A Biodiversity Planning Assessment for the Gulf Plains Bioregion

Fauna Expert Panel Report

Version 1.1

Prepared by: Biodiversity Assessment, Ecosystem Outcomes, Department of Environment and Heritage Protection

Citation

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1 Introduction

This report summarises the proceedings and the output of expert fauna panels convened in Townsville on 29th June 2011, Atherton on 15th August 2011 and Townsville on the 26th September 2011 to discuss the biodiversity values of the Gulf Plains Bioregion (GUP) study area. This report documents the panel's findings using the regional ecosystem (RE) mapping dated Version 8 (released 2/12/2013).

In order to fully capture biodiversity values and to accommodate local knowledge, the following three sets of values were considered for the GUP study area:

- fauna
- flora
- landscape.

Appendix 1 provides details of any abbreviations included in the report.

The Biodiversity Assessment and Mapping Methodology (BAMM, version 2.1) (EPA 2002) has been developed to provide a consistent approach for assessing biodiversity values at the landscape scale in Queensland using vegetation mapping data generated or approved by the Queensland Herbarium as a fundamental basis. It is being used by the Department of Environment and Heritage Protection (EHP) to generate Biodiversity Planning Assessments (BPAs) for bioregions in Queensland.

The BAMM is continually being refined and is published on the EHP website at <www.ehp.qld.gov.au>. The methodology was developed from a similar method initially devised by Chenoweth EPLA (2000), and can be used by agency staff, other government departments, local governments or members of the community to advise on a range of planning or decision making processes.

The methodology is applied in two stages (Figure 1). The first stage uses existing data to assess seven diagnostic criteria, which are relatively uniform and reliable across a bioregion. These account for ecological concepts including rarity, diversity, fragmentation, habitat condition, resilience, threats, and ecosystem processes. They are diagnostic in that they are used to filter available data and provide a 'first-cut' determination of significance. This initial assessment is generated on a geographic information system (GIS) and is then refined using a second group of expert panel criteria. These criteria rely more upon expert opinion than on quantitative data, and focus on data that may not be available uniformly across the bioregion.

Expert panels are convened to review and refine diagnostic criteria and to assess the expert panel criteria (Figure 1). A generalised terms of reference for expert panels is provided in the BAMM version 2.1.

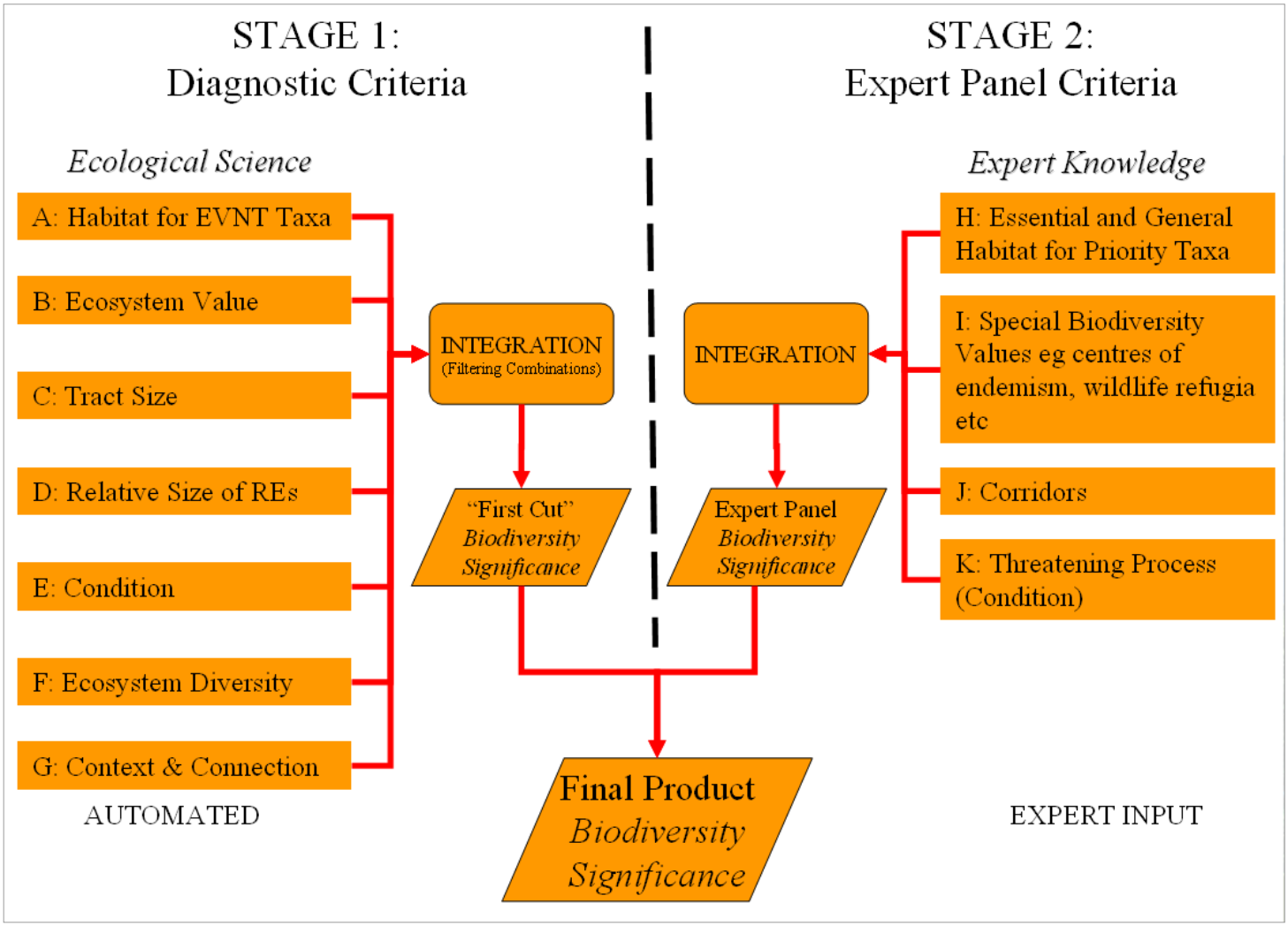


Figure 1 Biodiversity Assessment and Mapping Methodology (BAMM) process

2 Method

2.1 Study Area

Stretching from the Northern Territory border east to the base of Cape York Peninsula, the Gulf Plains Bioregion encompasses approximately 211,000km^2 of low-lying country and offshore islands of north-west Queensland. Major river systems dissect the broad alluvial plains – the Nicholson, Gregory and Leichhardt drain from the North West Highlands; the Cloncurry, Flinders and Norman from the Mitchell Grass Downs; the Gilbert, Staaten, Nassau and Mitchell from the Einasleigh Uplands.

The coastal edge is dominated by marine plains of clay, silt and sand with mangroves, saltpans and mudflats. Further inland, grasslands and woodlands of eucalypts, melaleuca and acacia cover the landscape of plains and river channels comprising clay and alluvial soils. Similar vegetation dominates the dissected plateau surfaces of sandstones and siltstones that abut the surrounding bioregions (Sattler & Williams 1999).

Fauna of the Gulf Plains has been little studied (e.g. Dames & Moore 1994; Vanderduys & Kutt 2011). One of the few iconic animals is the eastern subspecies of the purple-crowned fairy-wren *Malurus coronatus macgillivrayi* which is restricted to the riparian fringe of major rivers in the western part of the bioregion (Rowley 1993). The general impression of the fauna is one of resilience but relatively limited diversity as one might expect in a landscape prone to extensive flooding with few refugia for dryland species. However the Gulf Plains is critical for wetland taxa. The south-east Gulf of Carpentaria is an internationally important site, and the third most significant site in Australia, for migratory shorebirds using the East Asian-Australasian Flyway (Bamford et al 2008; Jaensch and Richardson 2014). On the land, the bioregion holds 15 important wetlands (Blackman 2001) which play a vital role as ecological refugia for waterbirds – waterfowl, herons and ibis.

A major environmental pressure on the bioregional biota is the combination of generally flat country and the monsoonal climate that can result in alternating periods of inundation over much of the region during the summer wet season followed by a long dry season in winter. These conditions restrict access both spatially and temporally – limiting any flora and fauna surveys to dry cooler times of year.

Landuse in the sparsely populated bioregion is primarily cattle grazing and infrastructure support for mines and Gulf of Carpentaria fisheries. The beef industry is based on native grassland pastures and consequently the region has experienced very little clearing of native vegetation compared to more eastern bioregions. Apart from the Staaten River National Park and two small protected areas, the majority of conservation lands are located on or near the periphery of the bioregion.

There are 10 sub-regions within the Gulf Plains Bioregion (Figure 2). The Department of Science, Information Technology, Innovation and Arts (DSITIA) has mapped and classified regional ecosystems (RE) to a peer reviewed and published mapping and classification methodology . These RE maps were used as a platform for the conservation assessments reported here. BPAs accept the released RE maps unmodified and therefore, are limited by inherent mapping and classification accuracy. Issues to do with RE mapping or classification errors are dealt with by DSITIA's mapping update processes and are not part of a BPA.

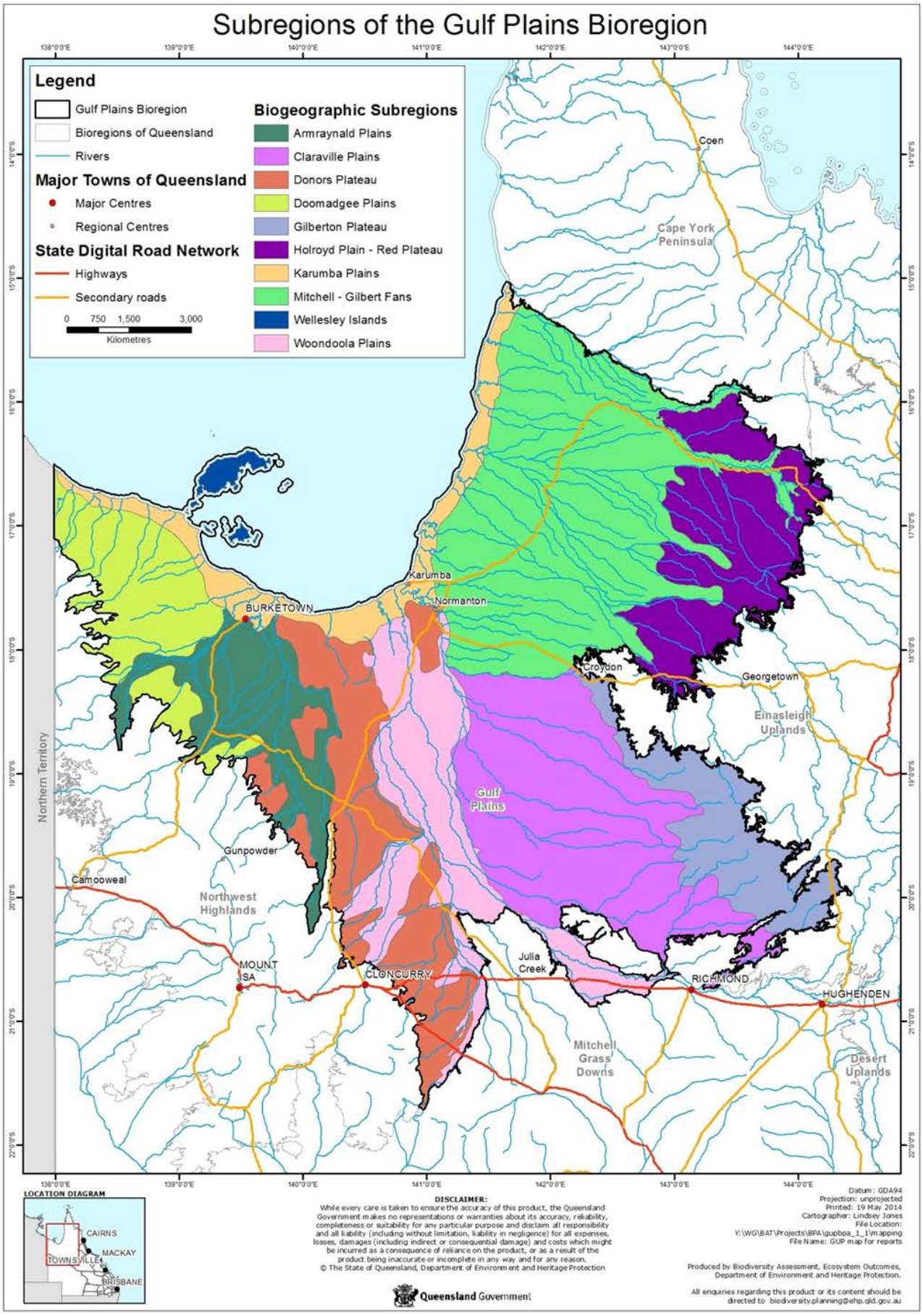


Figure 2 The Gulf plains Bioregion and its subregions

2.2 Expert Panel

The expert panel plays a significant role in the development of a BPA through:

- reviewing the suitability of data used in and arising from the GIS analysis
- identifying other information sources including expert and local knowledge, technical reports and papers, and modelled maps
- providing expert opinion where quantitative data is not available uniformly across the bioregion

Specifically for flora and fauna, the biodiversity issues addressed at panel workshops are:

- evaluating point records for endangered (E), vulnerable (V) and near threatened (NT) taxa to improve spatial accuracy and precision
- capturing any additional records available from expert panel members for subsequent use in criteria A and H
- identifying areas with special biodiversity values (criteria I) important for the bioregion's fauna
- identifying non-EVNT taxa to be treated as 'priority species' under criteria H
- identifying data gaps

The GUP study area expert panel comprised invited persons with knowledge of the biodiversity and/or special biodiversity values of the GUP Bioregion and a sound understanding of ecological conservation and management principles. As far as possible, the combined expertise of participants covered the whole GUP Bioregion and a range of planning and assessment processes (e.g. local government, regional Natural Resource Management (NRM) bodies, state government). The terms of reference for expert panels are provided in Appendix 6 of the BAMM documentation on the EHP website. Additional experts were consulted after the panel workshop and all panel participants are listed in Table 1 and Table 2.

The output of the panel process aims to be justifiable and transparent. Data that is captured digitally and mapped is a result of consensus within the panel and ratified by the Manager, Biodiversity Assessment, EHP and the relevant regional manager.

Further, significance ratings of State or Regional are attributed to the decisions produced at the expert panels. In general, ratings were only given by the panel to areas of remnant REs, however some small areas of non-remnant vegetation have been given a biodiversity significance rating as part of corridors to improve landscape connectivity.

The ratings used by the panel were described as:

State significance—areas assessed as being significant for biodiversity at the bioregional or state scales. They also include areas assessed as being significant at national or international scales

Regional significance—areas assessed as being significant for biodiversity at the sub-bioregional scale. These areas have lower significance for biodiversity than areas assessed as being of State significance.

Table 1 - Expert panel participants and additional persons consulted in Townsville on 28th June 2011

Name	Organisation
Steve Murphy	ex AWC
Justin Perry	CSIRO
Eric Vanderduys	CSIRO
Steve Malone	ex Southern Gulf NRMG
Mike Digby	Northern Gulf NRMG
Gethin Morgan	DERM – Northern Region
Mike Trenerry	DERM – Northern Region
Carly Greig	DERM – Northern Region
Gary Wilson	DERM – Northern Region
Tony Morrison	DERM – Northern Region
Richard Johnson	DERM – Nature Refuges
Alice Wardlaw	DERM – Nature Refuges
Lana Little	DERM – QPWS
Support staff	
Lindsey Jones	DERM – Head Office
Shane Chemello	DERM – Head Office
Michelle Richards	DERM – Northern Region
Andrew Jolly	DERM – Northern Region

Table 2 - Expert panel participants consulted in Atherton on 15th and 16th August 2011 and in Townsville on the 26th September 2011

Name	Organisation
Atherton	
Keith McDonald	QPWS – Northern Region
Alistair Freeman	QPWS – Northern Region
Noel Preece	Fauna Consultant
Alf Hogan	Fisheries Consultant
Mike Digby	Northern Gulf NRMG
Debbie Hansen	Northern Gulf NRMG
Charles Curry	Southern Gulf NRMG
Gethin Morgan	DERM – Northern Region
Tony Morrison	DERM – Northern Region
Townsville	
Alex Kutt	CSIRO
Gethin Morgan	DERM – Northern Region
Tony Morrison	DERM – Northern Region

2.3 Expert panel format

The fauna expert panel workshop used an interactive approach of GIS software, spreadsheets, reports, laptops and data projectors. Prior to the panel being convened, relevant information was collated and disseminated to the workshop participants.

The resources made available to the participants during the workshop proceedings were:

- copy of the BAMM
- available regional ecosystem mapping and 1:100 000 topographic maps
- information from databases such as HERBRECS, CORVEG, WILDNET and the Queensland Museum
- published surveys
- informal sources
- ancillary GIS layers provided for local reference included roads and cadastral information drainage, State forests and national parks and Landsat Thematic Mapper imagery; digital topographic maps where available.

Appendix 2 provides a full list of the resources made available to the panel at the workshop.

2.3.1 Species considerations (criteria A and H)

Fauna species considered by the expert panel were EVNT species listed under the *Nature Conservation Act 1992* (NCA) or the *Australian Government Environmental Protection and Biodiversity Conservation Act 1999* (EPBC) and 'non-EVNT priority taxa' including those identified through the Back on Track species prioritisation framework and other natural resource assessments focused on the bioregion. Records were compiled using WildNet, the Queensland Historical Fauna Database and from project specific data sets obtained from other sources. Other species were nominated, discussed and either added or discarded from the priority taxa list by workshop participants prior to and during the panel workshops. Experts were asked to identify any species with existing models of habitat suitability that could be incorporated into the BPA and to nominate species that they thought possible to generate models for, based on knowledge of known preferences of species for particular habitat features, e.g. specific REs or geology and landscape position. Proposed changes in status under the NCA were also considered.

Species records were interactively reviewed using GIS commencing with EVNT species then non-EVNT priority taxa. Participants were asked to accept, add, shift or exclude records based upon their expert knowledge. Panel participants accepted records located within their known distributions, at known locations or if they were collected by a reliable source. They shifted records that were incorrectly located and added records either during the workshop proceedings or with follow-up consultation.

Records were excluded for the following reasons:

- incorrect coordinates—a mismatch between location description and coordinates
- highly mobile taxa
- records which had obviously been placed at a degree or 10' grid centroid
- duplicate records which had been cited by a number of sources
- records with a precision >2001 metres.

Individuals were consulted following the workshops to clarify some recommendations and to add records.

2.3.1.1 Habitat for Endangered, Vulnerable and Near-Threatened species (criterion A)

Species records were interactively reviewed on GIS in decreasing order of conservation status: E, V, NT. Experts were asked to accept, add, shift or exclude records based upon their detailed knowledge of those taxa. Species were excluded from the diagnostic analysis when the panel considered there to be a lack of reliable GUP bioregion records, or when species were not known to occur in the GUP bioregion.

These decisions were flagged in the spatial database and in the minutes, which identified the person submitting the information; habitat information and threatening processes for each species, and the nomination of additional experts to be consulted regarding certain records or species.

2.3.1.2 Core habitat for priority taxa (criterion H)

The panel reviewed a list of non-EVNT fauna and flora species, and their associated records, with potential to be endemic and/or have disjunct distributions within the GUP bioregion. Based on the distribution of the records location and expert knowledge, the panel determined whether the species should be considered to have a disjunct and/or endemic distribution with the GUP bioregion.

Other priority taxa are identified for each bioregion on the basis of one or more special values and the written opinion of experts. These values may include:

- taxa at risk or of management concern
- taxa of scientific interest as being relictual (ancient or primitive)
- endemic taxa or locally significant populations (stronghold for taxon)
- highly specialised taxa whose habitat requirements are complex and distributions are not well correlated with any particular RE
- taxa important for maintaining genetic diversity (such as complex spatial patterns of genetic variation, geographic range limits, highly disjunct populations)
- taxa critical for management or monitoring of biodiversity (functionally important or ecological indicators)
- economic and culturally important taxa.

2.3.2 Special biodiversity values (criteria I)

The fauna panel nominated areas of special fauna biodiversity value for inclusion under criteria I. The panel assigned State or Regional significance to the nominated areas on the basis of presence of at least one of the following features:

- criteria Ia—the area supports a number of taxa endemic to the GUP study area
- criteria Ib—wildlife refugia; natural wetland that is in good condition or continues to function as a major wildlife habitat when seasonal conditions permit
- criteria Ic—the area supports a number of taxa that are present in other bioregions and have a limited number of occurrences in the GUP study area (outliers/disjunct populations)
- criteria Id—the area supports a number of taxa at or near the limits of their respective geographical ranges
- criteria Ie—the area supports a high species diversity
- criteria If—the area supports concentrations of relictual (ancient and primitive) taxa
- criteria Ig—the area contains a regional ecosystem or regional ecosystems that exhibit variation in species composition
- criteria Ih—an artificial waterbody or managed/manipulated wetland of ecological significance
- criteria Ii—the area contains a high density of hollow-bearing trees that provide animal habitat
- criteria Ij—the area is used by significant numbers of individuals for roosting or breeding.

The panel took into account combinations of the features present in deciding on an overall rating of State or Regional significance. The diagnostic criteria in BAMM use prescribed thresholds for determining the relative importance of individual criteria and standard rules for assigning significance based on combinations of values present. However, BAMM version 2.1 provides limited guidance on how expert panels are to assess criteria. The GUP Bioregion expert panels used a consensus approach in assigning overall significance. Where there was uncertainty or further work needed, tasks were assigned for follow-up. In some cases the areas were specifically identified by RE polygons, in others a bounding box was drawn as a shape file to indicate the general location of the area, and specific instructions given for the area to be more accurately mapped using RE polygons, geology, landform or some combination of these. Subsequently the areas were mapped, distributed to the expert panel for review, and then finalised.

3 Results and discussion

Specific recommendations from the panel are recorded in several tables within the following sections.

3.1 Fauna species considerations (criteria A and H)

Criteria A and H attribute significance to areas based on the presence of EVNT taxa scheduled under the Nature Conservation (Wildlife) Regulation 2006 or the EPBC, or presence of non-EVNT priority species. The GUP bioregion fauna expert panel considered some 137 species for inclusion in criteria A and H. Table 3 summarises the categories of species. It is the general convention under the BAMM that species records are filtered to exclude records older than 1975, or less precise than 2001 metres. The expert panel for the GUP bioregion BPA considered those conventions given that the GUP study area is an almost intact landscape with large areas of homogeneous habitat types and is remote and difficult to access. In many areas, data records for the bioregion are comparatively limited. The panel provided no indication of whether the standard filtering rules should be amended. The authors decided that, given the similarities of GUP with other remote bioregions (e.g. Channel Country, Mitchell Grass Downs and Einasleigh Uplands) that similar rules should apply. This meant the date rule was relaxed to accept records pre-1975 but the precision rule was retained at ≤2000m.

Due to the running of several supplementary meetings (Table 2), there were inevitably differences of opinion between groups of experts over the inclusion and exclusion of taxa in both Criterion A and H. To reconcile the panel decisions, the following rules were adopted. With respect to Criterion A, **all** threatened taxa were included if they were listed as threatened under the NCA or EPBC at the time the BPA was produced, had valid records (not proven erroneous by experts), and those records occurred within the bioregion (including any outlying polygons). For Criterion H, the precautionary principle was applied and all taxa listed by the panels were included. As there was no opportunity for all experts to meet and resolve the points of difference and it would have been unfair to accept one panel's decision over another, none of the proposed exclusions were incorporated. Where there was disagreement on a taxon, the authors decided that only Regional significance would apply.

Table 3 - Summary of fauna taxa considered by the expert panel for criteria A and H

	Endangered	Vulnerable	Near Threatened	Priority (non-EVNT) taxa	Total
Number of species considered	11	21	27	21	80
Number of species for which the panel made comments	7	14	15	21	57

3.1.1 Habitat for endangered, vulnerable and near threatened fauna species (criteria A)

The panel reviewed records of the listed EVNT species and provided comments on those species (Table 4). The panel nominated one EVNT species with potential for habitat modelling. A number of species were excluded either because there were no (or too few) reliable records of the species in the GUP bioregion.

Table 4 - Comments and recommendations of expert panel relating to endangered, vulnerable and near threatened fauna species (criterion A)

Scientific Name	Common Name	NCA[1]	EPBC[2]	Mobility	EP Comments
REPTILES					
Acanthophis antarcticus	Common death adder	NT		L	Mainland record looks dubious, flagged out anyway. Taxonomy dubious, probably not *A. antarcticus*. Death adders are difficult to find so are generally under sampled and recorded.
Chelonia mydas	Green turtle	V	V	H	Gulf population of the green turtle is genetically distinct. Around 5000 females have been recorded nesting on Bountiful Island. Threats include hunting, net entanglement, fishing by catch. Further follow up can be provided by Col Limpus or Ian Bell. The panel understood there were no pigs on Bountiful Island but the panel does not have contemporary knowledge to categorically state this is the case. Alastair Freeman commented that this had been recognised as an evolutionary significant populations; Keith McDonald thought it would be worth checking the genetic information to confirm this. Green turtles are considered an important sea turtle in the Gulf.
Crocodylus porosus	Estuarine crocodile	V		H	The panel commented that crocodiles are not vulnerable in the Gulf. Alf Hogan thought it was a significant population for the state with breeding on coastal plain at Nassau/Staaten Rivers as well as the Gilbert and Norman. Also good size range and population present on Albert and Leichhardt Rivers. The Gulf holds a stable, mature population when compared with the east coast. The species has moved back into areas where it was shot out.
Ctenotus zebrilla		NT		L	Should be delisted as it is abundant with lots of records from Abingdon Downs that are missing from the species records dataset.
Egernia rugosa	Yakka skink	V	V	L	
Elseya lavarackorum	Gulf snapping turtle	V	E	L	Localised moderate population occurring in the Gulf along Lawn Hill Creek and Gregory River. The best population occurs in the Northwest Highlands. Pigs are a threat along with the degradation of riparian habitat. Alastair Freeman raised climate change as a potential threat after finding clutches of eggs that were cooked by high sand temperatures.
Emydura subglobosa worrelli	Diamond head turtle	NT		L	Occurs in the upper Gregory and Leichhardt rivers and is widespread outside bioregion. It is the panel's view this species should be considered common.
Eretmochelys imbricata	Hawksbill turtle	V	V	H	No nesting records that Alastair could find. Not considered breeding in gulf.
Lerista cinerea		NT		L	Taxonomically unresolved – leave as is for now. From Chudleigh and spotted gum area.
Lerista storri		NT		L	Taxonomically unresolved – leave as is for now.

Scientific Name	Common Name	NCA[1]	EPBC[2]	Mobility	EP Comments
Lerista vittata	Mount Cooper striped lerista	V	V	L	Check up on notes from Desert Uplands panel – same issues regarding taxonomy. Einasleigh Uplands records and outside the study area. Three species in the vicinity. Taxonomy uncertain but include as is.
Natator depressus	Flatback turtle	V	V	H	Isolated nesting known from Wellesley group but the major nesting sites are found on the Cape & outside the bioregion.
Pseudechis colletti	Collett's snake	NT		L	Following clay plains north from Julia Creek. Nelia the type locality so high levels of collection have occurred there and most in captivity originate from there. Very infrequently sighted. Edge of bioregion, more typically species of Mitchell Grass downs.
Simoselaps warro	Robust burrowing snake	NT		L	E Vanderduys to follow up on missing date for FID 97. Under-recorded. Small snakes in Gulf poorly known particularly burrowing nocturnal ones.
Lepidochelys olivacea	Olive ridley	E	E	H	Isolated nesting recorded on Wellesley Islands.
Caretta caretta	Loggerhead turtle	E	E	H	Not considered likely to use the gulf for breeding. Panel considered this species either doesn't occur or is a vagrant in the GUP.
BIRDS					
Accipiter novaehollandiae	Grey goshawk	NT		H	Surprised to see this on the list. A few old records from Burketown vicinity. Atypical occurring on the coastal fringe. They will be flagged out. Historical vagrant. Also high mobility.
Aerodramus terraereginae	Australian swiftlet	NT		H	Breed in Chillagoe, highly mobile and records predominantly an outlier. Einasleigh Uplands species.
Amytornis dorotheae	Carpentarian grasswren	NT		L	Not a GUP species with record at edge of bioregion. Mostly in North West Highlands bioregion.
Cisticola juncidis normani	Zitting cisticola (Normanton subsp.)	NT		L	
Ephippiorhynchus asiaticus	Black-necked stork	NT		H	
Epthianura crocea	Yellow chat	V		L	GUP may be important refuge for this species when Channel Country dries out. No recent records.

Scientific Name	Common Name	NCA[1]	EPBC[2]	Mobility	EP Comments
Erythrotriorchis radiatus	Red goshawk	E	V	H	
Erythrura gouldiae	Gouldian finch	E	E	H	Species interaction between the Einasleigh Uplands and spinifex/sandstone areas of the Gulf likely to be critical to its persistence. Identified as Near Threatened at national level (Garnett et al 2011).
Esacus magnirostris	Beach stone-curlew	V		L	Not considered high mobility due to restricted nature of suitable habitat. Pigs, vehicles are a threat for nesting.
Falco hypoleucos	Grey falcon	NT		H	
Grantiella picta	Painted honeyeater	V		H	Poorly known. Point right on the boundary of the bioregion. Seems to move north. Bioregion may be important for the species. Highly mobile.
Haematopus fuliginosus	Sooty oystercatcher	NT		H	
Heteromunia pectoralis	Pictorella mannikin	NT		L	Moving in the Gulf with the spread of prickly acacia. There is a resident breeding population present. GUP important breeding area. Include any records that make reference to breeding.
Lophoictinia isura	Square-tailed kite	NT		H	
Malurus coronatus	Purple-crowned fairy-wren	V		L	Lower Gregory, Burketown, Gregory Downs, down through Beames Brook Nicholson – distribution patchy & dependant on condition of riparian habitat; Alastair - declined on Leichhardt where there were historical records, but none in recent times (see if can check) – decline on Leichhardt possibly linked to damming of Leichhardt & the impacts of regulated flows. – Issues of RE heterogeneity for modelling – the species need pandanus & tall trees – if the pandanus community or subtype can be mapped then could attempt to model their distribution.
Melithreptus gularis	Black-chinned honeyeater	NT		H	Include records for both nominate and *M. g. laetior* (golden-backed) subspecies.
Neochmia phaeton evangelinae	Crimson finch (white-bellied subsp.)	E	V	H	
Nettapus coromandelianus	Cotton pygmy-goose	NT		H	
Numenius	Eastern curlew	NT		H	

Scientific Name	Common Name	NCA[1]	EPBC[2]	Mobility	EP Comments
madagascariensis					
Phaethon rubricauda	Red-tailed tropicbird	V		H	
Psephotus chrysopterygius	Golden-shouldered parrot	E	E	L	Not considered a highly mobile species as closely linked to habitat. Panel recommends using all points.
Rostratula australis	Australian painted snipe	V	V	H	
Sternula albifrons	Little tern	E		H	
Stictonetta naevosa	Freckled duck	NT		H	Vagrant to bioregion.
Tadorna radjah	Radjah shelduck	NT		H	
MAMMALS					
Chalinolobus picatus	Little pied bat	NT		L	
Conilurus penicillatus	Brush-tailed rabbit-rat		V	L	Presence on Bentinck Island requires confirmation. Not easy to catch and requires tall forest, e.g. *Eucalyptus miniata*.
Dasyurus hallucatus	Northern quoll		E	L	Under-recorded, flagged record looks suspicious. Likely to be found more in the fringes of the Einasleigh. If anywhere it would occur in broken country along the eastern boundary. Panel considers likely to have originally occurred across wider area but lost from much of its former range.
Dugong dugon	Dugong	V		H	
Macroderma gigas	Ghost bat	V		H	Cave, good records.
Notomys aquilo	Northern hopping-mouse	V	V	L	Should exist through that dune area, but no one has looked. Record on foredune of Nassau River in 1990 and panel expects they would occur in study area on similar habitats. Presence requires confirmation.

Scientific Name	Common Name	NCA[1]	EPBC[2]	Mobility	EP Comments
Nyctophilus walkeri	Pygmy long-eared bat	NT		L	Edge of bioregion.
Orcaella heinsohni	Australian snubfin dolphin	NT		H	
Petrogale mareeba	Mareeba rock-wallaby	NT		L	Some valid records, may be an outlying population, include. Occurring along the Walsh River.
Petrogale purpureicollis	Purple-necked rock-wallaby	V		L	Not a typical GUP species, but include all records that intersect a GUP RE.
Rhinonicteris aurantia	Orange leaf-nosed bat	V		L	Edge of bioregion - vagrant.
Saccolaimus mixtus	Papuan sheathtail bat	NT			
Sminthopsis douglasi	Julia Creek dunnart	E	E	L	Some valid records in GUP occurring along clay plains following water courses in the south of the bioregion.
Sousa sahulensis	Australian humpback dolphin	NT		H	
FISH					
Pristis clavata	Dwarf sawfish		V	H	NCA status (not protected) but protected under *Fisheries Act 1994* (*Fisheries Regulation 2008*).
Pristis pristis	Freshwater sawfish		V	L	NCA status (not protected) but protected under *Fisheries Act 1994* (*Fisheries Regulation 2008*).
Glyphis glyphis	Speartooth shark		CE	H	AquaBAMM records, NCA status (not protected) but protected under *Fisheries Act 1994* (*Fisheries Regulation 2008*).
Pristis zijsron	Green sawfish		V	H	NCA status (not protected) but protected under *Fisheries Act 1994* (*Fisheries Regulation 2008*).

1 - E = endangered, V = vulnerable, NT = near threatened

2 - CE = critically endangered, E = endangered, V = vulnerable.

3.1.2 Core habitat for priority fauna taxa (criterion H)

Priority species are non-EVNT species that are considered to be of particular conservation significance.

The rationale for this significance may relate to:

1. taxa of management concern
2. taxa of scientific interest
3. endemic taxa or locally significant populations (such as a flying fox camp or heronry)
4. taxa with highly specialised habitat requirements
5. genetically important taxa
6. environmental indicator taxa
7. taxa that have economic or cultural importance.

A draft list of species was considered by the panel and several species were excluded either because there were no (or too few) reliable records of the species in the GUP study area. Additional species were also identified and the final list of priority species recommended by the panel is shown in Table 5.

For inclusion in the BPA the records were first subject to filtering rules for age of record and precision as applied to records for criteria A (see BAMM documentation, EPA 2002). Subsequently, for species of State significance, high precision records (precision ≤500m) were buffered by twice the precision (as for criteria A) with a minimum of 300m and assigned VERY HIGH in criteria H. For species of Regional significance, high precision records (precision ≤500m) were buffered by twice their precision (as for criteria A) with a minimum of 300m and assigned HIGH in criteria H. For low precision State and low precision Regional significant species the point records were buffered by 1000m and assigned MEDIUM in criteria H. These decision rules are summarised in Table 6.

Table 5 - Comments and recommendations of expert panel relating to other priority fauna taxa (criterion H).

Taxa with * indicates inclusion not supported by all panels.

Scientific Name	Common Name	BOT Rating	Reason for Listing	EP Notes	Significance
INSECTS					
Trisyntopa scatophaga	Golden-shouldered parrot nest moth	BoT Northern Gulf rank = High, DERM = High	1, 5	Bird is threatened, so moth is threatened. Keep as priority.	State
BIRDS					
Artamus cinereus normani	Black-faced woodswallow (CYP subspecies)	BoT Northern Gulf rank = Critical, DERM = High	1, 3 (this subspecies), 5, 6, 7 (indicator for Golden shoulder Parrot, loss of them may indicate too frequent cool burns and resultant thickening)	Indicator of condition related to thickening. 85% of golden shouldered records on the Cape associated with this species. Loss may indicate thickening or too frequent burns.	Regional
Climacteris picumnus melanotus	Brown treecreeper (CYP subspecies)	BoT Northern Gulf rank = High, DERM = Medium	1, 3 (this subspecies), 5, 6, 7 (indicator of frequent low intensity fire)	Low numbers in spatially separated areas. An indicator of fire regime. Not seen often but usually in good numbers when seen.	Regional
Eulabeornis castaneoventris	Chestnut rail		4, 5, 6	Only occurrence in QLD. Locally significant and highly specialised.	State
Grus antigone	Sarus crane		3, 4 (locally and nationally significant pop)	Breeds pretty exclusively in GUP. Seasonally 100% use the Gulf so endemic for breeding. Population of national/global significance.	State
Neochmia ruficauda clarescens	Star finch (northern subspecies)	High	1, 2, 5, 6	A management concern as southern subspecies extinct.	State
Phaps histrionica	Flock bronzewing		1, 5, 7 (indicator of grassland health)	Have declined significantly. Nowhere near as many as there used to be. GUP a potential drought refuge for this species. High mobility. Indicator of grassland health.	Regional

Scientific Name	Common Name	BOT Rating	Reason for Listing	EP Notes	Significance
MAMMALS					
Lagorchestes conspicillatus	Spectacled hare-wallaby		1, 2	Declining in large part of range.	Regional
Onychogalea unguifera	Northern nailtail wallaby		1, 3, 7	Impact of grazing and drought, prickly acacia. State stronghold. Management risk and vulnerable to land management actions.	State
Petaurus norfolcensis	Squirrel glider		1	Declining.	Regional
Petauroides volans	Greater glider		4, 9	Disjunct, Juntala Plateau a refugial area for the species. Vulnerable to climate change.	Regional
FISH					
Lates calcarifer	Barramundi		1	Recreational, commercial, cultural species. Meets the criteria of a priority species. All the widespread species like black bream should be included as these can give a good indication of what is happening in an area, should be monitored, keep common species common - requires monitoring.	Regional
*Ambassis elongatus**	Elongate glassfish			Current distribution restricted to GUP. Refer to Alf Hogan, along with all other fish identified as endemics.	Regional
REPTILES					
Chelodina rugosa			1, 7, 8	Important traditional food source for aborigines who dig them up out of aestivating sites. Evidence of potentially significant impacts on *C. rugosa* populations as a result of feral pig predation on aestivating animals (Fordham et. al 2006). An indicator species. Through the analysis of traditional hunting effort it may be possible to allocate a value for wetland health correlated with level of pig disturbance or other indicators of wetland degradation (grazing, weeds etc.). This could then be used to target feral	Regional

Scientific Name	Common Name	BOT Rating	Reason for Listing	EP Notes	Significance
				animal control and /or stock and feral animal exclusion for selected wetlands. Subsequent changes in harvest levels can be used as an indicator of the success of such management. Because this species is such an important food item for traditional owners in the area such a project lends itself to indigenous ranger implementation.	
*Emydura tanybaraga**	Northern yellow-faced turtle		1, 3	GUP is a key part of their distribution. Freshwater turtles in decline, generally. Taxonomy being challenged. Disagreement over whether there is a general decline.	Regional
Lygisaurus abscondita			1, 3, 4, 5, 6	Only known from Bulleringa NP, endemic. Largely unknown.	State
*Varanus mitchelli**	Mitchell's water monitor		6	Limits of range, Mornington record significant as disjunct population.	Regional
FROGS					
*Cyclorana cryptotis**	Earless frog		3, 6	E. Vanderduys has more records. Endemic or nearly so to the Cape, Gulf occurrences at the edge of its range or disjunct populations. Considered widespread.	Regional
*Cyclorana manya**	Little collared frog		3, 6	Endemic to a band of country straddling the peninsula but mostly in GUP. Considered widespread.	Regional
Litoria dahlii	Northern waterfrog		3	Cryptic, restricted to GUP and adjacent drier EIU in QLD.	Regional
Notaden nichollsi	Desert shovelfoot		2, 6	Normally Simpson Desert, disjunct and possibly relictual of previous climate regime. Could be present between Burke and Wills and Urandangie.	State

Table 6 - Priority fauna taxa special area decisions

Decision Number	Description	Significance	Identified values	Criteria values
gup_fa_19	High precision records for priority taxa of State significance are contained within the remnant.	State	Remnant contains core habitat for priority taxa with high precision records.	Criteria H: VERY HIGH
gup_fa_16	Low precision records for priority taxa of State significance are contained within the remnant.	State	Remnant contains core habitat for priority taxa with low precision records.	Criteria H: MEDIUM
gup_fa_17	High precision records for priority taxa of Regional significance are contained within the remnant.	Regional	Remnant contains habitat for priority taxa with high precision records.	Criteria H: HIGH
gup_fa_18	Low precision records for priority taxa of Regional significance are contained within the remnant.	Regional	Remnant contains habitat for priority taxa with low precision records.	Criteria H: MEDIUM

3.2 Special biodiversity values (criterion I)

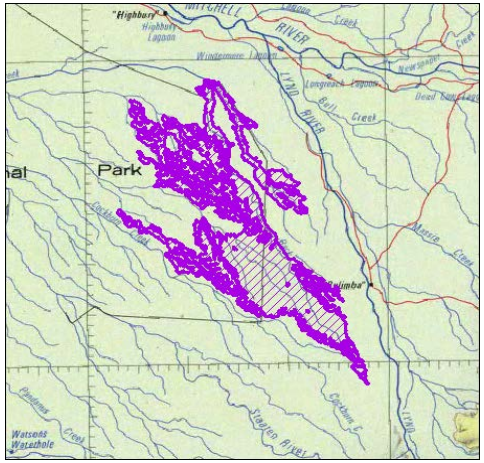
The panel was asked to identify areas with special biodiversity values within the GUP bioregion under the BAMM supplementary criterion I. Areas with special biodiversity value are important because they contain multiple taxa in unique ecological and often highly biodiverse environments. Values can include centres of endemism, wildlife refugia, disjunct populations, geographic limits of species distributions, high species richness, relictual populations, high densities of hollow-bearing trees and breeding sites. Using expert knowledge and available information (records, maps, GIS derived datasets), panel members were able to identify eleven areas and describe their collective values. The special areas proposed by the panel are described in Table 7.

The ratings used for diversity of species of conservation significance (EVNT and priority spp.) are:

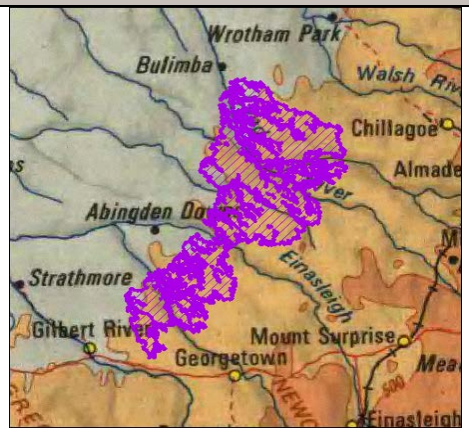
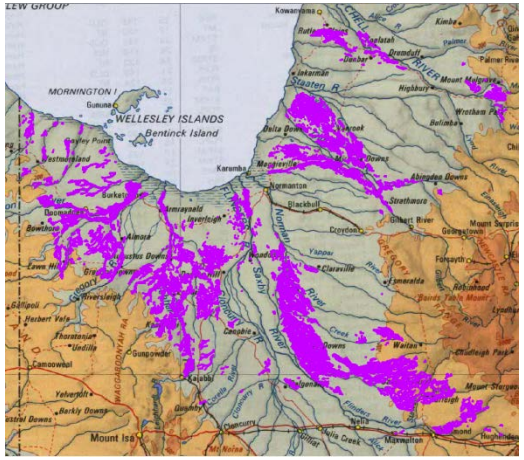
- very high (>25 per cent of GUP bioregion spp.)
- high (10–25 per cent of GUP bioregion spp.)
- medium (>10 per cent of GUP bioregion spp.)
- low (no data).

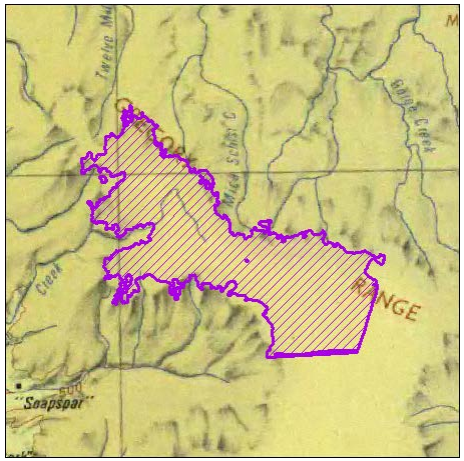
Only EVNT and priority species are specified for each decision.

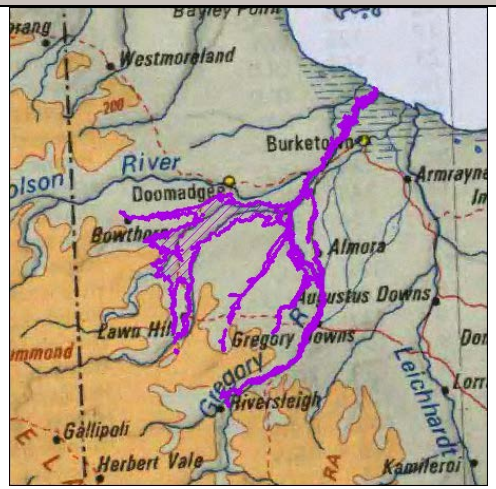
Table 7 - Comments and recommendations relating to areas of special biodiversity value (criteria I)

Decision number	Description	Panel recommended significance	Identified values in BPA	Criteria values
01	Vine thickets and dunes adjacent to rivers and mangroves along eastern coast. Implemented as landscape decision - gup_l_03	State	Some of this area is of international significance. Key resource areas for frugivores. Heavily dissected by water provides roosting and nesting sites for waterbirds, waders and raptors (Blackman 2001, Driscoll 2001). Dry season refugia with very high species richness relative to surrounding habitats. Distinct variation in species composition. Contains taxonomically distinct dragons. Large number of species at the limits of their range in this community. Turtle breeding area but very little mainland sea turtle nesting records from air survey of tracks. The 1999-2000 and 2009 air surveys found no or little evidence south of the Nassau River on the western CYP (GHD 2010). Possible northern hopping mouse *Notomys aquilo* habitat in fore-dune area (Smith et al 1990).	Id (species at geographic range limit): VERY HIGH Ie (high species diversity):VERY HIGH Ig (REs show distinct variation in species composition):VERY HIGH Ij (significant breeding or roosting sites):VERY HIGH
gup_fa_02	Breeding area for southern population of golden-shouldered parrot 	State	Breeding area for disjunct southern population of golden-shouldered parrot *Psephotus chrysopterygius* (Garnett and Crowley 2002; Preece et al 2009). Need rocky country to act as refugia. Grasses on harder lateritic areas adjacent to this site appear critical as a seasonal food resource. Area also forms part of the Staaten River Important Bird Area with populations of Australian bustard *Ardeotis australis* and bush stone-curlew *Burhinus grallarius*, and a diversity of northern savannah birds, e.g. varied lorikeet *Psitteuteles versicolor*, yellow-tinted honeyeater *Ptilotula flavescens*, banded honeyeater *Cissomela pectoralis* and masked finch *Poephila personata* (Dutson et al 2009).	Ib (wildlife refugia): VERY HIGH Ic (disjunct populations):VERY HIGH Ij (significant breeding or roosting sites):VERY HIGH

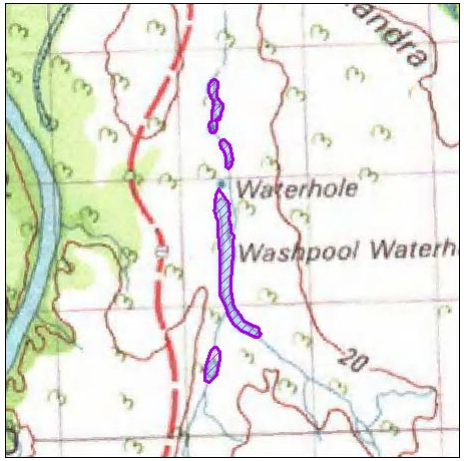
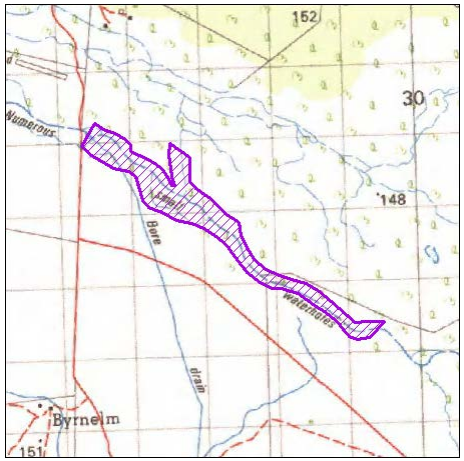
Decision number	Description	Panel recommended significance	Identified values in BPA	Criteria values
03	Wellesley Islands. Implemented as landscape decision - gup_l_13	State	Significant stand of *Pisonia*, and turtle and bird rookeries (Walker 1991). Bountiful and Rocky islands listed as Important Bird Areas (Dutson et al 2009) with large breeding populations of crested tern *Thalasseus bergii* and roseate tern *Sterna dougallii*, and brown booby *Sula leucogaster* and lesser frigatebird *Fregata ariel* respectively. Also major nesting sites for green *Chelonia mydas* and flatback *Natator depressus* turtles (Limpus 2007a, b). Value Ig as High based on current knowledge of ecosystems. Relictual populations of mammals that used to be extensive on mainland. Acting like Arks for mainland species. Mammals are declining rapidly in many areas therefore if they're in these islands the populations may have greater resilience than the mainland ones. Similarities with Donors Plateau, but there are some unusual landscapes and they are slightly more humid and vegetation is slightly different. Note the role of flood processes compared to arid islands of WA. Flooding in Gulf provides the opportunity for exotic species to colonise the Gulf islands that is not present in WA. Frogs on islands are Gulf Plains species rather than NWH ones but data are limited.	Ib (wildlife refugia): VERY HIGH Ic (disjunct populations):VERY HIGH Ie (high species diversity):VERY HIGH Ig (REs show distinct variation in species composition):HIGH Ij (significant breeding or roosting sites):VERY HIGH
gup_fa_04	Sandstone uplands in Holroyd Plain/Red Plateau and Gilberton Plateau subregions	State	Resource areas for birds that are declining across much of their range. Important for seed eating birds in wet season, e.g. Gouldian finch *Erythrura gouldiae*. Frogs and Mertens' water monitor *Varanus mertensi* around springs. North West Highland outlier species have been recorded here. High ecosystem diversity including springs, rock pavements and heathlands. High numbers of hollow bearing trees provide habitat for arboreal mammals, e.g. squirrel glider *Petaurus norfolcensis*. Fire refugia for full suite of species flora & fauna. Spinifex on rocky country very valuable and broken areas provides fire refuge for both small mammals and reptiles. Some canyons act as fire funnels, may lead to very hot late season fires. Part of the sandstone tablelands non-riverine special feature (gi_nr_ec_12) identified in southern Gulf of Carpentaria ACA	Ib (wildlife refugia): VERY HIGH Ic (disjunct populations):VERY HIGH Id (species at geographic range limit): HIGH Ig (REs show distinct variation in species composition):VERY HIGH Ii (high density of hollow-bearing habitat trees):VERY HIGH Ij (significant breeding or

Decision number	Description	Panel recommended significance	Identified values in BPA	Criteria values
			(Rollason and Howell 2010).	roosting sites): HIGH
gup_fa_05	Bauhinia woodlands 	Regional	Seasonally important for nectarivores (honeyeaters, white-browed woodswallows *Artamus supercilious*, white-winged trillers *Lalage sueurii* and varied lorikeets *Psitteuteles versicolor*) (Richard Johnson in lit). Important for honeyeater diversity given relatively high fertility and productivity with shallow sands over shales. Bauhinia woodland on alluvium may be at risk given possible future development of agriculture in the region (Richard Johnson in lit).	Ib (wildlife refugia): HIGH Ie (high species diversity): HIGH Ig (REs show distinct variation in species composition): HIGH
06	Chudleigh Plateau Implemented as landscape decision - gup_l_32	State	Geographic isolates. Disjunct species. Species at limits of ranges. See Chudleigh decision in Einasleigh Uplands BPA (eiu_fa_17, DERM 2009). Taller forest that drops in height rapidly from east to west. High density of greater gliders and significant for other arboreal mammals. Three skinks and one snake recorded here that	Ib (wildlife refugia): VERY HIGH Ic (disjunct populations): VERY HIGH Id (species at geographic range limit):VERY HIGH

Decision number	Description	Panel recommended significance	Identified values in BPA	Criteria values
			should be in the desert - disjunct populations. Brown bandicoots *Isoodon macrurus* also recorded here.	Ie (high species diversity): VERY HIGH Ig (REs show distinct variation in species composition):VERY HIGH Ii (high density of hollow-bearing habitat trees):VERY HIGH Ij (significant breeding or roosting sites):VERY HIGH
gup_fa_07	Gregory Range poison bush paddocks 	State	Refuge from grazing. Back paddocks that have been fenced out and not used due to the occurrence of poison bush.	Ib (wildlife refugia): VERY HIGH Ie (high species diversity): VERY HIGH Ig (REs show distinct variation in species composition): VERY HIGH
gup_fa_08	Permanent western watercourses and associated riparian areas	State	Refugia, high density of hollow bearing trees. Supports freshwater sawfish *Pristis pristis*, purple-crowned fairy-wrens *Malurus coronatus*, buff sided robins *Poecilodryas cerviniventris*, pictorella mannikin *Heteromunia pectoralis*, crimson finches *Neochmia phaeton*, barking owl *Ninox connivens* and red goshawk *Erythrotriorchis radiatus*	Ib (wildlife refugia): HIGH Id (species at geographic range limit): HIGH Ii (high density of hollow-bearing habitat trees):VERY HIGH

Decision number	Description	Panel recommended significance	Identified values in BPA	Criteria values
			(Macgillivray 1914; Rowley 1993; Peverell 2005). Significant populations of endangered Gulf snapping turtle *Elseya lavarackorum* (Lawnhill Creek and Gregory River catchments - Freeman 2010). The Gregory and Nicholson rivers, including Beames Brook, contain a disjunct population of northern saratoga *Scleropages jardinii* (Hogan and Vallance 2005). Also overlaps with two DIWA sites - Lawn Hill Gorge (pristine wetland with permanent deep water, refuge for diverse and distinctive biota including threatened taxa) and Gregory River (largest perennial river in arid/semi-arid Queensland) which are spread between the Gulf Plains and adjoining bioregions (Blackman 2001).	Ij (significant breeding or roosting sites):VERY HIGH
09	Western dunes and swales Implemented as landscape decision - gup_l_01	State	Dunes and swales, highly variable landform, seasonal swamps, lagoons, complex wetlands. Habitat for turtles, beach thick-knees *Burhinus grallarius*, large pelican *Pelecanus conspicillatus* populations, magpie geese *Anseranas semipalmata* and breeding black-neck storks *Ephippiorhynchus asiaticus*. Migratory wader aggregation (Garnett and Taplin 1990; Driscoll 2001). High turtle nesting (greens *Chelonia mydas*) from about Massacre Inlet to NT border.	Ib (wildlife refugia): VERY HIGH Ie (high species diversity): VERY HIGH Ig (REs show distinct variation in species composition): HIGH Ij (significant breeding or roosting sites):VERY HIGH
10	Paradise Swamp. Implemented as landscape decision - gup_l_15	State	Large seasonal wetland augmented by excavation. Habitat for waterbirds and frogs. See also gup_fl_13. This is a good example of wetlands on a lateritic surface. Sedges could be interesting or significant.	Ie (high species diversity): VERY HIGH Ig (REs show distinct variation in species composition):VERY HIGH
gup_fa_11	Significant bird and turtle rookeries	State	Egrets *Egretta* spp., ibis *Threskiornis* spp., spoonbills *Platalea*	Ij (significant breeding or

Decision number	Description	Panel recommended significance	Identified values in BPA	Criteria values
			spp., cormorants *Phalacrocorax* spp. and herons *Ardea* spp. recorded in major rookeries. Significant sites of colonially nesting waterbirds (up to 10,000 pairs), all of which are considered of international importance (Criterion 4 under Ramsar, with two sites also meeting Criterion 6) (Jaensch and Richardson 2013). Further survey work undertaken in western part of bioregion. Major threat from altered river flow/flooding due to proposed development (dams, reservoirs and irrigation schemes - Jaensch and Richardson 2013). Generally little turtle nesting on mainland in southern part of Gulf of Carpentaria (Living Planet Analysis 1993) with significant rookeries of green *Chelodina mydas* and flatback *Natator depressus* confined to islands in the Wellesley Group (Limpus 2007a, b).	roosting sites):VERY HIGH
12	Offshore intertidal flats Implemented as landscape decisions - gup_l_01; gup_l_02; gup_l_03.	State	Key resources areas for waders (Driscoll 2001). Presence of inshore cetaceans, sea snakes and dugongs *Dugong dugon* and nursery area for a range of fish and crustaceans with commercial and recreational values (Living Planet Analysis 1993). More appropriately dealt with under estuarine Aquatic Conservation Assessment. Would include estuarine special feature (nn_e_fa_02) identified in southern Gulf of Carpentaria ACA (Rollason and Howell 2010).	Ib (wildlife refugia): HIGH Ie (high species diversity):VERY HIGH Ij (significant breeding or roosting sites):VERY HIGH
13	Marine plains between Karumba and Moonlight Creek Implemented as landscape decisions - gup_l_02	State	Dry season refuge waterbirds (Blackman 2001; Driscoll 2001), and critical roost areas for waders (Driscoll 2001). Major concentrations of little curlew *Numenius minutus* recorded on plains and presence of major waterbird rookeries along channels (Garnett 1989; Jaensch and Richardson 2013, 2014).	Ib (wildlife refugia): VERY HIGH Id (species at geographic range limit): HIGH Ie (high species diversity): VERY HIGH Ig (REs show distinct variation in species composition):VERY HIGH

Decision number	Description	Panel recommended significance	Identified values in BPA	Criteria values
gup_fa_14	Washpool Waterhole 	Regional	Large concentration of estuarine crocodiles *Crocodylus porosus* (Hogan and Vallance 2005). For general area, historical records of black-necked stork *Ephippiorhynchus asiaticus*, red goshawk *Erythrotriorchis radiatus*, Gouldian finch *Erythrura gouldiae* and pictorella mannikin *Heteromunia pectoralis* (Birdlife Australia Atlas data).	Ib (wildlife refugia): HIGH Ij (significant breeding or roosting sites): HIGH
gup_fa_15	"Croc Hole", Saxby River 	Regional	One of the last major waterholes with freshwater crocodiles *Crocodylus johnstoni* in the area. On Bunda Bunda property, on an anabranch of the Saxby River.	Ib (wildlife refugia): HIGH

3.3 Data collection

Data collection has not been spatially uniform with regards to species records. Many areas are undersurveyed relative to areas with high densities of records and known values. Poorly sampled areas can be identified relatively easily using species record datasets. Areas such as roads are clearly more heavily sampled, while ranges and escarpments and interior parts of major floodplain wetland systems are underrepresented and should be the focus of future survey effort. Access to private lands may be more achievable in the future by forming joint projects with the Northern and Southern Gulf NRM Groups.

3.4 Data access and conditions

The public will be able to access the information contained in the BPA on the Queensland Government Spatial Catalogue website at http://qldspatial.information.qld.gov.au. Specific details for point records will not be included, thus end users will need to seek further advice from EHP when this detail is required.

4 Summary

Several matters were raised by the panel in relation to the fauna of the Gulf Plains bioregion.

First, there was a major concern over the lack of data/survey effort. The nature of the bioregion – remote, largely inaccessible (especially during the wet season) and general low interest from naturalists (both government and private); meant that records are largely confined to a few main roads and iconic locations, e.g. Karumba, Lawn Hill gorge and major river crossings. Recently there has been some increase in survey activity (NRM groups, local indigenous communities and EIS associated with mining development). It should be noted that there is an unexplained reticence by some groups to actually provide data for assessments like the BPA while others do so willingly.

Given the above constraint some panel members had reservations about a value-based assessment; primarily the unwitting interpretation of an absence of a record equating to an absence of biodiversity value. This is partly overcome through the landscape criteria in the BPA methodology, e.g. regional ecosystem diversity. An alternative proposed included using faunal communities that include the common taxa, in conjunction with the use of regional ecosystems, and the mapping of threatening processes. However, data availability especially for the latter is just as problematic as that for individual taxa.

Second, even with only limited information available there is some concern that ‘common’ taxa, e.g. common brushtail possum *Trichosurus vulpecula*, are either naturally uncommon or declining in the bioregion. Proper assessment within GUP is difficult given the first point discussed above. However, this pattern would be consistent with other findings across the otherwise intact landscape of northern Australia, particularly in regards to granivorous birds (Franklin et al 2005) and small native mammals both terrestrial and arboreal (Kerle et al 1992, Fitzsimmons et al 2010, Woinarski et al 2010).

Third, Keith McDonald identified that eastern (Woondoola Plains) and western (Armraynald Plains) areas of the bioregion have similar suites of frogs. The Donors Plateau forms a natural barrier between them and has a different complement of frogs. The burrowing & treefrogs are split by clay plains. A lack of toads on clay plains during big rains has been noted. It is not clear if this is a pattern, but it has been observed on multiple occasions.

Last, although time constraints meant little attention could be given to the possible implications of climate change by the panel it was intimated that historical changes in climate had not greatly affected the fauna. In recent years the region has suffered alternate periods of severe dry and wet droughts (the latter caused by prolonged inundation killing off grasses across the plains). The absence of any monitoring means the impact of these events on the fauna is unknown.

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Appendix 1 Acronyms and Abbreviations

ACA	Aquatic Conservation Assessment
BAMM	Biodiversity Assessment and Mapping Methodology
BPA	Biodiversity Planning Assessment
BVG	Broad Vegetation Group
CAMBA	China-Australia Migratory Bird Agreement
CORVEG	The site survey database maintained by the Queensland Herbarium
DCDB	Digital Cadastral Database—a spatial database of Queensland property boundaries.
DERM	Department of Environment and Resource Management (former Queensland Government department)
DIWA	Directory of Important Wetlands Australia
EHP	Department of Environment and Heritage Protection
EVNT	Endangered, vulnerable or near threatened under the Queensland *Nature Conservation Act 1992* and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999.*
EPA	Environmental Protection Agency (former Queensland Government department)
EPBC	*Environmental Protection and Biodiversity Conservation Act 1999*
GAB	Great Artesian Basin
GCDI	Ground Cover Disturbance Index
GIS	Geographic information system
GUP	Gulf Plains bioregion—a bioregion within the Interim Biogeographic Regionalisation for Australia (IBRA) framework
HERBRECS	Specimen based register of plants held by Queensland Herbarium
JAMBA	Japan-Australia Migratory Bird Agreement
NCA	*Nature Conservation Act 1992*
NPRSR	Department of National Parks, Recreation, Sport and Racing
QPWS	Queensland Parks and Wildlife Service (an agency within Department of National Parks, Recreation, Sport and Racing)
RE	Regional ecosystem
REDD	Regional Ecosystems Description Database
ROKAMBA	Republic of Korea-Australia Migratory Bird Agreement
SDRN	State Digital Road Network

SLATS	State-wide Landcover and Trees Study
WARLUS	Western Arid Region Land Use Study
WILDNET	Department of Science, Information Technology, Innovation and the Arts (DSITIA)'s corporate wildlife application containing records and other information on Queensland flora and fauna

Appendix 2 Datasets available to the expert panel during the workshop

GIS

Geographic data

Catchment boundaries

Contours (10m interval)

Topographic maps (1:100 000).

Cadastral, government and locational data

Cadastral data (DCDB) for GUP study area local government areas

Local government boundaries

Pastoral holdings database

Places

Towns

State Digital Road Network (SDRN)

Stockroutes.

Vegetation

Regional Ecosystem Description Database (REDD)

Draft pre-clearing vegetation

Draft remnant (RE07) RE mapping

Certified updates to remnant mapping.

Species

All fauna species records were obtained from Queensland Historical Fauna database. Flora species records were obtained from Herbrecs, WildNet and Corveg databases

BriMapper (Herbrecs species records viewer).

Wetlands

Queensland Wetland Mapping

Directory of Important Wetlands

Drainage network—rivers

Drainage network—creeks.

Biodiversity Planning Assessment data

Queensland bioregion and subregion boundaries

Terrestrial and riparian state bioregional corridors

Results from MGD bioregion BPA v1.1.

Results from EIU bioregion BPA v1.1.

Protected areas

EPA estates

Nature refuges

Coordinated conservation areas.

Imagery

2009 Landsat mosaic of the GUP bioregion

SPOT imagery (10 metres).

Documents available electronically

EPA (2002) Biodiversity Assessment and Mapping Methodology version 2.1 July 2002.

Hard copy maps

Landsat 7 mosaic of GUP bioregion

GUP bioregions and subregions (Queensland).