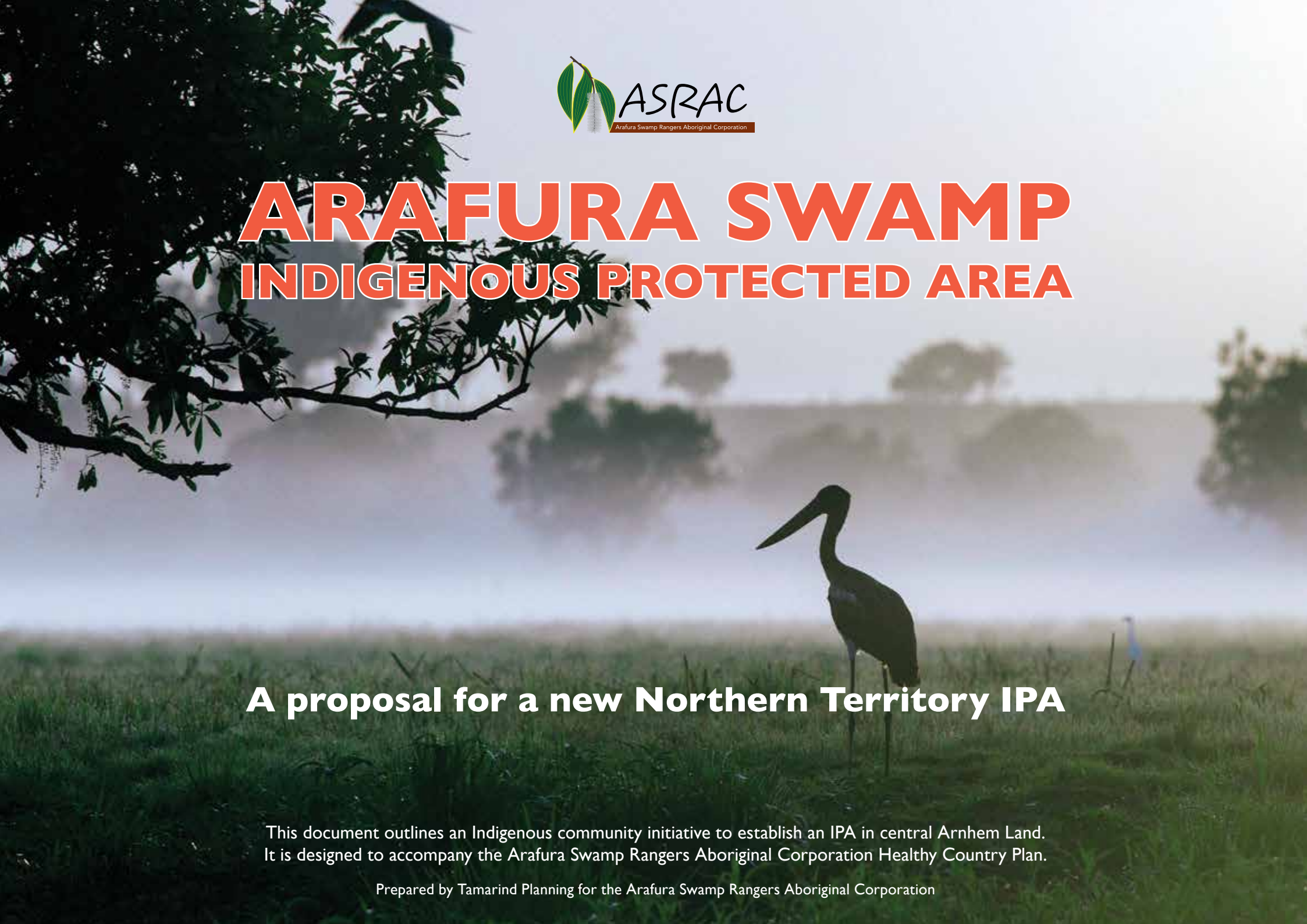

ASRAC
Arafura Swamp Rangers Aboriginal Corporation

ARAFURA SWAMP
INDIGENOUS PROTECTED AREA

A proposal for a new Northern Territory IPA

This document outlines an Indigenous community initiative to establish an IPA in central Arnhem Land.
It is designed to accompany the Arafura Swamp Rangers Aboriginal Corporation Healthy Country Plan.

Prepared by Tamarind Planning for the Arafura Swamp Rangers Aboriginal Corporation

Contents

Arafura Swamp Indigenous Protected Area

This document showcases an initiative by the Arafura Swamp Rangers Aboriginal Corporation (ASRAC) to establish a new Indigenous Protected Area (IPA) in northern Arnhem Land in the Northern Territory. It complements the ASRAC Healthy Country Plan (HCP) and presents additional information relevant to the establishment of an IPA and accession to the National Reserve System (NRS). In detailing the exceptional natural and cultural values of this area a clear case is made for Government support for the development and operation of the proposed *Arafura Swamp Indigenous Protected Area*.

Summary

Located in North East Arnhem Land, Arafura Swamp is a vast, pristine wetland covering some 1000 square kilometers. It lies at the heart of an 11,000 square kilometre catchment, extending from Castlereagh Bay to the upper reaches of the Goyder, Gulbuwangay and Glyde Rivers.

Long considered an area of exceptional conservation value, the greater Arafura Swamp region boasts some of the NT's richest and most extensive rainforests, supports an abundance of threatened, rare or little-known wildlife, and includes the major biogeographic corridor of the Mitchell and Parsons Ranges. Most of the catchment is listed on the Register of the National Estate while central swamp is listed as a Wetland of Nationally Importance.

The proposed Arafura Swamp IPA, which incorporates most of the Arafura catchment plus adjoining areas falling with the district's cultural boundaries, will cover approximately 1.4 million hectares. The entire area shares an unbroken history of Aboriginal ownership and management.

Traditional connections to country remain largely intact and many landowners still reside on outstations; living from and protecting their ancestral estates. Customary land management is today augmented by the activities of the Arafura Swamp Rangers, a composite and longstanding team including rangers based in Ramingining and outstation satellites.

With its many outstanding features Arafura Swamp IPA would not only add significantly to national conservation portfolio, in conjunction with the four neighboring IPA it virtually completes reservation of the Arnhem Coast bioregion — perhaps Australia's most culturally distinct and biodiverse quarter.

The Proposed Arafura Swamp Indigenous Protected Area

Area Location

The Arafura Swamp IPA centers on a large freshwater basin located on the northern coast of Arnhem Land, approximately 450 kilometres from Darwin in the Northern Territory. The proposed IPA covers 14,163 square kilometres, including 13,827 square kilometres of land and 336 square kilometres of sea country. It is bounded, and in some areas overlaps with Djelk IPA to the west, Laynhapuy IPA to the east and Marthakal IPA to the northeast. It also neighbors the operational areas of the Crocodile Island (Maringa), and Mimal Indigenous Ranger groups.

Once dedicated, the Arafura Swamp IPA will encompass 1,382,776 square kilometres of the Arnhem Land Aboriginal Land Trust, an area held as Inalienable Freehold under the provisions of the Commonwealth *Aboriginal Land Rights (Northern Territory) Act* (ALRA) *1976*.

IPA Dedication

The Arafura Swamp IPA will be dedicated as a Category VI Managed Resource Protected Area, consistent with the International Union of the Conservation of Nature (IUCN) definition of an area *'conserving ecosystems and habitats, together with associated cultural values and traditional natural resource management systems'*.

Additional Steps to IPA Dedication

ASRAC's IPA framework is close to complete with an effective ranger program, established facilities, landowner-representative governance and a suitable plan of management in place.

Statutory landowner consultations, refinement of the boundary alignment and negotiation of Shared Management Area agreements with neighboring groups are the principle steps to be completed ahead of the dedication of the Arafura Swamp IPA.

Bioregional Reservation

While none of the included IBRA7 bioregions or subregions are considered poorly reserved, the Arafura IPA will increase protection of the Central Arnhem bioregion by almost 25 per cent. For the Parson subregion reservation will be increased by nearly 65 per cent, while an additional 20 per cent of the Maningrida subregion will be protected.

Bioregion/Subregion	Existing Reservation	Additional Reservation — ASRAC IPA	Remaining Unreserved
Arnhem Coast	**51%**	**10.1%**	**36.8%**
Maningrida	42.2%	18.8%	39.0%
Nhulunbuy	63.1%	0.7%	36.2%
Central Arnhem	**34.1%**	**24.3%**	**41.7%**
Parson	31.8%	64.5%	3.7%
Wilton	34%	21.1%	45.6%

Table 1. Increase in reservation of IBRA bioregions/subregions offered by the ASRAC IPA

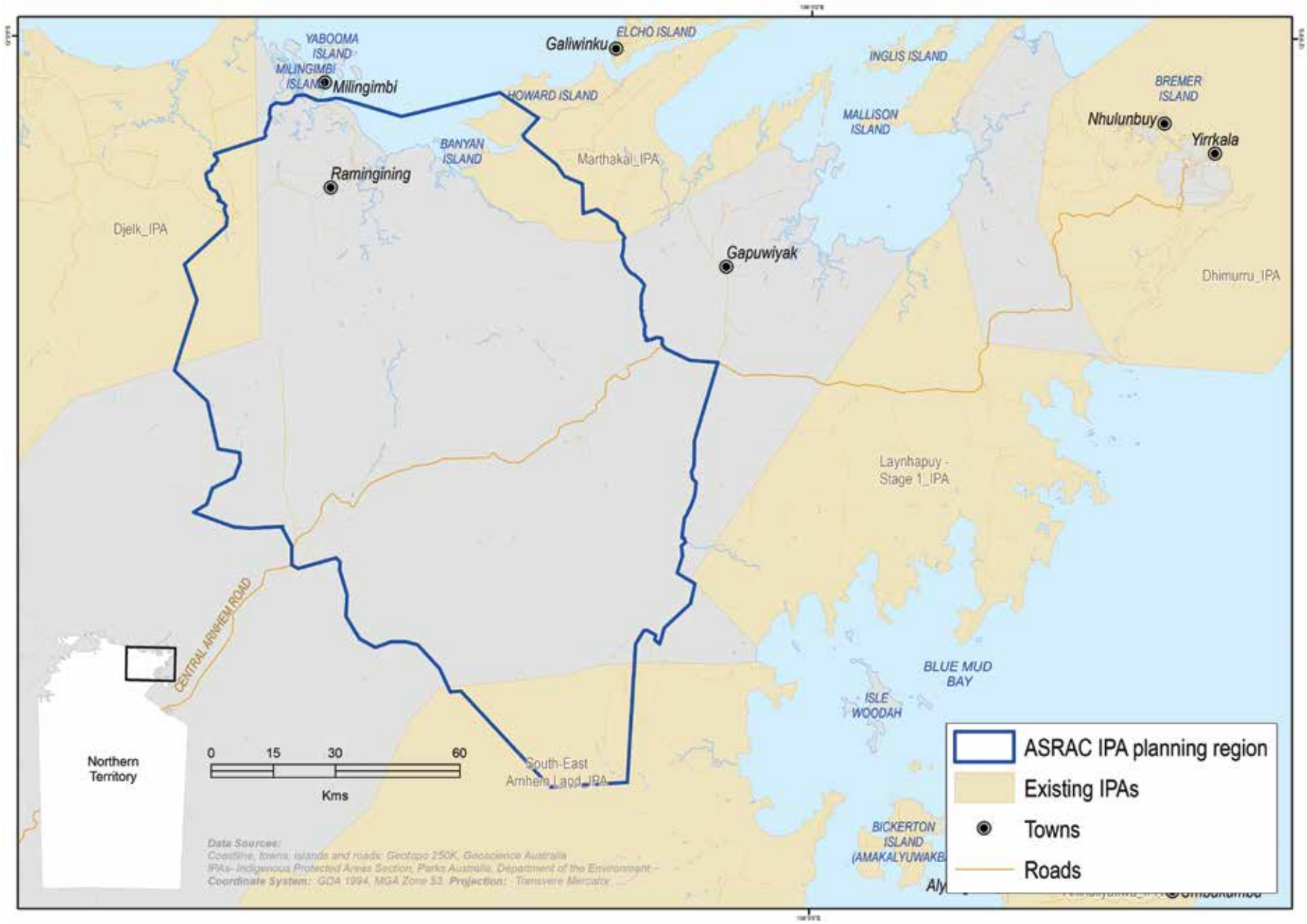

Figure 1. The proposed boundary of the Arafura Swamp IPA

Conservation Values of the Proposed Arafura Swamp IPA

Key Ecological Features

The Arafura Swamp, known locally as Gurrawiling, is currently listed as a Nationally Important Wetland. However, as possibly the largest wooded, perennial freshwater wetland in Northern Australia, it is considered to be of International Significance and has been assessed by the Northern Territory Government as meeting requirements (1–7) for listing under the RAMSAR Convention as a *High Conservation Value Aquatic Ecosystem*.

The Arafura Swamp, including its coastal reaches, is also recognised internationally as a Key Biodiversity Area. In this context it is described as a site *"contributing significantly to the global persistence of biodiversity"* (BirdLife International 2018). The area supports in excess of 300,000 waterbirds (Brennan et al 2003).

The Arafura wetlands are in near pristine condition and are highly unique, with an impervious basement, perennial inflow from springs and no continuous river channel to the sea. Most of the Arafura Swamp has National Heritage listing, relating to it is ancient and unique flora and continuous customary Indigenous management. The entire extent of this key ecological feature is contained within the proposed Arafura Swamp IPA.

The area supports several rare or restricted vegetation communities including *Hanguana malayana* Swamp, a restricted wetland community associated with permanently flooded areas where the Goyder River diffuses into the wetlands. The Arafura Swamp also contain virtually the entire NT population of the large and distinctive wetland palm *Corypha utan*, with more than 3000 hectares of complex monsoon rainforest gracing its margins (Russell-Smith 1991). These rainforests support a suite of rare and or threatened plants, as well as a distinctive mesic fauna.

The Mitchell and Parsons Ranges, which run diagonally through the south of the proposed IPA, are part of a broad continuous biogeographic corridor. To the north this sandstone formation was once part of a land bridge joining mainland Australia to New Guinea as recently as 1300 years before present. At current sea-levels it is represented by the Wessel Islands Archipelago within the neighboring Marthakal IPA. To the south, this feature links Arnhem Land to sandstone environments of the Gulf of Carpentaria. As a consequence, this area supports a varied array of wildlife including arid-land elements such as the Spectacled Hare-wallaby (*Lagorchestes conspicillatus*), Papuan elements such as the Six-toothed Rainbowskink (*Carlia sexdentata*) and Arnhem Land sandstone endemic species such as the Oenpelli Python (*Simalia oenpelliensis*).

Both the Arafura Swamp and Castlereagh Bay are recognised by the Northern Territory Government as Sites of Conservation Significance with an International Significance rating. Further details can be viewed here:

http://www.territorystories.nt.gov.au/jspui/bitstream/10070/254271/1/19_castlereagh.pdf

http://www.territorystories.nt.gov.au/bitstream/handle/10070/254345/20_arafura.pdf

Threatened Species

A total of 33 listed Threatened Species are recorded from the proposed Arafura Swamp IPA (Figure 1.), while at least a further 10 species are considered likely to occur in the IPA based on their known range and habitat preferences.

Common Name	Scientific Name	NT Status	EPBCA Status
Northern Quoll	*Dasyurus hallucatus*	CR	EN
Loggerhead Turtle	*Caretta caretta*		EN
Olive Ridley Turtle	*Lepidochelys olivacea*		EN
Gouldian Finch	*Erythrura gouldiae*	VU	EN
Water Mouse	*Xeromys myoides*	DD	VU
Fawn Antechinus	*Antechinus bellus*	EN	
Hawksbill Turtle	*Eretmochelys imbricate*		VU
Flatback Turtle	*Natator depressus*		VU
Green Turtle	*Chelonia mydas*		VU
Partridge Pigeon	*Geophaps smithii*	VU	VU
Masked Owl (northern)	*Tyto novaehollandiae kimberli*	VU	VU
Crested Shrike-tit	*Falcunculus frontatus*	NT	VU
Lesser Sand Plover	*Charadrius mongolus*	VU	
Greater Sand Plover	*Charadrius leschenaultii*	VU	
Curlew Sandpiper	*Calidris ferruginea*	VU	
Red Knot	*Calidris canutus*	VU	
Great Knot	*Calidris tenuirostris*	VU	
Bar-tailed Godwit	*Limosa lapponica*	VU	
Eastern Curlew	*Numenius madagascariensis*	VU	
Black-footed Tree-rat	*Mesembriomys gouldii*	VU	
Nabarlek	*Petrogale concinna*	VU	
Grey Falcon	*Falco hypoleucos*	VU	
Pale Field-rat	*Rattus tunneyi*	VU	
Mertens' Water Monitor	*Varanus mertensi*	VU	
Floodplain Monitor	*Varanus panoptes*	VU	
Northern Leaf-nosed Bat	*Hipposideros stenotis*	VU	
Oenpelli Python	*Simalia oenpelliensis*	VU	
Freycinetia	*Freycinetia excelsa*	VU	
Angiopteris	*Angiopteris evecta*	VU	
Freycinetia	*Freycinetia percostata*	VU	
Zamia Palm	*Cycas armstrongii*	VU	
Ectrosia	*Ectrosia blakei*	DD	VU

Table 2. Listed Threatened Species recorded from the proposed Arafura Swamp IPA

Conservation Codes: CR — Critically Endangered, EN — Endangered, VU — Vulnerable, NT — Near Threatened, DD — Data Deficient

Threats

Primary environmental threats to the proposed IPA's values occur at landscape scales and are common to most other reserves in Top End coastal regions. They are summarized and prioritized as feral pests, weeds, uncontrolled fire, trespass, and climate change. Of equal importance are the societal and cultural threats identified by Traditional Owners who see the dilution of culture, empty country and capricious government policy as growing impediments to their maintenance of healthy country.

Feral Pests

Water buffalo, wild cattle, pigs, horses, donkeys, cats and cane toads are all present in the proposed IPA though populations remain at moderate to low levels. Traditional Owners consider pigs the most serious problem. Not only do pigs compete for favored traditional food resources such as lilies, water chestnuts and Long-neck Turtles, they thoroughly foul favored places such as springs, swamps and creek lines.

ASRAC Rangers believe water buffalo pose the greatest threat to the country's values and are particularly concerned by the role of buffalo in accelerating salt intrusion to the freshwater swamps. Buffalo also cause great damage to lowland rainforests, many of which have high cultural, as well as conservation, significance.

Cane toads have invaded all of the freshwater swamp and, as elsewhere in northern Australia have heavily impacted the native wildlife. Freshwater crocodiles, freshwater turtles, large monitors, water pythons and the Northern Quoll have all suffered large population declines or regional extinction since the arrival of cane toads.

Weeds

Mimosa (*Mimosa pigra*) and Olive Hymenachme (*Hymenachne amplexicaulis*) are the most serious environmental weeds found in the proposed IPA. Both are vigorous wetland invaders with the potential to irrevocably change the swamp's ecosystem. While Mimosa is now under control, Olive Hymenachme continues to spread, posing a major management challenge by threatening not only wildlife but traditional economies based on resources such as water chestnuts and Magpie Geese.

In upland areas of the proposed IPA Mission grass, Grader grass and Gamba grass are potential threats. These introduced grasses out-compete native grasses and increase fuel loads, resulting in more intense fires and the loss of fire-sensitive understory species, the death of mature trees and general loss of biodiversity. By altering fire regimes invasive grasses have the potential to disrupt lucrative and environmentally important savanna carbon projects. Through vigilance and priority eradication of outbreaks along roads ASRAC Rangers have to-date managed to control these grassy weeds.

Uncontrolled Fire

Uncontrolled fire, or *bad fire* as it is locally known, refers to high intensity wildfires that sweep across vast tracts of country late in the dry season. In pre-colonial times, such late season fires would have been far more limited in extent because of traditional mosaic burning earlier in the dry season. With fewer people living on country and using it in customary ways the long-established intentional mosaic of traditional burning has waned; uncontrolled wildfire arising in its absence.

The consequences are many; vegetation diversity is diminished, important flowering and fruiting plants disappear, habitat complexity declines with thickets, logs, tree-hollows, leaf litter and grasses removed. Loss of cover leads to accelerated erosion and advantages feral predators like cats who preferentially hunt in burnt areas. Weeds and climate change may also be driving more frequent and intense bush fires.

Trespass

Arnhem Land is Aboriginal freehold land and access is restricted by a legal permit system. Unfortunately, this system is seldom enforced and is mostly disregarded by tourists and others seeking access to this remote and remarkable region. Trespass takes many forms, ranging from unwanted fishing and irregular landings along the coast to illegal sports hunting in the wetlands to ignorant intrusions onto homelands by contractors or others working in Ramingining. With strangers wandering their homelands Traditional Owners fear for the sanctity of their sacred sites, worry about the safety of their families and are generally upset by the lack respect for their privacy. ASRAC rangers are left to manage the weeds, wildfire and rubbish associated with unwanted visitors, yet are currently powerless to enforce the permit provisions of the NT Land Rights Act.

Climate Change

Sea-level rise as a result of climate change could dramatically affect the freshwater wetlands of the Arafura Swamp, with the majority of the wetlands lying less than a metre above sea level. Precursors to more significant impacts were seen during recent cyclone events when saltwater intrusion affected areas of paperbark swamp where buffalo channels and vehicle tracks breached the seaward levee. Vegetation loss and soil erosion resulting from feral animals, vehicle traffic and wildfire all leave the Arafura Swamp more susceptible to sea-level rise due to climate change.

Loss of Culture

The practice and authority of Rom, a body of traditional lore and customs that has structured Bi and Yolngu communities for millennia is receding as western culture and globalization pervade remotest Arnhem Land. Far from a recently arising threat senior Traditional Owners have long warned that the erosion of culture undermines their ability to guide and govern their communities, and in particular their youth.

In Arnhem Land keeping country healthy relies on people, their connections and cultural responsibilities to the land and sea. Loss of culture weakens these connections and obligations leaving ancestral country unused and uncared for. *'Empty Country'* is seen as a major threat by Traditional Owners as it embodies an environment devoid of spiritual and physical wellbeing.

Changing Government Policy

Indigenous lore and customs are seen as immutable by Bi and Yolngu communities who have witnessed their passage through generations for thousands of years. This stability and reverence for convention makes it difficult for Traditional Owners to accept and successfully engage with government policy, programs or laws that seem to be forever changing. *'Shifting goalposts'* is a problem that compounds the inherent difficulties of cross-cultural understanding because just as quickly as people interpret and understand government programs, the guidelines or operation changes.

Bush Heritage Australia, photographer Daniel Hartley-Allen

Land and Sea Management

Existing

ASRAC Rangers currently undertake a practical mix of land and sea management activities. These include:

Fire management: fuel reduction and wildfire mitigation are undertaken as part of the ASRAC Carbon Abatement initiative.

Feral animal control: culling pigs and buffalo is undertaken as well as fencing of fragile habitats, such as jungles and vulnerable cultural sites, to reduce the damage caused by these pests.

Crocodile management: including monitoring of Estuarine and Freshwater crocodile populations, capture-mark-release surveys, removal of 'problem' crocodiles, and crocodile egg collection for commercial farming.

Sugar Bag and Crocodile Farm projects: developing commercial projects based on local wildlife resources.

Fishing closure compliance: regular sea patrols in the Digagilla Creek, Glyde River, Woolen River and Hutchinson Strait areas, where commercial fishing is prohibited.

Sea Country Management: sea patrols, monitoring and removal of marine debris (Dept. Agriculture), surveillance for illegal boating or recreational fishing (NT Fisheries and NT Water Police).

Integrated weed management: primarily focused on Mimosa, Olive Hymenachne, Lantana, Mission grass, Gamba grass, Grader grass, Bellyache bush and Salvinia.

Cultural mapping and archiving: video recording of ceremonies, landowner interviews, ranger activities and other cultural events within the Arafura Swamp region.

Threatened Species Management: annual monitoring of select species including the Arenga Palm and Gouldian Finch.

Community education and development: Arafura Rangers host community training sessions in making traditional tools, traditional knowledge transfer and cultural tours.

General Operations: these are wide ranging but include on-going management planning with traditional land owners and the wider community, road and track clearing, monitoring saltwater intrusion, patrols for unwanted visitors, visiting and supporting remote homelands and working with scientists and agency staff on a variety of researcher projects.

Programs or laws that seem to be forever changing: 'Shifting goalposts' is a problem that compounds the inherent difficulties of cross-cultural understanding because just as quickly as people interpret and understand government programs, the guidelines or operation changes.

Future

ASRAC's Healthy Country Plan captures the aims and ideas of the region's Bi and Yolngu communities. It is a blueprint for ASARC's future, establishing priority targets, strategies and activities to benefit local people and the environment. A summary of the Healthy Country Plan's objectives includes:

Healthy People

- Develop a database for all our cultural and natural knowledge and information, and by 2022 it will be accessible and safe in a Cultural center.
- Working with Yolngu and Bi clans to produce a cultural map detailing sacred sites, songlines, clan estates, and traditional connections between groups.
- Implement a Cultural Program within our hub and homeland schools including activities such as on-country camps to provide high quality cross-cultural education.
- Develop a Visitor Management Plan that addresses a permit system, protocols, patrolling, signage, surveillance, enforcement and tourism facilitation.
- Grow our Women Rangers group through strong support and appropriate training.
- Improve support, infrastructure and access for new and existing satellite ranger bases, so rangers and their families can operate from them effectively.
- Plan and implement a career pathway program for, and beyond, rangers.

Healthy Country

- Develop a monitoring program using both-ways science with relevant partners.
- Develop an ASRAC plants and animals ethno-ecology book.
- Seek joint research projects with scientists to better understand environmental threats, their causes, impacts, and best-practice solutions.
- Develop and deliver a community awareness program about key threats to country and management goals.
- Work with partners to develop a strategy to increase populations of important plants and animals that have declined in our region (e.g. Emus).
- Continue to expand our fire program and complete the next 5-year ASRAC Fire Plan, consistent with carbon abatement opportunities and cultural priorities.
- Continue to grow ASRAC's crocodile and carbon businesses and investigate new sustainable enterprises such as tourism, arts and crafts, wildlife use, commercial fishing, mustering and an abattoir.
- Continue and expand ASRAC's feral animal and weed control programs and finalise our integrated Weed and Feral Pest Management Plan and Procedures.
- Continue to work with NT Fisheries and other stakeholders in the development of a Fisheries management plan and enforcement powers for ASRAC sea rangers.
- Work with landowners towards the development and dedication of the Arafura Swamp IPA.
- Strengthen landowner support for ASRAC through membership and improve our governance, operational and financial systems.
- Look at ways to transfer existing jobs and business to Yolngu through training, mentorship and joint-venture arrangements.

Bush Heritage Australia, photographer Daniel Hartley-Allen

Arafura Swamp Rangers Aboriginal Corporation

ASRAC is an independent not-for-profit Aboriginal organization established to support and administer a catchment-based network of five Indigenous ranger groups. ASRAC is an ORIC registered organization under the *Corporations (Aboriginal and Torres Strait Islander) Act 2006*. Governed by a board of eight Yolngu and Bi directors it represents all Aboriginal landowner clans within the ASRAC region.

Arafura Rangers

Bi and Yolngu Traditional Owners started ranger groups in the Ramingining region in the 1970s. These initially coalesced as the South-East Arafura Catchment Rangers associated with Donydji, Mirrngatja and Dhupawamirri homelands. Gurruwiling Rangers was later established to manage the central basin, while Wanga Djakamirr and Balmawirrey Dhipirri Rangers arose as sea country rangers in the Castlereagh Bay area. These groups now all operate under the ASRAC banner.

There are currently 16 full time equivalent (FTE) ASRAC ranger positions. Seasonal casual employment associated with fire and other intensive field work lifts this figure to around 20 FTE positions.

Partners

ASRAC have strong partnerships with the following agencies and organisations:

Darwin Centre for Bushfires Research	Charles Darwin University
North Australian Indigenous Land & Sea Management Alliance	Northern Land Council
Arnhem Land Fire Abatement Northern Territory	Bush Heritage Australia
Australian Government Department of Agriculture and Water Resources	NT Weeds Branch
Australian Government Department of Home Affairs (Customs)	CSIRO
Australian Government Department of Prime Minister and Cabinet	Bushfires NT
Flora and Fauna Division, NT Department of Environment and Natural Resources	NT Fisheries
Mimal Land Management Aboriginal Corporation	Porosus Pty Ltd
Aboriginal Research Partners Network (ARPnet)	Djelk Rangers
Territory Natural Resource Management	East Arnhem Council
Bawinanga Aboriginal Corporation	Jawoyn Association
Crocodile Islands (Maringa) Rangers	Warddeken Land Management

Supporting Information

Statement of Significance

National Reserve System Criteria

The Arafura Swamp IPA aligns with many aspects of the Scientific Framework underpinning the National Reserve System (NRS). Specifically, it addresses the following Scientific Priorities for Biodiversity Conservation:

Bioregions and subregions where there is very little legal protection for plants and animals native to that area and where they are under a real threat.

One hundred per cent of the Arnhem Coast and Central Arnhem bioregions occur on remote Aboriginal freehold land which is subject to very low levels of environmental law enforcement due to a) an absence of agency intervention on private land, and b) Traditional Aboriginal Owners having no legal powers of enforcement. Unauthorised hunting, fishing, trespass and wildlife poaching are increasing issues across this precinct.

Native habitats under-protected within the existing National Reserve System.

Evergreen lowland rainforest and Hanguana malayana swamps in the upper reaches of Arafura Swamp unique habitats that are currently unprotected. The Arafura Swamp, possibly the largest perennial, wooded north Australian wetland, is an outstanding example of a habitat under-reserved within the NRS.

Rare or threatened species and habitats.

Thirty three listed Threatened Species are recorded from the proposed Arafura Swamp IPA (Table 1.), while at least a further 10 species are considered likely to occur in the IPA (Appendix 1.). There are 58 plant and five vertebrate species recorded from the Arafura Swamp IPA that are endemic to the NT. A further four plant species recorded from the site are only known from the Arnhem Coast bioregion.

Places that offer refuge, centres of native species richness, or areas of national importance such as wetlands.

The Arafura Swamp, including its coastal reaches, is recognised internationally as a Key Biodiversity Area. In this context it is described as a site *"contributing significantly to the global persistence of biodiversity"* (BirdLife International 2018). The area supports in excess of 300,000 waterbirds (Brennan et al 2003). Arafura swamp is a listed as a Nationally Important Wetland and nominated as a High Conservation Value Aquatic Ecosystem under the RAMSAR Convention.

Special species, groups or circumstances — for example, very special habitat requirements, species with an exceptionally large range, migratory species, species vulnerable to climate change or other threatening process.

Both Castlereagh Bay and the Arafura Swamp are identified as key areas for migratory and waterbirds. 28 EPBC listed Migratory Species are recorded from the Arafura Swamp IPA, of which 20 are migratory shorebirds listed for special protection under bilateral and other international treaties. These are all species threatened by climate change-induced sea level rises and the pollution, draining or development of wetlands globally.

Appendix 1. Threatened vertebrate species likely to occur in the Arafura Swamp IPA

Based on their known geographic range and the availability of suitable habitat, the following species are considered highly likely to occur within the Arafura Swamp IPA.

Common name	Scientific Name	EPBC Status
Red Goshawk	*Erythrotriorchis radiatus*	VU
Northern Siberian Bar-tailed Godwit	*Limosa lapponica menzbieri*	CR
Brush-tailed Tree-rat	*Conilurus penicillatus*	VU
Ghost Bat	*Macroderma gigas*	VU
Nabarlek (Top End Northern Brush-tailed	*Petrogale concinna canescens*	EN
Phascogale	*Phascogale pirata*	VU
Bare-rumped Sheathtail	*Saccolaimus saccolaimus nudicluniatus*	VU
Plains Death Adder	*Acanthophis hawke*	VU
Leatherback Turtle	*Dermochelys coriacea*	EN

Conservation Codes: CR — Critically Endangered, EN — Endangered, VU — Vulnerable

Appendix 2. Migratory and NT Endemic Fauna recorded from the proposed Arafura Swamp IPA

Common Name (EPBCA)Species	Scientific Name	Endemic Species	Migratory
Bar-tailed Godwit	*Limosa lapponica*		Yes
Curlew Sandpiper	*Calidris ferruginea*		Yes
Eastern Curlew	*Numenius madagascariensis*		Yes
Great Knot	*Calidris tenuirostris*		Yes
Greater Sand Plover	*Charadrius leschenaultii*		Yes
Lesser Sand Plover	*Charadrius mongolus*		Yes
Red Knot	*Calidris canutus*		Yes
Crested Shrike-tit	*Falcunculus frontatus*		Yes
Black-tailed Godwit	*Limosa limosa*		Yes
Grey Plover	*Pluvialis squatarola*		Yes
Grey-tailed Tattler	*Tringa brevipes*		Yes
Ruddy Turnstone	*Arenaria interpres*		Yes
Whimbrel	*Numenius phaeopus*		Yes
Caspian Tern	*Hydroprogne caspia*		Yes
Cattle Egret	*Ardea ibis*		Yes
Common Greenshank	*Tringa nebularia*		Yes
Common Sandpiper	*Actitis hypoleucos*		Yes
Eastern Great Egret	*Ardea modesta*		Yes
Eastern Osprey	*Pandion cristatus*		Yes
Glossy Ibis	*Plegadis falcinellus*		Yes
Little Tern	*Sternula albifrons*		Yes
Marsh Sandpiper	*Tringa stagnatilis*		Yes
Rainbow Bee-eater	*Merops ornatus*		Yes
Red-necked Stint	*Calidris ruficollis*		Yes
Saltwater Crocodile	*Crocodylus porosus*		Yes
Sharp-tailed Sandpiper	*Calidris acuminata*		Yes
White-bellied Sea-eagle	*Haliaeetus leucogaster*		Yes
White-winged Black Tern	*Chlidonias leucopterus*		Yes
Oenpelli Python	*Morelia oenpelliensis*	Yes	
Hooded Parrot	*Psephotus dissimilis*	Yes	
Fawn Antechinus	*Antechinus bellus*	Yes	
Black-spotted Ridge-tailed Monitor	*Varanus baritji*	Yes	
Arnhem Shovel-nosed Snake	*Brachyurphis morrisi*	Yes	

Appendix 3. Notable Flora recorded from the proposed Arafura Swamp IPA

Conservation Codes: CR — Critically Endangered, EN — Endangered, VU — Vulnerable, NT — Near Threatened, LC — Least Concern, DD — Data Deficient

Common Name	Scientific Name	NT Status	EPBCA Status	NT Endemic	Restricted distribution
Freycinetia	*Freycinetia excelsa*	VU			
Angiopteris	*Angiopteris evecta*	VU			Yes
Freycinetia	*Freycinetia percostata*	VU			Yes
Zamia Palm	*Cycas armstrongii*	VU		Yes	
Ectrosia	*Ectrosia blakei*	DD	VU		
Fatoua	*Fatoua villosa*	NT			
Pleurostylia	*Pleurostylia opposita*	NT			
Waterwheel	*Aldrovanda vesiculosa*	NT			
Emmenosperma	*Emmenosperma cunninghamii*	NT			
Citrus	*Citrus gracilis*	NT		Yes	
Premna	*Premna dallachyana*	NT			
Tectaria	*Tectaria siifolia*	NT			
Nephrolepis	*Nephrolepis acutifolia*	NT			
Northern Territory Mangrove	*Avicennia integra*	NT		Yes	
Grevillea	*Grevillea benthamiana*	NT		Yes	
Asteromyrtus	*Asteromyrtus lysicephala*	NT			Yes
Muellerargia	*Muellerargia timorensis*	DD			
Rainforest Habenaria	*Habenaria hymenophylla*	DD			
Adiantum	*Adiantum atroviride*	DD			
Schizachyrium	*Schizachyrium perplexum*	DD			
Pueraria	*Pueraria lobata var. lobata*	DD			
Stylidium	*Stylidium tenerum*	DD			
Fringe-rush	*Fimbristylis spiralis*	DD		Yes	
Sarcolobus	*Sarcolobus ritae*	DD		Yes	
Cupgrass	*Eriochloa fatmensis*	DD			

Common Name	Scientific Name	NT Status	EPBCA Status	NT Endemic	Restricted distribution
Paspalidium	*Paspalidium udum*	DD			
Ectrosia	*Ectrosia lasioclada*	DD			
Cymaria	*Cymaria dichotoma*	DD		Yes	Yes
Purple Mangrove Holly	*Acanthus e. subsp. ebarbatus*	DD			
Centella	*Centella asiatica*	DD			
Scleria	*Scleria biflora subsp. biflora*	DD		Yes	
Butomopsis	*Butomopsis latifolia*	DD			
Hoppea	*Hoppea dichotoma*	DD		Yes	
Crateva	*Crateva religiosa*	DD			
Murdannia	*Murdannia cryptantha*	DD			
Spermacoce	*Spermacoce laevigata*	DD			
Sauropus	*Sauropus sp. Mann River*	DD		Yes	
Wanderrie Grass	*Eriachne squarrosa*	DD			
Three-awn, Wiregrass	*Aristida polyclados*	DD			
Lovegrass	*Eragrostis ecarinata*	DD		Yes	
Panicum	*Panicum simile*	DD			
Molineria	*Molineria capitulata*	DD			
Alysicarpus	*Alysicarpus brownii*	DD		Yes	
Didymoplexis	*Didymoplexis pallens*	DD			Yes
Bullrush	*Typha orientalis*	DD			
Nutgrass	*Cyperus haspan subsp. haspan*	DD			
Lindernia	*Lindernia sp. Willowra*	DD			
Stylidium	*Stylidium symonii*	DD		Yes	
Lovegrass	*Eragrostis concinna*	DD			
Bladderwort	*Utricularia australis*	DD			
Typhonium	Typhonium russell-smithii	DD		Yes	
Cyperus, Nutgrass	*Cyperus tenuiculmis*	DD			
Vigna	*Vigna vexillata var. youngiana*	DD			
Cochlospermum	*Cochlospermum arafuricum*	DD		Yes	
Scleria	*Scleria terrestris*	DD			
Acacia, Wattle	*Acacia sp. Gove*	DD			
Croton	*Croton dockrillii*	DD			

Appendix 4. Potential increases in reservation of National Vegetation Types provided by the Arafura Swamp IPA.

The Arafura Swamp IPA would contribute significantly to the protection of a large number of Major Vegetation groups and sub-groups (NVIS 5.1) at national and regional levels, thereby increasing the comprehensiveness, adequacy and representativeness of National Reserve System.

In particular, the IPA will provide primary reservation for two Major Vegetation groups (*Eucalypt Low Open Forests* and *Rainforests and Vine Thickets*) in the Central Arnhem bioregion, five occurring in the Parson sub-region (*Eucalypt Low Open Forests, Eucalypt Open Forests, Melaleuca Forests and Woodlands, Eucalypt Open Woodlands, Eucalypt Woodlands*), one in the Wilton sub-region (*Rainforests and Vine Thickets*) and one in the Maningrida sub-region (*Melaleuca Forests and Woodlands*).

IBRA7 BIOREGION Major Vegetation Group (NVIS)	Currently Reserved	Added by ASRAC IPA
Arnhem Coast		
Melaleuca Forests and Woodlands	38.6%	39.5%
Central Arnhem		
Eucalypt Low Open Forests	23.1%	71.3%
Rainforests and Vine Thickets	44.4%	53.9%
Melaleuca Forests and Woodlands	18.7%	33.9%
Eucalypt Open Forests	37.8%	29.8%
Tropical Eucalypt Woodlands/Grasslands	21.7%	28.2%

Table 3. Protection of Major Vegetation groups at the Bioregion level

IBRA7 SUBREGION Major Vegetation Group (NVIS)	Currently Reserved	Added by ASRAC IPA
Maningrida		
Melaleuca Forests and Woodlands	29.9%	54.3%
Other Grasslands, Herblands, Sedgelands and Rushlands	67.4%	25.1%
Rainforests and Vine Thickets 42.4%	24.4%	
Parson		
Eucalypt Low Open Forests 17.6%	81.9%	
Eucalypt Open Forests	16.5%	80.4%
Unclassified Forest	22.4%	74.5%
Melaleuca Forests and Woodlands	25.5%	70.3%
Eucalypt Open Woodlands 41.1%	52.1%	
Eucalypt Woodlands	42.4%	52.1%
Rainforests and Vine Thickets 58.3%	37.5%	
Wilton		
Rainforests and Vine Thickets 44%	54.5%	
Melaleuca Forests and Woodlands	18.5%	32.6%
Tropical Eucalypt Woodlands/Grasslands	19.4%	28.9%
Eucalypt Open Forests	39.9%	24.0%
Eucalypt Open Woodlands 15.1%	20.0%	
Eucalypt Woodlands	37%	13.3%

Table 4. Protection of NVIS Major Vegetation groups at the subregion level

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