

Managing for risk

Rainforests of Dorrigo National Park



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FACT SHEET 16

Geographical information

Dorrigo National Park straddles the eastern parts of the Dorrigo Plateau including the upper catchments of the Rosewood River, Never Never River and Wild Cattle Creeks, and the section of the Great Escarpment representing the northern watershed of the Bellinger River. Roughly elliptical in shape it has an area of 11,732 hectares and is situated 4km south south-east of Dorrigo, 25km north-west of Bellingen and 32km west of the coast.

Dorrigo Rainforest Centre: Lat: 300 22',
Long: 1520 44'

Dorrigo National Park: Lat: 300 18' - 300 25',
Long: 1520 44' - 1520 55'

Altitude: maximum 1042m at Mt Moombil; minimum 50m at Rosewood River.

Climate and weather

Generally speaking the climate on the Dorrigo Plateau in summer is warm and wet, autumn is cool and wet, winter is cold and dry and spring is cool and dry.

Rainfall average is around 2000mm, with occasional extreme rainfall events such as 1100mm in 5 days during March 2001.

Geological features

The major landscape feature is the Great Escarpment, which began to form around 70 million years ago with the rifting of Tasmantis (New Zealand, New Caledonia, Lord Howe Island, etc.) from the remaining Gondwanan landmass, with resultant uplift of the Australian/Antarctic East Coast.

Basalt underlying parts of the park is a remnant of the 19 million year old Ebor Volcano. It has weathered to form a clay loam (red kraznozem) soil which is relatively fertile by Australian standards and has a high water-holding capacity, supporting well-developed Cool Subtropical Rainforest on the plateau and upper escarpment. Elsewhere in Dorrigo National Park soils are mostly yellow podzolics derived from metamorphosed sedimentary rocks such as argillite, phyllite and slate.

WHY IS THIS ECOSYSTEM AT RISK AND WHY IS IT SPECIAL?

Globally, rainforests are at risk from clearing for agriculture and unsustainable logging, especially in tropical South America, South-east Asia, Indonesia, New Guinea and some Pacific Islands.

Rainforests of eastern Australia underwent catastrophic clearing, mainly between the 1890s and 1920s. Unsustainable logging occurred on the New South Wales north coast mainly from the late 19th century to the 1950s, but continued up to the early 1980s. In New South Wales, the best remaining rainforest stands were preserved by a 1984 State Government decision, leading to listing as World Heritage in 1986, with later additions in 1994.

A mix of hoop pine and Antarctic beech in cool temperate rainforests is unique to the Eastern Dorrigo Plateau. The Dorrigo Plateau and Bellinger Escarpment together represent an important refugium for four rainforest subforms, which evolved prior to and during the Tertiary Period (around 65 million years ago). Some elements extend back further to the early evolution of flowering plants and have highly restricted distributions, such as the Dorrigo waratah, Dorrigo plum and red bopple nut. Other species with highly localised distributions include ringwood, five-leaved bonewood and brown tamarind.

More info at www.environment.gov.au/heritage/places/world/gondwana/index.html

Forest communities

Dorrigo National Park conserves examples of four rainforest sub-forms and wet sclerophyll forest, as well as small areas of rocky and swampy heath and native grassland.

Rainforest sub-forms:

Cool Subtropical Rainforest on basalt-derived soils of plateau and escarpment in the south-western section of the park.

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Warm Subtropical Rainforest along the Rosewood River and other tributaries of the Bellinger River within the park.

Warm Temperate Rainforest on poorer soils of the plateau in the central and northern sections of the park.

Cool Temperate Rainforest in the highest sections of the park along the plateau edge.

Dry Rainforest on skeletal soils on steep and rocky parts of the escarpment.

Major threatening processes

Since dedication as a National Park, the main actual and potential threats to these vegetation communities and the biodiversity they support are:

Fire, especially in northern sections of the park and from both natural and human ignition sources.

Introduced plants (environmental weeds) such as privet, mistflower, lantana and invasive vines.

Feral animals such as foxes, wild dogs, feral cats, black rats, rabbits, goats and cane toads.

Diseases such as phytophthora and other soil-borne plant pathogens.

Effect of human visitation: direct, such as erosion caused by short-cutting on tracks, littering, damage to vegetation, feeding of wildlife, disturbance to animal behaviour; and indirect, such as introduction of foreign plant or seed material, animals, disease and fungal pathogens.



Lantana coUetes with native colonising plants in rainforest clearings and edges.

Severe weather events such as intense rainfall and wind causing tree fall and mass movement of soil and rock.

Medium-term climatic fluctuations such as El Nino Southern Oscillation.

Long-term climatic changes associated with global warming due to the greenhouse effect.

Park management

The primary management philosophy for Dorrigo National Park is the conservation of the natural and cultural heritage of the plateau and escarpment ecosystems.

A secondary objective is education for both domestic and international visitors about the rainforests of Australia's subtropical east coast. The Dorrigo Rainforest Centre, opened in 1991, represents the major interpretation and education facility for the Dorrigo portion of the Gondwana Rainforests of Australia World Heritage Site.

The **management strategy** entails amelioration of actual threats and monitoring of potential threats.

Fire represents a major potential threat requiring early detection and planning for rapid response, along with regular maintenance of fire trails, especially in the northern section of the park.

Rainforest is a plant community highly sensitive to death and damage through fire so its control and suppression is given a particularly high priority. Unlike



Picnic shelter, sign and paved paths at The Glade Picnic Area.

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some ecosystems, fire as a management tool cannot be used in rainforest.

For the actual threat of introduced plants and animals, priority is given to control of those with the highest potential for negative effects on natural heritage values, such as environmental weeds with a capacity for rapid spread, and feral animals threatening native animals through predation, competition and spread of disease.

Human visitation is managed through education and interpretation, and the division of the park into four zones permitting different levels of use. None of these use-levels includes a camping area, due to its potential for pollution and sedimentation of streams and because there is very little flat land.

- The highest usage zone, around the easily accessible Rainforest Centre and The Glade Picnic Area has been developed to minimise impact from the high number of visitors. Infrastructure such as signs, paved pathways, boardwalks, bridges, picnic shelters, barbecues and toilets are provided at appropriate locations and popular walking tracks are sealed to reduce erosion.
- The moderate use zone at Never Never Picnic Area is reached via an unsealed road and has signs, a shelter, barbecues, and pit toilets, and tracks are unsealed, and have rough rock steps.
- The low visitation zone covers the Killungoondie section of the park, where a network of rough tracks based on old logging roads allows self-reliant recreation and bush camping. Apart from limited signage, no other infrastructure is provided.



The track to Red Cedar Falls in the moderate use zone has rough rock steps.



Incendiary devices dropped from helicopters are a part of modern fire control methods.

- All areas away from track networks represent a fourth management unit where visitation is very low and restricted mostly to local bushwalkers able to navigate untracked country using topographic maps.

New technology is assisting the management of the park in several ways:

Specialised machines (Yanmars) with powerful motors have been developed for narrow tracks, allowing grading, hauling of heavy materials, and mechanised spreading of bitumen.

High-tech fire-fighting developments include helicopter winching operations, slip-on fire units for rapid deployment, more reliable communication equipment and more detailed local weather predictions.

Satellite imagery assists in mapping vegetation communities and Geographical Positioning Systems (GPS) assist in determining more accurate locations for isolated occurrences of rare and threatened plant communities, or invasive weeds.

Modern rock-climbing equipment makes it safer to reach some

locations for weed control such as mistflower on cliff lines.

Indigenous management strategies for rainforests are not well known for the Dorrigo Plateau, but would have included access track maintenance, and possibly some intentional seed dispersal of useful species. Research into Aboriginal practices on other areas of the plateau has led to fire being considered as a management tool in the native grassland area of the park.

Social and political attitudes to rainforest conservation management have been largely positive

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since the 1980s. When former public uses of park areas were altered under the management plan, such as public vehicle access through Killungoondie section, local media was used to publicise the reasons for and the values of this change. Public information strategies are used to provide background on current management practices such as weed spraying or pest species baiting projects.

Management resources (human and financial) at Dorrigo National Park are tied to budgets allocated by the State Government and are influenced by the priorities of individual governments, and their allocation of ministerial portfolios. However, recognition of the World Heritage status of the park's rainforests in 1986 led to funding for the establishment of the Rainforest Centre as a major interpretive facility, and has since ensured a reasonable level of resourcing to maintain and upgrade visitor facilities and interpretive initiatives.

Visitor response to the park and the management practices is generally very positive. Feedback is sought in surveys and through Rainforest Centre staff interaction with the public, and indicates visitor appreciation of their rainforest experience and the quality of service and facilities at the Centre. The



Example of a temporary track closure sign

local business community shows an increasing level of support, based on a growing understanding of the role of the World Heritage area in maintaining and developing the local community through tourism.

Temporary closures of tracks or facilities can be frustrating for visitors but are always explained on signage. Respect for management decisions is shown by the lack of damage and general lack of visitor conflict with staff at the Rainforest Centre.

Human impacts on Dorrigo rainforest have been most significant during the period of European settlement and expansion in the north-east of New South Wales. We know of no substantial effects on rainforests by Aboriginal practices: resources were harvested in a sustainable way.

Harvesting of hoop pine in the early decades of the 20th century, and coachwood and sassafras during 1940s and 1950s has significantly altered warm temperate rainforest ecosystems in the northern sections of Dorrigo National Park.

Construction of the Mountain Road has had ongoing impacts such as weed spread and increased instability of steep slopes but has had a positive influence on



It is crucial to work with neighbouring farmers to help reduce risks from cattle grazing, weeds, feral animals, chemical runoff and fire.

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the accessibility and popularity of the park as a tourist destination, and its choice as a location for a major interpretive centre for World Heritage rainforests.

The most difficult to manage impacts are those resulting from closer settlement and farming practices adjacent to the park. Introduced pasture grasses, agricultural plants and garden plants are accidental invaders of native habitats. Access to many rugged areas of the park is easy for seeds spread by wind or animals but almost impossible for management staff. The potential impact of the spread of cane toads into the park is of huge concern for the future, as we do not yet know its limits of tolerance to cold and or dry conditions.

Vulnerability of the rainforest ecosystem in Dorrigo National Park lies first and foremost in the fact of its relatively small remaining area and its isolation amongst other types of forest. The unique features protected within the park would be lost to the world if destroyed by a major event. Climate change may bring more extreme ranges of temperature, dry periods or wind strength, any or all of which could lead to irreparable damage.

Attitude change in our society towards conservation over the past twenty years has led to some improved environmental farming practices on the Dorrigo Plateau, such as reforestation of steep slopes and gullies, creation of wildlife corridors, better water management, and pest species control. This in turn benefits factors such as water runoff quality, buffer zones, wildlife survival and pest species impacts on the rainforest ecology in the park.

Political factors determined the widespread clearing of small farming blocks on the plateau. It was argued in State Government in the early years of the 20th century that the soils and climate were suitable for closer settlement and land should be sold in small holdings to those who would clear and farm it. After 1905 wholesale clearing of land removed most of the remaining plateau rainforest, creating a completely new environment and isolating the park ecosystem.

More recently, political factors could have had a major impact on conservation and management strategies if unsuitable land use development or infrastructure had been planned and approved by local or state governments for areas adjacent to the ecosystem. However, so far, the conservation values of the park have been largely recognised and supported by governments in their decisions on land use and development.

Future management strategies will need to address change in patterns of recreational use of parks by increasingly urbanised and multinational populations. It is likely there will be an increased need for emphasis on effective communication to the general public on the values of ecosystem and biodiversity conservation, in the face of growing pressures on government to spread the taxpayer's dollar ever wider.