

Mary River coastal floodplain

Location and Description

The Mary River coastal floodplain is located 90 km east of Darwin and is unusual in the Top End in lacking a single major river channel through the floodplain to the ocean. The floodplain is poorly drained and the inflow channel diffuses into vast seasonal swamps before reaching the sea through a number of tidal channels. Compared to other coastal floodplains in the Northern Territory, this feature results in greater areas of wetland habitats flooded over extended periods and an extremely complex and productive system. The floodplain is dominated by a mix of sedge and grass communities and large paperbark forests in the north, and fringed by open eucalypt woodland and pockets of monsoon forest.

Tenure and Land Use

The Mary River floodplain is predominantly Crown leasehold land and remaining portions are mostly pastoral leasehold land encompassing three pastoral properties (Marrakai, Woolner and McKinlay River), plus some small portions of freehold land. The main land use within the site is pastoral operations and other uses include conservation, recreation, tourism and mining. Almost 30% of this site is managed as conservation reserves.

Significance Rating

International Significance

Ecological Values

The Mary River floodplain comprises a complex mosaic of wet and dry habitats which support vast populations of waterbirds. The floodplain is the most significant and reliable breeding site for Magpie Goose in the NT, and numbers exceed 400 000 birds in some years. The floodplain environments provide a major breeding area for many fish species, notably Barramundi. 12 threatened species occur on the floodplain, including the Vulnerable Yellow Chat (Alligator Rivers subspecies).

Management Issues

The conservation values of the Mary River floodplain are affected by the spread of environmental weeds (including *Mimosa pigra*, olive hymenachne and para grass) and exotic animals (mainly feral pig). Saltwater intrusion and the resultant habitat degradation has been a major problem in the past and was managed through a series of barrages and control of feral buffalo in the area. Any significant rise in sea levels will result in more saltwater intrusion.

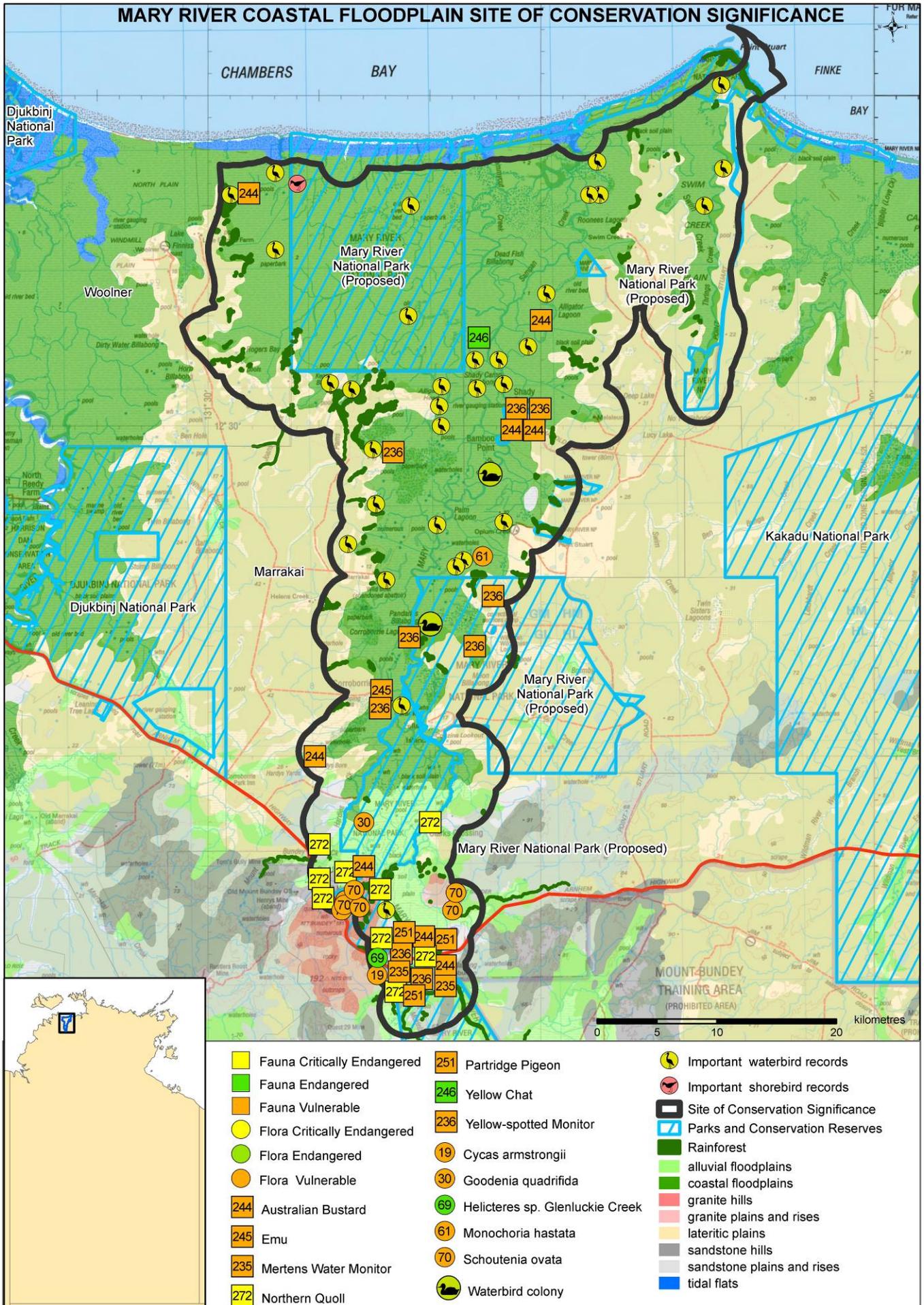


Condition

Coarse assessments of the condition of environments in the Mary River system conclude that environments across the area are suffering substantial degradation as a result of impact from exotic species and fire.

Current Conservation Initiatives

An integrated catchment plan and a conservation plan for the Mary River catchment provide a basis for addressing management issues. A major saltwater control program has been implemented in the lower Mary floodplain since 1987, and numerous earthen barrages have been constructed to minimize tidal flow and saltwater intrusion. Some landholders are actively trying to conserve the ecological values of the floodplain through fire and grazing management. An agreement between Parks and Wildlife NT and a private landholder protects an important portion of core Magpie Goose breeding habitat on the Mary River floodplain.



MARY RIVER COASTAL FLOODPLAIN - SITE OF CONSERVATION SIGNIFICANCE

LOCATION	SOCS Number	13 (NT Parks and Conservation Masterplan Map Number 11)
	Latitude/Longitude	12° 31' South, 131° 41' East (at centre)
	Bioregion	Darwin Coastal (85%), Pine Creek (15%)
	Description	<p>The Mary River coastal floodplain extends from the junction of the Mary and McKinlay Rivers near the Arnhem Highway in the south, to Point Stuart in the east (including Swim Creek Plain), and Lake Finniss and the Adelaide River floodplain in the west. The site encompasses an area of 1674 km² and is predominantly seasonally inundated freshwater floodplain (1005 km²).</p> <p>The site shares boundaries with the Adelaide River coastal floodplain (to the west, Chambers Bay, to the north and the Alligator Rivers coastal floodplains, to the east. They are also recognised as sites of high conservation significance in the NT.</p>
THREATENED SPECIES	Significance Rating	International Significance
	Threatened plants and animals (Listings at National/NT level CR - Critically Endangered, EN - Endangered, VU - Vulnerable, NT - Near Threatened, LC - Least Concern, DD - Data Deficient)	<p>12 threatened species are reported from this site.</p> <p>Plants</p> <ul style="list-style-type: none"> ▪ <i>Cycas armstrongii</i> (-/VU) ▪ <i>Goodenia quadrifida</i> (VU/DD) ▪ <i>Helicteres</i> sp. Glenluckie Creek (EN/EN) ▪ <i>Monochoria hastata</i> (-/VU) ▪ <i>Schoutenia ovata</i> (-/VU) <p>Vertebrates</p> <ul style="list-style-type: none"> ▪ Australian Bustard <i>Ardeotis australis</i> (-/VU) ▪ Emu <i>Dromaius novaehollandiae</i> (-/VU) ▪ Partridge Pigeon <i>Geophaps smithii</i> (VU/VU) ▪ Yellow Chat (Alligator River subspecies) <i>Epthianura crocea tunneyi</i> (EN/EN) ▪ Northern Quoll <i>Dasyurus hallucatus</i> (EN/CR) ▪ Merten's Water Monitor <i>Varanus mertensi</i> (-/VU) ▪ Yellow-spotted Monitor <i>Varanus panoptes</i> (-/VU) <p>The Mary River floodplain encompasses much of the range and population of the Alligator River subspecies of the Yellow Chat (Armstrong <i>et al.</i> 2002).</p>
ENDEMIC SPECIES	Significance Rating	Not Significant
	Notes	<p>Endemic to the bioregion: One reptile species (Alligator Rivers Ctenotus <i>Ctenotus kumbudji</i>) recorded in this site is an NT endemic only found in the Darwin Coastal bioregion.</p> <p>Endemic to the NT: 45 plant and 13 vertebrate species recorded in this site are endemic to the NT.</p> <p>Other: Two plant species recorded in this site are found only in the Darwin Coastal bioregion within the NT but are also found in other states.</p>
WILDLIFE AGGREGATIONS	Significance Rating	International Significance
	Marine turtles	Not applicable
	Seabirds	No major aggregations recorded
	Waterbirds	<p>Total numbers of waterbirds: The diverse and patchy nature of vegetation on the Mary floodplain underpins the vast numbers of waterbirds found in this system (Armstrong <i>et al.</i> 2002). Counts are dominated by Magpie Geese with 477 000 individuals recorded in 1987 (DIWA). Separate surveys of other waterbird species report counts of about 32 500 birds in part of the site in 1995 (Chatto 2006), and about 50 000 for the whole site in 1993 (R. Chatto, NRETAS unpubl.). These counts were dominated by whistling-ducks and Magpie Geese.</p> <p>Counts of individual species: Maximum counts of species that are internationally significant (> 1% global population; G. Dutson in prep.) include: 477 000 Magpie Geese; 188 000 Wandering Whistling-duck (DIWA).</p> <p>55 important waterbird records (including records from neighboring areas in Chambers Bay) are noted for this site (Chatto 2006; R. Chatto, NRETAS unpubl.), including high counts of whistling-ducks and other species that are regionally important.</p> <p>Breeding records: The floodplains of the Mary and Adelaide Rivers encompass the most important nesting habitat in the NT for Magpie Geese (Bayliss and Yeomans 1990) and the highest reported count of nests is 54 000 in 1985 (DIWA).</p> <p>This site supports two waterbird breeding colonies with low numbers (<100) of cormorants and spoonbills (Chatto 2000a). Larger waterbird breeding colonies are located on the extensive floodplains to the east and west of this site, and wetlands on the Mary system provide important feeding areas for birds from these colonies during their non-breeding times (Chatto 2000a).</p>
	Shorebirds	Only small numbers of shorebirds occur on the floodplain wetlands of this site (Chatto 2003), but internationally significant numbers aggregate on the tidal flats of Chambers Bay (Bamford <i>et al.</i> 2008) to the north of this site.
	Other aggregations	Flying Foxes, in the order of 250 000, have been observed at this site when paperbark forests are in flower (DIWA).

MARY RIVER COASTAL FLOODPLAIN - SITE OF CONSERVATION SIGNIFICANCE

WETLANDS	Significance Rating	National Significance (possible International)
	Ramsar criteria met	This site has not been formally assessed against Ramsar criteria but is likely to satisfy at least waterbird based criteria (criterion 5: important waterbird aggregation site with >20 000 waterbirds; criterion 6: regularly supports >1% of the individuals in a population) for listing as a wetland of international importance under the Ramsar Convention.
	DIWA criteria met	This site is listed as a wetland of national significance in the Directory of Important Wetlands in Australia (DIWA: NT026 Mary Floodplain system). The site meets criteria 1, 2, 3, 4, 6 and includes DIWA wetland types: B4, A8, A7, A6, A9, B1, B9, B10, and B14.
	Notes	A good example of a major floodplain-tidal wetland system typical of the Top End Region, but unusual in lacking a coherent river channel or major river. The site includes some of the largest areas of wooded swamp in the NT, and features a complex network of channels and billabongs. The unusual morphology of the plain contributes to rapid overtopping of levees and inundation of huge seasonal wetlands, even in years of relatively low rainfalls. Drainage rates are also lower than many other systems, such that the site provides greater areas of wetland habitats over a relatively extended period. (DIWA)
	Rivers	The Mary River is one of eight rivers in the Top End that have large floodplains in their catchments. The floodplains of the Adelaide, Mary and Alligator Rivers form one very large interconnected wetland system each wet season. The Mary River is unlike most other Australian tropical rivers because it doesn't have a continuous channel to the sea. Instead, its channel diffuses into a broad area of floodplain swamps. The floodplain is separated from the sea by a series of parallel narrow sandy chenier ridges which are a legacy of the receding shoreline over the last 6,000 years. The other Top End river that is similar is the Goyder River, but the Goyder River is spring fed and the Mary River is not (Brennan <i>et al.</i> 2003).
FLORA	Significance Rating	Regional Significance
	Notes	Rainforest: About 2470 ha of monsoon rainforest (or 1% of the NT rainforest estate) occurs as numerous small patches (<10 ha or <100 ha) around the margin of the Mary floodplain. Three patches are >100 ha (Russell-Smith 1991). The Mount Bunday hills and Mount Goyder in the southern part of this site support a distinctive rainforest community containing a number of plant species with restricted distributions in the NT (Armstrong <i>et al.</i> 2002). Other: The Mary floodplain contains the most extensive representation in the Top End of grasslands dominated by <i>Hymenachne acutigluma</i> and <i>Pseudoraphis spinescens</i> (ANCA 1992 in Armstrong <i>et al.</i> 2002).
OTHER ENVIRONMENTAL VALUES		Four sites on the Mary River floodplain are listed on the Register of the National Estate for their natural values including: Mary River Crossing area, Point Stuart Area, Shady Camp Billabong and the Mount Bunday Training Area (Australian Heritage Council). The Mary River floodplain, together with the Adelaide River floodplain and Chambers Bay, is proposed to be nominated by Birds Australia as an internationally-recognised <i>Important Bird Area</i> (G. Dutton in prep.). The Mary River supports high densities of Saltwater Crocodiles (Fukuda <i>et al.</i> 2007) and large populations of Freshwater Crocodiles (Armstrong <i>et al.</i> 2002). 42 species recorded from this site are listed under international conventions or bilateral agreements protecting migratory animals.
		Fire: In the period 1993-2004, 72% of the site was burnt in fewer than three years, and 4% was burnt in more than six years. The floodplain environment may be undergoing floristic change associated with reduced frequency of fine-scale fire (Woinarski 2002). Feral animals: There is a history of large populations of buffalo, horse and pig in this site. Water Buffalo are particularly implicated in the problem of saltwater intrusion. Cane Toads are now widespread throughout the site. Weeds: Two Weeds of National Significance (<i>Mimosa pigra</i> and <i>Hymenachne amplexicaulis</i>), five declared Category B weeds (<i>Hyptis suaveolens</i> , <i>Senna obtusifolia</i> , <i>Senna occidentalis</i> , <i>Sida acuta</i> , <i>Sida cordifolia</i>) and five undeclared but problematic environmental weeds (high priority weeds: Smith 2001) (<i>Andropogon gayanus</i> , <i>Calopogonium mucunoides</i> , <i>Crotalaria gorensis</i> , <i>Hibiscus sabdariffa</i> , <i>Urochloa mutica</i>) are recorded from this site. Other: Saltwater intrusion has substantially modified and degraded a considerable area (240 km ²) of the lower Mary coastal floodplain (Woinarski 2002). Given the low relief of these plains, rises in sea levels associated with global warming are likely to exacerbate the present situation.
MANAGEMENT ISSUES		

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MANAGEMENT INFORMATION	NRM groups	Mary River Landcare Group.
	Protected areas	Mary River National Park (Proposed) (486 km ² / 29% of site).
	Current management plans	<p>Site-specific plans: A Plan for the Conservation of Biodiversity in the Mary River Catchment, Northern Territory (Armstrong <i>et al.</i> 2002); Revised Integrated Catchment Management Plan Mary River (NTG 2001); Draft Mary River Catchment <i>Mimosa pigra</i> weed management plan (DPIF 2000).</p> <p>National recovery plans for threatened species: Partridge Pigeon (Woinarski 2004a); Northern Quoll (Hill and Ward in prep.).</p> <p>Other management plans: Australian Weeds Strategy (NRMMC 2007); Threat Abatement Plan for Predation, habitat degradation, competition and disease transmission by feral pigs (DEH 2005); FIREPLAN: Fire management for the savanna community (Russell-Smith <i>et al.</i> in prep.).</p>
	Monitoring programs and research projects	<p>Comprehensive vegetation and land cover data has been collected for the Mary River floodplain as part of a wetlands monitoring system developed for the Mary River Catchment (Bach and Hosking 2002).</p> <p>Maggie Goose populations and nests are surveyed regularly in core habitat areas in the NT including the Mary River floodplain (PWCNT 2003).</p> <p>There are regular surveys of Saltwater Crocodiles in the Mary River (PWSNT 2005), with the next surveys scheduled for 2009.</p> <p>There are nine Tier 1 rangeland monitoring points within this site (Karfs and Bastin 2001).</p> <p>A gauging station on the Mary River at Shady Camp measures water level and the increase in tidal amplitude over time, and could potentially be used to measure saltwater intrusion (D. Williams, NRETAS, pers. comm.).</p> <p>Fire in the tropical savannas is mapped continuously under the North Australia Fire Information project http://www.firenorth.org.au/nafi/app/init.jsp</p>
KEY REFERENCES	Management recommendations	<p>In the context of the Mary River Catchment Management framework and in cooperation with landholders and stakeholders, review the Integrated Catchment Management Plan and Mary River Catchment Conservation Plan to identify potential park extensions and opportunities to develop conservation agreements with landholders (NRETA 2005).</p> <p>Rationalise boundaries of the proposed Mary River National Park providing for enhanced access and camping opportunities (NRETA 2005).</p> <p>Declare the Mary River National Park and establish the joint management arrangements in accordance with the Parks and Reserves (Framework for the Future) Act. (NRETA 2005).</p> <p>Investigate potential for establishing a Biosphere Reserve in accordance with IUCN criteria (NRETA 2005).</p> <p>Provide continuing NT government financial and technical support for the integrated catchment management process under the Mary River Integrated Catchment Management Plan (NRETA 2005).</p>
	Papers and reports	<p>Armstrong, M., Woinarski, J., Hempel, C., Connors, G., & Beggs, K. (2002). <i>A Plan for the Conservation of Biodiversity in the Mary River Catchment, Northern Territory</i>. Parks and Wildlife Commission of the Northern Territory: Darwin.</p> <p>Bach, C. & Hosking, E.J. (2002) <i>Wetland Monitoring for the Mary River Catchment, Northern Territory</i>. Natural Heritage Trust Project No. 97152. Department of Infrastructure, Planning & Environment, Palmerston.</p> <p>NTG (2001). <i>Revised Integrated Catchment Management Plan Mary River</i>. Northern Territory Department of Lands, Planning and Environment, Palmerston, NT.</p>
	Contributors	