

**HAT HEAD NATIONAL PARK  
PLAN OF MANAGEMENT**

**NSW NATIONAL PARKS AND WILDLIFE SERVICE**

**JULY 1998**

**Acknowledgements:** This plan of management was prepared by Senior Ranger Colin Campbell of the Port Macquarie District of the National Parks and Wildlife Service in consultation with the Field Services Division.

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## FOREWORD

Hat Head National Park was reserved in 1972 and is located on the North Coast of NSW between the village of Crescent Head and the town of South West Rocks. The park is entirely within the Kempsey Shire and is approximately 500 kms from both Sydney and Brisbane.

Together with Limeburners Creek Nature Reserve, Sea Acres Nature Reserve and Crowdy Bay National Park, Hat Head National Park forms a system of protected areas between Harrington in the south and South West Rocks in the north which is broken only by the coastal towns and villages.

The main features of Hat Head National Park are the long sweeping Smoky and Killick Beaches, the dramatic and geologically significant headlands of Smoky Cape, Korogoro Point and the highest lighthouse in Australia at Smoky Cape.

The park has strong associations with the voyage along the eastern coast of Australia of Lieutenant James Cook who named the most striking headland in the park Smoky Cape in recognition of the fires he observed there during May 1770.

Aboriginal history abounds with many sites listed and an abundance of dreaming and contact stories associated with the park. Some of the shield trees on display in the Australian Museum were removed from the Smoky Cape Escarpment.

Extensive wetlands parallel the beaches of Hat Head National Park although these are being invaded by huge mobile dunes. The higher areas feature eucalypt woodlands grading to moister communities and rainforests in the gullies. The exposed headlands feature extensive coastal heaths with littoral rainforests and palm forests in their lees.

Hat Head National Park contains the northern range limit of a number of temperate species of flora and fauna as well as the southern limit of many tropical and sub-tropical species.

Recreational activities include fishing, camping, surfing, photography, sailboarding, skin-diving, hang gliding and bush walking.

The park will be managed to conserve its natural and cultural heritage whilst remaining a venue for passive or appropriate recreational pursuits. This will be achieved by increasing the information available on plant and animal communities, completing flora studies and undertaking fauna studies as required.

This plan of management establishes the scheme of operations for Hat Head National Park. In accordance with the provisions of Section 75 of the National Parks and Wildlife Act, 1974, this plan of management is hereby adopted.

PAM ALLAN

Minister for  
the Environment

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## 1. INTRODUCTION

The National Parks and Wildlife Act, 1974, requires that a plan of management be prepared for each national park. A plan of management is a legal document that outlines how the area will be managed in the years ahead. The procedures for the adoption of a plan of management are specified in the Act and involve five stages:

- \* The Director-General gives notice that a plan of management has been prepared.
- \* The plan is placed on public exhibition for at least one month and any person may comment on it.
- \* The plan and copies of all representations are referred to the National Parks and Wildlife Advisory Council for its consideration and advice to the Minister.
- \* The Director-General submits the plan, together with the recommendations of the Advisory Council, to the Minister.
- \* The Minister may adopt the plan with or without alteration after considering the recommendations of the Advisory Council or may refer the plan back to the Director-General and Council for further consideration.

A draft plan of management for Hat Head National Park was placed on public exhibition for a period of three months ending 1st September 1997. During the period of public exhibition, seventeen representations were received which raised fifteen issues. The representations were referred to the National Parks and Wildlife Advisory Council for review and report to the Minister. The comments and suggestions of the Advisory Council were in turn considered by the Minister when adopting this plan.

For additional information or enquiries on any aspect of the management of Hat Head National Park, please contact:

Port Macquarie District  
National Parks and Wildlife Service  
152 Horton Street  
(PO Box 61)  
**Port Macquarie 2444**

**Phone (02) 6584 2203**

## 2. MANAGEMENT CONTEXT

### 2.1 NATIONAL PARKS IN NEW SOUTH WALES

The national park concept was introduced into Australia through the establishment of Royal National Park in 1879.

The International Union for the Conservation of Nature and Natural Resources (IUCN) in 1994 defined a national park as:

"A natural area of land/or sea, designated to (a) protect the ecological integrity of one or more ecosystems for present and future generations, (b) exclude exploitation or occupation inimical to the purposes of designation of the area, and (c) provide a foundation for the spiritual, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible."

National parks are part of the regional pattern of land use. The management of a national park aims at minimising disturbance to natural and cultural resources; other land uses, for example, agriculture, forestry and mining, are distinguished by an acceptance or encouragement of environmental modification. National parks, therefore, provide for only a limited part of the range of land uses in a region.

### 2.2 HAT HEAD NATIONAL PARK

#### 2.2.1 Location and Regional Context

Hat Head National Park contains 7 220 ha (July 1998) of coastal land between the village of Crescent Head and the town of South West Rocks on the Mid-North Coast of New South Wales. The park is equi-distant from Sydney and Brisbane, both being a distance of slightly less than 500 km and is 36 km from the regional centre of Kempsey.

The park provides a diverse range of opportunities for outdoor recreation in natural coastal settings. Hat Head National Park is an important local, regional and national resource drawing as it does from a wide catchment area and features many repeat visitors, families of whom have been visiting and camping in the park for generations.

The North Coast Region of NSW has been identified as having one of the highest growth rates in the nation with the town of South West Rocks on the northern boundary of the park, one of the fastest growing centres in the region.

#### 2.2.2 Significance of Hat Head National Park

Hat Head National Park is one of a number of moderately sized or small national parks and nature reserves on the mid north coast of NSW. Other regional conservation areas include Khappingat Nature Reserve (367ha) east of Taree, Crowdy Bay National Park (8 005ha) north-east of Taree, Kattang Nature Reserve (58ha) at Point Perpendicular near Dunbogan, Limeburners Creek Nature Reserve (9 083ha) north of Port Macquarie, Lake Innes Nature Reserve (3 509ha) immediately south of Port Macquarie, Sea Acres Nature Reserve (76ha) within the township of Port Macquarie and Bongil Bongil National Park (1 314ha) near Sawtell south of Coffs Harbour.

These eight areas protect a full range of both erosional and depositional landforms and related biological features which demonstrate the evolution of the coastline between the Manning River and Coffs Harbour.

The coastline south of Coffs Harbour lies within the New England Fold Belt which was formed during a period of mountain building in the late Paleozoic Era (about 260 million years ago). The New England Fold Belt stretches from the Hunter River to the central coast of Queensland.

The oldest rocks of Hat Head National Park were laid down on the Kullatine Shelf which was part of the continental shelf of Australia during the Upper Devonian and Carboniferous Periods 280 to 360 million years ago. These rocks, the Touchwood Formation of Devonian Age and the Kullatine Formation outcrop at Crescent Head south of the park and Hat Head in the central section of the park respectively.

A more recent depositional event occurred during the Lower Permian Period (255 to 280 million years ago) when the Kempsey Beds were laid down. These rocks outcrop at Smoky Cape.

These rocks demonstrate the evolution of the Australian continent in this region. The record shows the transition from deep to shallow water and terrestrial conditions and indicate not only the environments of successive sedimentation events but also the nature of the mountain building processes in the ancestral New England. Some sections of the sedimentary rocks indicate extensive volcanic activity and marine glacial deposits occur at the top of the sequence of the Carboniferous deposits.

An interesting occurrence of adamellite occurs in the far north of the national park in the vicinity of Gap Beach. This rock is a coarse grained pink or white granitic rock which was intruded during the Upper Permian (230 to 255 million years ago) and is the only coastal occurrence of granite on the eastern continental margin between Bundaberg and Moruya Head. A further intrusion of aplite (a fine grained igneous rock which often occurs as a dyke structure) has been emplaced within the adamellite. These features are recognised as significant by the Geological Society of Australia (NSW Division) because of the easily accessible surface exposure of the contact zone between the Kempsey Beds and the intruded adamellite and the aplite. All of the sedimentary rocks in the contact zone demonstrate contact metamorphism.

During the Permian Period, the rocks of the Carboniferous and early Permian were subject to folding and other deformation. Further folding and faulting of a compressive nature occurred during the Mesozoic Era. Accordingly, the region is now described as the Eastern Belt of Folds and Thrusts region of the New England Fold Belt.

The coast of eastern Australia has a complex geological and geomorphic history. The present coast developed during the late Mesozoic and early Tertiary Periods as a result of the rifting of eastern Australia when the Coral Sea and Tasman Sea were formed between 90-65 million years ago. In contrast to the spectacular mountain and volcanic landforms of continental and oceanic plates in collision, the east coast of Australia is a "trailing edge" of the Australian plate as it drifts across the planet's surface. Similar trailing edges of continental plates are the south-east coast of Africa, the Brazilian coast of South America and the west coast of India. All these coastal areas are characterised by a high escarpment delineating the inland margins of coastal plains and continental shelves.

The past two million years have seen the sea level throughout the world rise and fall in large cycles with the onset and melting of icecaps and glaciers brought on by successive ice ages. Because the continental shelf is generally both wider and more shallow in the north compared to the south coast of NSW (south of 33 degrees south - near Lake Macquarie), successive incursions of the sea over the continental shelf swept abundant amounts of sand and other weathered littoral debris onshore.

Three phases of this coast building process are of importance to the understanding of the Macleay Coast landscape:

- During earlier periods of high sea level extensive deposits of marine sediments were laid down, forming the inner dune barrier. This formation is not well developed in Hat Head National Park but is a feature of Myall Lakes National Park to the south.
- A drop in sea level produced the swampy plains of the inland coastal plain sections of Hat Head National Park which are fluvial and/or estuarine in origin. The age of these deposits is unknown but active re-working is likely to have taken place during the latter part of the last glacial period (50 000 to 17 000 years ago).
- The latest and most important rise in sea level took place between seventeen thousand and six thousand years ago. this incursion of the sea drowned the shoreline and produced the current coastline. The progradation of the coast by deposition has resulted in offshore islands being encapsulated in the mainland and rocky bays and coves being filled with sand deposits.

Hat Head National Park is located at the southern limits of the Macleay-Macpherson Overlap; an ecological transition zone between the temperate southern areas of eastern Australia and the tropical north. The zone of overlap has significance for the number and diversity of both plant and animal species.

The vegetation of the park comprises a full range of communities from coastal dunes, through hind-dune swamps and heathlands to tall open forests of coastal headlands. The pattern of vegetation varies according to soils, topography, drainage, exposure to coastal winds, aspect and fire history.

Substantial areas of wetland adjacent or close to the park have been identified under State Environmental Planning Policy 14, Coastal Wetlands. Twenty four wetlands have been mapped which lie either totally or partly within the park. These include the very significant Swan Pool as well as Saltwater Lagoon behind South-West Rocks, the large wetland behind Smoky Beach and the large wetland behind Killick Beach.

Less than one quarter of the area of high value wetlands that existed prior to European settlement on the north coast south of Coffs Harbour remain. Swan Pool and the other wetlands that remain are of critical importance for the conservation of wetland plant and animal communities.

In the context of the coast south Coffs Harbour, Hat Head National Park is of even greater importance because the it provides essential links to and complements other protected areas such as the national parks and nature reserves noted above which conserve different but related physical and biological phenomenon of the region.

An essential aspect of the management of these protected areas is to recognise their significance within the framework of a regional conservation strategy. The aim of such a strategy is to promote the concepts of biodiversity and its protection, with emphasis on the inter-relationships that exist between individual protected areas or groups of protected areas and between protected areas and other forms of land-use. The protection of a network of conservation areas is essential to allow plant and animal communities to maintain a maximum level of resilience to the increasing impacts of the human environment.

The management of the wetlands of the Macleay Floodplain to conserve aquatic and semi-aquatic plant and animal communities is an important aspect of the regional conservation strategy.



Hat Head National Park one of the system of north coast protected areas which is important for many species of wading and shore birds for resting, feeding and/or roosting on sand and mud flats in estuaries and beaches and on rock platforms during their annual migration. These species are covered by international conservation agreements; particularly:

- The Agreement between the Government of Australia and the Government of Japan for the Protection of Migratory Birds and Birds in Danger of Extinction and their Environment (JAMBA); and
- The Agreement between the Peoples Republic of China and the Government of Australia for the Protection of Migratory Birds and their Environment (CAMBA).

One species of bird which occurs in the park, the little tern, is recognised as being endangered under the Threatened Species Conservation Act 1995 and therefore of very high conservation status. A further four birds and four, probably five mammals are recognised as being vulnerable under that Act.

The coast of NSW has a discontinuous chain of heathlands that are essential for the north-south migration of animals, for example honeyeaters. Most of the heathlands which remain are within protected areas managed by the Service and Hat Head National Park is an important link in this chain.

Hat Head National Park contains sites and places of significance to the Aboriginal community, some of which are also of archaeological significance to all Australians. Few sites of non-Aboriginal occupation and use of the park area survive apart from World War Two gun and radio emplacements on Smoky Cape and evidence of the impacts of sandmining. The proposed addition of a number of buildings associated with the Smoky Cape lightstation will add to the historic interest of the park. Other than these sites, former landuses have left little tangible evidence and for these reasons much of the cultural heritage of the park consists of oral and documentary records.

Accommodation for visitors to these coastal parks includes motels, holiday cottages and caravan parks in the adjoining coastal resorts and villages, and within Hat Head National Park, Smoky Beach and Hungry Head cater for short-term camping in a natural setting. A number of national park picnic areas and day walks are also provided in Hat Head National Park.

The North Coast Region of NSW has been identified as a priority area for tourism development. Emphasis is being given to identifying potential tourism development areas on the north coast with outstanding environmental and aesthetic qualities and which are sympathetic to the environment and aim to encourage the appropriate use of natural attractions and visitor facilities.

The significance of Hat Head National Park can be summarised:

**Regional nature conservation values:** the park;

- \* Is one of a group of national parks and nature reserves which protect important natural features of the north coast of NSW south of Coffs Harbour;
- \* Includes within the nature conservation system of NSW, geological features which demonstrate the development of the Eastern Belt of Folds and Thrusts of the New England Fold Belt;

- \* Protects a fine example of igneous adamellite and aplite intrusions and demonstrates the contact geology of these structures and the surrounding sedimentary rocks;
- \* Demonstrates the evolution of the Macleay coast over the past two million years and protects examples of a wide range of coastal landforms;
- \* Protects a wide range of coastal vegetation communities including wet and dry heathland, littoral rainforest, eucalypt forest and woodland;
- \* Protects important remnants of the once extensive fresh water wetlands of the Macleay Floodplain;
- \* Protects habitats which support a diverse range of wildlife communities including refuges for plants and animals of ecological significance;
- \* Is an important link in the north-south migration of certain animal species; and
- \* Is an important part of the broader nature conservation system of the north coast of NSW and complements other programs aimed at the conservation of biodiversity on north coast south of Coffs Harbour.

**Regional cultural heritage value:** the park;

- \* Includes areas which are of spiritual significance to the Aboriginal community; and
- \* Demonstrates the pattern of Aboriginal occupation and economy.

**Regional educational and scientific values:** The park

- \* Provides opportunities for scientific study of coastal processes; and
- \* Provides opportunities for environmental education and field studies.

**Regional recreation and tourism:**

- \* The park provides a range of opportunities for outdoor recreation and appreciation of the natural and cultural heritage of the north coast south of Coffs Harbour.

### 3. OBJECTIVES OF MANAGEMENT

#### 3.1 GENERAL OBJECTIVES FOR NATIONAL PARKS

The following general objectives relate to the management of national parks in New South Wales:

- \* the protection and preservation of scenic and natural features;
- \* the conservation of wildlife;
- \* the maintenance of natural processes as far as is possible;
- \* the preservation of Aboriginal sites and historic features;
- \* the preservation and appropriate interpretation of the European cultural heritage;
- \* the provision of appropriate recreation opportunities; and
- \* the encouragement of scientific and educational inquiry into environmental features and processes, prehistoric and historic features and park use patterns.

#### 3.2 SPECIFIC OBJECTIVES FOR HAT HEAD NATIONAL PARK

Consistent with these general objectives, the following specific objectives relate to the management of Hat Head National Park.

- \* the protection of Hat Head National Park as part of the system of regionally important national parks and nature reserves on the north coast of NSW south of Coffs Harbour and which conserve:
  - a wide range of coastal landforms;
  - hydrological features of regional significance;
  - a wide range of coastal vegetation communities including wet and dry heathland, littoral rainforest, eucalypt forest and woodland; and
  - habitats which support a diverse range of wildlife communities including refuges for plants and animals of ecological significance;
- \* the protection of Aboriginal sites and places and the provision of opportunities for the Aboriginal community to be involved in the management of these sites.
- \* the promotion of public awareness and appreciation of Hat Head National Park with emphasis on:
  - the importance of the national park in the regional pattern of conservation areas on the north coast of NSW south of Coffs Harbour;
  - the physical and biological significance of the coastal environment for the conservation of native plants and animals; and
  - appropriate use of the recreation resources of the park, particularly the recreational use of its beaches.

- \* ensuring that the pattern of outdoor recreation in the park is appropriate with emphasis on providing a range of alternative access opportunities and low key facilities to and on the coast to that provided elsewhere in the region; and in particular, to provide opportunities for appropriate use, understanding and enjoyment by:
- maintaining the present recreational setting of the camping areas at Smoky Beach and Hungry Head;
  - maintaining the existing day use areas and the road and walking track networks; and
  - expanding environmental education and interpretation programs and facilities.

### **OVERALL STRATEGY**

Hat Head National Park will be managed during the lifetime of this plan to ensure the protection of the area and the maintenance of its natural processes. Emphasis will be given to the restoration of modified lands and the control and minimisation of any unacceptable impacts of public use.

Particular emphasis will be given to a reduction in the overall frequency of fire so as to provide for the rehabilitation of native vegetation communities which have become degraded from the too frequent occurrence of arson-lit wildfire during recent decades.

The importance and purpose of management programs relating to the protection of the natural features and cultural heritage of the park and the control of fire, weeds and feral animals will be promoted amongst the local community, particularly neighbours of the park.

The Service will support the development of appropriate tourist and recreation facilities on lands adjacent to or in close proximity to the park.

## 4. POLICIES AND FRAMEWORK FOR MANAGEMENT

This chapter contains the policies and framework for the management of Hat Head National Park together with relevant background information.

Policies are summarised under the following section headings:

Conservation of Nature;  
Cultural Heritage; and  
Use of the Area.

The policies established in this plan of management will provide the framework for management decisions consistent with the anticipated resources available to the Service and with anticipated community trends for the next five to ten years.

The actions identified are those to which priority will be given in the foreseeable future. Other management actions may be developed over the life span of this plan consistent with the policies set out in the plan.

Subject to the provisions of section 81 of the National Parks and Wildlife Act, where not specifically provided for in this plan of management, the management of Hat Head National Park will also be in accordance with the objectives of this plan of management, the National Parks and Wildlife Act and with general Service conservation and other management policies.

### 4.1 CONSERVATION OF NATURE

#### 4.1.1 Landforms, Geology, Soils and Hydrology

The landscape of Hat Head National Park is a complex mix of coastal depositional and erosional landforms. The scenically impressive features are former offshore islands at Smoky Cape and Korogoro Point that have been "tied" to the mainland by sand deposition during the last 6 000 years. The depositional landforms include irregular longitudinal sand ridges through which meander freshwater and saline drainage depressions and swamps.

In the north of Hat Head National Park part of the Smoky Cape Range is the dominant element of the otherwise flat landscape of the Macleay River flood plain. The range's two prominent peaks, Big Smoky (309m) and Little Smoky (210m) are joined by a north south trending ridge line from which falls a series of secondary ridges and steep valleys. The northern part of Smoky Cape is composed of the intruded rock types adamellite and aplite; the southern part is composed of sedimentary rocks of the Kempsey Beds. The geologically interesting contact zone between the two rock types lies just to the north of Gap Beach.

Landward of the Smoky Cape Range bed-rock is covered by alluvial deposits overlain by recent fluvial and estuarine sediments. These form the Salt Water Lagoon and associated wetlands which are the northern extremity of Hat Head National Park.

Smoky Beach extends seventeen kilometres south of Smoky Cape to Hat Head Village at Korogoro Point/Hat Hill (164m). This feature is an outcrop of massive conglomerate, the Kullatine Formation, which extends 4km to the south to Hungry Hill (96m). The park then extends twelve kilometres south along Killick beach to it's southern boundary adjacent to the coastal village of Crescent Head.

Immediately behind the frontal dunal system on both Smoky and Killick beaches are extensive narrow freshwater wetlands which parallel the dunal systems. These dunal

systems are highly mobile on both beaches and are invading the wetlands at a rate in excess of 1m/year.

In the case of Smoky Beach the dunes have become mobile through a combination of fire and grazing destroying the natural stabilising vegetation prior to dedication of the park. In the case of Killick Beach the area was mined for mineral sands prior to reservation and not successfully stabilised owing to sand drifting from outside of the mining path. In both cases the introduced weed bitou bush (*Chrysanthemoides monilifera*) has led to tussock erosion exacerbating the problem of wetland inundation by these mobile dunes.

In 1986 the Soil Conservation Service of NSW prepared a report on the rehabilitation of both Smoky Beach and Killick Beach. The Soil Conservation Service found that according to 1981 aerial photographs, there were approximately 700 hectares of active coastal sand drift and the estimated rate of drift was up to 6 metres per year. In one section of the park some 70 hectares of valuable coastal wetlands had been destroyed since 1942.

The Service proposes to seek expressions of interest in a study to determine:

- the desirability (including environmental and economic feasibility) of stabilising and revegetating the mobile sand dunes; including
- the likelihood of swamps redeveloping in the swales behind the the moving sand dunes.

The coastal plain of the Macleay River is generally flat and low lying country. To the east within the park there are some large wind blown back dunes, particularly south of Smoky Cape and Hat Head which consist of medium grained clean sand. Indurated 'coffee rock' is found in many places about three meters below ground surface. Low lying, flood prone flats and wetlands consist of fine silts, clayey sands and clays.

The Catchment Management Act came into effect in 1989. Total catchment management provides an umbrella framework to aim for amongst other matters, cleaner water, less soil erosion, improved vegetation cover, the maintenance of ecological processes and a balanced and healthier environment. It also provides a focus to balance conservation needs and development pressures and encourages a more aware and involved community. An important means of achieving these aims is the formation and support of catchment management committees at a local level.

The Service is represented on the Macleay Total Catchment Management Committee which co-ordinates and recommends funding for dune care programs.

Dune Care groups have been established in both South West Rocks and Hat Head villages and work on projects both within the park and off-park. Within the park, the Hat Head group maintain the vehicle beach access at Hat Head onto Smoky Beach and the vehicle beach access onto Killick Beach at Hungry Head. The South West Rocks group has projects of weed control and revegetation at Gap Beach as well as maintenance of vehicle beach access onto Smoky Beach near the Smoky Camping Area.

Extensive areas of Hat Head National Park are underlain by ground water which is an extension of the Macleay floodplain. There are three borefields operated under licence from the Service by Kempsey Council for water supply to the villages at Hat Head, South West Rocks and Crescent Head. The impact of the existing borefields is not well understood although it has been suggested that the extraction of groundwater may have an unacceptable impact upon the vegetation of the park during drought. **(see also sub-section 4.3.4 Management Operations pp 44-45)**

The growth of the coastal villages may require extension of the existing borefields. This has been proposed for the Hat Head village borefield.

Sandmining was a significant activity in Hat Head National Park for the extraction of rutile, zircon, monazite and ilmenite for up to fifty years. In June 1977, the then government established the current policy on coastal mineral sands mining whereby the granting of new mining approvals in existing and proposed national parks ceased. As established leases expired they were not re-granted and sand-mining was progressively phased out in conservation areas along the NSW coast. All mining operations had ceased in Hat Head by the late 1970s, and all mining leases have subsequently expired.

Mining impacts extended beyond the immediate areas of mining because of the narrow linear nature of ore bodies and the associated mining infrastructure, including roads, plant sites and drains. Primary restoration of mined and disturbed areas is almost completed. Because of the long history of mining the standard of restoration varies throughout the park.

There is a continuing requirement to protect the mined areas against weed invasion, damage from fire and unregulated visitor use.

Certain lands adjacent to Hat Head National Park are proposed for addition to the park and have been classified under the relevant Local Environmental Plan as 8(b) zoning.

## **Policies**

- \* All features of geological, geomorphic and pedological interest will be protected, including:
  - . the wetlands to the west of the frontal dunal systems of Smoky and Killick beaches;
  - . the freshwater wetlands of the Swan Pool to the west of the village of Hat Head; and
  - . the beach dunal systems;
- \* Restoration programs for mined areas will be maintained.
- \* Research will be encouraged in mined areas to establish the long term effects of mining and the ecological processes of restoration.
- \* Subject to developing an environmentally and economically feasible proposal, the mobile dunes of Smoky and Killick beaches will be stabilised.
- \* All management activities, where relevant, will incorporate soil erosion management principles and practices developed by the Department of Land and Water Conservation of New South Wales.
- \* The Service will continue to participate in and support district total catchment management committees.
- \* The Service will oppose any development or activity which may compromise the scenery, landforms, hydrology or scenic features of the park.

## Actions

- \* Features of geological, geomorphic and pedological interest will be interpreted, including:
  - . the beaches and coastal dunes which demonstrate the evolution of the Macleay coastline during recent geological history;
  - . the contact zone between the intruded rocks and the sedimentary rocks of Smoky Cape; and
  - . the conglomerate rocks at Hat Hill which demonstrate the basement rocks of parts the Macleay Valley which were laid down during the creation of the New England Fold Belt.
- \* Lands identified as 8(b) in the Kempsey Shire Local Environmental Plan will be progressively acquired as funds become available.
- \* Past sandmining restoration works will be monitored and where necessary further maintenance and protection of areas being restored will be undertaken.
- \* The Service will seek expressions of interest for the stabilisation of the mobile sand dunes of Smoky and Killick beaches.
- \* Monitoring will be undertaken to establish the environmental impacts of the Kempsey Shire's water supply bores which are located within the park.
- \* Any proposal for extension of the water supply borefields will require that a comprehensive environmental impact assessment be completed before consideration by the Service and the Minister.

### 4.1.2 Climate, Native Plants and Animals

The climate of the park is best described as warm temperate. The mean daily temperature range lies between 19<sup>0</sup>C and 29<sup>0</sup>C in the summer and 6<sup>0</sup>C and 19<sup>0</sup>C in the winter. The main proportion of rain falls during the summer and autumn months with the mean annual rainfall being 1200mm. In the north of the park the topographic relief of the Smoky Cape Range causes higher local rainfall with the western slopes being in a rainshadow.

The wind pattern is typical of the NSW north coast with dry westerlies, hot in the summer and cool in the winter being followed by a moister wind from the south. The summer wind is predominantly from the north-east and is heavily salt laden.

A survey of the vegetation of Hat Head National Park has been undertaken. This survey describes the park's vegetation in terms of bedrock, sand dune, floodplain and estuarine habitats. Other factors which influence the distribution of plant species include soil fertility and drainage, degree of exposure, fire and competition between plants. The survey has identified the following important plant communities:

**Bedrock vegetation** of the national park is demonstrated by those communities which occur on Smoky Cape and Hat Head-Hungry Hill. The most exposed seaward aspects support a closed grassland of kangaroo grass (*Themeda australis*) with associated prostrate shrubs. A tall shrubland to low forest of black she-oak (*Allocasuarina littoralis*), dogwood (*Jacksonia scoparia*) and white banksia (*Banksia integrifolia*) replaces the kangaroo grassland on less exposed aspects, especially where fires have not burned for some time.



Increasingly sheltered sites are occupied by dry and wet sclerophyll forest, common species of which include blackbutt (*Eucalyptus pilularis*), brush box (*Lophostemon confertus*), forest red gum (*E. tereticornis*), grey ironbark (*E. placita*), northern scribbly gum (*E. signata*), red mahogany (*E. resinifera*), tallowwood (*E. microcorys*) and white stringybark (*E. globoidea*).

Littoral rainforest is present in moist fire shadow areas, for example at Gap Beach and west of Smoky Cape lighthouse. Common dominants of these rainforests include bauerella (*Sarcomelicope simplicifolia*), brush box, cabbage palm (*Livistona australis*), red olive plum (*Cassine australis*) and yellow tulip (*Drypates australasica*).

An area of cleared land at Gap Beach is being revegetated with rainforest species.

**Vegetation communities on sand dunes:** Dunal landforms in Hat Head National Park are extensive, and well developed interbarrier depressions separate the inner and outer barriers. Where vegetated, the Holocene outer barrier displays a general zonation from hairy spinifex (*Spinifex sericeus*) grassland on low windward slopes of the foredune to shrubland of beach Sally wattle (*Accacia sophorae*) further upslope and then tall shrubland or low forest of coast tea tree (*Leptospermum laevigatum*) and white banksia.

Increasingly sheltered positions are occupied by forest or woodlands of species such as pink bloodwood (*Corymbia intermedia*) and saw banksia (*Banksia serrata*). Small stands of littoral rainforest are present at some locations, for example along Gap Beach and immediately south of Smoky Cape. Common canopy species of these rainforests include blue lilly pilly (*Syzygium oleosum*), brush cherry (*Syzygium australe*), coogera (*Arytera divaricata*), green tamarind (*Elattostachys nervosa*), native guava (*Rhodomyrtus psidioides*), plum pine (*Podocarpus elatus*), three veined cryptocarya (*Cryptocarya triplinervis*) and tuckeroo (*Cupaniopsis anacardioides*).

The podsolised Pleistocene sands of the inner barrier support forest, woodland, mallee shrubland, heathland and sedgeland communities. Common tree species of dry sclerophyll forest and woodland include blackbutt, needlebark stringybark (*E. planchoniana*), northern scribbly gum and red bloodwood (*Corymbia gummifera*); some of which occur as mallee on less fertile or more exposed sites.

Wallum banksia (*Banksia aemula*) is typical of dry heathland and shrubland while wet heathland and shrubland supports such species as heath banksia (*Banksia ericifolia*), knotted scale-rush (*Lepyrodia interrupta*), lemon-scented tea tree (*Leptospermum liversidgei*), prickly tea tree (*L. juniperinum*), spear grasstree (*Xanthorrhoea fulva*) and swamp banksia (*Banksia oblongifolia*).

Sedgeland, rushland, swamp forest and swamp woodland communities characterise lower drainage lines and perched swamps of the inner barrier and inter-barrier depressions. Common species of shallower sedgeleands include wrinkle-nut twig-rush (*Baumea teretifolia*), zig zag bog rush (*Schoenus brevifolius*), pale cord-rush (*Restio pallens*) and slender twine rush (*Leptocarpus tenax*).

In deeper, more permanent water the communities are dominated by soft twig-rush (*Baumea rubiginosa*), giant sedge (*Lepironia articulata*), jointed twig-rush (*Baumea articulata*), tall spike-rush (*Eleocharis sphacelata*) and

common reed (*Phragmites australis*). Even deeper areas of water may lack emergent vegetation.

Swamp forest and woodland dominants are broad-leaved paperbark (*Melaleuca quinquenervia*), swamp mahogany (*E. robusta*) and swamp oak (*Casuarina glauca*).

**Much of the lower Macleay floodplain** has been cleared for agriculture. Nonetheless, parts of the Swan Pool, a significant floodplain wetland, occur in the park in the vicinity of Upper Kinchela and Belmore River. The wetland vegetation of the Swan Pool displays a zonation from fresh meadow to seasonal fresh swamp and reed swamp with increasing depth and permanence of inundation. Fresh meadows are covered by up to 30 centimetres of water after periods of rainfall, whereas standing water in reed swamps may be one metre or more deep in wet seasons.

Common species of the Swan Pool wetlands include *Bolboschoenus fluviatilis*, common reed, spike rush (*Eleocharis equisetina*), water couch (*Paspalum distichum*) and water pepper (*Persicaria hydropiper*). Fringing the wetlands are swamp forests of broad leaved paperbark and swamp oak.

**Only limited areas of estuarine vegetation** occur in the national park along Korogoro Creek and about Saltwater Lagoon south-east of South West Rocks. Tidal flats which are inundated daily support a low forest and woodland dominated by grey mangrove (*Avicenna marina*) with river mangrove (*Aegiceras corniculatum*) also present.

Saltmarsh characterised by sand couch (*Sporobolus virginicus*) and samphire (*Sarcocornia quinqueflora*) replaces the mangroves upslope where tidal inundation is less frequent, and more upstream sites support bare twig-rush (*Baumea juncea*) sedgeland and maritime rush (*Juncus kraussii*) rushland. Swamp forest or woodland dominated by swamp oak often fringes the estuarine area.

Areas of estuarine vegetation adjoin the national park along Saltwater Inlet which leads to Saltwater Lagoon and Killick Creek.

More than 500 plant species have been recorded in the national park to date, some of which are of particular conservation significance. One species, austral toadflax (*Thesium australe*) is considered to be nationally vulnerable and has been classified as vulnerable on Schedule 2 of the Threatened Species Conservation Act 1995. Austral toadflax occurs in kangaroo grass communities on Hat Head. It is a short-lived herb which parasitises the roots of kangaroo grass and has seed which appears to lie dormant in the soil for many years.

Under the Threatened Species Conservation Act a recovery plan must be prepared for endangered and vulnerable flora and fauna. The purpose of a recovery plan is to promote the recovery of a threatened species, population or ecological community with the aim of returning the species, population or ecological community to a position of viability in nature.

The Act provides that a recovery plan for a plant or animal listed on Schedule 1 must be prepared within five years from December 1995. The Act also provides that a recovery plan for a plant or animal listed on Schedule 2 must be prepared within ten years from December 1995.

A threat abatement plan outlines the management of key threatening processes with a view to their abatement, amelioration or elimination.

Recovery plans and threat abatement plans are prepared as part of a Service wide program and are not the responsibility of any one park or district.

Species which are not included on the schedules of the Threatened Species Conservation Act but are nevertheless restricted or uncommon include bog rush (*Schoenus scabripes*) and pink paperbark (*Melaleuca squamea*) in dunal swamps; *Durringtonia paludosa* in dunal swamps, swamp forest and swamp woodland; *Maundia triglochinos* in floodplain wetlands; Port Jackson pine (*Callitris rhomboidea*) in dunal forest and woodland; shore spleenwort (*Asplenium difforme*) in exposed headland crevices and single fringe rush (*Abildgaardia ovata*) in headland grassland.

A number of plant species approach their southern limit within the park. These include narrow-leafed milk vine (*Marsdenia fraseri*), Whites tea tree (*Leptospermum whitei*), brown bolly gum (*Litsea leefeana*), hodgkinsonia (*Hodgkinsonia ovatiflora*), three-veined cryptocarya, scribbly gum and screw pine (*Pandanus tectorius*). Dagger hakea (*Hakea teretifolia*) and darwinia (*Darwinia leptantha*) reach their northern limit in the park.

The park is very rich in ground, rock and tree orchids and over twenty species of orchids listed in Schedule 13 (Protected Native Plants) of the National Parks and Wildlife Act of 1974 are to be found within the park.

The Atlas of NSW Wildlife records the little tern (*Sterna albifrons*) which is classified as endangered under Schedule 1 of the Threatened Species Conservation Act as occurring in the park. A number of other animal species recorded in the Atlas as occurring in or near Hat Head National Park are listed in Schedule 2 of the Act as vulnerable; the pied oyster catcher (*Haematopus longirostris*), black-necked stork (*Xenorhynchus asiaticus*), osprey (*Pandion haliaetus*) Terek sandpiper (*Xenus cinereus*), koala (*Phascolarctos cinereus*), tiger quoll (*Dasyurus maculatus*), brush-tailed phascogale (*Phascogale tapoatafa*) and the eastern chestnut mouse (*Pseudomys gracilicaudatus*). The Queensland blossom bat (*Syconycteris australis*) is expected to occur in the park; particularly in the cabbage tree palm vegetation community.

The Smoky Range provides habitat for a koala population which is known to utilise the park and adjacent private and Crown lands in South-West Rocks. Under State Environmental Planning Policy 44 Kempsey Shire Council is required to prepare a Koala Management Plan which will deal with koala management issues in areas outside Hat Head National Park.

Hat Head National Park contains a number of osprey nesting sites which are monitored by the National Parks and Wildlife Service as part of a district wide program for all osprey nesting sites, both on and off park. Sites are known from Scotts Head in the north to the banks of the Manning River in the south.

Hat Head National Park is important for many species of wading birds for resting, feeding and/or roosting on sand and mud flats in estuaries and beaches and on rock platforms during their annual migration. These species are covered by international conservation agreements particularly:

- The Agreement between the Government of Australia and the Government of Japan for the Protection of Migratory Birds and Birds in Danger of Extinction and their Environment (JAMBA); and

- The Agreement between the Peoples Republic of China and the Government of Australia for the Protection of Migratory Birds and their Environment (CAMBA).

Species recorded in or near Hat Head National Park and which are identified in one or both of these two Agreements, in addition to the little tern, osprey, Terek sandpiper and pied oyster catcher noted above, include:

brahiminy kite (*Haliastur indus*);  
 white-bellied sea eagle (*Haliaeetus leucogaster*);  
 whimbrel (*Numenius phaeopus*);  
 sharp-tailed sandpiper (*Calidris acuminata*);  
 common sandpiper (*Actitis hypoleucos*);  
 Lathams Snipe (*Gallinago hardwickii*);  
 wood sandpiper (*Tringia glareola*);  
 common greenshank (*Tringia nebularia*);  
 marsh sandpiper (*Tringia stagnatalis*); and  
 rainbow bee eater (*Merops ornatus*).

The invertebrate fauna is rich and several taxa of butterflies (*Lepidoptera*) are notable including:

- the regent skipper, the largest member of the Australian *Hesperiid* family which is only found in Hat Head National Park and the adjacent Limeburners Creek Nature Reserve where they feed on the tuckeroos in littoral rainforest;
- an unusual red-eyed variant of the symmomus skipper (*Trapezites symmomus*) found at Gap Beach and Big Smoky;
- four species of swallow-tailed butterflies (*Papilionids* spp.) found in and about the mesic communities;
- a local population of *Arctiid* moth which occurs in the tuckeroos in the dry rainforests of the coastal headlands; and
- several essentially tropical species of miller moths (*Noctuidae* spp.) which are also found in the tuckeroos in the dry rainforests of the coastal headlands.

The data available to the Service on the distribution of native plant and animal communities and other information relevant to the management of native plants and animals in the park is being progressively stored on the Service's Environmental Resources Mapping System (E-RMS) computer data base and the Atlas of NSW Wildlife.

### **Policies**

- \* The protection of native plants and animals will place emphasis on protecting significant ecosystems and habitats including:
  - . those listed as rare and endangered; and/or
  - . international treaties.
- \* The co-operation of neighbouring land holders and other land use planning and management authorities will be sought to protect important wildlife habitats in the vicinity of Hat Head National Park.

## Actions

- \* A fauna survey of the park will be undertaken.
- \* Records of native plants and animals will continue to be updated and progressively entered into the E-RMS computer data base and Atlas of NSW Wildlife.
- \* The distribution of rare or endangered native plant and animal species on the park will be mapped.
- \* Species management plans may be prepared and implemented where warranted.
- \* The rainforest revegetation works at Gap Beach will be continued.

### 4.1.3 Introduced Plants and Animals

Many introduced plant species are to be found in Hat Head National Park. Six of these are particularly aggressive invaders of native plant communities and one is of potential concern. These species are:

**Salvinia** (*Salvinia molesta*): A noxious water plant introduced from South America is found in the Swan Pool within Hat Head National Park. This area has seen the trial of numerous, chemical, physical and of late biological control measures. The introduction of the weevil *Cryptobagus salviniae* from Brazil has had real success with over 90% of the plants experiencing tip damage. This program is being monitored by the Service, CSIRO and the NSW Department of Agriculture.

**Bitou Bush** (*Chrysanthemoides monilifera*): Bitou bush is an environmental weed native to South Africa. This plant rapidly colonises the dunal and adjacent areas to the exclusion of native species. Clumps of bitou bush change the velocity of the wind causing it to accelerate either side of the plant; thus increasing the aeolian transport of sand and leading to tussock erosion. This form of erosion and increased mobility of the fore dunes is dramatically illustrated in Hat Head National Park on both Smoky and Killick beaches. Research is being undertaken in biological control methods with the bitou tip moth (*Comostolopsis germania*) showing positive signs of being an effective retarder of growth.

**Asparagus Fern** (*Asparagus sprengeri*) and **Madeira Vine** (*Anredera cordifolia*): Native to South America these climbing plants infest most of the rainforest areas in Hat Head National Park. Bush regeneration methods such as those successfully used in the Wingham Brush are effective; however these methods are extremely labour intensive.

**Lantana** (*Lantana camara*): Yet another native of South America this is well established in the hind dune and littoral rainforest as well as along most road edges and many trails throughout the park. Lantana can be shaded out by the canopy or removed by hand. Effective control of lantana requires that sufficient follow up can be carried out. Failure to do so will often result in lantana being replaced by bitou bush which is considerably more difficult and expensive to control.

**Blackberry** (*Rubus fruticosus*): Blackberry is a declared noxious weed in NSW and, although not widespread in Hat Head National Park, is found in open, disturbed areas with moist soils; notably along Spencers Creek near

Jerseyville. Unless controlled, blackberry will quickly and completely dominate native vegetation.

The Service uses a combination of control methods for blackberry, including slashing and application of specific herbicides such as glyphosate with follow up applications as necessary. Research into the biological control of blackberry is currently being carried out in Victoria and, although promising results have been achieved overseas by the use of biological control agents, it is expected that it will be some years before the method has endorsement for widespread use in Australia.

**Paramatta Grass** (*Sporobolus indicus* variety *capensis*): Paramatta grass is very common in the Macleay River area but is not considered to be a serious pest. The weed is generally confined to disturbed areas and occurs within the park on open grassed areas at Smoky Cape and in isolated sites near Hat Head village.

Control of Paramatta grass includes digging out of tussocks to prevent spread and spot spraying with specific herbicides.

The Noxious Weeds Act 1993 took effect from 1 July 1993. The Act places an obligation upon public authorities to control noxious weeds on land that it occupies to the extent necessary to prevent such weeds spreading to adjoining lands.

Feral cats (*Felis catus*), foxes (*Vulpes vulpes*), introduced rats (*Rattus* spp.), mice (*Mus domesticus*), European honey bees (*Apis*) and some dogs (*Canis familiaris*) are found in the park. Control is undertaken in conjunction with the Kempsey Rural Lands Protection Board by baiting in the vicinity of the villages. Fox control is also undertaken from time to time in the park by the baiting of specific areas. Unused baits are retrieved.

With the exception of salvinia and bitou bush, there is only a limited understanding of the ecology and impact of introduced plants and animals in Hat Head National Park.

When the park was reserved in 1972, three declared flood refuge areas were included on the basis that future use for stock flood refuge purposes would be permitted during flood emergencies. Such use of these areas has been formalised by licence granted under the National Parks and Wildlife Act to the Kempsey Rural Lands Protection Board. The flood refuges, however, have never been used.

It was a Service requirement that the flood refuges be fenced to ensure that stock are restricted to a limited area in the event of a flood of limited duration. A more extensive area surrounding the core flood refuge area has also been fenced as part of the flood refuge for the times when the flood event is of longer duration. This accepts that in longer periods of flood, the impacts of flood relief grazing should not be concentrated in a small area

A recent addition of land to the park includes one bee site. A number of studies have demonstrated that European honey bees represent serious competition for Australian native bees, honeyeaters, and small mammals. The current licence may, however, be renewed in accordance with Service policy.

## Policies

- \* Priority for control of introduced species will be given to those which:
  - . are declared noxious weeds;

- . conflict with significant natural resources;
  - . are causing damage to cultural resources;
  - . are or may affect neighbouring lands;
  - . are new isolated occurrences; and/or
  - . have the potential to be spread through internal access systems.
- \* Techniques which have minimal impacts on native ecosystems will be utilised for the control of introduced plants and animals.
  - \* Stock will only be permitted onto flood refuge areas during declared flood emergencies and in accordance with the licence granted to the Kempsey Rural Lands Protection Board.
  - \* Domestic animals and stock will not be permitted in the park, with the exception of the use of the flood refuge areas during declared flood emergencies, horses in association with authorised horseriding activities (see section 4.3.2) and guide dogs for the disabled.
  - \* No additional apiary licences will be granted within the park. The one site within Hat Head National Park which is current may be renewed in accordance with Service policy.
  - \* Environments currently free of introduced species that are known to be susceptible to invasion by introduced species will be monitored. Control /eradication measures will be implemented in these areas if invasion occurs.

### **Actions**

- \* Known occurrences, distribution and density of introduced species causing, or having potential to cause, significant environmental damage will be mapped.
- \* A control program for introduced plants and animals will be prepared and progressively implemented as resources become available.

#### **4.1.4. Fire Management**

Fire has been an important factor influencing the environment of Hat Head National Park area for many tens of thousands of years. Fire is regarded by the National Parks and Wildlife Service as a natural process, one of the established physical factors of the Australian environment to which native plant and animal communities have become adapted. The correct management of fire is essential to avoid the extinction of native plant and animal species.

The National Parks and Wildlife Service has as its primary aims in fire management:

- to reduce the risk of bushfire damage to life and property both within and immediately adjacent to areas where the Service has a statutory responsibility;
- to effectively manage bushfires for the protection and conservation of the natural, cultural, scenic and recreational features of service areas; and
- to co-operate and work with other organisations in fire management planning and implementation within the region.

Both the long term and short term effects of fire on native plant and animal species, including the biota of the surface and sub-surface soil zone, is largely dependent upon three factors; the frequency of fire, the intensity of fire and its seasonality.

Prior to European settlement, wildfire probably burned down to the coast from lightning strikes on the ranges. The development of the coastal plain for agriculture, however, has created a fire break across this natural fire path. Accordingly, in coastal parks like Hat Head there are no natural causes of fire since dry lightning usually does not often occur on the coastal plains of the north coast.

Historical evidence as well as our current scientific understanding of the biological impact of fire on the environments of the north coast area has established that the Aborigines, from about 40 000 years ago, introduced a regime which increased the frequency of fire, thus modifying the area for easier hunting and gathering. Accordingly, many of the plant and animal communities of Hat Head National Park have adapted to a moderately high frequency of fire.

Since European settlement of the north coast, however, the frequency of fire has increased dramatically from that arising from the Aboriginal use of the land. This has often been to the detriment of many plant and animal species which have been poorly adapted to this new and far more frequent fire regime.

By far the main occurrence of fire in Hat Head National Park is due to arson. At least part of the park has been burnt each year; often during high to extreme fire conditions. Recent major fire events have included:

- in spring 1992 a fire burned all the park north of Hat Head road to the northern boundary exclusive of the Smoky Escarpment;
- in summer 1993 the area of the park surrounding Hat Head village south of the Hat Head road to McGuires Crossing was burned;
- in 1994 the area south of McGuires Crossing to the southern boundary of the park was burned;
- in October 1997 the area around McGuires crossing was burned for the third time in four years; and
- Smoky Cape was burned in 1992, 1993 and again in 1994.

Virtually the whole of the park has, therefore, been burned since 1992 with the exception of the northern section of the Smoky Escarpment and the Hat Head/Hungry Head area. The vegetation of the park shows that this frequency of fire is precluding regeneration of native plants in some areas.

Fires may threaten human lives, property and other heritage valued by the community. The control of these fires often involves considerable public expenditure and risks to firefighters.

Fire from natural causes and at a frequency and intensity that is consistent with the management of the native plant and animal communities does not take place. The overwhelming priority in fire management therefore is to reduce and if possible eliminate the occurrence of fires escaping from neighbouring properties and arson. Not until this is achieved can a practical, socially responsible and scientifically based fire regime be implemented.



## **Protection of Life and Property**

Considerable effort has been put in over the last few years on the north coast by the National Parks and Wildlife Service, District Fire Committees and local bush fire brigades to maximise protection to the village areas surrounded by the park. This strategy has a twofold purpose; to minimise the threat of wildfire to urban areas and their residents, and to thus provide the basis for fire management throughout the rest of the park by reducing the frequency of arson in the park itself.

One important fire management program is the reduction of the risk of high intensity fires by prescribed burning in high risk areas. This reduces the risk of intense fires and improves the capacity of firefighters to safely control wildfires. The perimeter of the park, therefore, adjacent to urban areas has its own combination of fire radiation zones which are maintained by trittering, mowing, hand removal of vegetation, perimeter fire trails and hazard reduction zones. It is planned to continue consolidation and improvement of this system of protection to the villages in consultation with the respective councils, District Fire Committees, Bushfire Control Officers, Bushfire Brigades and village residents.

In accordance with Department of Bush Fire Service's "Development in Fire Prone Areas", fuel reduction zones, including perimeter trails are required in any new subdivision on lands adjoining the national park.

Fire can also threaten the car parking, picnicking and camping areas at Smoky Beach, Hungry Head, Smoky Cape Lighthouse, Gap Beach and Richardsons Crossing which are isolated areas located on the coast but which are bordered by fire prone vegetation. Each of these facility areas can be cut off when fire threatens access roads. Regular hazard reduction is also undertaken in the vicinity of these six facility areas. During extreme fire events these areas may be closed to visitors.

Neighbours with common boundaries with Hat Head National park, where a potential fire threat has been identified, have been approached to enter into regular and cooperative hazard reduction programs.

## **Maintenance of Species Habitat and Diversity.**

Contemporary ecological research in fire prone ecosystems, such as those which are represented in Hat Head National Park, has established broad principles about the fire regimes needed to avoid the extinction of species and thus conserve biodiversity:

- Groups of plant and animal species which constitute an ecosystem respond similarly to fire according to the characteristics of their life-history. It is not necessary to specify fire regimes for the conservation of every species. Rather fire regimes for groups of species or an ecosystem are required to be developed.
- A diversity of fire regimes is needed to maintain natural diversity. Accordingly the management of fire should aim to provide a pattern of fires of high, moderate and low intensity, frequency and extent. Extinctions are most likely when fire regimes of relatively fixed intensity, frequency and extent prevail without variation.

Scientific understanding of the fire requirements for plant communities is generally more advanced than for animal communities, although recent published research demonstrates that the conservation of many animal species also depends upon a mix of fire regimes including occasional high intensity fires. The use of regular and low intensity fires has an unacceptable impact on critical habitat requirements for native animals, particularly on ground flora and undergrowth.

With these general principles as a basis, fire management guidelines are being developed for Hat Head National Park which define fire regime thresholds for several major groups of plant communities. If these thresholds are exceeded the decline and extinction of plant species can be expected.

Based on the similarity of vegetation in Hat Head National Park with that of other coastal national parks such as Royal National Park and Bundjalung National Park where extensive fire research has been undertaken, the following significant fire regime thresholds have been identified for the management of fire in Hat Head National Park:

- All fire will be excluded from **rainforest communities**.
- The **tall moist eucalypt forests** such as those found at Smoky Cape support many mammal and bird species; they are also a critical refuge in fire and an important ecological buffer for the rainforest. It is essential to protect moist eucalypt forests against too frequent fire.

Loss of some species of woody plants will occur in these forests if the frequency of fires:

- . exceeds two fires in quick succession each twenty years; or
- . in the event of a high intensity fire which scorches tree canopy at a frequency of more than twice each hundred years.
- Loss of some species of woody plants will occur within **open forest or woodland communities** where the frequency of fires:
  - . exceeds two fires in quick succession each five years; or
  - . in the event of no fires within thirty years.
- Fire is an important determinant of species and structural diversity of **wet and dry heath**. Management of heathland therefore includes maintaining appropriate fire regimes for the purpose of creating a mosaic of communities with different ages and structures.

Loss of some species of woody plants will occur in these plant communities if the frequency of fires:

- . exceeds two fires in quick succession each eight years;
- . three fires within a period of fifteen to thirty years; or
- . in the event of no fires within thirty years.
- Similar fire regimes are required for **tall shrubland, swamp forest and sedgeland communities**. Loss of some species of woody plants will occur where the frequency of fires:
  - . exceeds two fires in quick succession each eight years;
  - . three fires within a period of fifteen to thirty years; or
  - . in the event of no fires within thirty years.

In addition to the thresholds determined above, the following ecological considerations are important:

- The beach dune systems in the park are susceptible to damage from fire and their protection is also recognised as an important aspect of fire management;
- Many small mammals and most birds breed in spring and summer and are vulnerable to fire during this critical period;
- Frequent fires in most vegetation communities reduce the floristic complexity of the understory which is a critical habitat requirement for most native animals. Areas burnt too frequently are reduced to pyrogenic species such as bladey grass, an understory which accumulates fuel quickly and is capable of further frequent burning;
- As areas regenerate following fires, different animal species find the habitat suitable at different stages of regeneration. To support the full complement of native animals a range of age classes after fire of vegetation is desirable; and
- Some of the species and communities within Hat Head National Park are fire sensitive and rely on recolonisation from surrounding areas following fire.

The management of fire in Hat Head National Park for the protection of native plant and animal communities, therefore, aims to create a mosaic of habitats of different age classes of intensity and frequency of fire. To achieve this the park has been divided into fire management compartments which are bounded by existing public roads, internal management trails and naturally occurring fire lines such as wetlands and streams.

Hat Head National Park, however, includes a large tract of contiguous fire prone heathland which extends almost the entire north-south length of the park; some 33 kilometres with few natural barriers to the spread of fire. To complete the necessary fire management compartments, a pattern of east west control lines is required to be developed to enable establishment of a desirable fire regimes, mosaics and containment of wildfires.

In due course this should lead to a mosaic of habitats of different age classes of intensity and frequency of fire which will be of high value for the protection of native plants and animals.

### **Fire Management Operations**

The Service has prepared a fire management plan for the lands it manages in Port Macquarie District. In addition, the Service, like other land owners and managers in NSW, is bound by the Bush Fires Act, 1949. The Service is also bound by the National Parks and Wildlife Act, 1974 and Service fire policy.

The Service regards co-operative fire management as essential for both the protection of property and the cultural and natural resources of Hat Head National Park. Under the Rural Fires Act, 1997 the Service is a fire authority and is responsible for controlling fires in the park and ensuring that they do not cause damage to other land or property. The Service may also assist with the control and suppression of fires on lands adjacent to the park.

An important part of the Service's fire management is participation in local co-operative fire management arrangements. The Kempsey District Bush Fire Management Committee aims to coordinate fire management and fire control on a

district basis. To implement these responsibilities, the committee has prepared a plan of operations and a bush fire risk management plan which are required under Section 52 of the Rural Fires Act.

These plans address operational arrangements, fuel management planning and include a resources directory. The commitments each organisation makes in these plans are legally binding. The plans recognise the need to systematically map or otherwise identify all environmental resources, including vegetation, topography, and aboriginal or historic heritage sites.

The Service contributes to these plans by providing preferred fuel management prescriptions for areas it manages. The fuel management plan is subject to annual review.

A computerised fire prediction model has been developed by the Service and will be implemented for Hat Head National Park. A district wide computerised Geographic Information System is also in place and increasingly will provide information on native plants and animals of relevance to park fire planning.

To give effect to the collection, storage and use of information relevant to the effective management of fire, a record of the history of fire in Hat Head National Park; its occurrence, frequency and extent will be kept. An important function of research into fire within the three areas is to ensure that the information thus gained is used to improve fire management.

The populations of a number of indicator species of native plants and animals will be monitored and an evaluation made of the performance of the guidelines outlined in the proposed fire regime thresholds for the several communities of native plants and animals. The threshold guidelines may be modified in the light of new scientific information.

Fires resulting from human activity are the major cause of fire in Hat Head National Park. Priority will be given to developing effective public awareness and education campaigns about the social and environmental management of fire.

In accordance with the Service wide program of fire management planning, a fire management plan for Hat Head National Park will be developed by December 1998 which will identify the bushfire threat, requirements for the conservation of native plants and animals and provide the basis for management strategies and prescriptions. The plan will establish community protection measures in areas where it is identified that fire is a threat to both property and biodiversity.

## **Policies**

- \* Fire in Hat Head National Park will be managed in accordance with the Section 52 Plan, the District Fire Plan and this plan of management.
- \* Liaison will be maintained and co-operative strategies developed with bushfire brigades, local government and neighbours to ensure co-ordination in fire management in the national park and on adjoining lands.
- \* The level of community understanding of the role and management of fire within Service areas will be promoted.
- \* Emphasis will be placed in this program on promoting amongst the local community a socially responsible and an ecologically acceptable fire management regime for Hat Head National Park.

- \* The co-operation of all relevant authorities, neighbours and visitors will be sought in eliminating unplanned fires.
- \* The District will maintain a fire management information system to assist in the identification of high fire risk areas and trends in fire occurrence.
- \* Fire management in Hat Head National Park will aim to:
  - protect human life and property both within the park and adjacent to it;
  - maintain species habitat and diversity, avoid local extinctions of native plant and animal species and enhance the conservation of rare and endangered native plant and animal species; and
  - protect structures, objects and places of cultural heritage significance.
- \* Wherever practical wild fires within Hat Head National Park will be suppressed with the aim of re-establishing extensive areas of native plant and animal communities which are free of an unacceptable level of fire.
- \* Villages, neighbours and facility areas within Hat Head National Park will be protected by fire trails, fire radiation zones and areas of hazard reduction.
- \* As far as possible fuel management will be carried out in co-operation with neighbours for mutual protection and neighbours will be encouraged to implement Community Fireguard practices on their land.
- \* A program of prescription burning will be progressively introduced within Hat Head National Park with the aim of establishing a mosaic of vegetation communities of different fire age classes.
- \* The pattern of the mosaic will be on compartments bounded by existing public roads, internal management trails and naturally occurring firelines such as streams and wetlands.
- \* Wherever practicable, management trails used for fire management and other purposes will be slashed trails and will, as required to alleviate wear and tear, be relocated or realigned to allow for erosion control and revegetation.
- \* An aim of fire management will be to exclude fire from:
  - . rainforest; and
  - . beach sand dunes.
- \* New trails will be constructed where necessary for fire control or other emergency operations. All new trails constructed for emergency operations will be closed and rehabilitated as soon as possible after each emergency.
- \* Research into fire behaviour, fire hazard and risk assessment, and the impact of fire on the park's plant and animal communities will be encouraged.

**Actions:**

- \* In accordance with Service policy a fire management plan will be prepared for Hat Head National Park by December 1998 detailing fire management for the park. The fire management plan will be placed on exhibition for public comment before its final adoption by the Service.

- \* East to west fire control lines will be established in the vicinity of:
  - . McGuires Crossing;
  - . the flood cut north of Hat Head from Korogoro Creek;
  - . Killmores; and
  - . Balls Gate.
- \* Existing trails which:
  - . cross swamps in the north of the park and south of Smoky Cape; and
  - . cross swamps south of Hat Head village;
 will be relocated and the existing alignment closed and rehabilitated.
- \* Where the terrain permits, the system of perimeter trails on the boundaries of the park will be extended to protect neighbours and the park from fire.
- \* Co-operative plans for the protection of coastal villages from fire will be further developed and implemented in consultation with the District Bushfire Committee and local bushfire brigades.
- \* An education program will be implemented to raise community awareness of fire management Hat Head National Park.
- \* Records of fire occurrence will be maintained with particular emphasis on mapping and recording of the area, frequency, seasonality and intensity of fire.
- \* Information on fuel characteristics and fire hazard will be maintained and upgraded.
- \* All fire trails will be maintained and usage restricted to authorised vehicles only.
- \* High priority will be given to enforcement of the Bush Fires Act relating to the fire permit system and arson.

## **4.2 CULTURAL HERITAGE**

The Macleay coastal area is part of the territory of the Thunghutti (or Dhunghutti) group of Aboriginal people. The territory of the Thunghutti people extended from Point Plommer on the coast to near Macksville to the north and inland to Kemps Pinnacle. Hat Head National Park falls within the area of the Kempsey Local Aboriginal Land Council.

The north east coast of NSW and the narrow adjoining coastal plain, such as occurs in the Macleay Region, featured some of the most productive and hospitable regions in Australia for Aboriginal life. The sea, tidal estuaries, rivers, creeks and adjacent wetlands provided a rich source of fish, shell-fish and crustacea. Before European occupation of the Macleay Region the river plains and coastal headlands were open grasslands maintained by fire and grazed by large numbers of macropods and smaller marsupials. With these rich resources and favourable climate Hat Head National Park and adjacent river valleys supported a high and densely concentrated Aboriginal population.

The Thunghutti had a complex relationship with neighbouring groups and had developed an extensive trading network that linked the Macleay not only with neighbouring river valleys but extended to other parts of the continent.

Hat Head National Park and the surrounding area protects many different types of Aboriginal sites including mythological sites such as the Smoky Cape Range, 2 bora rings, 29 shell middens, 4 campsites and two sites recognised as waterholes or wells used by the Aborigines. The richness and diversity of these sites is strong evidence of the past high Aboriginal population of the area and are an important source of information, not only about the occupation of Hat Head National Park by the Thunghutti, but in the wider regional spiritual, social and economic context of Aboriginal society.

A bora ring at Richardsons Crossing is degrading due to natural processes. The Kempsey Aboriginal Local Lands Council, in conjunction with the Service, has a program aimed at protecting the site from further decay.

The recording and analysis of many of these Aboriginal cultural sites has taken place over the last 15 years, however a number of sites have undoubtedly yet to be discovered or recorded and a compilation of findings and prehistory has as yet to be prepared. Many more sites, however, have been lost or disturbed by mineral sand mining activities

Parts of Hat Head National Park were burial sites used by the Aborigines and prior to it being reserved as a national park one burial site was disturbed and the remains removed from the gravesite. The Kempsey Aboriginal community has arranged that the remains be returned to the park and reburied.

The Kempsey Aboriginal community has also sought to have other remains, with a similar history, returned to the park and reburied at a suitable location.

The history of European settlement began with the cedar cutters who were the first Europeans to explore and exploit the rainforests of the north coast rivers during the 1820's. The cedar cutters were followed by the farmers who cleared the rainforests of the rich alluvial plains for agriculture; Kempsey was established on the Macleay River in 1836 by Enoch Rudder.

During the latter half of the nineteenth century the loss of life in ship wrecks had reached such alarming proportions along this stretch of the coast that the government built the Smoky Cape Lighthouse which was commissioned in 1891. The lighthouse has now been automated and the lightstation, including the lighthouse itself, transferred to the NSW Government for addition to Hat Head National Park. Access to the lighthouse by the public will be permitted subject to modification of the lighthouse for public safety reasons.

The buildings proposed to be added to the national park include three residences (two of which are in one building) and related fuel sheds, the stables, workshop and a garage. The residences, fuel sheds and the stables were built in 1891; the workshop was constructed in the 1940's and the garage during the 1980's.

The whole lightstation complex has been subject to a conservation plan prepared for the Australian Maritime Safety Authority which identified the three residences, fuel sheds and the stables as of very high cultural heritage value. The workshop is of moderate conservation significance and the garage was attributed little significance and could be removed. A lavatory block not part of the lightstation complex but part of the Captain Cook Lookout is identified as a structure that should be removed and

replaced with a building more in sympathy with the significant buildings of the lightstation.

The conservation plan emphasises that the Smoky Cape lighthouse was one of a number of lighthouses constructed in Australia during the second half of the nineteenth century and the first half of the twentieth century and as such is not rare. Perhaps the most important value of the lightstation is that it is one of an extensive system of lightstations and demonstrates changes in lighthouse technology and operation that developed during this period. Options for the use and management of the lighthouse complex are being investigated as part of the current study of lighthouses being undertaken by the Service and a conservation plan prepared in accordance with the Australia ICOMOS Burra Charter.

It is proposed to focus the visitor use of Hat Head National Park on the area of the Captain Cook Lookout on Smoky Cape and an important aspect of public education in the park will be the significance of the system of lightstations along the NSW coast and in particular the historical and/or heritage significance of the Smoky Cape Lightstation as an example of this system.

The area of the national park prior to its reservation as a national park, was not generally occupied and utilised for commercial agriculture or other purposes. Few material remains survive, although the park was used for gold mining in the 1930's and sandmining took place on Killick beach during the post war period. A small banana plantation was located on Smoky Cape as was a gun emplacement during the Second World War.

The data available to the Service on the distribution of Aboriginal and other cultural heritage sites in the park is being progressively stored on the Service's site register. A comprehensive bibliography of publications relevant to Aboriginal heritage in the various of the State is also being prepared.

## **Policies**

- \* The provisions of the Burra Charter (ICOMOS revised 1987) for the conservation of places of cultural significance will guide management of the cultural heritage of Hat Head National Park.
- \* An understanding and appreciation by visitors of the cultural heritage of Hat Head National Park will be promoted.
- \* The Kempsey Regional and Local Aboriginal Land Councils will be consulted in the management of Aboriginal sites.
- \* Preference will be given to Local Aboriginal Land Councils and Aboriginal Custodian groups to undertake interpretation of Aboriginal sites and culture.
- \* Secret sacred sites will not be disclosed.
- \* A site for the reburial of Aboriginal remains in the park will be identified in consultation with the Kempsey Aboriginal community.
- \* Research and inventory into the cultural heritage of the park will be encouraged.
- \* Prior to any works being undertaken, a survey for Aboriginal sites and historic places will be undertaken. Where sites or places of cultural significance are found, the works will be modified or relocated.



- \* Historic places will be researched, recorded, protected and, where appropriate, interpreted for the public.

#### **Actions:**

#### **Aboriginal Heritage**

- \* The district register of Aboriginal sites will be maintained and updated as required.
- \* The Service will undertake a survey of significant sites in consultation with Kempsey Local Aboriginal Land Council as a basis for determining appropriate management.
- \* An interpretations program for the Bora Ring site at Richardsons Crossing will be developed in consultation with Kempsey Local Aboriginal Land Council.

#### **Historic Heritage**

- \* The district register of historic places will be maintained and updated as required.
- \* Part of the Smoky Cape light station complex will be developed to provide basic interpretation by means of signs, a brochure of the cultural heritage of the lightstation and of the natural heritage of Smoky Cape.

### **4.3 USE OF HAT HEAD NATIONAL PARK**

Hat Head National Park will be managed to ensure that its use, whether by the general public, special interest groups, Service managers or other authorities is appropriate; that is consistent with the National Parks and Wildlife Act, Service policies and the management objectives and strategies outlined in this plan of management.

The major categories of use that may be appropriate within Service areas are:

- environmental education;
- promotion of natural and cultural resource conservation;
- recreation in a natural setting;
- research; and
- management operations by the Service and other authorities.

The extent to which these categories of use are appropriate in Hat Head National Park are listed below.

#### **4.3.1 Promotion of the Park**

Increasing public awareness of the National Parks and Wildlife Service and its responsibilities in natural and cultural heritage management assists with the protection of the natural and cultural heritage of the park and is a major aspect of managing visitor use. Hat Head National Park has a significant role to play in the community as a resource for environmental study and education. Visitors have a strong expectation that information on the features of the area and their management is readily available.

Existing programs for the promotion of public awareness and appreciation of Hat Head National Park include the presentation of interpretation material in the form of brochures on the park generally as well as specific items of its natural and cultural

heritage. Information is provided along the walking track system. Discovery ranger programs are conducted during the NSW school holiday periods.

Where resources allow, existing programs will be extended and emphasis will be given to promoting:

- the importance of the national park in the regional pattern of conservation areas;
- the geological evolution of the north coast south of Coffs Harbour;
- the biological significance of coastal environments for the conservation of native plants and animals;
- the history and significance of the system of lightstations along the NSW coast; and
- the appropriate use of coastal national parks, particularly the recreational use of beaches.

Accordingly it is proposed to provide a coastal zone interpretation facility within Hat Head National Park in the vicinity of the Captain Cook Lookout on Smoky Cape. This site has been selected because it is already a popular destination, it is close to the mid-point of the coast between Sydney and Brisbane and it offers ready appreciation of coastal features and panoramic views by means of an existing lookout.

The Service is a member of a working party on ecotourism sponsored by Hastings Council which has as its aim, the promotion of an increased awareness of ecotourism opportunities on the mid-north coast. Hat Head National Park has the potential to offer increased opportunities for commercial ecotourism which are consistent with its status as a national park and with this plan of management. Such increased use will be required to be licenced under the Act and will also be supported by assistance by the Service in providing training and certification to both commercial and voluntary guides.

School groups utilise the park for environmental education, particularly in the rainforest areas of Gap Beach, near the Smoky Lighthouse and along the access and beach stabilisation works of the various Dune Care groups.

An important program of public awareness is to keep members of the local community, particularly neighbours of the park, councils and other authorities informed of programs of management undertaken on the park with respect to fire management, feral animal control and weed control. To this end, the District emphasises the importance of maintaining liaison with local authorities such as fire management committees and rural lands protection boards. Liaison meetings with councils and meetings with district bush fire brigades, Dune Care Groups, Progress Associations and Government Departments are held as required on issues affecting the management of the park.

The themes and programs outlined above will be integrated into an Environmental Education and Interpretation Strategy for Hat Head National Park.

### **Policies**

- \* Emphasis will be given to promoting the following themes in Hat Head National Park:

- the importance of the national park in the regional pattern of conservation areas;
  - the geological evolution of the north-coast south of Coffs Harbour;
  - the biological significance of coastal environments for the conservation of native plants and animals;
  - the history and significance of the system of light stations along the NSW coast;
  - the importance and purpose of management programs relating to the control of fire, weeds and feral animals; and
  - the appropriate use of coastal national parks.
- \* The continued use of the park by school and other educational groups for environmental and park management education will be encouraged.
  - \* The Discovery Ranger program will continue to be provided during peak visitor periods.
  - \* Emphasis will be placed on explaining to neighbours of the park the Service's programs for fire management, feral animal control and weed control.
  - \* A range of information including brochures and broadsheets will be provided to help people understand, and appreciate Hat Head National Park and the park system as a whole.
  - \* Guided walks and tours will be permitted as commercial activities.

**Actions:**

- \* An Environmental Education and Interpretation Strategy will be developed for Hat Head National Park.
- \* Interpretive information will continue to be provided at facilities and in association with walking tracks to promote understanding and enjoyment of natural and cultural features.
- \* Interpretation signs and displays along selected walking tracks will be maintained, and as funds and resources permit, upgraded.
- \* Guided educational activities during both peak and other visitor periods will be extended as funds permit.
- \* Certification and training will be provided to tour operators using the park to ensure that non-Service publicity and interpretation programs are consistent with the aims of the Services visitor education objectives.
- \* All tour operators conducting commercial activities in the park will be required to be licensed under the National Parks and Wildlife Act.
- \* Certification and training will be provided to tour operators using the park to ensure that non-Service publicity and interpretation programs are consistent with the aims of the Services visitor education objectives as outlined in this plan of management.

### 4.3.2 Recreation Opportunities

Hat Head National Park is one of only two national parks on the coast between the major centres of Port Macquarie and Coffs Harbour. The park therefore provides a major opportunity for outdoor recreation opportunities on the north coast south of Coffs Harbour. To fulfil these expectations, the recreation management of the park has aimed to provide a diversity of recreational settings from remote to accessible coastline with access roads, low key camping areas, day use areas, walking tracks and beach access points which offer different recreational opportunities to those found elsewhere in the sub-region.

The villages of Arakoon, South West Rocks, Crescent Head and Hat Head lie on the coast immediately adjacent to the national park. The recreational mix provided by this combination of villages and national park provides opportunities for boating, picnicking, camping, fishing, swimming, surfing and bushwalking.

Accommodation for visitors to the mid-north coast includes motels, holiday cottages and caravan parks in the adjoining coastal villages and regional centres.

The north coast region has been identified as a priority area for tourism development in New South Wales. Emphasis is being given to identifying potential tourism development areas with outstanding environmental and aesthetic qualities. Tourism development in these areas will be sympathetic to the environment and aim to encourage the appropriate use of natural attractions and visitor facilities.

Currently it is estimated that 150 000 visits are made annually to Hat Head National Park and emphasis is placed on providing visitor facilities in a more natural setting than that that provided by most commercial operators in the surrounding region. Two camping areas are provided at Smoky Beach and Hungry Head which cater for low-key, short-term camping. A number of picnic areas and day walks are also provided.

To provide guidelines for the management of public use in Hat Head National Park, the following recreation settings or zones have been identified:

**Semi-Remote (Non Motorised):** This setting comprises virtually all of the park and is characterised by a predominantly unmodified environment. Few recreation facilities other than walking tracks along coastal headlands will be provided and moderate to low levels of contact with other groups is likely.

**Roaded Natural:** This setting will be managed to cater for visitors to the park who are seeking an outdoor experience in a natural setting which is different to that provided elsewhere in the mid north coast region. The recreation setting will consist:

- of small facility areas accessible by unsealed roads or minor sealed roads; and
- the beach access points in Hat Head National Park.

Moderate levels of contact with other groups is likely, including families with young children.

The residences at the Smoky Cape Lightstation may be adapted, subject to the requirements of the conservation plan for the site and a financial assessment of the proposal, for tourist accommodation. They may be offered for lease as a concession operation in the park.

Hat Head National Park has a low key but established pattern of horseriding. Horseriders include neighbours, the Macleay Valley Trail Riders Association and groups of students from two local schools. The written permission of the District Manager is required for groups of horseriders to ride in the park and all riding is limited to the park road system including the beach access points and the management trail between the Lighthouse Road and Hat Head Road. This management trail runs generally along the western boundary of the park and passes through private property as well as park. Horse riding is not permitted off road or in the sand dunes. Racehorses are trained outside the park on the beach near Hat Head Village.

## **Policies**

- \* A range of outdoor recreation and education opportunities will be provided which:
  - are consistent with the protection of the park's natural and cultural heritage;
  - are appropriate to the appreciation and understanding of natural and cultural heritage; and
  - complement those opportunities available elsewhere in the region.
- \* The program of monitoring visitor use of the park will be maintained.
- \* The impacts of visitor use will be monitored and where necessary, measures will be taken to protect natural and cultural features.
- \* Opportunities will be provided in Hat Head National Park for:
  - bushwalking for short, intermediate and long walks;
  - low key camping;
  - picnicking;
  - car touring;
  - surfing; and
  - recreational fishing.
- \* Certain recreational activities and pursuits require the approval of the District Manager. These activities include:
  - group activities involving more than 30 people;
  - horse riding involving more than 5 horses in the one group;
  - competitive activities;
  - training activities;
  - adventure activities including hang gliding; and
  - commercial recreation ventures.
- \* Commercial recreation and other public use activities in Hat Head National Park will be subject to the policies contained in this plan of management and to National Parks and Wildlife Service policies and regulations.
- \* Horseriding will be permitted in Hat Head National Park on public roads, the management trail between the Lighthouse Road and Hat Head Road and on the beaches. Horseriding will not be permitted on the sand dunes in the park.

## Actions

- \* Impacts arising from public use of the park will be monitored and measures taken to protect natural and cultural features found to be subject to an unacceptable impact arising from such use.

## Vehicular Access

The public access system for vehicles within the park comprises two types of road or trail:

- **Public Roads:** open to the public, but excluded from the park and generally maintained by other authorities; and
- **Park Roads:** which are reserved as part of the park and are open to the public. These roads are maintained by the Service usually to two wheel drive standard.

**Management Trails** are required for management operations and are not open to private vehicles. These are maintained by the Service (refer section 4.3.4).

Vehicular access to Hat Head National Park by public roads is via the Pacific Highway and thence by sealed roads to:

- South West Rocks and Smoky Cape in the north;
- to Hat Head village in the central section of the park; and
- to Crescent Head in the south.

In addition to these roads, the Service has constructed and/or maintained a further 10km of park roads within Hat Head National Park for access to recreation facilities and other features of interest at:

- Gap Beach;
- Smoky Cape;
- Hungry Head;
- McGuires Crossing; and
- Richardsons Crossing.

An amendment to the Arakoon State Recreation Area plan of management was exhibited in early April 1990 which proposed four wheel drive access to Gap Beach which was then within the State Recreation Area. The Gap Beach area has since been added to Hat Head National Park. In accordance with this amendment four wheel drive access from the present ridge top car park to the southern end of Gap Beach has been provided. This road can be impassable to vehicles during wet weather and upgrading it to two wheel drive standard will be investigated.

The Service is represented on the Kempsey Shire's Vehicles on Beaches Task Force. This group recommends which beaches are available for use by four wheel drives, the rules governing operation of these vehicles on beaches and sets the price for annual beach permit stickers which are obligatory before a vehicle can be used on the beach. Four wheel drive vehicles which are road registered, driven by a licensed driver and displaying a current permit valid for the Kempsey Shire are permitted on the following beaches in Hat Head National Park;

- The 14km of Smoky beach south of the vehicular access point adjacent to the Smoky Beach Camping Area and north of the access point adjacent to Hat Head village.
- The 11km of Killick Beach south of the access at Hungry Head and north of the access at Richardsons Crossing.

Vehicles are restricted to the intertidal zone and are prohibited from driving on the sand dunes, other than at designated points for ingress and egress. At present the intertidal zone is excluded from the park.

Vehicle access to Killick Beach is currently available at Hungry Head, Richardsons Crossing and McGuires Crossing.

The McGuires Crossing vehicle access onto Killick Beach has been used as an alternative to the Hungry Head beach access when the latter was impassible. However, following the recent stabilisation of the Hungry Head beach access to a satisfactory standard, the McGuires Crossing beach access will be closed. Access to Killick Beach will continue to be available further to the south at Richardsons Crossing.

Access for recreational vehicles to other beaches in Hat Head National Park is prohibited:

- Killick Beach south of Richardsons Crossing;
- all beaches on Smoky Cape; and
- all beaches on Hat Head.

Vehicular use of beaches has impacts on the biodiversity of the intertidal zone. Vehicles on beaches may also conflict with the recreation experience of other park visitors and pose a risk to the safety of these visitors. Therefore the impacts of vehicle use of beaches in Hat Head National Park will be monitored and the Service will seek that funds collected as part of the annual beach vehicle permit system be allocated to this monitoring program.

Measures to minimise or where practicable eliminate any unacceptable impacts arising from the use of vehicles on beaches will be undertaken to protect the biodiversity and recreational amenity of those beaches.

The roads and beach access points described in this section including the beaches available to authorised four wheel drives are shown on the attached map.

### **Policies**

- \* Vehicles will only be permitted on the designated vehicular access system, including beaches and beach access points, outlined on the map centre pages, unless otherwise authorised for emergency or management purposes.
- \* The Service will seek to have funds collected as part of the annual beach vehicle permit system allocated to a program which monitors the impact of vehicle use of beaches both on the biodiversity of the intertidal zone and on the park experience of visitors.
- \* Vehicles are not permitted on any beaches other than those recognised as part of the public access system of the park.
- \* The impacts of vehicles on beaches where they are permitted will be monitored.

- \* Vehicular access to Gap Beach shall be via the existing southern route to the car park at the southern end of the beach, approximately 100 m from the dunes. Access shall not be permitted onto the beach.

### **Actions**

- \* The existing vehicle access to Killick Beach at Hungry Head will be retained.
- \* The existing vehicle access to Killick Beach at Richardsons Crossing will be retained.
- \* The four wheel drive beach access to Killick Beach at McGuires Crossing will be closed.
- \* The existing vehicle access to Smoky Beach at Smoky Camping Area will be retained.
- \* The current access to the southern end of Gap Beach shall be retained and the parking area defined and maintained.
- \* The northern access road to the rainforest revegetation area at the north of Gap beach shall be closed by a gate at the entry point and retained as a management trail.

### **Camping**

There are two low key vehicular camping areas in Hat Head National Park at:

**Smoky Beach Camping Area** which will be maintained at a capacity which does not exceed 53 campsites, 20 carparking places and five pit toilets.

**Hungry Head Camping Area** which will be maintained at a capacity which does not exceed 38 campsites, 22 carparking places, 2 pit toilets.

The maximum capacity of the camping areas as outlined above is the present design capacity of these areas.

The following conditions apply to occupation of camping areas in Hat Head National Park:

- Maximum length of stay is six weeks within a six month period outside the summer school holidays. The maximum length of stay during the summer school holidays will be initially three weeks but may be extended by the district manager if demand does not exceed the availability of campsites;
- Unoccupied tents or vans may not be left on site;
- Generators will not be permitted; and
- A fee may be charged.

Wood barbecues are provided at camping and picnic areas in Hat Head National Park and the Service has provided firewood, in the form of offcuts, to some of these areas. Where firewood is not provided, visitors obtain both living and dead wood from the vicinity of these facility areas to burn in barbecues. Visitors will be encouraged to



either bring their own wood or to bring their own non-wood fuel stoves as an alternative.

### **Policies**

- \* Opportunities for low key vehicle based camping will continue to be maintained at:
  - Smoky Beach Camping Area; and
  - Hungry Head.
- \* Any proposal for the upgrading of either camping area above the limits specified in this plan of management will require public exhibition of an amendment to the plan. Routine maintenance of existing facilities will not require amendment of this plan of management.
- \* Back-country camping will not be permitted in Hat Head National Park; camping will be confined to the formal camping areas.
- \* Campers will be encouraged to use alternatives to wood fires for campsite cooking and lighting.

### **Day Use Areas**

Facilities for day visitors are provided at:

**Smoky Cape (Captain Cook Lookout)** which will be maintained at a capacity which does not exceed 30 car parking places, 3 bus parking areas and one septic toilet block.

**Gap Beach (Ridgetop car park)** which will be maintained at a capacity which does not exceed 18 car parking places.

**South Gap Beach** which will be maintained at a capacity which does not exceed 25 car parking places and two septic toilet blocks - one at the southern end of the beach and one at the northern end of the beach.

**Hat Head Gap** which will be maintained at a capacity which does not exceed 12 car parking places.

**Richardsons Crossing** which will provide a maximum of 15 car parking places.

The maximum capacity of the picnic sites as outlined above is the present design capacity of these areas.

### **Policy**

- \* Day use facilities will continue to be provided in Hat Head National park at the following sites:
  - Captain Cook Lookout at Smoky Cape;
  - Gap Beach on Smoky Cape;
  - the ridge above Gap Beach;
  - Hat Head Gap; and
  - Richardsons Crossing.

- \* Any proposal for the upgrading of a picnic area above the limits specified in this plan of management will require public exhibition of an amendment to the plan. Routine maintenance of existing picnic facilities will not require amendment of this plan of management.

### **Walking Tracks**

The walking track system of Hat Head National Park contributes greatly to the recreational and educational experience of visitors. Many sections of the park are only accessible via walking tracks and as such this network is vital in providing access to some of the more remote, scientifically important, and scenic areas of the park.

The standard of walking track in Hat Head National Park is a well defined track suitable for people of average fitness with some experience. Walking tracks are between 0.6 and 1.8 metres wide. They may be surfaced, benched and drained as necessary to retard erosion and water damage.

The following walking tracks are provided in Hat Head National park:

**The Smoky Mountain Walking Track** which links the lighthouse and Trail Bay Gaol in Arakoon State Recreation Area. About half of this track is well graded. Some other sections require realignment. The track offers spectacular views of both seascapes and landscapes and traverses forested country.

Proposals for short loop walking tracks to areas of interest such as the headland heath and palm forests of Smoky Cape will be incorporated in the design of the proposed coastal interpretation facility.

**The Hat Head-Hungry Hill Headland Walking Track** traverses largely a treeless terrain in contrast to the Smoky Mountain walking track.

**The Korogoro Point Walking Track** encircles Hat Hill and leads to Korogoro Point. This trail is popular for its scenery and with rock fishermen.

By utilising the walking track system of the Arakoon State Recreation and those tracks and beaches of Hat Head National Park it is possible to walk along the coast from Trial Bay Gaol to the village of Crescent Head some 43km to the south.

Many of the walking tracks are located on steep highly erodible terrain and have received little if any maintenance for many years. As a result many tracks are in poor condition and in need of urgent maintenance.

### **Policies**

- \* The walking track network of Hat Head National Park will provide the primary means of access to many areas of the park with emphasis on interpretation of the coastal environment, rainforests and cultural sites.
- \* Short loop walking tracks to features of interest on Smoky Cape will be incorporated in the proposed design for the coastal interpretation facility.
- \* The following walking tracks will be maintained in the park:
  - the Smoky Mountain walking track;

- the Hat Head-Hungry Hill Headland walking track; and
  - the Korogoro Point walking track system, including the Korogoro Summit walking track.
- \* Any proposal for a significant relocation or upgrading or of an existing walking track will require public exhibition of an amendment to this plan of management. Routine maintenance and minor rerouting of existing walking tracks will not require amendment of this plan of management.
  - \* The use of horses, trail bikes, push bikes and off-road vehicles is not permitted on walking tracks.

### **Action**

- \* Signposting and interpretation of the track system will be a high priority.

### **4.3.3 Scientific Use**

An important purpose of scientific study in Hat Head National Park is to improve the Service's understanding of the park's natural and cultural heritage and the processes which affect them. Research will also establish the requirements for the management of particular plant and animal species. Data and findings from research studies and surveys will be utilised in park management.

Protected areas are also often the only natural systems available for fundamental but non-destructive research undertaken by researchers and research organisations and this is considered an appropriate use of the park. The park has long been important to research and educational institutions in Armidale.

The Service does not presently have the resources to undertake any long term research in the park and relies upon work done by outside scientific institutions. As part of a strategy to encourage scientific use of the park a prospectus will be prepared as the basis for the involvement of scientists and research organisations in research in Hat Head National Park.

The need for research into park management issues has been identified in other sections of this plan. Research projects which require field study sites will require support from management in protection of those sites.

### **Policies**

- \* A prospectus will be prepared as a guide to preferred research projects in the park. Preferred topics will be those of direct relevance to management.
- \* Service conducted research will aim to provide information on the natural and cultural heritage, and on human use to facilitate management of the park.
- \* All research will be subject to Service policy and procedures for the granting of permits, conduct of research and the production of results.
- \* Research applications will only be granted where;
  - the research has the potential to facilitate the better management of the park; and
  - the research does not conflict with the objectives of park management.

- \* The Service will encourage survey work in the park with emphasis on updating information the Service's Environmental Resource Mapping System.

### **Actions**

- \* The prospectus will include as preferred research projects:
  - completion of the mapping of vegetation communities in the park;
  - additional surveys of native animals;
  - habitat requirements of threatened fauna and rare and endangered plants;
  - the continued monitoring of the effects of mining and revegetation programs;
  - the impact of groundwater extraction on the natural values of the park;
  - the fire history of the park;
  - the ecological significance of fire in the park and its use in the conservation of native plants and animals;
  - surveys of Aboriginal sites and other places of significance; and
  - surveys of visitor use and expectations in the park.
- \* The priority list for research projects will be amended and updated as required.

### **4.3.4 Management Operations**

#### **Management trails**

In addition to the public vehicular access system described in sub-section 4.3.2 there is a network of management trails in Hat Head National Park; these are illustrated on the map centre pages.

The primary purpose of the management trail system is fire management. The trails are used for fire suppression and as boundaries for hazard reduction burning. These trails are available for use only by authorised vehicles.

The trails also provide access for other essential management operations such as research, access to rainforest revegetation areas, weed control and access for other authorities such as Telecom, Oxley Electricity, the Rural Lands Protection Board and the Kempsey Shire for maintenance of their equipment and infrastructure.

Management trails are also an important component of the park's walking track system.

Two small quarries were formerly operated by the Service within the park for its own purposes; the first is beside Smoky Cape near the Gap Beach road and the second

beside the road to the Smoky Cape Lighthouse. Both these quarries no longer have any management purpose and have now been closed.

### **Policies**

- \* The existing management trail system will be maintained in an environmentally stable condition and its use restricted to vehicles authorised by the District Manager.
- \* Any proposal for a significant relocation or upgrading or of an existing management trail will require public exhibition of an amendment to this plan of management. Routine maintenance and minor rerouting of existing management trails will not require amendment of this plan of management.
- \* New trails will be constructed only where necessary for fire control or other emergency operations. All new trails constructed for emergency operations will be closed and rehabilitated as soon as possible after each emergency unless approved by the Regional Manager for retention as necessary for management purposes.
- \* Management trails may be used without specific authorisation for walking and non-motorised bicycling.
- \* Bicycle and mountain bike riding and similar recreational activities will only be permitted on those designated management trails which are adequately surfaced and drained.

### **Actions**

- \* Management trails will be upgraded to Service design standards.
- \* All management trails will be signposted and barred to eliminate unauthorised use.

### **Commercial Recreational and Education Activities**

Hat Head National Park provides the potential for a range of commercial activities in the fields of recreation, interpretation and education. These commercial activities may complement park management and provide increased opportunities for visitors commensurate with the objectives of the Service and this plan of management.

There are as yet no commercial recreation operators licenced in Hat Head National Park.

### **Policies**

- \* Commercial recreational activities consistent with the objectives of the Service and this plan of management will be considered in Hat Head National Park.
- \* Commercial recreational activities will be subject to the objectives and policies of this plan.
- \* Commercial activities will be regulated and monitored to protect natural and cultural values.
- \* All commercial activities will be licensed under the National Parks and Wildlife Act 1974.

## **Non-Park Management Operations**

A number of statutory authorities including Oxley Electricity, Telecom, Optus, Kempsey Shire and the Rural Lands Protection Board currently occupy or use lands reserved as Hat Head National Park for activities not directly associated with park management but which provide municipal and other services to the coastal villages. Most of these occupancies are long standing and pre-date the establishment of the national park.

These works, facilities and operations affect the natural and cultural features and recreational opportunities of the park. It is a requirement that all such works, facilities and operations be covered by a lease, licence or easement under the National Parks and Wildlife Act or other legislation.

There are three borefields operated by Kempsey Shire Council within the national park - all of which were developed before the park was reserved. These are located near South-West Rocks (12 bore heads); near Hat Head village (3 bore heads) and at Maguires Crossing which provides water to Crescent Head (3 bore heads). These borefields, because they predate the establishment of the park, are covered by the existing use provisions of section 39 of the Act.

In 1993 four emergency bores were established on road reserves excluded from the park to maintain a water supply to the Nestles factory. These borefields will be superceded by the Fattorini Creek dam.

The impact on the vegetation of the park by the extraction of groundwater is unknown and at present only very limited vegetation monitoring is undertaken by Council. The Service will prepare a brief for monitoring the impact of groundwater extraction from the park and support a program for the systematic monitoring of such impacts. If the bores give rise to any significant change in the ecological or other condition of the park their continued operation will be reviewed and alternative water supply options assessed.

Any change in the operation of water extraction within the existing legal/administrative framework of the occupation of the park by the borefields will require an environmental assessment. The Service will oppose any increase:

- in the number of borefields;
- the area of the existing borefields;
- the volume of water extracted; and/or
- the number of boreheads.

## **Policies**

- \* All activities undertaken on Hat Head National Park by other authorities and organisations will be licensed under the National Parks and Wildlife Act 1974.
- \* Non-park uses shall be managed in accordance with the principles and objectives of this plan of management.
- \* Non-park uses shall be managed in accordance with the requirements of the licence, agreement or lease.

- \* Where no licence, agreement or lease currently exists then action will be taken where appropriate to negotiate one as early as possible.
- \* Proposals for the occupation of areas within the park for purposes inconsistent with the National Parks and Wildlife Act or this plan of management will be opposed by the Service.
- \* Leases, licences and other occupancies granted over lands within the park will be regularly reviewed and monitored to ensure the impacts of such use are minimised.
- \* Where appropriate, occupancies may be relocated or closed and the site/s rehabilitated.
- \* The Service will prepare a brief for monitoring the impact of groundwater extraction from the park and support a program for the systematic monitoring of such impacts.
- \* If the bores give rise to any significant change in the ecological or another condition of the park their continued operation will be reviewed and alternative water supply options assessed.
- \* Any change in the operation of water extraction within the existing legal/administrative framework of the occupation of the park by the borefields will require an environmental assessment.
- \* The Service will oppose any increase:
  - in the number of borefields;
  - the area of the existing borefields;
  - the volume of water extracted; and/or
  - the number of boreheads.

### **Commercial Fishing**

Commercial fishing is an activity regulated by NSW State Fisheries, under the Fisheries Management Act. Beach haul netting is a traditional commercial fishing activity undertaken from Smoky and Killick beaches below high water mark adjacent to Hat Head National Park.

This activity is subject to control by the Kempsey Shire Council Vehicles on Beaches Task Force, of which the Service is a member, NSW Fisheries and the beach haulers own Code of Ethics.

Access to these beaches is provided by the existing four wheel drive vehicle access points at Smoky Beach Camping Area, Hat Head, Hungry Head and Richardsons Crossing.

### **Policy**

- \* Subject to compliance with the National Parks & Wildlife Act, 1974, and the National Parks & Wildlife (Land Management) Regulation, 1987, access will continue to be provided for licensed professional beach hauling crews whose vehicles display a current beach permit provided their fishing activities are consistent with the policies of this plan and the other regulatory authorities.

## 5. PLAN IMPLEMENTATION

This plan of management is part of a system of management developed by the National Parks and Wildlife Service. The system includes the National Parks and Wildlife Act, management policies, established conservation and recreation philosophies and strategic planning at corporate, regional and district levels.

The orderly implementation of this plan will be undertaken within the annual programs of the Service's Port Macquarie District. Priorities, determined in the context of district and regional operational planning, will be subject to the availability of necessary staff and funds and to any special requirements of the Director-General or Minister.

District programs are subject to ongoing review, within which, works and other activities carried out in the Port Macquarie District are evaluated in relation to the objectives laid out in this plan.

The environmental impact of all development proposals will continue to be assessed at all stages of the development and any necessary investigations undertaken in accordance with established environmental assessment procedures.

Section 81 of the Act requires that this plan shall be carried out and given effect to, and that no operations shall be undertaken in relation to Hat Head National Park unless they are in accordance with the plan. However, if after adequate investigation, operations not included in the plan are found to be justified, this plan may be amended in accordance with section 76(6) of the Act.

As a guide to the orderly implementation of this plan of management, relative priorities for activities identified in this plan are summarised below on the basis of:

- **High Priority:** programs that need to be done in the immediate to near future on the basis that to not undertake these works will result in unacceptable degradation of the resource and/or greatly increased costs associated with rehabilitation at a later date. Also included as high priority are programs which are given high priority for legal and public safety reasons.

These programs will appear on the current three year works program.

- **Moderate Priority:** programs that can be deferred without unacceptable loss of natural and/or cultural heritage values. These programs will appear on later three year works programs.
- **Low Priority:** programs which will be undertaken only after high and moderate priority programs have been completed or when the necessary resources are made available, from regional or Service allocations or which can be funded by external means such as grant, concession operation, sponsorship or similar.



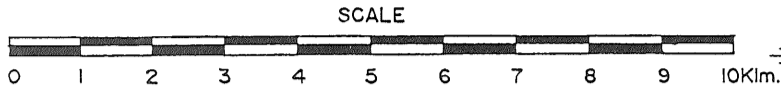
<b>Activity</b>	<b>Priority</b>	<b>reference in plan</b>
Examine the feasibility arresting the encroachment of the mobile dunes	High	4.1.1
Map the distribution of threatened plants and animals	High	4.1.2
Prepare (including map of distribution) and implement a control program for introduced plants and animals	High	4.1.3
Monitor the impact of groundwater extraction on the natural values of the park	High	4.1.3
Prepare fire management plan	High	4.1.4
Prepare cooperative Village Protection Plans	High	4.1.4
Maintain and upgrade information on fuel characteristics and fire hazard	High	4.1.4
Maintain fire records	High	4.1.4
Maintain east-west fire control lines	High	4.1.4
Subject to the availability of funds, acquire identified 8(b) lands	High	4.1.4
Signpost and interpret existing walking tracks	High	4.3.2
Seek the cooperation of land-use authorities and neighbours to protect important wildlife habitats off park	Moderate	4.1.2
Maintain program of rainforest regeneration at Gap Beach	Moderate	4.1.2
Continue monitoring of the effects of mining and revegetation programs	Moderate	4.1.1
Monitor public use impacts	Moderate	4.3.2
Monitor the impacts of vehicles on beaches	Moderate	4.3.2
Develop an interpretation plan for the park	Moderate	4.3.1
Design and establish coastal interpretations facility at Smoky Cape	Moderate	4.3.1
Develop an interpretation program for Richardsons Crossing Bora Ring site	Moderate	4.2

Undertake fauna studies of the park	Moderate	4.1.2
Undertake survey of Aboriginal sites	Moderate	4.2
Rationalise and signpost existing management trails	Moderate	4.3.3
Close beach access at McGuires Crossing	Moderate	4.3.2
Prepare a history of European activity in the park	Low	4.2
Prepare a history of Aboriginal use of the park	Low	4.2
Prepare scientific research prospectus	Low	4.3.3
Provide certification and training for ecotourism operators	Low	4.3.1




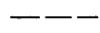





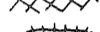
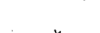
## 6. SELECTED REFERENCES

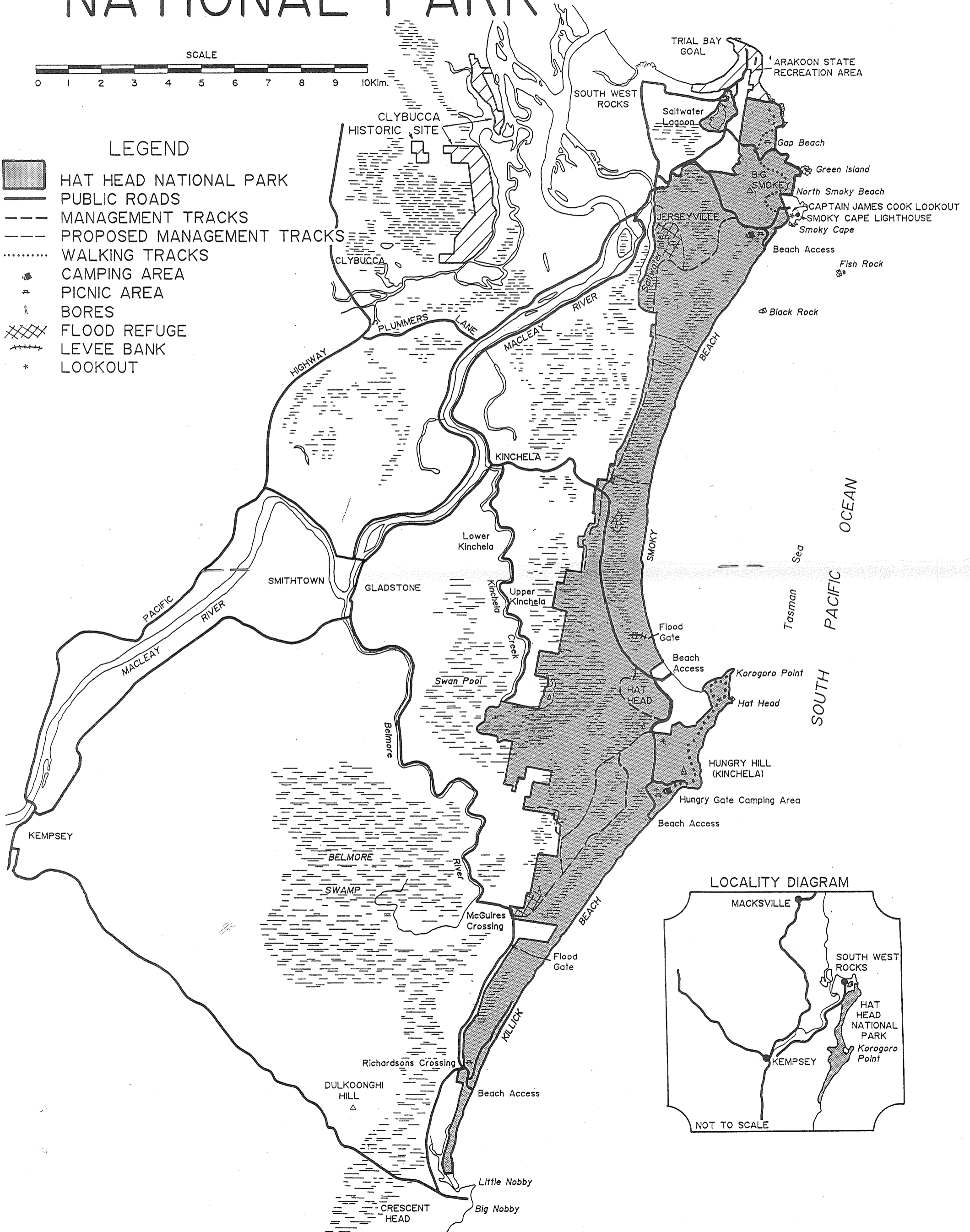
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# HAT HEAD NATIONAL PARK



## LEGEND

-  HAT HEAD NATIONAL PARK
-  PUBLIC ROADS
-  MANAGEMENT TRACKS
-  PROPOSED MANAGEMENT TRACKS
-  WALKING TRACKS
-  CAMPING AREA
-  PICNIC AREA
-  BORES
-  FLOOD REFUGE
-  LEVEE BANK
-  LOOKOUT



## LOCALITY DIAGRAM

