

Rangelands Monitoring:

**Developing an Analytical Framework for
Monitoring Biodiversity in Australia's
Rangelands.**

***Case Study 1:
Biodiversity Monitoring in Cape York Peninsula***

This report is prepared as a resource document for Project 3 “*Developing an adaptive framework for monitoring biodiversity in Australia’s rangelands*” of the **National Land and Water Resources Audit** Theme 4 (*Rangelands monitoring*).

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1. Introduction

The Cape York Peninsula Bioregion occupies an area of 115 500 km² in monsoonal northern Australia. The vegetation is predominantly eucalypt savanna, dominated by *Eucalyptus* and *Melaleuca* associations, although there are significant areas of rainforest and grassland, as well as a number of islands in the Torres Strait. The bioregion has both many commonalities and significant dissimilarities with other northern Australian bioregions. There is a small population, low level of infrastructure development and land use is predominantly pastoral within large leases. However, there are substantial areas of Aboriginal land and protected areas, the latter amounting to c. 13.7% of the bioregion. Due to the Cape York Peninsula Land Use Study (CYPLUS), the natural resources of the bioregion, including the biological assets, are unusually well known. This includes vegetation mapping at 1:250000 scale, supported by 1473 detailed vegetation plots. By contrast, the bioregion contains no pastoral monitoring plots under the Qgraze or Traps schemes (see Background Paper 2). Despite the considerable work done under CYPLUS, there remains substantial information gaps concerning the state of biodiversity (eg. mammals) in the bioregion, and a very small scientific and agency staff commitment to biodiversity management and monitoring.

The Queensland Parks & Wildlife Service (QPWS) is currently developing an integrated proposal for terrestrial biodiversity monitoring in Cape York Peninsula (G. Crowley & S. Garnett, pers. comm.). In this case study, we provide an edited version of the background paper describing this program (Crowley, unpublished) and make some brief comments below on the relationship of the biodiversity indicators proposed by QPWS to the nine core biodiversity indicators that are described in the Framework document.

The Cape York program is based on 15 indicators, under 5 broad types (Land management capability; Land condition; Weeds & feral animals; Native plants & communities; Native animals). Each indicator may be reported on using more than one measure and a total of 53 measures are described, although additional measures clearly need to be developed for some of the indicators. The integrated program draws upon existing monitoring programs and other projects within QPWS (and some other agencies); funded and proposed projects under a large Cape York NHT program; and other scientific work funded by organisations such as the Tropical Savannas CRC and Birds Australia. However, many of the proposed measures are only partly funded or are currently unfunded.

In the Framework document, we suggest that many of the core biodiversity indicators can be assessed at a selected set of existing pastoral monitoring sites, supplemented by additional sites chosen to improve environmental representation. In the case of Cape York Peninsula there are no existing pastoral monitoring plots, although c. 25 'SavMon' vegetation monitoring sites have been established by QPWS (L. Felderhof, pers. comm.). At these plots, woody vegetation is recorded with a methodology based on the TRAPS system, with dominant ground cover plants also assessed. However, this small number of plots may be supplanted by the "Corveg" vegetation plots established by the Queensland Herbarium. A total of 1473 *Corveg* sites have been sampled in Cape York and can potentially be reestablished as monitoring plots. An assessment of the representativeness of the plots (Neldner 1998) suggested resampling of 700 of these

sites would be sufficient to monitor broadscale vegetation change. Full floristic lists (with some measure of abundance) and the cover of perennial grass are recorded at *Corveg* sites, so the data would be appropriate to the core indicators described in the Framework document.

2. Cape York program in relation to 9 Core Biodiversity Indicators

1. Progress to CAR reserve system

Included in Cape York program as Indicator 1A. While there are 3 measures proposed, we suggest that these can be combined in single index. Due to the relatively fine-scale mapping available for Cape York, CAR can be assessed within the bioregion at the scale of vegetation unit / regional ecosystem. Were additional protected areas to be established in the bioregion, this would provide a valuable opportunity for the link studies we suggest are required to assess the contribution of reserves to maintenance of regional biodiversity.

In addition to assessment toward CAR reserve system, the Cape York Program provides measures for the integrity of the reserve estate and the quality of management of reserves.

2. Extent of clearing

Included in Cape York program as Indicator 2A. Clearing can be quantified for broad vegetation groups and threatened regional ecosystems. Due to the restricted extent of clearing, this bioregion would not be useful for proposed link studies.

3. Landscape functionality

Included in Cape York program as Indicator 2D, although no appropriate measures are proposed other than the adequacy of monitoring. Very few measurements of landscape function have been made at any sites within the bioregion so implementation of this indicator is likely to be costly and require some initial validation studies. However, some LFA measures may usefully be included if there was an integrated assessment of vegetation and selected vertebrate and invertebrate groups at selected *Corveg* plots, and this would be a valuable contribution to the proposed link studies.

4. Native perennial grass cover

Included in Cape York program as Indicator 2E. Monitoring could be based on resampling selected *Corveg* plots, as well as the establishment of ground cover monitoring plots as part of Property Plans. One strength of this indicator is that some perennial grass species have already been identified as declining within the bioregion (Crowley & Garnett 1998) and the connections between perennial grass composition and biodiversity condition are being investigated under the Golden-Shouldered parrot Recovery Plan.

5. Exotic plant species cover

Included in Cape York program as Indicator 3A, with a list of significant weed species already developed during CYPLUS. Again, the large number of *Corveg* sites provides the opportunity to assess changes in the frequency of significant weed species at representative sites through the bioregion. Additional mapping of the distribution of the most potentially harmful weed species may be required.

6. Fire-sensitive plant species and communities

Included in Cape York program as Indicator 2C, 4A, 4B. There is ongoing research within the bioregion into fire histories, best practice fire regimes, plant responses to fire, and the impacts of fire regimes on sensitive plant communities (particularly grassland) and associated significant fauna species. These studies provide considerable opportunity for input into link studies for the development of this core indicator, particularly where the influence of fire regimes can be examined under a range of land tenures and levels of grazing intensity.

7. Susceptible plants

Included in Cape York program as Indicator 4A, although this concentrates on species categorised as threatened, which may not necessarily include all highly palatable "decreaser" species. May be assessed through the resampling of *Corveg* sites, although these may not incorporate a range of grazing histories within each vegetation type.

8. Susceptible vertebrates – mammals

Included in Cape York program as Indicator 5A, although appropriate measures for this indicator have not yet been developed. Mammals were systematically sampled at c. 200 sites during CYPLUS and assessment of changes in abundance of selected species could be based on periodic re-sampling of these sites. There is also considerable scope for landholder surveys and integrated assessment of vegetation, landscape function and selected vertebrate and invertebrate groups at selected *Corveg* plots.

9. Susceptible vertebrates – birds

Included in Cape York program as Indicator 5B, with a list of potential target threatened and near-threatened species. While there has been considerable research directed to the Endangered Golden-shouldered Parrot, and more recently to the Crimson and Star Finches, shifts in the abundance of near-threatened taxa (such as the Black-faced Woodswallow) may have greater applicability as indicators of environmental health. There is considerable scope for building on current research in this area to provide link studies for this core indicator.

3. Terrestrial biodiversity reporting for Cape York Peninsula

Gabriel Crowley, Queensland Parks & Wildlife Service

Note: this is an edited version of a working document, and should not be quoted without permission of the author.

Introduction

Cape York Peninsula is at the northern extremity of Queensland, covering 115,480 km². It is a monsoonal environment with a reliable annual wet season rainfall. The majority of the vegetation is savanna woodland, dominated by *Eucalyptus/Corymbia* and *Melaleuca* associations. Rainforest and grasslands, though less extensive, are locally important for biodiversity.

In this proposal the Cape York Peninsula bioregion is assessed both in its entirety, and for the rangelands only. Rangelands are considered to exclude all islands of the Torres Strait and Great Barrier Reef, mangroves and the extensive rainforest blocks of the wet tropics, McIlwraith /Iron Range and Lockerbie Scrub (Carnegie tableland).

Table 1 Cape York Peninsula vegetation types covered by this proposal (adapted from Neldner and Clarkson, 1995).

Vegetation type	Broad vegetation groups		Vegetation units ¹					
	Total no.		Total no.		No. endangered		No. of concern	
	Rangeland	Total	Rangeland	Total	Rangeland	Total	Rangeland	Total
Rainforest	4	6	23	41	1	2	2	3
<i>Eucalyptus/Corymbia</i> open forests & woodlands in high rainfall areas	0	3	0	20	-	-	-	-
Other <i>Eucalyptus/Corymbia</i> woodlands	8	8	55	55	1	1	-	-
<i>Melaleuca viridiflora</i> woodlands	2	2	7	7	-	-	-	-
Other <i>Melaleuca</i> woodlands	1	1	13	13	-	-	-	-
Grasslands	3	3	16	16	1	1	4	5
Heathlands	1	1	13	13	-	1	-	-
Coastal dunes	1	1	6	6	-	-	-	-
Mangroves	0	1	0	5	-	-	-	-
Sedgeland, lakes & lagoons	1	1	5	5	-	-	-	-
Bare areas	1	1	4	4	-	-	-	-
Atolls and cays	0	1	0	4	-	1	-	-
Miscellaneous	1	1	12	12	-	-	-	-
Total	23	30	154	201	3	6	6	8

¹ In most instances, vegetation units and regional ecosystems (REs) are equivalent. However, a small number of vegetation units that occur on more than one land type, have been subdivided into two or more REs, resulting in a total of 211 REs. As the distribution of monitoring sites within these REs has not yet been determined, many figures in this proposal relate to vegetation units, rather than REs. Conversion to REs will be forthcoming with the realisation of the proposal.

Indicators

1. Land management capability

1A. Progress towards CAR reserve system

Issues: A high proportion of Cape York Peninsula has been gazetted as conservation reserves (Sattler, 1999). Initial reserve acquisition was based on Stanton (1977). More recently, acquisition proposals have considered CAR, as well as a number of other indicators.

Existing information: The percentage of regional ecosystems and the percentage of each regional ecosystem present in a protected area has been calculated. CAR analysis is made of each regional ecosystem present on a property as part of Property Planning, and is undertaken as part of any acquisition proposal.

Table 2. Representation of Cape York Peninsula, and its regional ecosystems in protected areas (Sattler, 1999).

		Total	Protected (%)
<i>Total area</i>		<i>115,480 km²</i>	<i>13.8</i>
Regional ecosystems	Total	211	83.9
	Endangered	6	33.3
	Of concern	8	62.5

Measures:

1. **Comprehensiveness**
Percentage of regional ecosystems represented in Protected Areas
2. **Adequacy**
Number of threatened species and regional ecosystems represented in Protected Areas; Percentage of regional ecosystems represented in Protected Areas at low (< 4%), medium (4-10%) or high (> 10%) levels
3. **Representativeness**
Percentage of regional ecosystems across provinces represented in Protected Areas

Existing monitoring: CAR analysis is to be updated on the acquisition of new properties. Each acquisition proposal includes an assessment of the contribution it will make to CAR.

Proposed additional monitoring: Minimum set analysis will be undertaken across Cape York Peninsula (funded).

Contributing programs and projects: Statewide CAR analysis is undertaken annually by QPWS; CAR status of some Cape York properties being determined with CYNHT funding.

Estimated cost over 5 years: \$10 000

1B. Progress towards best practice Protected Area management

Issues: Protected Areas can only achieve conservation of biodiversity if they are managed correctly. On Cape York Peninsula, conservation agency resources have initially been directed towards acquisition and the provision and maintenance of infrastructure, such as fencing. Until recently information on the condition and management of Protected Areas on Cape York Peninsula has not been collected in a systematic manner. A scheme to assess Protected Area management is being developed for the whole of Queensland, in a manner that will enable reporting at a bioregional level on an annual basis. Criteria for preparing Integrity Statements is also currently under development, but there is no funding for such statements to be prepared for Protected Areas on Cape York Peninsula. Undoubtedly, such statements will provide useful indicators for biodiversity reporting. However, at this stage the mere existence of an Integrity Statement is considered a useful indicator.

Existing information: None available at present.

Measures:

4. Adequacy of monitoring
5. Protection
6. Management Capacity
7. Number of Protected Areas with Natural Integrity Statements
8. Natural Integrity rating
(to be devised)

Existing monitoring: Protocols for Rapid Assessment of Protected Area Management and preparation of criteria for Integrity Statements are under development.

Proposed additional monitoring: Assessments of park management will be prepared and updated annually. Natural Integrity Statements will need to be prepared for Protected Areas.

Contributing programs and projects: QPWS projects on Rapid Assessment of Park Management and Protected Area management planning.

Estimated cost over 5 years:

1C. Progress towards regional Property Planning

Issues: Because of its remoteness, Cape York Peninsula is less developed than any other area in Queensland. The majority of land is under pastoral lease. Most properties also have a high conservation value. CYPLUS and the Cape York Heads of Agreement recognised the importance of integrated development that protected the aspirations of leaseholders and traditional owners, while maintaining conservation values. As a result, it has been proposed that all properties on Cape York Peninsula develop Property Plans, with input from traditional owners, pastoral leaseholders and conservation agencies, as appropriate.

Existing information: Eleven properties (10 pastoral, 1 unallocated state land) are the subject of Property Planning.

Measures:

9. Adequacy of monitoring
10. Percentage of Cape York Peninsula covered by Property Plans
11. Percentage of properties covered by Property Plans

Existing monitoring: None.

Proposed additional monitoring: An annual assessment will be made of the progress to property planning.

Contributing programs and projects. Pilot program for eleven properties funded through CY NHT

Estimated cost over 5 years:

1D. Inventory assessment

Issues: Inventories of the biological assets of Cape York Peninsula were produced as part of CYPLUS.

Existing information: The CYPLUS study area of Cape York Peninsula has been thoroughly mapped for vegetation (1:250,000). There are about 1,473 detailed Corveg sites. These sites are geo-located, but not permanently marked. They are representative of the vegetation communities across the Peninsula. An assessment of sampling frequency indicates that this included about 774 sites that were excess to requirements of adequate representative mapping, and that an additional 85 sites are required in inadequately sampled vegetation units. However, as most under-sampled vegetation units were extensive, had at least two sample sites, and had high similarity to adequately or over-sampled vegetation units (Neldner, 1998), considerably fewer additional sites would be required for biodiversity assessment. Adequate assessment of broadscale vegetation change could therefore be achieved by re-sampling approximately 700 Corveg sites.

There are also and about 200 comprehensive animal survey sites.

Table 3.. Adequacy of sampling of individual vegetation units.

Sampling adequacy	Discrepancy	Vegetation units	
	(No. of sites)	(No.)	(%)
Under-sampled	-1 to - 6		20
Adequate	0		13
Over-sampled	+ 1 to + 3		37
	+ 4 to + 10		19
	+ 11 to +34		10

Measures:

12. Adequacy of vegetation mapping
Percentage of Cape York Peninsula with reliable, up-to-date, vegetation mapping at 1:250,000
13. Adequacy of aerial photographic coverage
Percentage of Cape York Peninsula with complete, recent (< 10 years old) aerial photographic coverage (or equivalent)
14. Adequacy of remote sensing coverage
Percentage of Cape York Peninsula for which adequate remote sensing information is available at 5 year intervals
15. Adequacy of GIS facilitation
16. Adequacy and representativeness of vegetation monitoring plots

Existing monitoring: Adequacy of Corveg site coverage in relation to vegetation composition was assessed by Neldner (thesis).

Proposed additional monitoring:

Contributing programs and projects: partly funded through CY NHT

Estimated cost over 5 years:

2. Land condition

2A. Extent of clearing

Issues: Clearance is restricted in extent and concentrated around Lakefield and Cooktown. However, most pastoral leases have some cleared areas, and a number have clearance proposals.

Existing information: LANDSAT data layer is present in the CYPLUS GIS up to 1997 but analysis of this data is not currently part of the State-based SLATS program.

Measures:

- 17. Adequacy of monitoring
- 18. Percentage of each BVG cleared
- 19. Percentage of Endangered or Of concern regional ecosystem cleared

Existing monitoring: SLATS could be expanded to give an annual estimate of clearance.

Proposed additional monitoring: SLATS could be expanded to give an annual estimate of clearance. GIS could be used to superimpose clearance with vegetation communities that are Endangered or Of concern.

Contributing projects: SLATS.

Estimated cost over 5 years:

2B. Extent of land degradation

Issues: Most land on Cape York Peninsula retains its native vegetation cover. However, land degradation occurs in association with over-grazing and some areas have been identified as prone to salinisation.

Existing information: A land capability study identified areas prone to salinisation as part of CYPLUS.

Measures:

- 20. Adequacy of monitoring
- 21. Trend in area subject to salinisation

Existing monitoring: .

Proposed additional monitoring: .

Contributing projects: .

Estimated cost over 5 years: .

2C. Fire regimes

Issues: Fire is an important management tool on Cape York Peninsula, both for biodiversity and pastoral productivity, as well as having an important cultural role in Aboriginal communities (Crowley 1995, Neldner and Clarkson 1997, Crowley and Garnett 1998, 1999). Fire is believed to be integral in maintaining grasslands and the rainforest/savanna boundary. Too extensive fires may lead to homogeneous environments that exclude both post-fire specialists and fire-sensitive species. Implementation of a best practice fire regime is desirable to ensure the maintenance of biodiversity. This would be based on detailed fire histories linked to land condition, vegetation communities and threatened species distributions.

Existing information: A history of fire in the pastoral lands of Cape York Peninsula from 1623-1995 has been compiled, with emphasis on east-central Cape York Peninsula. Remote sensing interpretation has been calibrated with an 85% accuracy for the Laura Basin study area.

Measures:

22. Adequacy of monitoring
Percentage of Cape York Peninsula for which detailed fire histories are available
23. Percentage of Cape York Peninsula successfully implementing approved fire management plans
24. Patchiness of fire pattern
Index to be developed

Existing monitoring: Fire histories are currently being developed for the Laura Basin. Fire histories and best practice fire regimes are being developed for three study areas, Laura Basin (National Park and Pastoral Leases, Kowanyama (Aboriginal Land) and Iron Range (National Park)).

Proposed additional monitoring: The fire project would be made more representative by the inclusion of a study area covering pastoral properties north of Coen.

Contributing projects: Cape York Peninsula Fire Project.

Estimated cost over 5 years: .

2D. Landscape functionality

Issues: There is almost no information on landscape functionality available for Cape York Peninsula.

Existing information: Negligible.

Measures:

25. Adequacy of monitoring

Existing monitoring: None.

Proposed additional monitoring: one at this stage.

Contributing projects: None.

Estimated cost over 5 years:

2E. *Native perennial grass cover*

Issues: Much of Cape York Peninsula is grazed by domestic or feral cattle. Pigs occur throughout and are locally numerous. Perennial grasses are affected by both cattle and pigs. Changes in property management associated with the Property Planning aims to both increase cattle productivity and protect conservation values, including pasture productivity. A range of perennial grasses are essential for both conservation and production, so both pastoralists and conservation managers have an interest in maintaining perennial grass cover.

Existing information: Perennial grasses that have decreased in abundance on Cape York Peninsula at a regional level are *Eriachne obtusa*, *Heteropogon contortus*, *Heteropogon triticeus*, *Sorghum plumosum* and *Themeda triandra* (Crowley and Garnett 1998). *Alloteropsis semialata*, may also be sensitive, and is selectively grazed by cattle (Crowley *et al.* unpubl. data), and is selectively uprooted and eaten by pigs (Crowley and Shephard unpubl. data). Perennial grass cover has been assessed at Corveg sites.

Measures:

26. Adequacy of monitoring

27. Frequency of sensitive perennial grasses

Monitored at *Corveg* sites and *SavMon* sites

Existing monitoring: Ground cover monitoring plots have been monitored annually on Artemis Station since 1998, as part of the Golden-shouldered Parrot Recovery Plan.

Proposed additional monitoring: Establish ground cover monitoring plots as part of Property Planning conditions.

Contributing projects: Golden-shouldered Parrot Recovery Plan.

Estimated cost over 5 years: .

3. Weeds and feral animals

3A. *Exotic plant cover*

Issues: Weeds are both indicators of disturbed environments and alter environments to make them less suitable for native plants and animals. Cape York Peninsula has a low level of weed

infestation. However increasing accessibility and recent introductions of pasture plants means that an increasing number of plants have the potential to become significant pests.

Existing information: A list of significant weeds present or with the potential to become a problem on Cape York Peninsula was prepared as a part of CYPLUS. *Hymenachne*, Water Hyacinth and other ponded pastures are likely to become an increasing problem for wetland communities (Lukas 1993). Piecemeal information is available from herbarium collection data. CYNHT project under Strategy 4 has collected some information on distribution and history of control attempts.

Table 4. Significant weeds that are present or have the potential to become a problem on Cape York Peninsula.

Common name	Scientific name	Present		Adequate control methods	Adequate monitoring
		Rangelands	Total		
Rubber vine	<i>Cryptostegia grandiflora</i>	yes	yes	yes	no
Sickle pod	<i>Senna obtusifolia</i>	yes	yes	no	no
Grader grass	<i>Themeda quadrivalvis</i>	yes	yes	no	no
Lion's tail	<i>Leonotis</i>	yes	yes	yes	no
Hymenachne	<i>Hymenachne</i>	yes	yes	no	no
Stinking Roger	<i>Hyptis suaveolens</i>	yes	yes	no	no
Gamba grass	<i>Andropogon gayanus</i>	yes	yes	no	no
Vetiver grass	<i>Vetiveria</i>	yes	yes	yes	no
Salvinia	<i>Salvinia</i>	yes	yes	no	yes
Water Hyacinth	<i>Eichhornia</i>	yes	yes	yes	no

Measures:

28. Adequacy of monitoring
29. Adequacy of control measures available
30. Frequency of significant weed species
Monitored at *Corveg* sites and *SavMon* sites
31. Change in abundance of significant weed species
Species listed above

Existing monitoring: Pestinfo. CYNHT Strategy 4.

Proposed additional monitoring:

Contributing projects: Cape York weeds and feral animals project.

Estimated cost over 5 years: .

3B. Pest animal abundance

Issues: Pigs and feral cattle are prevalent in most parts of Cape York Peninsula, and have been linked to habitat degradation. Cats are also present, but have not been shown to have a significant impact as predators. A number of species of native animal have been advantaged

by habitat alteration since European settlement. In some cases their increased population size or expanded distribution has been to the detriment of other native species. Control of these increaser species may enable threatened species to recover in the short term, while habitat restoration is undertaken. However, in other cases, the factors responsible for increases in these species may be unclear, and direct control may be the only avenue available to restore the balance.

Existing information: . A number of increaser species were identified in a recent study of granivorous birds (Franklin, 1999a,b). However, it is not known whether these increaser species impact adversely on any threatened species. Pied Butcherbirds are believed to prey on endangered Golden-shouldered Parrots at unsustainable levels. However, there is only anecdotal information to suggest that the butcherbirds have increased in abundance (Garnett and Crowley, 1995). There is no information available for increases in other native taxa that might impact adversely on threatened plants or animals. However, Dingoes, Galahs, Sulphur-crested Cockatoos, Red-tailed Black-Cockatoos and Cane Rats are all believed to have adverse impacts on agricultural systems, and at least some of these may have increased.

Measures:

32. Adequacy of monitoring
33. Turnoff rate of cattle from Protected Areas
34. Pig survey data
35. Cattle grazing pressure
36. Adequacy of knowledge about increaser native animals
37. Stability/sustainability of predation on threatened animals by native increasers
Predation of Golden-shouldered Parrots during the breeding season

Existing monitoring: Pestinfo. Cape York Pest NHT. Monitoring of Red-tailed Black-Cockatoos is by Birds Australia.

Proposed additional monitoring: Pied Butcherbird control and monitoring will be undertaken over 2001 as part of the Golden-shouldered Parrot Recovery Plan.

Contributing projects: Cape York Weeds and Feral Animal Program, Golden-shouldered Parrot Recovery Plan.

Estimated cost over 5 years: .

4. Native plants and communities

4A. Threatened plant species

Issues: Recognised threats to plants in Cape York Peninsula include inappropriate fire regime, grazing by cattle, grazing and rooting by pigs, and clearance. Most fire-sensitive plants on Cape York Peninsula occur within fire-retarding rainforests. Outside these

communities, there is a low number of obligate seeders. The plants most likely to be adversely affected by fire are epiphytes.

Existing information: Fire response information is being collected by QPWS in a format outlined by the national fire response register. However, this information is not being collected systematically.

Measures:

38. Change in number of individuals and populations of Endangered plants.
39. Relative persistence of threatened species in *Corveg* sites.
40. Percentage of each threatened regional ecosystem intact and/or protected.
41. Area of grassland as identified from remote sensing.
42. Stability of grassland monitoring plots.

Existing monitoring:

Proposed additional monitoring: Additional grassland monitoring plots to be established as part of Property Planning and National Park management.

Estimated cost over 5 years: .

3B. Threatened plant communities

Issues: Recognised threats to plant communities in Cape York Peninsula include inappropriate fire regime, grazing by cattle, grazing and rooting by pigs, weed invasion and clearance.

Existing information: Fire response information is being collected by QPWS in a format outlined by the national fire response register. However, this information is not being collected systematically. No communities are known to be threatened by too frequent fires. However, inappropriate fire regimes are held responsible for the disappearance of grasslands, and decline in associated fauna.

Measures:

43. Adequacy of monitoring
44. Change in number of individuals and populations of Endangered plants
45. Relative persistence of threatened species in *Corveg* sites
46. Percentage of each threatened regional ecosystem intact and/or protected
47. Area of grassland as identified from remote sensing
48. Stability of grassland monitoring plots

Existing monitoring: .

Proposed additional monitoring: Additional grassland monitoring plots to be established as part of Property Planning and National Park management.

Contributing projects: .

Estimated cost over 5 years: .

Table 5. Threatening processes affecting threatened regional ecosystems, representation in Protected Areas and number of Corveg monitoring sites in relation to land tenure. A dash for Corveg sites indicates the Regional Ecosystem is not represented in this land tenure.

Regional ecosystem	Threatening processes	Extent reserved	Number of Corveg sites ¹							
			Pastoral lease		National Park		ATSI lands		Total	
			Rangeland	Total	Rangeland	Total	Rangeland	Total	Rangeland	Total
Endangered										
3.2.19 <i>Leucopogon yorkensis</i> ± <i>Asteromyrtus angustifolia</i> closed scrub on dunefields	Clearance	None	-		-	-	-	-	-	-
3.2.29 <i>Pisonia grandis</i> low closed forest	Small extent, cyclones, fire, insect attack, human disturbance	High	-		-	+	-	-	-	-
3.3.11 <i>Melaleuca leucadendra</i> ± <i>Eucalyptus teriticornis</i> open forest on alluvium	Small extent, weed invasion (<i>Cryptostegia grandiflora</i>)	None			?	-				
3.3.57 <i>Imperata cylindrica</i> ± <i>Mnesithea rottboellioides</i> closed tussock grassland on coastal plains	weed invasion (<i>Senna obtusifolia</i> , <i>Calopogonium mucunoides</i>)	Low			-	+				
3.8.1 Complex mesophyll vine forest on basalt lowlands	Restricted occurrence, clearance, fire, wind	None	-		-	-	-	-	-	-
3.8.3 <i>Eucalyptus leptophleba</i> ± <i>Corymbia papuana</i> ± <i>E. erythrophloia</i> ± <i>E. cullenii</i> woodland on basalt flows	Clearance, weed invasion	None			-	-				
Of concern										
3.2.2 Semi-deciduous vine thicket on western coastal dunes and beach ridges	Clearance, weed invasion (<i>Cryptostegia grandiflora</i> , <i>Calatropis</i>)	None			0	0				
3.3.38 Deciduous microphyll vine thicket ± <i>Lagerstroemia archeriana</i> on clay alluvium	Cattle and pigs	High			+	+				
3.3.59 <i>Sorghum</i> spp., <i>Themeda arguens</i> closed tussock grassland on erosional clay plains	Inappropriate fire regime	High			+	+				
3.3.62 Grassland/sedgeland with <i>Pandanus</i> spp. on Torres Strait Islands	Restricted distribution, fire management?	None	-		-	-	-	+	-	-
3.5.3 Semi-deciduous notophyll vine forest on lateritic Carnegie tableland	Clearance, weed invasion	None	-		-	-	-	-	-	-
3.9.5 <i>Corymbia papuana</i> ± <i>Eucalyptus leptophleba</i> open woodland on rolling plains	Grazing, pasture improvement	High			+	+				
3.9.6 <i>Terminalia aridicola</i> var. <i>chillagoensis</i> ± <i>T. platyphylla</i> open woodland on clay soils	Inappropriate fire regime, weed invasion	High			+	+				
3.9.8 <i>Heteropogon triticeus</i> , <i>Themeda arguens</i> , <i>Sorghum plumosum</i> closed tussock grassland on plains in central peninsula	Restricted occurrence, grazing, pasture improvement	Low			+	+				

5. Native animals

5A. Susceptible vertebrates - mammals

Issues:

Existing information:

Table 6. Rare and threatened mammals on Cape York.

Taxon	Conservation status
Northern Hopping Mouse <i>Notomys aquilo</i>	Vulnerable
Large-eared Flying Fox <i>Pteropus macrotis epularius</i>	Vulnerable
Torresian Flying Fox <i>Pteropus</i> sp.	Vulnerable
Cinnamon Antechinus <i>Antechinus leo</i>	Rare
Bare-backed Fruit-bat <i>Dobsonia magna</i>	Rare
Diadem Horseshoe-bat <i>Hipposideros diadema</i>	Rare
Ghost Bat <i>Macroderma gigas</i>	Rare
Torresian Tube-nosed Bat <i>Nyctimene cephalotes</i>	Rare
Cape York Rock Wallaby <i>Petrogale coenensis</i>	Rare
Spotted Cuscus <i>Spilocuscus maculatus</i>	Rare
Large-eared Horseshoe-bat <i>Rhinolophus philippinensis</i>	Rare
Papuan Sheathtail-bat <i>Saccolaimus mixtus</i>	Rare
Naked-rumped Sheathtail-bat <i>Saccolaimus saccolaimus</i>	Rare
Chestnut Dunnart <i>Sminthopsis archeri</i>	Rare

Measures: .

49. Adequacy of monitoring

Existing monitoring: At present, only incidental mammals sightings are recorded.

Proposed additional monitoring: Repeat and expand mammal inventory.

Contributing projects: NatureSearch

Estimated cost over 5 years: .

5B. Susceptible vertebrates - birds

Issues: A species is generally classified as threatened only after the degradation of many essential habitat elements. Recovery of threatened species usually involves restoration of those elements essential to the species of concern, and may indicate little about general biodiversity health. An assessment of the shift in abundance of least concern and near threatened taxa gives a better indication of the functionality of the environment. There has been a documented decline in Golden-shouldered Parrots, Brown Treecreepers, Black-faced Woodswallows.

Existing information: All vertebrates on Cape York Peninsula have been allocated a conservation status at National and State levels. Laura Basin has been designated a coordinated conservation area.

Table 7. Nationally threatened and near threatened birds on Cape York Peninsula (Garnett and Crowley, 2000).

Taxon	Conservation status	Present in rangelands	Likely threatening processes	Restricted distribution only
Southern Cassowary <i>Casuarius casuarius</i>	Endangered		-	Yes
Cotton Pygmy Goose <i>Netapus coramandelianus albipennis</i>	Near threatened	Yes	-	Yes
Buff-breasted Button Quail <i>Turnix olivii</i>	Endangered	Yes	Grazing/ Inappropriate fire regime	
Little Bittern (Australasian) <i>Ixobrychus minutus dubius</i>	Near threatened		Wetland degradation	
Australian Bustard <i>Ardeotis australis</i>	Near threatened	Yes	Grazing/ Inappropriate fire regime	
Bush Stone-Curlew <i>Burhinus grallarius</i>	Near threatened	Yes	Grazing/ Inappropriate fire regime	
Palm Cockatoo <i>Probosciger aterrimus macgillivrayi</i>	Near threatened		Inappropriate fire regime	Yes
Eclectus Parrot (Cape York Peninsula) <i>Eclectus roratus macgillivrayi</i>	Near threatened		Inappropriate fire regime	Yes
Red-cheeked Parrot (Australian) <i>Geoffroyus geoffroyi maclennani</i>	Near threatened		Inappropriate fire regime	Yes
Golden-shouldered Parrot <i>Psephotus chrysopterygius</i>	Endangered	Yes	Grazing/ Inappropriate fire regime	
Brown Treecreeper (Cape York Peninsula) <i>Climacteris picumnus melanotus</i>	Near threatened	Yes	Inappropriate fire regime	
Rufous Owl (Cape York Peninsula) <i>Ninox rufa meesi</i>	Near threatened		Inappropriate fire regime	Yes
Masked Owl (northern) <i>Tyto novaehollandiae kimberli</i>	Near threatened	Yes	Unknown	
Little Kingfisher (Torres Strait) <i>Alcedo pusilla pusilla</i>	Near threatened		-	Yes
Red-headed Honeyeater (Torres Strait) <i>Myzomela erythrocephala infuscata</i>	Near threatened		-	Yes
Dusky Honeyeater (Torres Strait) <i>Myzomela obscura fumata</i>	Near threatened		-	Yes
Grey-crowned Babbler (eastern) <i>Pomastomus temporalis temporalis</i>	Near threatened	Yes	Grazing/ Inappropriate fire regime	
Black-faced Woodswallow (Cape York Peninsula) <i>Artamus cinereus normani</i>	Near threatened	Yes	Grazing/ Inappropriate fire regime	

Frilled Monarch (Torres Strait) <i>Arses telescopthalmus harterti</i>	Near threatened		-	Yes
Leaden Flycatcher (Torres Strait) <i>Myiagra rubecula papuana</i>	Near threatened		-	Yes
Northern Fantail (Torres Strait) <i>Rhipidura rufiventris gularis</i>	Near threatened		-	Yes
Willie Wagtail (Torres Strait) <i>Rhipidura leucophrys melaleuca</i>	Near threatened		-	Yes
Spangled Drongo (Torres Strait) <i>Dicrurus bracteatus carbonarius</i>	Near threatened		-	Yes
Black Butcherbird (Torres Strait) <i>Cracticus quoyi alecto</i>	Near threatened		-	Yes
Torresian Crow (Torres Strait) <i>Corvus orru orru</i>	Near threatened	Yes	-	Yes
Crimson Finch (white-bellied) <i>Neochmia phaeton evangelinae</i>	Endangered	Yes	Grazing/ Inappropriate fire regime/ Wetland degradation	
Star Finch (Cape York Peninsula) <i>Neochmia ruficauda clarescens</i>	Endangered	Yes	Grazing/ Inappropriate fire regime/ Wetland degradation	
Gouldian Finch <i>Erythrura gouldiae</i>	Endangered	Yes	Grazing/ Inappropriate fire regime	
Singing Starling <i>Aplonis cantoroides</i>	Near threatened		-	Yes

Measures:

50. Adequacy of monitoring
51. Transition descriptors of changing bird status
52. Percentage of threatened and near threatened taxa subject to an implemented management/recovery plan
53. Minimum area estimates of Golden-shouldered Parrot breeding areas

Existing monitoring: Annual monitoring of Golden-shouldered Parrots and Black-faced Woodswallows in a core area, and 5-yearly monitoring in other areas; collection of data for Birds Australia Atlas; monitoring of Crimson & Star Finch

Proposed additional monitoring:

Contributing projects: Golden-shouldered Parrot recovery plan; Threatened Finch project; Birds Australia Atlas;

Estimated cost over 5 years: