recorded by most fishers over time, can provide very important information about the health of the populations.



Barramundi



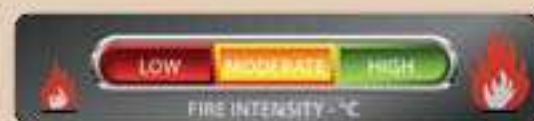
Mangroves

Broad-leaved Tea Tree Low Open Woodland

Landscape 2



Tea tree (paper bark) woodland on plains on earths and podsolics: *Melaleuca citrolens* and/or *Eucalyptus pruinosa* (silver box) and/or *Melaleuca viridiflora* (broad-leaved paperbark) low open woodland to low shrubland. Flat to gently undulating sandplains (RE 2.5.15).



Broad-leaved Tea Tree Low Open Woodland

Tea tree low open woodlands mostly occur on Mornington, Forsyth, Bailey and Pains Islands. These occur on weathered (leached) soils usually with only a shallow surface layer of organic matter.

The key values of this landscape include tea tree flowers which are harvested by native bees and used to produce sugar bag. Also present are medicinal plants such as 'Dog's Balls' (*Grewia retusifolia*), timbers for tools, and paperbark.

Along with many areas elsewhere in Northern Australia, one of the principal concerns within this landscape is vegetation 'thickening' resulting in large part from the wrong type of fire management. Such thickening changes the structure of the woodland to one that has far more trees, which results in shading and less grass. These changes result in fewer (grass) seed eating birds such as Zebra and Star Finches.

Current patterns in fire management (NAFI) show that this landscape is being burnt in quite different ways. Areas on Mornington Island, particularly close to Gununu are being burnt very regularly, and often late in the season. Other areas such as Bailey and Pains Islands are not being burnt.

Applying fire regimes that are slightly different within a given landscape can be a useful way to provide a diversity of habitat conditions. This current situation provides an ideal opportunity to conduct biodiversity surveys within areas receiving different fire management, to help guide fire prescriptions that best meet the aspirations of the Traditional Owners.

In the interim, fire should be applied every 3–5 years, and should ideally be reasonably late in the season to reduce the chances of thickening. This type of fire will also be effective in helping to control weeds such as rubber vine. It is important however, to plan burning so as to leave some areas unburnt, otherwise some species such as the Two-lined Dragon and other reptiles and small mammals, will not survive, because there will be no refuge areas left.



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Tea tree flowers are an important source of nectars for native bees (and people). Healthy woodlands will flower regularly. As a guide, these woodlands should not be burnt when in flower.



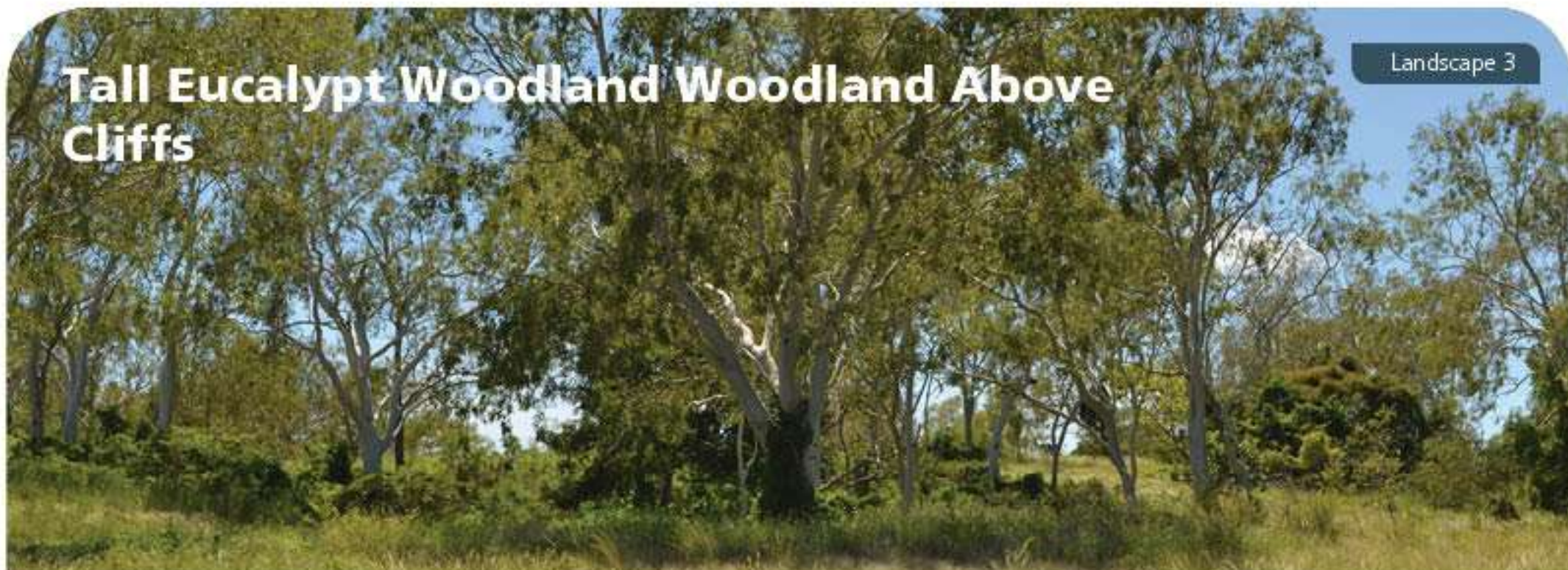
Two-lined Dragon



Zebra Finches

Tall Eucalypt Woodland Woodland Above Cliffs

Landscape 3



Ghost gum (*Corymbia papuana*) and poplar gum (*Eucalyptus platyphylla*) tall woodland behind cliffs and some other elevated areas (RE 12.7.3).



Tall Eucalypt Woodland Woodland Above Cliffs

The Wellesley Islands are considered to be part of the Gulf Plains bioregion. However, vegetation on islands is often different to the adjacent mainland even when they lie close together. Regional ecosystem mapping is available for most of the islands (but not for Mornington Island). This shows that tall eucalypt woodland occurs on Bentick Island, was also recorded by smaller scale surveys on Sweers Island, and also occurs on Mornington Island. It differs from similar vegetation on the mainland in that it is most often dominated by Ghost Gum and Poplar Gum (rather than Georgetown Box, Snappy Gum or Darwin Woollybutt) and is therefore unique to the Wellesley Islands.

Being the principle landscape that supports large trees, this is likely to be important nesting habitat for a range of birds including cockatoos and corellas.

Along with beach vegetation, this landscape is most likely critical habitat areas for the Brush-tailed Rabbit Rat on Bentick Island. This species prefers habitats that are not burnt annually and therefore have a well developed grassy understorey, and a sparse to moderate middle storey of shrubs and small trees. The rat shelters in tree hollows during the day and so planned burns should not destroy old growth trees.

Fire management will ideally include a combination of early dry season burns, and storm burns that result in low to moderate patchy fires, leaving refuge habitat for the Brush-tailed Rabbit Rat, and which do not burn down habitat trees.

As a guide, for any given patch of this landscape, these burns should take every 3–5 years. An additional purpose of these burns will be to assist in control of rubber vine. Backing fires, that result in a slow moving fire will give greater control as there will be a longer period of heating around rubber vine stems.



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Flying foxes are one of the most important pollinators for many trees. The number of flying foxes present can be estimated when they leave their roosts late in the early evening.



Sulphur Crested Cockatoo



Brush-tailed Rabbit Rat

Silver Box Open Woodland

Landscape 4



Silver Box (*Eucalyptus pruinosa*) low open woodland with a ground layer of tussock or hummock grasses (RE 2.9.1).



Silver Box Open Woodland

A low open woodland of silver box covers extensive areas of the Wellesley Islands and apart from mangrove and associated salt-marsh, this the most common and extensive landscape within the island group. There is considerable diversity within the landscape with other Eucalypts being present in some areas, as are tea trees (*Melaleuca* spp.) grading in from adjacent landscapes. A key management challenge will be to maintain this diversity, as different areas will provide varied habitat for flora and fauna supported by the islands. Currently fire scar mapping (NAFI) illustrates a dominance of late season fires on Mornington Island, but early dry season burning on Bentick. In both cases, relatively large patches of this landscape are burnt.

This landscape is important habitat for a range of fauna including pigeons and doves, cuckoos and honey-eaters and the marsupial Planigale (*Planigale maculatus*), in addition to predatory birds such as kookaburras, butcher birds and drongos.

Fire management within this landscape should focus on providing a mosaic of differently aged vegetation, and a diversity of fire types. Given its location, particularly when it lies close to residential areas, some early season burning will be required to safeguard against late season wildfires. Ideally however, most of this landscape will be burnt late in the year after the first rains, to produce a low to moderate intensity fire with a high level of patchiness.

A fire frequency of 3–5 years would provide a range of habitat conditions that would account for the habitat needs of most species.

The exception to the above may be situations in which heavy infestations of fire sensitive weed species occur. In this case, 'rehabilitation burns' outside of these guidelines may be needed to reduce the occurrence of weeds. In this case, two burns in four years may be required initially, with burn frequency the extending to 3–5 years.



Bush fruits are an important resource and one that can be protected and maintained by good management including both planned burning and effective weed control. The number, and different types of bush fruits in different landscapes can be easily measured and monitored and is a good way to tell if country is staying healthy.



Peaceful Dove



Kookaburra

Hind Dune Vegetation

Landscape 5



Vegetation on secondary dunes and swales (RE 2.2.2) and also grassland on low plains adjacent to estuarine wetlands (i.e. mangroves) (RE 2.3.1).



Hind Dune Vegetation

Grassy landscapes on the Wellesley Islands includes hind dune vegetation and also grasslands associated with estuarine areas, but lying above tidal influence.

Generally these occur on sandy areas with relatively few nutrients and are often subject to physical disturbance. These areas will tolerate and recover from fire making this practice useful for reducing the extent of fire sensitive weed species. However, frequent burning will reduce the amount of nutrients in the sandy soil resulting in slower and less vigorous recovery of the grassland. A similar situation will result if planned burning is undertaken with low soil moisture and this may favour the more rapid colonisation of weeds as opposed to native grasses.

For these reasons burning should be infrequent (ideally no areas are to be burnt less than 5 years apart) and only very early in the season when soil moisture remains, or after the first rains late in the year. The resulting low intensity fires should provide a mosaic where less vegetation is burnt than that consumed by fire.

In some cases, particularly where weed cover is extensive, more frequent and higher intensity fire may be required in the short term, to gain control of infestations.

Pisonia forest - a special case

Pisonia (*Pisonia grandis*) forest occurs on Pisonia Island in the north-east section of the Wellesley Islands. This forest is globally restricted with the vast majority of its extent occurring on small sand and shingle cays.

These forests are critical areas for seabird breeding, and often play a critical role in stabilising cays. Pisonia is well adapted to disturbance being able to rapidly regenerate from even severely damaged and felled trees. However, the plant is fire sensitive and even low intensity planned burns will cause significant damage and associated dieback in this landscape. Under no circumstances should this landscape be subject to fire.



The Dog's balls plant is an important medicine plant and occurs in a range of habitats. Because it is easily identified and counted, doing surveys several months after an area is burnt, will provide an indication of whether the planned burn has provided favourable growing conditions for this plant.



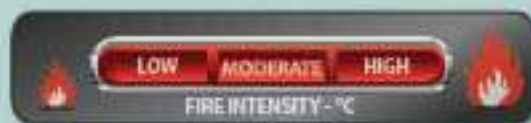
Pisonia Forest

Dune Cap and Beach Front Vegetation

Landscape 6



Beaches and foredunes (RE 2.2.1).



Dune Cap and Beach Front Vegetation



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All cockatoo's, lorikeets and parrots use tree hollows for nesting. Although they are mobile for most of the day, these birds tend to gather together in the late afternoon and can be counted. The number and variety of these birds can be a good indicator of the condition of old growth woodlands. Alternatively, after burning, estimates can be made of the number of old trees burnt down. Burning down these trees is a sign of too intense fire.

Beach front vegetation occurs extensively amongst the Wellesley Islands and primarily is made up of beach she-oak (*Casuarina equisetifolia*), cotton wood (*Hibiscus tiliaceus*) with an understorey of beach grasses and vines. This vegetation is of critical importance in stabilising the beach front, reducing erosion and encouraging the buildup of beach sand.

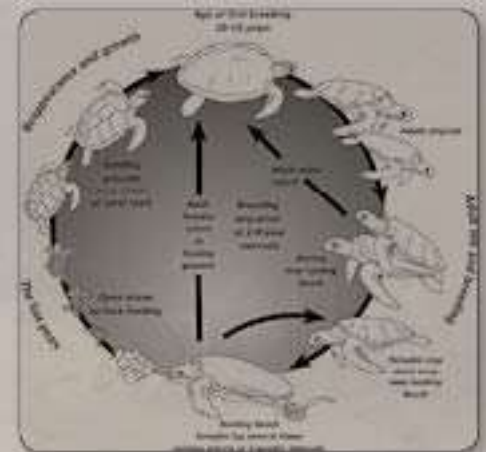
This area is extremely fire sensitive. For example beach she-oaks will be killed by even the lowest intensity fire. Dune cap vegetation occurring behind the beach is principally grassland. Whilst fire tolerant, this vegetation lies in close association with beach front vegetation so that any fire in this area will likely impact on fire sensitive areas.

Fire should not be used in this landscape. Control of weeds such as rubber vine, calotrophis and parkinsonia should be by other means.

Marine Turtles

The sex of marine turtles is determined by the temperature of the nest during development of the hatchlings. A nest temperature of 28 degrees and above will result in most turtles being born female, and below that, mostly males.

Shading of the nesting habitat by beach front vegetation such as beach she-oaks plays a very large role in regulating nest temperatures and therefore the sex ration of hatchling turtles. For this reason, it is very important to maintain beach fronts in as natural condition as possible.



Turtle Life Cycle

Red Gum Woodland and Wetlands

Landscape 7



Red gum woodland and wetlands (RE 2.3.34).



Red Gum Woodland and Wetlands

Freshwater wetlands are present on Mornington, Allen, Bentick, Denham, Forsyth and Sweers Islands. These habitats are of significant importance for many species and especially for breeding grounds for migratory birds such as magpie geese. Surrounding trees are also often used as maternal colonies of flying foxes.

Small mammals, snakes, lizards and frogs make use of both the moist environment and also habitat features such as cracks in the dried wetland for protection against predators. Generally, these areas should not be burnt unless there is an overriding need to gain initial control over significant weed infestations. In this case, burning should be undertaken when there is high soil moisture to allow rapid recovery of native plants.

Avoid very dry conditions as a ground fire can develop in peat layers, which can burn for extended periods and damage the capacity of the soil.



The diversity and number of waterbirds is one of the most important ways to determine if wetlands are in healthy condition. Because different birds use wetlands at different times and for different reasons, surveys should be conducted both during the wet season, and also late in the dry season.

Pests and Biosecurity Management Issues

Four steps to island biosecurity

1. **Quarantine:** Preventing invasions by potentially harmful organisms is the most cost-effective approach to protecting island biotas.
2. **Early Detection and Rapid Response:** Controlling invasive species before they become well established limits the damage to biodiversity and the cost of invasive species control.
3. **Eradication:** Successful eradication of invasive species on islands has been proven and is increasingly being practiced around the world – methods are improving and costs are likely to decrease with experience.
4. **Vigilance:** Once eradication has occurred, islands can remain invasive-free at relatively low cost through effective quarantine measures including early detection and rapid response approaches.



Transport of people and goods has potential to bring into the islands many new pests both plants and animals



Pests are much easier to control if they are detected and tackled early



Realistically some pests especially weeds can only be controlled. However, eradication, particularly of feral or unwanted animals is possible and most cost effective in the long term.



It's all about having eyes and ears on the ground

Weeds

Caliotropis

Caliotrope reproduces from both suckers and seeds. The plant readily grows back from the long deep tap making it tolerant to both fire and drought. Fruit set is generally from September to November, ripening from December to February, and produces numerous seeds. Soil movement on vehicles is a principle way of seed transport. The onset of the wet season also stimulates suckering and populations can rapidly spread.

Chemical control is the best method of reducing infestations (Picloram + 2,4-D amine or Access or Picloram + triclopyr). Control should be undertaken when plants are actively growing but before seed production.

Control: November – January

Rubber Vine

Rubber vine flowers at any time when sufficient moisture is available. Generally seed pods form in spring to autumn and seeds are released about 200 days later, so that seeds are available virtually year round.

Timing of control should be focussed more on maximising the effectiveness of the technique chosen. Chemical control (i.e. basal bark application of Access) will be most effective when plants are actively growing during the wet season. Control by fire, is usually most effective when the fire is moving slowly, increasing the plants exposure to heat. Burning when the plants are moisture stressed can be more effective.

Consider introducing the rubber vine rust *Maravalia cryptostegiae* which will be effective in reducing plants especially during the wet season.

Parkinsonia

Parkinsonia mostly flowers from August to September with pods maturing from November to December. Seeds are released 3–12 months after. Mature plants readily regrow after fire, but seedling (up to about a meter) are usually killed. Germination of seeds is stimulated by fire, but intense fire can also kill seeds at the soil surface. Burning, followed by chemical control can often produce good results. Storm burning, with follow up chemical control, working in from the margins of infestations is often used in long-term control programs aimed at reducing the impact of this species on the landscape.

Control: Burn after first rains (~ December), follow up chemical control in early wet season (~ January)



Caliotrope



Parkinsonia



Rubber Vine

Weeds

Candle Bush

Candle Bush can flower for most of the year, but best control is obtained during the wet season from December to April. Candle Bush is spread by vehicles and machinery, flood waters and by animals. Infestations are usually worse in wetter areas where it can form dense thickets. Isolated plants can be grubbed out, but heavy infestations will require chemical control (Fluroxypyr 200g/l). Basal barking can be used for large plants but foliar spraying will be required for seedlings. It is very important that follow-up be undertaken so the best control programs aim at gradually reducing infestations over a period of several years.

Control: December to April

Belly Ache Bush

Belly Ache Bush can flower at any time but peaks in the wet season. Germination of seeds is usually restricted to the onset of the wet season. Seeds can be transported by water and presumably by vehicles and machinery. They are also thrown up to several meters away from the parent plants because the fruits 'explode' on maturity. This plant can be killed by fire. Small or scattered infestations can be effectively control by 'hand pulling'. This technique can be very useful as chemical control often also kills adjacent grasses. Keeping good grass covers restricts germination of seeds of this species. Chemical control if needed is best using Fluroxypyr.

Control: December to April

Leucaena

Leucaena can devastate landscapes, forming dense impenetrable thickets that rapidly grow in size. Seed pods up to about 15cm long occur in dense clusters and each contain about 20 seeds that are readily moved by water and through the gut of stock which readily eat the plant. When mature the only control options are chemical: Triclopyr + picloram, as a foliar spray for young plants or as a basal bark application for mature trees, and Access as a basal bark.

Control: December to April



Candle Bush



Bellyache Bush



Leucaena

Other Weeds and Pests - The Principles of Good Pest Management

Integration	Management practices such as fire, grazing and maintaining roadways have implications for pest management. Fire can effectively control many weeds species, but may increase infestations of others. Roadworks cause disturbance and can cause or make worse, some weed infestations. Over grazing almost always favours weeds. Before starting any management action, think of the implications for pests, and how opportunities and challenges can be addressed.
Awareness	Vigilance is key and islands are a great opportunity. On islands, virtually any pest, plant or animal, can be eradicated if it is not allowed to become established. Keeping a close eye on things, regularly can prevent big problems.
Commitment	Once pests are established, control becomes a long-term commitment. Planning for control should be long term and should focus on the 'big picture' of reducing the impact of pests on Country.
Consultation and partnership	Airports, boat & barge operators, fishers, Governments, landholders all share the problem of pest management. It is always more efficient and cost effective to work together.
Planning	Think carefully about what the real problems are. Pests that alter habitats are the biggest problem. What are others doing, how can landholders best work together. Short term pest control programs which can't be maintained are usually a waste of time and money.
Prevention	Rangers, and other land managers should be able to identify all pests in the areas AND those that may invade. Preventing a pest establishing is always cheaper than having to control after it is established.
Best Practice	Research the best ways of doing things. Control techniques are constantly being updated and improved.
Research and monitoring	Look, listen and learn. Different Country behaves in different ways. The best way to control pests in one area might not work in another.

Traditional Ownership and Permissions

All of the four Traditional Owner groups involved with the development of this management plan are concerned about the increasing number of visitors to our region.

Every visitor to Mornington Island is technically required to obtain a permit from the Mornington Shire Council prior to their arrival. Over recent years, however, the practice and enforcement of this requirement has diminished to the stage where it is rare for a permit to be obtained at all. This has led to the problem that many people visiting the region, whether for work or leisure, are unaware that all of the land of the Wellesley Islands are Aboriginal leased land or otherwise is freehold land held in trust for aboriginal people and all other people require permission to be there.

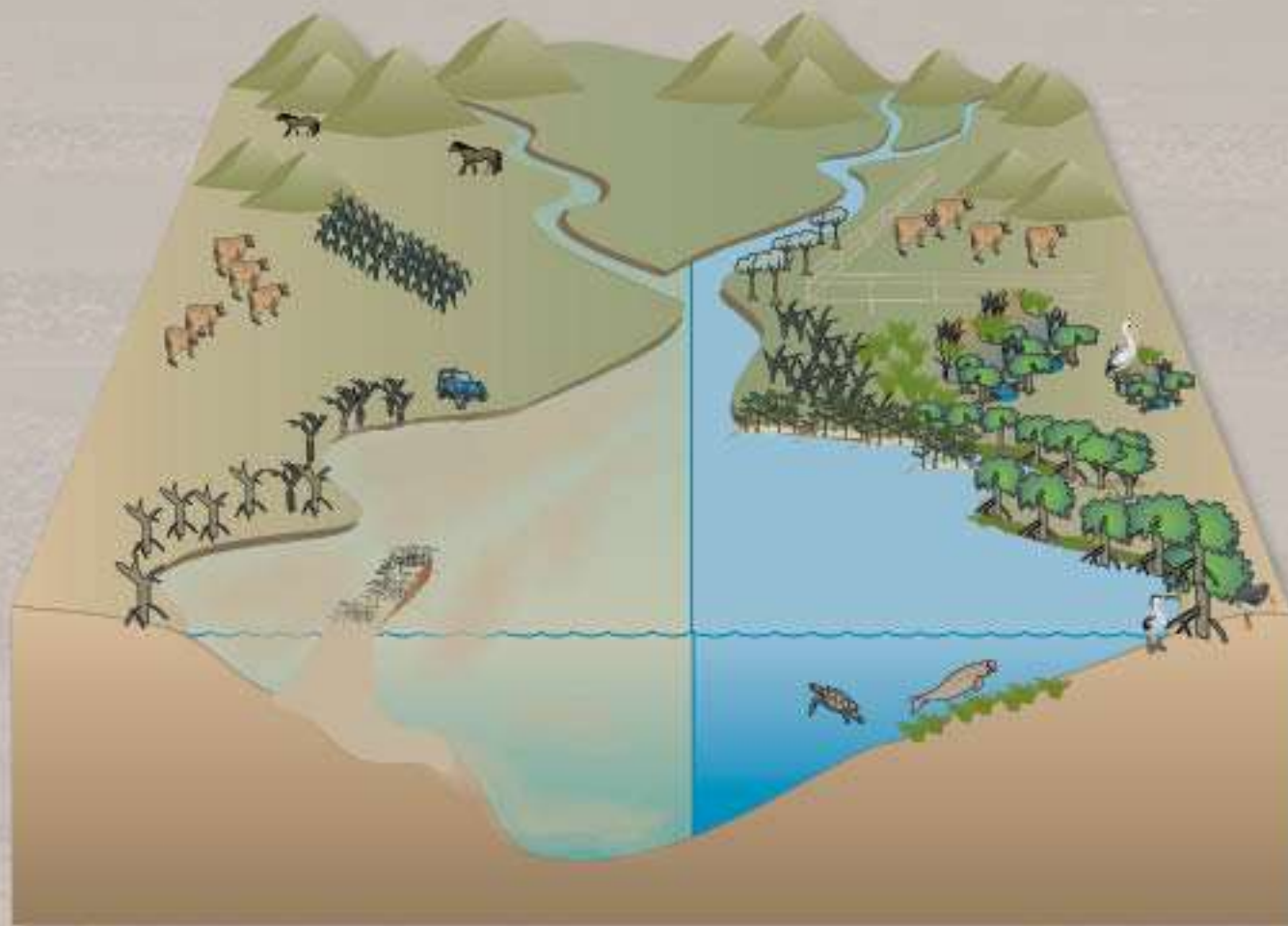
They are also unaware that the traditional laws and customs concerning access and use of the islands and the surrounding seas, and that offence is caused when those laws and customs are not acknowledged and observed.

Visitors can also be unaware that there are sacred sites right across our country, including dangerous story places, and areas that may be closed for sorry business or for environmental management reasons. It is disturbing to us that many of our sites are being unintentionally desecrated by visitors that do not realise that even their presence on country can transgress our traditional law and destroy the significance of a site.

We also believe it is necessary for us to introduce a cultural induction for all visitors to Mornington Island. This would include any visitor who intends to stay for more than one day. The induction program itself could be developed by our Rangers in close collaboration with our Elders.

Extract from the Thuwathu/Bujimulla Indigenous Protected Area Draft Management Plan

Links to Thuwathu/Bujimulla Sea Country Plan



Notes

