

COOCUMBAC ISLAND NATURE RESERVE

PLAN OF MANAGEMENT

NSW National Parks and Wildlife Service
September 2003

This plan of management was adopted by the Minister for the Environment on 16th September 2003.

FURTHER INQUIRIES

For additional information or inquiries on any aspect of the plan, contact the NPWS Mid North Coast Manning Area office at 78 Hargreaves Drive, Taree 2430 or by phone on (02) 6552 4097.

ACKNOWLEDGMENTS

Kim Luckie and Scott Filmer are the principal authors of this plan, with assistance from Mid North Coast Regional staff and the Northern Directorate planning staff.

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FOREWORD

Coocumbac Island Nature Reserve is located in the Manning River on the NSW mid-north coast. The island is situated immediately upstream of the Martin Bridge (formerly part of the Pacific Highway), and is adjacent to the city of Taree.

The reserve contains an important remnant of subtropical rainforest on the Manning River floodplain, and represents one of the few remaining floodplain rainforest remnants in the 400 km between the Hunter and the Clarence Rivers. Lowland rainforest on floodplain covers less than 1000 hectares in NSW, and the remaining stands are often small and isolated. Consequently, this vegetation community has been declared an endangered ecological community under the *Threatened Species Conservation Act 1995* (TSC Act).

The New South Wales *National Parks and Wildlife Act 1974* requires that a plan of management be prepared for each nature reserve. A plan of management is a legal document that outlines how a reserve will be managed in the years ahead.

A draft plan of management for Coocumbac Island Nature Reserve was placed on public exhibition for three months from 12th April until 1st July 2002. The exhibition of the plan of management attracted 12 submissions which raised 10 issues. All submissions received were carefully considered before adopting this plan of management.

This plan of management aims conserve the vegetation on the island, reduce the distribution and spread of introduced species on the island, and promote rainforest regeneration on the island.

This plan of management establishes the scheme of operations for Coocumbac Island Nature Reserve. In accordance with section 76 of the National Parks and Wildlife Act 1974, this plan of management is hereby adopted.

Bob Debus
Minister for the Environment

MANAGEMENT CONTEXT

Location and Regional Setting

Coocumbac Island Nature Reserve is located in the Manning River on the NSW mid-north coast. The island is situated immediately upstream of the Martin Bridge (formerly part of the Pacific Highway), and is adjacent to the city of Taree (see Map, page 7).

Coocumbac Island Nature Reserve, together with Wingham Brush Nature Reserve, is an important remnant of subtropical rainforest on the Manning River floodplain, and represents one of the few remaining floodplain rainforest remnants in the 400 km between the Hunter and the Clarence Rivers. Lowland rainforest on floodplain covers less than 1000 hectares in NSW, and the remaining stands are often small and isolated. Consequently, this vegetation community has been declared an endangered ecological community under the *Threatened Species Conservation Act 1995* (TSC Act).

Coocumbac Island was dedicated as a nature reserve on 18 September 1981 to above the mean high tide mark to preserve its lowland subtropical rainforest. Although only 5ha in size, Coocumbac Island Nature Reserve contains one of the largest floodplain island rainforest remnants in the Manning Valley and is of excellent structural integrity (Williams, 1990; Floyd, 1990).

Historically, the island has experienced a range of landuse practices that resulted in weeds smothering the rainforest canopy and threatening the conservation of the remnant. Since 1987 a successful rainforest regeneration program has been operating on the reserve utilising a method and similar techniques to those developed at nearby Wingham Brush Nature Reserve. Today, both reserves require continual maintenance to address the reinfestation of weed species and to encourage the regeneration of native plant species.

Landscape Context

Natural and cultural heritage and on-going use are strongly inter-related and together form the landscape of an area. Much of the Australian environment has been influenced by past Aboriginal and non-Aboriginal land use practices, and the activities of modern day Australians continue to influence the environment through recreational use, cultural practices, the presence of introduced plants and animals and in some cases air and water pollution.

Both Aboriginal and non-Aboriginal people place cultural values on natural areas, including aesthetic, social, spiritual, recreational and other values. Cultural values may be attached to the landscape as a whole or to individual components, for example to plant and animal species used by Aboriginal people. This plan of management aims to conserve both natural and cultural values. For reasons of clarity and document usefulness natural and cultural heritage, non-human threats and on-going use are dealt with individually, but their inter-relationships are recognised.

Natural and Cultural Heritage Values

Landform and hydrology

Coocumbac Island is a dynamic geomorphic feature shaped and modified by the Manning River, particularly by floods, which occur on average every five years (NSW Public Works Department, 1981). During a minor flood the island is generally inundated at the downstream end and around the lower fringes of the reserve. Approximately every 20 to 30 years larger floods occur and the island is completely inundated by floodwaters.

The island is a mid-channel bar, composed of alluvial fine to coarse sands and clayed sands, which overlay a coarse gravel substrate. From a comparison of aerial photographs taken between 1941 and 1982, the net increase in the total area of the island above the mean high tide mark was approximately 16%. While the southern bank of the island is steep and actively eroding, the northern bank of the island accumulates sediment.

The mangrove community on the northern bank is well established and contributes to the sediment accumulation process. The remains of a beached paddle steamer in this area also traps sediment.

Native plants

Three distinct vegetation communities and 124 native species are present on the reserve. A mangrove woodland/shrubland fringes the island in the intertidal area and consists of grey mangrove (*Avicennia marina*) and river mangrove (*Aegiceras corniculatum*). A swamp sclerophyll forest dominated by swamp oak (*Casuarina glauca*) adjoins and creates a transition between the mangroves and lowland subtropical rainforest. There are no threatened plant species recorded on the reserve.

The rainforest on the reserve is known as floodplain subtropical rainforest, which is listed as an endangered ecological community under the TSC Act. It is classified as of the 'large fig - giant stinger tree association' (Floyd, 1990) with dry rainforest elements. Coocumbac Island and Wingham Brush Nature Reserves represent the southern most limit for this rainforest suballiance. The reserve also represents an example of one of the few floodplain subtropical rainforests in a saline environment and contains a number of species at their southern limit of distribution including *Lomandra hystrix* and native elm (*Aphananthe philippinensis*).

Native elm and native celtis (also know as hackberry) (*Celtis paniculata*) are the most common native tree species. One of the largest recorded specimens in NSW of native celtis is found on the reserve with a height of approximately 30 m and a trunk diameter of 1.2 m.

The island has the maximum number of epiphytic Moraceae (fig) species found at this latitude. Many of the mature emergent trees in the rainforest are fig species,

such as strangler fig (*Ficus watkinsiana*), Moreton Bay fig (*Ficus macrophylla*) and deciduous fig (*Ficus superba*). A recent study of the figs on the island found that up to 70% of mature canopy trees are colonised by strangler figs (NPWS, 2001).

Flooded gums (*Eucalyptus grandis*) have been planted in a small part of the highly disturbed area at the southern end of the island. These trees were planted to provide canopy cover for emergent rainforest species and to assist in minimising erosion during flood events. Flooded gums previously grew on the floodplain island and are a primary coloniser in some rainforest ecosystems. The planted flooded gums were grown from local seed trees. Due to its availability at the time of planting and the likelihood that there is very little genetic diversity in this species, it was considered an appropriate source for the reserve.

The island is a small remnant of native vegetation in an otherwise highly modified floodplain. Its long-term viability would benefit from the planting of suitable species, particularly mature phase species, in the vicinity.

Native animals

The reserve is thought to provide important habitat to a range of riverine, estuarine and rainforest bird species, including the vulnerable wompoo fruit-dove (*Ptilinopus magnificus*). Manning Birdwatchers have compiled a list of birds seen on the reserve, and a survey of invertebrates on the island has been undertaken (Williams, 2001). Both studies have increased knowledge of these components of the biodiversity of the reserve, however, there have been no comprehensive studies or surveys of other native fauna.

Vulnerable species recorded on the island include the osprey (*Pandion haliaetus*) and the grey-headed flying fox (*Pteropus poliocephalus*) which are listed as vulnerable under Schedule 2 of the TSC Act. Grey-headed flying foxes are also listed as vulnerable under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999*. Grey-headed flying foxes roost on the island during the breeding season from September to March each year, with approximately 5000 individuals recorded in 2000-01.

Cultural heritage

The name 'Coocumbac' is of Aboriginal origin meaning 'meeting place' and the island is of spiritual importance to the Biripi people. The island has been used by Aboriginal people for a range of cultural purposes including ceremonies, social gatherings and the collection of bush tucker and medicinal plants ('Uncle' Bert Maher, pers. comm.). There is one recorded Aboriginal site on the island, however there have been no systematic studies for cultural heritage sites on the reserve.

The Purfleet - Taree Local Aboriginal Land Council, the Giuiwan Elders and the Biripi people represent contemporary Aboriginal involvement in Coocumbac Island Nature Reserve. The ongoing involvement of the Aboriginal community with the management of Aboriginal heritage on the reserve is encouraged.

Coocumbac Island is sometimes referred to as 'Goat' or 'Big' Island by the local community. Rainforest timber, particularly rosewood (*Dysoxylum fraserianum*), was logged on the island around the turn of the century and was processed at a sawmill that was located opposite the island on the northern bank of the Manning River. Today, rosewood is still common on the island with several large trees present. The southern end of the island was partly cleared for a market garden and became heavily infested with weeds once cultivation ceased in the 1940s.

Hydrological survey marks are located on a rosewood tree in the southern section of the reserve and were historically used by ships to navigate the river. The marks carved into the tree were approximately 20cm long, but have since been largely covered over by the bark of the tree. There are few hydrological markers of this type remaining on the Manning River, and there is no knowledge of any other of these trees being preserved in the area.

In the 1960s, a tree house was constructed in a mature fig on the reserve and the tree is locally known as the 'Huckleberry Fig'. The trunk of the fig has the remains of bridge spikes, which act as a ladder, spiralling to the upper branches. Previously, there was a platform in the upper branches of the tree.

On the northern bank of the island is a relic of the 1864 paddle steamer *Yaamba*, which beached in 1910. Little remains of the relic today other than the heavily decaying section of the paddle steamer's hull.

Recreation and education

It is estimated that less than 500 people visit the reserve each year. A floating pontoon, walkway and staircase are located on the southern side of the reserve. Limited facilities presently on the reserve include a walking track network, picnic table and interpretation signs. The walking track traverses the length of the island and includes a loop section. The track maintains a 'fluid' nature and moves around new disturbances such as tree branches or new regeneration sites. Due to low visitation levels, the fluid track has minimal effects on the vegetation and soil. It also enables maintenance of the island's natural aesthetics, as chainsaw marks and other human disturbances are not evident. Some sections of the track are used for access to current bush regeneration sites and are therefore only temporary.

The island is well recognised as a site for nature education visits by school and tertiary institution students, with opportunities to learn about the rainforest and its ongoing bush regeneration. The reserve is also visited by guided tours during Heritage Week and the Manning Aquatic Festival, as well as for other field days and activities under the NPWS Discovery Program.

Research and monitoring

The reserve is used for a range of research projects, with studies focusing on the flora, invertebrate fauna and bush regeneration. Most research is conducted by students from tertiary institutions and / or through projects funded from external sources such as the Australian Museum.

In addition, the bush regeneration team operating on the island regularly records a range of biological observations (such as plants in flower or fruit, new species and fauna sightings) during their weekly visits.

Threats to Reserve Values

Introduced species

Prior to the commencement of the bush regeneration program in 1987, Coocumbac Island Nature Reserve was infested by over 70 species of exotic plant species including exotic vines, privet (*Ligustrum* sp.) and trad (*Tradescantia albiflora*) (Dodkin, 1989). The present condition and conservation of the island's native flora is attributed to the dedicated team of bush regenerators and community volunteers who have worked on the reserve over the years. Currently, bush regeneration is undertaken by a team of contract workers, with some maintenance and plantings by TAFE bush regeneration classes and local schools. Taree Public School has been involved in yearly native tree plantings on the reserve since 1991.

Coocumbac Island Nature Reserve is subject to ongoing reinfestation by a number of weed species, mainly through dispersal of seeds by animals and the transportation of weed propagules by flood events. Current weed threats include lantana (*Lantana camara*), madeira vine (*Anredera cordifolia*), balloon vine (*Cardiospermum grandiflorum*), asparagus fern (*Asparagus plumosa*) and trad. There are 27 weeds found on the reserve which are listed under the *Noxious Weed Act 1993*.

Introduced animals recorded on the reserve include foxes (*Vulpes vulpes*), black rat (*Rattus rattus*) and European honeybees (*Apis mellifera*). Hives of feral European honeybees occur in a number of tree hollows and can be in competition with native animals, particularly native bees, honeyeaters and small mammals. Introduced bees may have an impact on the pollination of some native plants and pose a threat to the safety of visitors on the island.

Floods

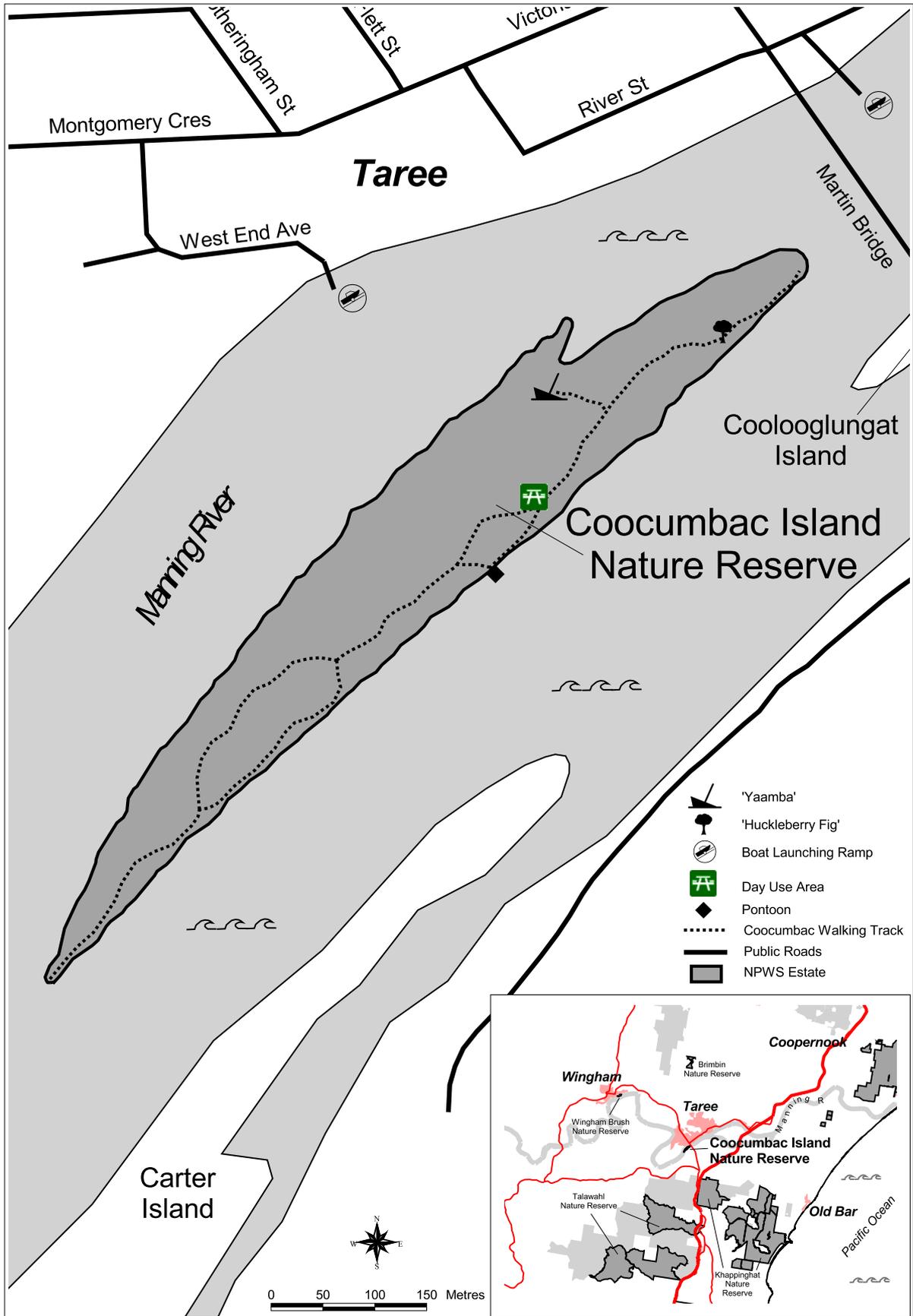
Since European settlement, landuse practices have resulted in clearing and erosion throughout the Manning catchment. Such activities have altered the natural hydrological processes, and are likely to have affected the velocity of floodwaters and the rate of sedimentation on the reserve. Floods can result in damage to vegetation and infrastructure and the importation of weed propagules. Bank erosion generally occurs during flood events. Floods can also contribute to the growth of the island through the deposition of soil. High velocity floods are usually the most destructive.

Visitation and recreation

High visitor numbers and unsuitable recreation activities on the reserve may result in the compaction of walking tracks, damage to infrastructure and vegetation, and general disturbance to the conservation of the island's values. Vandalism of signage and vegetation has previously occurred on the reserve.

As a nature reserve, use and recreational activities should focus on the education of visitors and appreciation of the natural and cultural heritage of the reserve. However, even for these appropriate activities, the values of the island could be threatened by high numbers of visitors.

Reserve Map



MANAGEMENT FRAMEWORK

Legislation

The management of nature reserves in NSW is in the context of the legislative and policy framework, primarily the *National Parks and Wildlife Act 1974* (NPW Act), the *Threatened Species Conservation Act 1995* (TSC Act), and the policies of the NSW National Parks and Wildlife Service (NPWS). The policies relate to nature conservation, Aboriginal and historic site conservation, recreation, commercial use, research and communication. Other legislation, international agreements and charters may also apply to management of the area. In particular, the *Environmental Planning and Assessment Act 1979* (EP&A Act) requires the assessment and mitigation of environmental impacts of any works proposed in this plan.

Nature reserves are reserved under the NPW Act to protect and conserve areas containing outstanding, unique or representative ecosystems, species, communities or natural phenomena.

Under the Act, nature reserves are managed to:

- conserve biodiversity, maintain ecosystem functions, and protect geological and geomorphological features and natural phenomena;
- conserve places, objects, features and landscapes of cultural value;
- promote public appreciation, enjoyment and understanding of the reserve's natural and cultural values; and
- provide for appropriate research and monitoring.

Specific Management Objectives

The management objectives for Coocumbac Island Nature Reserve are to:

- conserve the island as one of the few remnants of lowland subtropical rainforest on floodplain in NSW, which is listed as an endangered ecological community under the TSC Act;
- reduce the distribution and spread of introduced species on the island;
- recognise the reserve as a potential seed source to expand similar rainforest remnants in the region;
- promote the rainforest regeneration program on the island;
- continue to involve the community in the management and protection of the natural and cultural values of the reserve;
- encourage community education on the importance of rainforest remnants and riparian vegetation; and
- promote appropriate scientific research to assist in the management of the natural and cultural values of the reserve.

MANAGEMENT STRATEGIES

Current Situation	Desired outcomes	Strategies	Priority
<p>Soil and hydrology. The island is periodically flooded causing bank erosion on the southern side and a build up of silt on the north. The impact of wave action generated by watercraft and prevailing southeasterly winds also contributes to erosion on the southern bank. Mangroves and other salt tolerant species have been transplanted to the eastern bank and up to 80% of this area is now stabilised (Rolls, 1997).</p> <p>Land clearing and soil erosion in the catchment is thought to be increasing the velocity of floodwaters and quantity of sediment transported by floodwaters onto the reserve.</p>	<p>Minimal disturbance to native vegetation on Coocumbac Island.</p> <p>Bank maintained with suitable riparian vegetation.</p> <p>The retention and regeneration of native riparian vegetation in the Manning Valley to reduce flood velocity and sediment.</p>	Continue the mangrove planting program if necessary to stabilise the banks of the reserve in consultation with NSW Fisheries.	Medium
		Liaise with Waterways NSW to ensure waterskiing, the Aquatic Festival and other events take into account possible impacts on the reserve and where possible occur downstream of Martins Bridge.	Medium
		Liaise with Waterways NSW to minimise any impact caused by wash from watercraft, including maintaining the designated watercraft channel in the southern most section of the Manning River.	Medium
		Any works will be undertaken in a manner that minimises erosion and water pollution.	Medium
		Continue to be actively involved in catchment management in the Manning Valley.	High

Current Situation	Desired outcomes	Strategies	Priority
<p>Native plants and animals. The reserve contains lowland rainforest on floodplain, which is listed as an endangered ecological community under the TSC Act.</p> <p>Up to 70% of mature canopy trees are colonised by strangler figs and there is a concern that they may pose a threat to the future plant diversity on the reserve.</p> <p>The reserve is thought to be an important habitat to a range of riverine, estuarine and rainforest bird species. No comprehensive vertebrate studies for the reserve have been undertaken.</p>	<p>The native vegetation and animals on the reserve are managed to conserve natural biodiversity.</p> <p>Increased knowledge of fauna on the reserve and their ecological requirements.</p> <p>Threatened fauna populations do not decline.</p>	<p>Continue ongoing rainforest regeneration.</p> <p>Promote and support volunteer bush regeneration activities.</p> <p>Encourage neighbours and local authorities to plant endemic species in the vicinity of the island.</p> <p>Monitor the effect of the strangler figs on the biodiversity of the reserve and investigate methods to retain the diversity of rainforest trees.</p> <p>Allow flooded gums to die naturally unless culling is required to allow rainforest succession.</p> <p>The area under the flooded gums will continue to be planted with rainforest species and natural rainforest regeneration will be encouraged in this vicinity.</p> <p>Encourage research into the vertebrate fauna of the island and their ecology.</p>	<p>High</p> <p>High</p> <p>Medium</p> <p>Medium</p> <p>Low</p> <p>Medium</p> <p>Medium</p>

Current Situation	Desired outcomes	Strategies	Priority
<p>Cultural heritage. The island has spiritual importance for the Biripi people and was used by Aboriginal people for a range of cultural purposes.</p> <p>There is one recorded Aboriginal site on the reserve.</p> <p>There are a number of examples of past European activities on the island, including the relic of a beached paddle steamer, a tree house and hydrological survey marks.</p>	<p>The cultural heritage of the reserve is recorded and protected, in consultation with relevant members of the community.</p>	<p>Studies will be encouraged into the reserve's cultural heritage, including formal documentation of cultural resources and locations.</p>	<p>Medium</p>
	<p>The Aboriginal community is involved in the research into their heritage and culture.</p>	<p>The Purfleet - Taree Local Aboriginal Land Council, the Giuiwan Elders and the Biripi people will be encouraged to participate in the management of Aboriginal cultural heritage on the reserve.</p>	<p>High</p>
	<p>History of the island and knowledge from appropriate persons is documented and recorded.</p>	<p>NPWS will actively consult with relevant persons for cultural heritage information and advice.</p>	<p>High</p>
	<p>The community is informed of items of cultural heritage on the reserve, where appropriate.</p>	<p>Research involving Aboriginal heritage or culture will be carried out in consultation with the Aboriginal community.</p>	<p>High</p>
		<p>Information on Aboriginal cultural heritage sites in the reserve will not be promoted to the public unless requested by the Purfleet -Taree Local Aboriginal Land Council and the Giuiwan Elders.</p>	<p>High</p>
		<p>Copies of any Aboriginal cultural heritage studies undertaken by NPWS will be provided to the Purfleet Taree Local Aboriginal Land Council and the Giuiwan Elders.</p>	<p>High</p>

Current Situation	Desired outcomes	Strategies	Priority
		<p>The remains of the <i>Yaamba</i>, the tree spikes and hydrological markers will be left in situ and allowed to decay.</p> <p>Photographically record and interpret the hydrological marker tree.</p> <p>Investigate options for restoration of hydrological survey marks on the rosewood tree provided that such action does not threaten the tree.</p>	<p>Medium</p> <p>High</p> <p>Medium</p>
<p>Scientific study and research. Research projects have focused on the native plants, invertebrate animals and the bush regeneration project on the reserve. There have been no detailed studies on vertebrate animals and the cultural heritage of the reserve.</p> <p>The bush regeneration team currently records data on a range of biological observations on the island.</p>	<p>Research improves knowledge on the management of natural and cultural heritage on the reserve.</p> <p>Research has minimal environmental impact.</p> <p>Natural processes and biological observations will continue to be recorded.</p>	<p>Encourage researchers and educational institutions to use the reserve for appropriate educational and research purposes.</p> <p>Encourage research into the following:</p> <ol style="list-style-type: none"> I. fauna surveys and ecological studies; II. Aboriginal and European cultural heritage; III. bush regeneration practices in relation to lowland rainforest; IV. the effect of the strangler figs on the future plant diversity of the reserve; and V. appropriate management of pest species. <p>Enter all species records obtained from the bush regeneration team and other groups or individuals in the NPWS NSW Wildlife Atlas database.</p>	<p>Medium</p> <p>Medium</p> <p>High</p>

Current Situation	Desired outcomes	Strategies	Priority
<p>Pest species. Weeds are currently being controlled and maintained. A weed control and bush regeneration plan for the reserve is currently being prepared. The plan will identify the need for increased efforts after floods to repair damage and to control the new growth of weeds. The continuation of bush regeneration activities is vital to the ongoing preservation of the reserve.</p> <p>There are no control programs for pest animals. Foxes have previously been known to inhabit the island and fox control programs have been successful in the past. Feral European honeybee hives are present on the reserve.</p>	<p>Weed competition is reduced and native plant regeneration increases.</p> <p>Introduced fauna species are controlled, reduced and, where possible, eliminated from the reserve.</p>	<p>Continue to resource weed control and rainforest regeneration.</p> <p>Prepare a pest management strategy outlining mechanisms for managing and removing exotic species.</p> <p>Finalise the bush regeneration plan specifying techniques for native plant regeneration and weed control.</p> <p>Monitor and target weeds after floods to maximise efforts of the weed control program.</p> <p>Undertake pest species control as required according to the Regional Pest Strategy.</p> <p>Undertake opportunistic control of foxes if required.</p> <p>Remove feral European honeybee hives from the reserve where practical.</p> <p>Regularly consult with volunteers and bush regeneration teams to monitor the progress of pest management strategies.</p>	<p>High</p> <p>High</p> <p>High</p> <p>Medium</p> <p>High</p> <p>Medium</p> <p>High</p> <p>Medium</p>

Current Situation	Desired outcomes	Strategies	Priority
<p>Recreation and education. Access to the island is generally only possible by watercraft. There is a floating pontoon, walkway and staircase located on the southern side of the reserve that provides pedestrian access to the island at both high and low tides, and also assists in reducing bank erosion that would otherwise occur with watercraft beaching around the island.</p> <p>There are limited recreational opportunities on the reserve and the emphasis is on nature appreciation and education. Current facilities on the reserve comprise of a walking track and picnic table. The walking track on the reserve crosses the length of the island and includes a loop section. It is occasionally cut by fallen trees. The route of the walking track is not well marked and is sometimes confused with tracks used by the bush regeneration program.</p> <p>The island is used for nature education by schools and tertiary students, and occasionally other guided NPWS Discovery Program tours occur in association with local festivals. Current seating provided is inadequate to cater for these groups.</p> <p>There are currently no commercial tour operations licensed for the nature reserve. Regular visits by large tourist groups are</p>	<p>The reserve is regionally recognised and used as an educational resource.</p>	<p>Maintain the fluid nature of the walking track and allow it to move around obstructions.</p>	<p>Medium</p>
	<p>Recreational activities on the island remain low key with only limited facilities on the reserve.</p>	<p>Ensure that the walking track is kept well clear of any sensitive cultural heritage sites, including the recorded Aboriginal site.</p>	<p>High</p>
	<p>The pontoon is the only landing point used on the island.</p>	<p>Identify the walking track with appropriate NPWS track marking symbols. Ensure the markers are easily removed to allow the fluid nature of the track, and that the markers are small, unobtrusive and complement the surrounding environment.</p>	<p>High</p>
	<p>The route of the walking track is clearly identifiable without the need for any upgrading of the track.</p>	<p>Monitor compaction on the track.</p>	<p>Medium</p>
	<p>The natural aesthetics of the island are maintained.</p>	<p>Ensure recreational activities remain at low levels.</p>	<p>High</p>
		<p>Install a bench seat at the entrance to the reserve near the stairs from the pontoon and two other bench seats in the day use area.</p>	<p>Medium</p>
		<p>Other than the addition of the bench seats, allow no increase in the capacity of current facilities on the reserve.</p>	<p>High</p>
		<p>Field days and guided tours will be undertaken as part of the NPWS</p>	<p>Medium</p>

Current Situation	Desired outcomes	Strategies	Priority
considered unsustainable.		<p>Discovery Program or as part of the bush regeneration works.</p> <p>Other than the above, commercial and group activities will not be permitted on the reserve.</p> <p>No open fires will be permitted in the reserve.</p>	High
<p>Interpretation and signage. There are three interpretation signs promoting the island. Two are located on the reserve, and one in the Queen Elizabeth II Park at Taree. Signage on the island could be improved to increase visitor understanding and appreciation.</p> <p>As a prominent remnant of an endangered ecological community, the reserve has a role to promote the conservation of other rainforest remnants in the area.</p>	<p>The island is recognised in the Manning Valley for its natural and cultural significance.</p> <p>There is recognition of community involvement in the bush regeneration activities.</p> <p>Interpretation signs encourage visitors to minimise disturbance.</p> <p>The community supports the conservation of rainforest remnants in the region.</p>	<p>Provide interpretation signs along the walking track to highlight vegetation, habitat and cultural heritage items such as the <i>Yaamba</i>.</p> <p>Consult with relevant authorities and individuals to encourage the conservation of other rainforest remnants in the area.</p> <p>Develop a display at the entrance to the reserve interpreting:</p> <ol style="list-style-type: none"> I. the natural and cultural significance of the island; II. community involvement in the bush regeneration project; and III. the importance of minimal disturbance. 	<p>Low</p> <p>Medium</p> <p>Medium</p>

Current Situation	Desired outcomes	Strategies	Priority
<p>Management operations Sections of the walking track are for maintenance access and are varied according to the works program.</p> <p>Some facilities on the reserve (a shed and a pit toilet) have been constructed, primarily for use by the bush regeneration team. Additional temporary structures, such as sheltered tables, may be required in the future.</p>	<p>The extent of walking tracks on the island is reduced.</p> <p>Facilities provided specifically for management purposes and bush regenerators remain at low levels.</p>	Close sections of the maintenance track network when no longer required to access regeneration sites.	Medium
		Maintain and monitor the condition of the pit toilet to ensure there is no contamination to the surrounding environment.	High
		Remove the shed, toilet and other temporary structures when no longer required.	Medium
<p>Reserve additions The intertidal zone is currently outside the reserve boundary. To formalise management actions and jurisdiction with respect to bank stabilisation and the conservation of the <i>Yaamba</i> and natural values of the intertidal zone, it would be beneficial to include this land as part of the reserve.</p>	<p>The reserve boundary is extended to include the intertidal zone.</p>	<p>Pursue options to dedicate the land in the intertidal zone of the island as an addition to Coocumbac Island Nature Reserve.</p>	Medium

High priority activities are those imperative to achievement of the objectives and desired outcomes. They must be undertaken in the near future to avoid significant deterioration in natural, cultural or management resources.

Medium priority activities are those that are necessary to achieve the objectives and desired outcomes but are not urgent.

Low priority activities are desirable to achieve management objectives and desired outcomes but can wait until resources become available.

REFERENCES

- Dodkin, M.J. (1989) Coocumbac Island Nature Reserve — Rainforest Regeneration. NPWS unpublished report, Port Macquarie District.
- Floyd, A.G. (1990) *Australian Rainforests in New South Wales. Volumes 1 and 2*, Surrey Beatty & Sons, Sydney, in association with NPWS.
- Jennings, A. (2002). *Strangling Fig (Ficus spp.) Survey 2002 Coocumbac Island Nature Reserve*. Prepared for the NSW National Parks and Wildlife Service Port Macquarie, Mid North Coast Region.
- NSW Public Works Department (1981) *Manning River Flood History 1831 - 1979*, NSW Public Works Department Report.
- Rolls, T.F. (1997) Habitat Management and Assessment. Coocumbac Island Nature Reserve. Habitat Management. Forest Regen unpublished report to NPWS, Manning Area, Taree.
- Williams, G.A. (1990) Riverine rainforest remnants in the Manning Valley. *Wetlands Australia*, **9**:49 - 67.
- Williams, G.A. (2001) List of insect species recorded from Coocumbac Island Nature Reserve, Taree NSW. Unpublished report for NPWS, Manning Area, Taree.