



PROFILE FOR MANAGEMENT OF THE HABITATS AND RELATED ECOLOGICAL AND CULTURAL RESOURCE VALUES OF **PORUMA ISLAND**

January 2013

Prepared by 3D Environmental for
Torres Strait Regional Authority Land & Sea Management Unit



Australian Government



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EXECUTIVE SUMMARY

Poruma Island is located approximately 110km north-east of Thursday Island, Queensland. The island is part of the Central Island Group, a geologically diverse group of small islands that also include the inhabited islands of Masig (Yorke), Warraber (Sue), and Lama (Yam) and numerous uninhabited islands the largest being Sassie, Gebbar and Naghir (Mt Ernest). The Central Island group includes sand cays on coral platforms, mangrove islands, and islands formed on igneous basement rock. Poruma is a sand cay formed with calcareous sand which has accumulated atop a coral platform. It features a well developed aeolian dune system which is unique to the coral cay islands of Torres Strait.

The islands vegetation cover has been impacted over time by disturbance regimes associated human occupation and settlement. Major impacts to the island have been the clearing of vegetation for settlement and infrastructure such as the airstrip, the garbage disposal area and water storage. There are also likely to have been historical impacts to vegetation on the island associated with timber harvesting for industry.

The present vegetation cover is simple and limited to a single natural 'vine thicket' vegetation community, and a coastal dune complex which comprises dune grassland/herbland, and coastal shrublands. The total known flora comprises 180 species (66 families and 131 genera). There are 117 native species (65%) and 63 (35%) which are naturalised. No species listed as threatened at the federal and state level are known to occur. Two species are assigned regional significance and 58 are culturally significant.

Poruma is one of the most intensively surveyed islands for fauna in the broader Torres Strait Island group per unit area. A review of available desktop resources identified 66 fauna species that have been reported for the island. This includes one frog, eight reptile, 54 bird and three mammal species. This can be compared with the 384 terrestrial fauna species that have been reported for the broader Torres Strait Island group. Of the animals reported for the island, four bird species are listed as threatened under state legislation, 23 species are migratory, and one bird and one mammal species are introduced.

Within the four broad vegetation groups (or management units) identified on the island, a number of issues for future management are identified. Addressing these issues is necessary for the future biodiversity maintenance and ecological health of the island. They are:

- Monitoring for the introduction and spread of a number of exotic species, both fauna and flora, throughout the island landscape.
- Identification of weed infestations and preparation of a weed management plan.

- A requirement for further survey work to document the faunal assemblage on the island, particularly in relation to habitats for threatened and migratory bird species.
- Continued collection of floristic information, specifically those plants with cultural and biodiversity significance.
- Further survey and documentation of the cultural landscape on the island.
- Baseline vegetation mapping, flora and fauna surveys on the numerous smaller coral cay islands and islets which occur within the Poruma area.

It is important that any future surveys on Poruma be undertaken in collaboration with the Poruma people and include study of traditional ecological knowledge and ethnotaxonomy. Furthermore all mapping and assessment work must comply with Poruma research protocols (to be finalised), must be approved by the Porumagal (Torres Strait Islanders) Corporation, and involve and be guided by the Porumagal Rangers.

ACKNOWLEDGEMENTS

The project has been funded by the Land and Sea Management Unit of the Torres Strait Regional Authority. Our thanks are extended for the support and guidance of Tony O’Keeffe, Karen Evans and George Saveka of TSRA who administered the project and provided valuable input throughout. 3D Environmental also wish to acknowledge all Poruma Elders and thank the Porumalgal (Torres Strait Islanders) Corporation for their access to the land. Appreciation is also given to the Porumalgal Rangers Kevin Levi and Joseph David and TSRA Ranger Supervisor Shaun Skerritt for assistance in the field.

Initial fauna information and text provided for other Torres Strait Islands by Terry Reis was adapted for the purpose of this report and his provision of raw data and preparation of species profiles is greatly appreciated. Staff of the Queensland Herbarium assisted with identification of plant specimens and provided advice on the ecology and distribution of significant species. Barbara Waterhouse and Steven McKenna of the Department of Agriculture, Forestry and Fisheries provided valuable information on the occurrence and distribution of weeds.

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1.0 Introduction

Poruma, also known as Coconut Island, is one of 6 inhabited islands selected in a secondary phase of assessment for development of a biodiversity management profile. This document represents a summary of current ecological knowledge for the island. It aims to identify the biodiversity features, landscape processes, and cultural values that are intrinsic to the island, and provides preliminary management actions to assist preservation of these values into the future. The document also seeks to identify at a preliminary level those sites and landscape features of specific cultural importance to the Poruma people. The specific management recommendations detailed within this profile will form the basis for more detailed work plans to guide the land based operations of the ranger program.

1.1 Cultural Setting

The population of Poruma consists of 166 people (2006 census). Land tenure is DOGIT (Deed of Grant in Trust) and the Registered Native Title Body Corporate¹ (RNTBC or PBC in shortened form) is the Porumalgal (Torres Strait Islanders) Corporation who hold the title of the land on behalf of the Traditional Owners.

The Poruma people's ownership of Poruma, Uttu and Yarpar Islands in the Torres Strait was recognised in two native title determinations: the *Porumalgal Poruma People* determination and the *Yarpar & Uttu* determination. In addition, the Porumalgal (Torres Strait Islanders) Corporation also administers two Indigenous Land Use Agreements between the Poruma people, Ergon Energy and Telstra, respectively (Native Title Research Unit, 2012).

The local dialect is Kulkalgau Ya. Native title was granted to the Poruma people on 7 July 2000.

1.2 Geographic Setting

Poruma Island is located approximately 110km north-east of Thursday Island (see **Figure 1**). Poruma is part of the Central Island Group, a geologically diverse group of small islands that also include the inhabited islands of Masig (Yorke), Warraber (Sue), and Iama (Yam) Islands and the uninhabited Sassie, Gebbar, and Naghir (Mt Ernest) Islands. The Central Island Group includes numerous other small uninhabited islands in the form of sand cays on coral platforms, mangrove islands, and islands formed on igneous basement rock.

The island has a total land area of 38ha and is approximately 1.4km long. It is elongated to the east / west and is 400m at its widest point. The island is elevated to 5-7m above local mean sea level with a dune formation on the southern side of the island rising to 12m (RPS 2010a). The village is located on the western end of the airstrip, separated from the unpopulated eastern

¹ Registered Native Title Body Corporate – the organisation that is recognised as holding native title in trust for the benefit of the native title holders. It contacts native title holders and administers business between them and outsiders, such as government, industry and developers.

side by a diagonally placed airstrip. The mean annual rainfall of Poruma island is 1 498 mm (BOM 2008a), compared to Badu which at 1 983mm is the wettest recording station in the Torres Strait Islands (BOM 2008b), and Dauan at 1 082mm which is the driest.

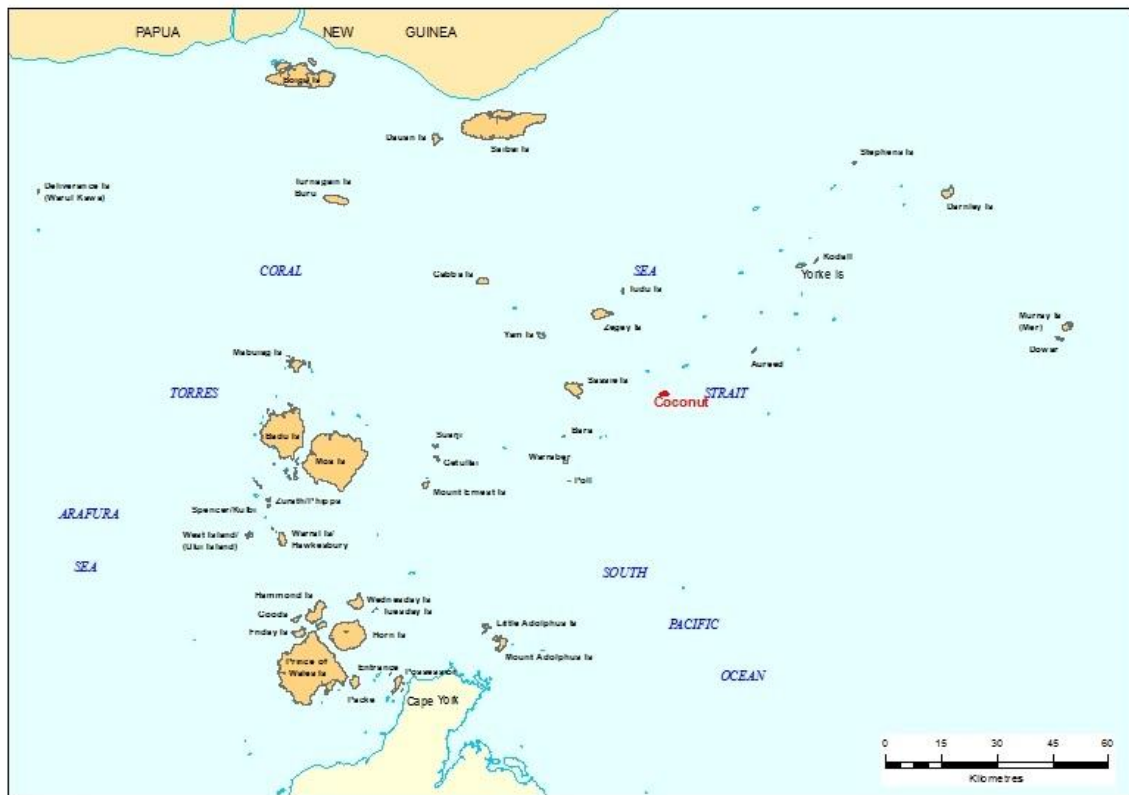


Figure 1. Location of Poruma (Coconut) Island

1.3 Geological Context

Poruma is typical of a number of islands in the Central Island Group, being a sand cay formed by calcareous sand which has accumulated atop a coral platform. It does however possess some unique landform features that have not been observed on other Torres Strait Island sand cays. The island sand cays of the Torres Strait are in general very low lying and not more than 6m high (Willmott 1972) although Poruma features a well developed dune system on its south eastern side which reportedly rises to a height of 12m (RPS, 2010a). The dune system presents well developed aeolian features including an elevated foredune crest which parallels the south-eastern coastline and an irregular deflation swale (blowout) immediately landward of the crest. The aeolian dunes overlie a well developed beach-rock platform which is exposed as a broad apron, particularly on the islands south-east facing coastline. The beach rock platform acts as a ramp for transgressing sand particles, enabling sufficient velocity for sand to be blown up and over the foredune crest.

In contrast to the continental and volcanic islands, the sand cays are relatively dynamic, shaped by prevailing tidal currents and subject to shifting shorelines in response to extreme weather events. The island is situated at the north-west end of a large reef flat with the surrounding reef providing some protection from incoming waves especially in the north-west season (Mulrennan 1992, Leary & David 1994). Nevertheless, being low lying and without the foundation of continental basement rock, Poruma is exposed to erosion caused by storm surges and tides, extreme tidal events and the incipient impacts of long term sea level rise. Numerous attempts have been made to stabilise erosion around the foreshore of Poruma although none has been particularly successful. The dumping of a number of tractor tyres on the beach front of the islands south-east coast has facilitated sand build up in that particular location. It has however been at the expense of the foreshore on the islands south-west which has been subsequently starved of sand and is undergoing substantial erosion and retreat.



Photograph 1. The foredune crest on the south-east coast of Poruma with beach rock horizon exposed.

2.0 Methods

This document provides a compendium of information that has been compiled from a range of data sources. It includes information from previous surveys relevant to flora, fauna and to a lesser extent cultural heritage matters. Literature resources utilised include but are not limited to:

- Vegetation Communities and Regional Ecosystems of the Torres Strait Islands (Stanton *et al.* 2009).
- Queensland Herbarium's Herbrecks Database.
- Queensland Museum fauna record extracts.
- Birds Australia database extract.
- Wildnet database extracts (DERM 2010a to 2010g).
- Land Use Management Plan for Poruma Island (RPS 2010a).
- The Poruma Environmental Report (RPS, 2010b).
- Various technical papers relating to both flora and fauna (see references section).

A preliminary desktop report was prepared prior to a two day field visit completed in May 2012. With the involvement and support of the TSRA land team and island rangers, the field team traversed the island enabling vegetation mapping to be ground truthed, flora lists to be updated, important habitats, plants and animal species to be surveyed, and management issues to be identified. This process facilitated a two-way information and learning exchange between rangers, TSRA and the research team, and included a formal meeting with the PBC community members and Torres Strait Island Regional Council (TSIRC) representatives.

3.0 Aims and Objectives

The aim of this document is to compile existing information relating to:

1. The extent, values and condition of island habitats and the plants and animals which occur in them.
2. Island-scale ecological processes, that is, the environmental and human factors which are influencing habitats, plants and animals.
3. The cultural interactions with these processes, that is, the ways that Poruma people interact with the natural environment including identification of values.
4. The establishment of a list of management actions and priorities intended to be used by island rangers and managers to assist in updating Land and Sea Ranger Work Plans and to increase the effectiveness of the island's ecological and cultural value management.

Owing to the long term occupancy of the islands (>4 000 years) (McNiven & Wright 2008), the apparent stability of the majority of landscapes, and general lack of detailed ecological information pertaining to these landscapes, it is assumed that maintaining the existing landscape condition and process (in all but a few cases) is the safest management option. Habitat maintenance has therefore been a primary consideration during the compilation of this document. The specific actions that are adopted and direction of island-scale ecological management will however be ultimately up to the discretion of the Porumalgal Rangers and the Poruma people, who are represented by their registered native title body corporate, the Porumalgal (Torres Strait Islanders) Corporation.

4.0 Legislative and Policy Considerations

Biodiversity (plants, animals and their habitats) is regulated at state and national levels by a range of legislative mechanisms which classify animal species, plant species and habitats according to their rarity, population size, distribution and threats. The legislative classification is used by western science as a way to assign significance to a particular species or ecological value. If an animal, plant or vegetation type is listed on any Australian or Queensland government legislation, it is subject to rules which protect it from being destroyed or harmed.

For example, if a certain orchid species is listed on the legislation it would mean that the orchid could not be collected from the bush and sold at a nursery without the necessary authorisation and permits. Similarly, if an animal such as a bat species or bat colony, which was listed as threatened under legislation, lived in a rock shelter where a housing development was proposed, then detailed studies and assessments would be required to determine how the bats would be affected by the development. A description of relevant components of the major legislation mechanisms requiring consideration is provided briefly below.

Nature Conservation Act 1992: *The Nature Conservation Act (NC Act)* is a legislative mechanism of the Queensland Government that is regulated by the Department of Environment and Heritage Protection (EHP, formerly DERM). The *Nature Conservation (Wildlife) Regulation 2006* is subordinate to the NC Act and defines five classes that are:

- Extinct in the Wild.
- Endangered.
- Vulnerable.
- Near-Threatened.
- Least Concern.

These classes collectively relate to native species that are protected wildlife (plants and animals).

Vegetation Management Act: *The Vegetation Management Act 1999 (VMA)* is a state regulated planning initiative that underpins the regional management of vegetation in Queensland. Under the VMA, conservation significance to particular vegetation groups termed regional ecosystems (REs) is assigned on a consistent state-wide basis. The classification of regional ecosystems is based on a hierarchical system with a three-part code defining bioregion, followed by land zone, and then vegetation. Thirteen bioregions are classified in Queensland with the Torres Strait Islands being a sub-province of the Cape York Peninsula bioregion.

Land zones are geological and geomorphic categories that describe the major geologies and landforms of Queensland. The system is based primarily on geology, with geologic age considered an important determinant. The classification of land zone generally utilises available geological information (Neldner *et al.* 2005) although field inspection is utilised as a supplementary measure where geological mapping is inadequate.

The status of REs is based on their pre-clearing and remnant extent, and is gazetted under the VMA and listed in the Regional Ecosystem Description Database (REDD) maintained by EHP. The Vegetation Management Status (VMS) of a regional ecosystem is described in line with the following criteria:

Endangered regional ecosystem: a regional ecosystem that is prescribed under a regulation and has either:

- Less than 10% of its pre-clearing extent remaining, or
- 10% to 30% of its pre-clearing extent remaining and the remnant vegetation remaining is less than 10 000 hectares (ha).

Of Concern regional ecosystem: means a regional ecosystem that is prescribed under a regulation and has either:

- 10% to 30% of its pre-clearing extent remaining, or
- More than 30% of its pre-clearing extent remaining and the remnant vegetation remaining is less than 10 000 ha.

Least Concern regional ecosystem: means a regional ecosystem that is prescribed under a regulation and has more than 30% of its pre-clearing extent remaining and the remnant vegetation remaining is more than 10 000 ha.

Hence, vegetation scheduled under the VMA as 'Of Concern' on Poruma (i.e. evergreen notophyll vine forest habitat RE3.2.38) is classified as such because, on a regional level (Cape York Peninsula), more than 30% of the original habitat extent remains, although the total area of the habitat is less than 10 000 ha.

The regional ecosystem mapping available for Poruma provides accurate information on the legislative significance of vegetation on the island offering an information planning resource for the Poruma community, the TSIRC and the TSRA. For example, if a sewerage plant was proposed in an area which supported a regional ecosystem (vegetation type) that was considered 'Of Concern', then clearing of this vegetation without authorisation is in breach of the VMA. Liaison with regulators (EHP) must be undertaken to determine the conditions that must be met for clearing to be authorised. EHP also assigns a Biodiversity Status (BS) to REs, a non-statutory indicator of a regional ecosystems susceptibility to elements of degradation.

Land Protection (Pest and Stock Route Management) Act 2002: The *Land Protection (Pest and Stock Route Management) Act 2002* (LP Act) provides a framework and powers for improved management of weeds, pest animals and the stock route network in Queensland. The act provides for designation of threat classes to species of plant and animal considered not native to Queensland (exotic or invasive) and which degrade natural resources, threaten conservation of biodiversity, threaten remnant vegetation, reduce rural production and interfere with human health and recreational activities. Exotic species that pose a threat are declared under one of the following three categories:

- **Class 1 Pest:** a pest that has potential to become a very serious pest in Queensland in the future.
- **Class 2 Pest:** a pest that has already spread over substantial areas of Queensland, but its impact is considered sufficiently serious to warrant control.

- **Class 3 Pest:** a pest that is commonly established in parts of Queensland but its control by landholders is not warranted unless the plant is impacting, or has potential to impact on a nearby environmentally sensitive area.

For example, the Class 3 weed lantana (*Lantana camara*) is present on Poruma and there is a requirement under the act for landowners to take reasonable steps to control and manage the weed.

Weeds of National Significance (WONS): Classification of pest plants as WONS is made at the national level and is not supported by any legislation. The determination of WONS is a system which prioritises weed problems for national action as part of the National Weeds Strategy. In addition to ranking the top 20 weeds in terms of impact to productivity and landscape, it provides indicators on which to base future weed decision-making and a framework for prioritising weeds at the State, regional and local levels (Thorp & Lynch 2000).

The Back on Track Species Prioritisation Framework: The 'Back on Track (BOT) species prioritisation framework' is a non-legislative Queensland Government initiative that prioritises Queensland's native species as a means to guide their conservation, management and recovery. The assessment method utilises multiple criteria allowing identification of those species that are threatened and facing population declines, and those species that have a high potential for recovery. The BOT methodology classifies four priority levels for action to remediate declining Queensland wildlife being 'Critical Priority (CR)', 'High Priority (H)', 'Medium Priority (M)' and 'Low Priority (L)'.

The Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act): The EPBC Act, an initiative of the Australian Government, provides recognition of four classes of wildlife and habitat being those which are:

- Extinct in the Wild.
- Critically Endangered.
- Endangered.
- Vulnerable.

Plant and animal species and habitats scheduled under these categories are referred to collectively as 'Threatened Wildlife'. The EPBC Act also provides for protection of those species which are considered migratory under international conventions which include:

- Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention).
- China-Australia Migratory Bird Agreement (CAMBA).
- Japan-Australia Migratory Bird Agreement (JAMBA), and
- Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA).

Interference or destruction of plants, animals or areas of habitat for species listed as threatened under the EPBC Act requires specific authorisation from the Department of Sustainability,

Environment, Water, Population and Communities (DSEWPC) who are likely to provide conditions under which the interference can take place. Interference (such as killing of a protected bird species) without authorisation is in breach of the EPBC Act.

5.0 Vegetation

As described in the following sections, the classification of vegetation includes both nomenclature of individual species and the classification of groups of plants, the latter often forming unique assemblages that can be consistently recognised across islands (e.g. Poruma), island groups (Central Island Group), or bioregions (Cape York Peninsula Bioregion).

5.1 Vegetation Groups and Mapping

The hierarchy of vegetation classification used in the Torres Strait Islands is described below with relationships illustrated in **Figure 2**. At the highest level, the classification of plant assemblages is based on vegetation structure considering the dominant life form (tree or grass), height of the tallest strata, and canopy closure (cover). The structural classification used by the Queensland Government is included within **Appendix B**.

Vegetation structural groupings (i.e. shrubland, woodland etc.) are used to define **Broad Vegetation Groups** (BVGs), and these provide the broadest level of vegetation classification recognised in vegetation mapping produced for the Torres Strait Islands (Stanton *et al.* 2009). BVGs may be an amalgamation of a number of more specific plant groupings known as **Vegetation Communities**. Vegetation communities (VCs) can be described as ‘a unit of vegetation that demonstrates similarities in both structure and floristic composition’. VCs are useful to describe fine scale variation in floristic composition that may occur due to the consistent dominance of a particular plant species or suite of plant species.

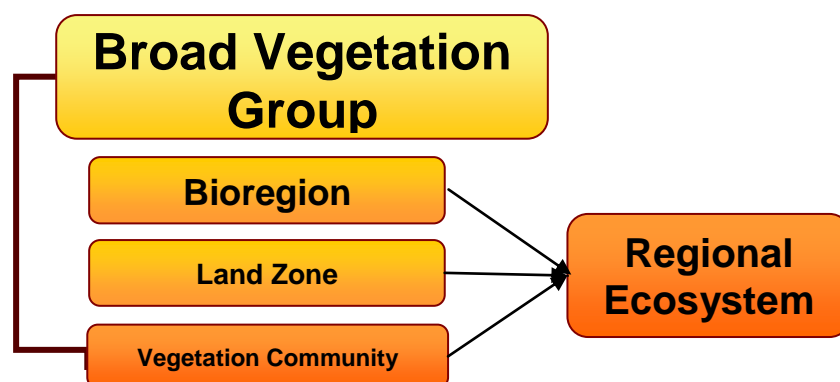


Figure 2. Diagrammatic illustration of the hierarchy and relationship between components of the vegetation classification system used in the Torres Strait Island vegetation mapping study (Stanton *et al.* 2009).

REs comprise a group of vegetation communities, although unlike BVGs, consider regional distribution and geology within the classification. Whilst REs must be considered in vegetation management planning due to their legislative implications, BVGs provide a more readily usable

management grouping and have been used to define habitat management units in this document.

Vegetation Classification on Poruma

For management purposes, the islands vegetation is classified into broad vegetation groups (BVGs), herein referred to as habitats, and are derived from Stanton *et al.* (2009). The spatial extent and relative contribution of these groupings is provided in **Table 1**, with descriptions of component vegetation communities and associated regional ecosystems in **Table 2**. Further characterisation of habitat types is provided in the following text.

Table 1. Broad vegetation groups and relative contributions to island vegetation.

Broad Vegetation Group/ Habitat**	Component Vegetation Communities**	Area (ha)	Contribution (%)
Deciduous/Semi deciduous vine forest and vine thicket	2m	2.2	6%
Coastal dune complexes	16a, 17d, 14y, 17j	9	23%
Cleared land, plantation / regrowth and exotic species	CI, RE, EX	26.8	71%
Total		38	100

Table 2. Descriptions of component vegetation communities and association with regional ecosystems currently recognised on Poruma Island (from Stanton *et al.* 2009).

Vegetation Community	Description	Geological Association	Regional Ecosystem	VMS ²	BDS ³
2m	Semi-deciduous notophyll vine forest + <i>Millettia pinnata</i> + <i>Terminalia</i> spp. + <i>Diospyros maritima</i> + <i>Manilkara kauki</i> + <i>Aglaia elaeagnoidea</i> + <i>Pouteria obovata</i> + <i>Drypetes deplanchei</i> +/- <i>Erythrina</i> spp.	Calcareous sand	3.2.28	Of Concern	Of Concern
14y	Low <i>Premna serratifolia</i> + <i>Cordia subcordata</i> +/- <i>Pemphis acidula</i> +/- <i>Drypetes deplanchei</i> shrubland.	Foredune deposits	3.2.25	Of Concern	Of Concern
17d	Medium to tall <i>Mnesithea rottboellioides</i> + <i>Heteropogon triticeus</i> + <i>Cymbopogon</i> spp. +/- <i>Imperata cylindrica</i> +/- <i>Themeda triandra</i> grassland.	Coastal dunes and foredunes	3.2.24	Of Concern	Of Concern
17j	Low <i>Spinifex sericeus</i> + <i>Vigna marina</i> + <i>Ipomoea pes-caprae</i> subsp. <i>brasiliensis</i> + <i>Sesuvium portulacastrum</i> grassland and forbland complex.	Foredune deposits	3.2.24	Of Concern	Of Concern
CI	Cleared areas	Calcareous sand	Non-	Non-	Non-

² Vegetation Management Status

³ Biodiversity Status

Vegetation Community	Description	Geological Association	Regional Ecosystem	VMS ²	BDS ³
			remnant	remnant	remnant
Re	Regrowth vegetation / Plantation	Calcareous sand	Non-remnant	Non-remnant	Non-remnant
Ex	Exotic Species	Calcareous sand	Non-remnant	Non-remnant	Non-remnant

OC = 'Of Concern' Regional Ecosystem; LC = 'Least Concern' Regional Ecosystem; End. = Regional Ecosystem with a Biodiversity Status that is 'Endangered'; NCAP = regional ecosystem with a Biodiversity Status that is considered to be 'No Concern at Present'

5.2 Flora Species

The composition of the Poruma flora has been compiled from analysis of Queensland Herbarium data (Herbrechts 2011), unpublished data from Barbara Waterhouse and Stephen McKenna of the Department of Agriculture, Forestry and Fisheries (DAFF), a report by Environmental Science and Services (1994), and a field survey carried out by 3D Environmental on the 19th and 20th May 2012 (refer **Appendix B**).

The 2012 field survey increased the known flora documented in the desktop study from 73 species (46 families and 64 genera), to 180 species (66 families and 131 genera). This comprises 117 native species (65%) and 63 (35%) which are naturalised. No species listed as threatened at the federal and state level are known to occur. Two species are assigned regional significance and 51 are culturally significant.

Dominant families (native species) are Poaceae (11 native), Fabaceae (7 native), Lamiaceae (5 native), Euphorbiaceae (4 native), Convolvulaceae (3 native). Of the 71 families, 11 are wholly represented by naturalised species.

5.2.1 Flora Species with Conservation Significance

An assessment of significant flora species draws on the data sources identified above. Species have been broadly categorised into significance categories (i.e. national, state, regional and cultural) based on criteria which include legislative status, keystone/focal, threatened or sensitive, restricted, otherwise noteworthy or of cultural interest value. Culturally significant species are assessed separately (refer **Sect. 5.2.2** and **Appendix C**). The species identified as having significance are summarised in **Table 3** below.

National Significance

No species listed on the EPBC Act are known to occur.

State Significance

No species listed on the amended regulations of the NC Act are known to occur.

Regional Significance

The classification of regional significance takes into account factors such as disjunct occurrence, endemism (at the bioregional, bioprovince, and island scales), limits of geographic distribution, and local rarity in the landscape. Two species are recognised for the island.

Chalmers aristolochia (*Aristolochia chalmersii*)

A slender vine inhabiting coastal vine forest/thicket and dune shrubland. The leaf blades are soft in texture, about 3.5-11 x 5-15 cm, with slender petioles about 3-8 cm long. Petioles are distinctly thickened and twisted near the base forming a type of tendril (Hyland *et al.* 2010). It is a bioregional endemic known from south eastern Cape York (Laura Basin including Cape Melville, Silver Plains, Coen), Lizard Island and Torres Strait (DERM 2011c). It is not common in Torres Strait, known from Mer, Masig, Pulu, and Poruma. The occurrence on Poruma is disjunct and represents part of its northern limits of distribution. The vine is a food plant for the larvae of the big greasy and Cairns birdwing butterflies (Hyland *et al.* 2010).



Photograph 2. Chalmers aristolochia (*Aristolochia chalmersii*) in vine forest on Poruma.

***Spermacoce* sp. (Lorim Point A. Morton AM1237)**

This currently undescribed perennial herb is known from northern Cape York Peninsula (near Somerset), Torres Strait (Badu, Mua, Dauan, Warraber, and Poruma), and Papua New Guinea (Mabadauan), (DERM 2011c). Poruma populations form part of its disjunct northern limit of distribution. It occurs on sandy soils supporting savanna woodland and coastal grasslands and shrublands (DERM 2011c). On Poruma it has been recorded from near the rubbish tip in grassland with shrubs. The population size is unknown.

Table 3. Summary of flora with conservation significance on Poruma.

Species	National EPBC	State NC Act	Regionally Significant	BVG	VC	RE
<i>Aristolochia chalmersii</i>	-	-	Northern limit and disjunct population. Host for larvae of big greasy and Cairns birdwing butterflies.	Deciduous/ Semi deciduous vine forest and vine thicket.	2m	3.2.28
<i>Spermacoce</i> sp. (Lorim Point A. Morton AM1237)	-	-	Undescribed and disjunct	Grassland/ forbland complex	17j	3.2.24

5.2.2 Flora with Cultural Significance

Information on useful plants of Poruma Island is currently being documented by the Land and Sea Ranger team. More detailed ethnobotanical studies to derive baseline information of useful plants and the local language names should include information on uses, seasonality, habitat, distribution, abundance, phenology, and most importantly the relationships to story and culture. Useful plant species recorded during the May 2012 field survey have been annotated in the species lists provided in **Appendix B & C**). The available information indicates 51 plant species (36% of the island flora) known from the island are culturally significant. Of these, 44 are native and seven are naturalised.

5.2.3 Introduced Plants

Information on weed species has been sourced from Queensland Herbarium voucher data (DERM 2001c), the land use planning report of Conics (2009), field data of Barbara Waterhouse and Stephen McKenna from DAFF, and field surveys by 3D Environmental in May 2012.

With reference to the flora list (**Appendix B**), there are 63 naturalised species currently known to occur on the island (35% of the total island flora). As for the majority of the inhabited islands in the Torres Strait, the developed and disturbed areas are a major dispersal point for weeds. Those species considered a current threat to biodiversity on the island and requiring management action are summarised below. Further surveys are required to determine the extent of impact and threats of individual weeds to the islands ecology.

One native species, the coastal wattle (*Acacia oraria*), is considered a potential introduction to the Poruma Island flora. The wattle is otherwise rare in Torres Strait with a record on aeolian dunes from Friday Island (DERM 2011c, Fell pers. obs. 2007) being the previously known northern limit of Australian distribution. It is also known from Timor and coastal parts of Cape York and far northern Queensland south to coastal central Queensland (Hyland *et al.* 2010). The fact that the species occurs on aeolian dunes on Poruma is potentially significant.

Declared Weeds

Three declared species under the LP Act are currently known to occur on Poruma.

Lantana (*Lantana camara*) – Class 3

Lantana is a Class 3 Declared Weed and listed as a WONS species. Whilst the plant is not prolific on the island there are a number of infestations. Mr. Olandi Pearson (pers. com. May 2012) who has been monitoring the plant for around 10 years, indicates that the population appears to be stable. It is currently widespread on Mer, Erub and is present on Ugar, Masig and Warraber. Ongoing monitoring and prompt control of any infestations is recommended.

Rubber Vine (*Cryptostegia grandiflora*) – Class 2

Rubber vine has been recorded by DAFF (2011, 2012) in the Poruma community. The plant is reportedly a garden ornamental although the potential to spread into native habitat on the island is unknown.

Singapore Daisy (*Sphagneticola trilobata*) - Class 3

Singapore daisy is a vigorous creeping ground cover which has been recorded from around the community area. The plant has the potential to out-compete natural habit and is a significant threat to foredune habitats across the island. Control of any establishing populations is the highest priority management action. It is also known from Badu in a number of locations in and around the community.



Photograph 3. Lantana infestation on the Poruma foreshore.

Yellow Bells (*Tecoma stans* var. *stans*) – Class 3

A medium to tall densely branched shrub with attractive yellow flowers, which is common throughout the community in house gardens and community areas. It has a papery wind-blown seed, which readily germinates in disturbed areas and native bushland. This suggests a potential for further proliferation on Poruma.



Photograph 4. Yellow bells (yellow flowers lower left) on the margins of foreshore coastal shrubland, Poruma.

Environmental Weeds

The existing level of disturbance on the island is evident by a large number of introduced plants (over one-quarter of the islands flora). The limited extent of remnant vegetation is therefore increasingly susceptible to impacts from a number of weeds. Whilst weeds are primarily distributed throughout disturbed areas, a number pose more significant threats to native vegetation. Weeds which are not currently declared under state legislation are categorized in **Table 4** according to their invasiveness, dispersibility and potential spread under the following criteria:

High

Plants considered to be the highest threat to the islands cultural and biodiversity values because they have a high potential to expand beyond existing infestations and could occupy a much larger area if not controlled. These plants have a high likelihood to spread and establish in new areas and are able to invade intact ecosystems.

Moderate

These plants are considered to be of secondary importance at present, although some could become a problem in the future. They are not considered as invaders yet, but are known to be invasive elsewhere in the region and/or are showing signs of extension (species which are in an early stage of invasion), or may be present on the island in disturbed areas. These plants have a moderate potential to spread and establish in new areas, both within native bush and disturbed areas.

Low

These are naturalised plants which are not considered as invaders given their low dispersal potential. They have a low potential to expand beyond existing areas of infestations and may already occupy as much area as likely to infest.

Table 4. Environmental weeds (refer to **Appendix F** for photographs)

Species	Life Form	Comments
HIGH		
Leucaena (<i>Leucaena leucocephala</i>)	Shrub	Leucaena is the most pressing weed threat to the island with the potential to severely impact and transform the remaining natural ecosystems. It is a small tree of up to about six metres tall with fine bipinnate leaflets, spherical creamy yellow flower heads, dense clusters of flattened pods up to 15 cm long with 20 glossy brown, and flat seeds that scatter when ripe (Biosecurity Queensland 2007). Its origins on Poruma are not known although it is likely to have been brought in from other islands as an ornamental, possibly for its seeds which can be used for necklaces. The current distribution on Poruma is restricted to a few isolated occurrences.
Glory lily (<i>Gloriosa superbens</i>)	Climber	A striking tuberous climbing plant with brilliant wavy-edged yellow and red flowers. It is a serious weed on sandy coastal soils in south eastern Queensland and along the north coast of New South Wales, and is known to be fatally toxic to humans with the rootstock being the most toxic part of the plant. The plant has underground tubers and is difficult to control. It has been observed in gardens on a number of islands in the Torres Strait including Masig, Warraber, Mer, Ugar, Erub and Poruma. It is likely that it has been introduced as an ornamental for house gardens. There is a potential for it to escape into bushland and to displace native foreshore herbs and grasses.
Scarlet flower (<i>Ipomoea hederifolia</i>)	Vine	A slender vine originally from tropical America, now naturalised in Cape York Peninsula (CYP), north eastern Queensland and southwards to north eastern New South Wales. Recorded on disturbed margins of the community invading shrublands and vine thicket margins.
Sisal, Manilla rope (<i>Agave sisilana</i>)	Succulent shrub	A robust succulent plant that is widely cultivated as a garden ornamental. The species has had traditional usage on the Torres Strait Islands providing a natural source of fibre. It generally occurs in coastal areas where it may form dense impenetrable thickets covering dune swales and riparian areas. It is also listed as one of the 35 most troublesome weed species in the state, occurring on sandy beaches and dunes along the Queensland coast (Queensland Government 2012). Reports by RPS (2010b) of the species occurrence on the margins vine thicket habitats were confirmed during the May 2012 field survey.
MODERATE		
Beggar weed (<i>Desmodium tortuosum</i>)	Herb	An herbaceous annual 1-2m in height with a deep taproot. It is naturalised throughout temperate and tropical regions of the world. It is widespread on Poruma occurring on disturbed areas around the village and roadsides. The sticky seed pods are easily dispersed by dogs, humans and machinery.
Bluebell, minnieroot (<i>Ruellia tuberosa</i>)	Herb	A perennial herb with tuberous roots, widely branched erect stems to 50 cm. Leaves ovate to oblong, 4-6 x 1.5-2.5 cm, with undulate margins and petioles to 1.5 cm long. Flowers are purple. Fruit is a cigar-shaped capsule, 1.5 cm long, with a persistent calyx, and produces 20 or more seeds per locule which explode at maturity (Howard 1989; pp. 380-381). Reproduces by seeds and tubers. It occurs throughout the West Indies, northern South America, and central America (Long 1976, Wilson <i>et al</i> , 2004). It is used medicinally in West Indies, Suriname (Lans n.d). In Torres Strait it is present on a number of islands. Its abundance around disturbed parts of Poruma indicates a potential for proliferation.
Butterfly pea (<i>Clitoria ternatea</i>)	Vine	This vigorous sprawling vine is one of a number of leguminous vines and herbs which occur throughout the disturbed parts of the island. Butterfly pea is a tropical perennial legume adapted to a range of soils and climates in

Species	Life Form	Comments
		northern (tropical and subtropical) Australia. Current infestations are restricted to disturbed areas however evidence from Mabuiag suggests its potential to invade native vegetation. Seeds are likely to be dispersed by vectors such as machinery, water and dumping of garden waste. Ongoing monitoring and prompt control of any infestations outside the community area is recommended.
Calotrope (<i>Calotropis gigantea</i>)	Shrub	A few scattered individuals of this bushy shrub occur along the foreshore areas. The plant has milky sap which exudes from broken leaves and stems. Another species <i>Calotropis procera</i> is a recognised environmental weed in northern Queensland and the Northern Territory with an ability to form dense thickets on alluvial flats. It is likely that the species on Poruma has been present for many years with no noticeable spread. Given its toxicity and potential for spread, any calotrope plants should be considered undesirable and controlled as appropriate. A few scattered plants occur on Poruma. Localised infestations occur on Masig.
Castor oil bush (<i>Ricinus communis</i>)	Shrub	A robust perennial spreading shrub to about 6m native to Africa and Eurasia. Leaves are large and palmately divided when mature, with 7–9 lobes, and with a strong odour when crushed. Seeds ejected explosively. It was introduced to Australia in the early 1800's. Now widespread in mainland states where it occurs in disturbed areas and along rivers and creeks. Cultivated for castor oil which was extracted from seeds which also contain the toxin ricin. Humans are sensitive to the toxin and a few seeds ingested may kill (Parsons & Cuthbertson 1992).
Indian couch (<i>Bothriochloa pertusa</i>)	Grass	A stoloniferous and/or tufted perennial, commonly with pink to red stolons. Widespread throughout the tropics and in urban lawns, parks and roadsides. Occurs in disturbed areas and along tracks and roads. Has potential to invade native grassland and herbland ecosystems in the long term.
Milkweed (<i>Euphorbia heterophylla</i>)	Herb	Erect herb to 1.5m with milky sap from damaged stems and leaves. Widespread in the tropics and throughout Torres Strait, occurring in particular on sand dunes and coral cays. Invades native grassland and herblands.
Mint weed (<i>Hyptis suaveolens</i>)	Herb	A robust annual herb forming a multi stemmed shrub to 2m. Native of tropical America but now widespread throughout the tropics and subtropics. Naturalised in Western Australia, Northern Territory, CYP, north eastern Queensland and southwards as far as south-eastern Queensland. It is widespread in and around a number of island communities with seeds dispersed by wind, water and birds.
Mossman River grass (<i>Cenchrus echinatus</i>)	Grass	Mossman River grass is a prostrate spreading grass with a spiny seed head that adheres to clothing and can penetrate the skin. The species has potential to become a troublesome dominant cover on grassy dune systems.
Mother in law tongue (<i>Sansevieria trifasciata</i> var. <i>trifasciata</i>)	Succulent	An erect perennial succulent to 1m high with 1–6 per strap like leaves per plant which are 2.5–9 cm wide and with a sharp-pointed apex. Fruit is a berry about 8mm wide, containing two seeds which are pale brown, oblong, and about 6.5 mm long and 5mm wide. The plant is spread by seed and by its underground stolons. Likely to have originated on Poruma as a garden plant and dispersed through dumping of garden waste. A number of robust infestations occur on the island. It has the potential to outcompete native groundcovers in open areas and under tree canopy.
Painted spurge (<i>Euphorbia cyathophora</i>)	Herb	An introduced weed originally from tropical America naturalised in Queensland and New South Wales. Widespread throughout Torres Strait where it is associated with sand dunes and coral cays. Invades native grassland and herblands.

Species	Life Form	Comments
Siratro (<i>Macrotileum atropurpureum</i>)	Vine	Siratro is widespread throughout Torres Strait occurring in community areas and on the margins of tracks and roads. It is a vigorous sprawling leguminous climber that establishes rapidly and is considered capable of invading the groundcover of shrublands.
Snake weed (<i>Stachytarpheta jamaicensis</i>)	Herb	This low erect perennial herb is widespread on Poruma. Its leaves are opposite with toothed margins and blue flowers borne on stiff spikes. They are also naturalised throughout Queensland where they invade roadsides, creeklines and vine forests where soil has been disturbed.
Townsville stylo / secca (<i>Stylosanthes scabra</i> , <i>S. hamata</i> , <i>S. humilis</i>)	Erect herb	A perennial herb to 1 m high which was introduced as a pasture species in northern Australia and now widely naturalised. Leaves have three small leaflets which are narrow elliptic. Seedpods are 3–11 mm long and 1.5–2 mm wide, with 1–2 red-brown seeds. Common on Poruma throughout disturbed areas.
True indigo (<i>Indigofera tinctoria</i>)	Low shrub	A low compact perennial shrub 1-2 metres in height naturalised in tropical and temperate regions. Common on numerous Torres Strait Islands inclusive of coral cays. Tends to inhabit disturbed areas and is able to tolerate coastal exposure. The plant is one of the original sources of indigo dye which is extracted from the leaves.
Yellow alder (<i>Turnera ulmifolia</i>)	Herb	An aromatic perennial herb to 30cm, with lanceolate to oblong-lanceolate or narrowly elliptic leaves 4-13 cm long and 2-3 cm wide, clustered toward the tips of the branches. Flower petals are yellow. Yellow alder is a native to Florida, the West Indies and tropical America and is widely planted as an ornamental and naturalised throughout the tropics. It has been planted in gardens on Poruma on account of its attractive yellow flowers.
LOW		
Asthma plant (<i>Euphorbia hirta</i>)	Herb	Prostrate herb to 10cm with milky sap produced from stems and leaves. Widespread in the tropics and throughout Torres Strait in particular on sand dunes and coral cays. Invades native grassland and herblands.
Button grass (<i>Dactyloctenium aegyptium</i>)	Grass	A low perennial grass widespread throughout Queensland and Torres Strait. Common on coral cay islands.
Cinderella weed (<i>Synedrella nodiflora</i>)	Herb	An annual herb which occurs on Poruma and other Torres Strait Islands. Occurs in disturbed areas and on the margins of native vegetation.
Cobblers peg (<i>Bidens pilosa</i>)	Herb	An annual herb widespread in disturbed areas.
Coffee senna (<i>Senna occidentalis</i>)	Shrub	Annual to short-lived perennial shrub to 2m with 3–7 pairs of leaflets that are 2–10 cm long, 0.6–4 cm wide, and mounded gland at base of leaf stalk. The seedpod is hairless, straight or sickle-shaped, opening at maturity, with seeds transverse in seedpods. Seeds ovate to oblong, flattened, olive to dark brown, 0.4–0.5 cm long. Widespread in Queensland and northern Australia. Seeds have been used as a coffee substitute. Scattered infestations occur on Poruma, mostly near the island refuse site.
Couch (<i>Cynodon dactylon</i>)	Grass	A low-growing perennial grass with grey-green leaves which spreads rapidly by seed and runners. It is widely planted as a lawn grass. It occurs in all states and territories. It typically invades wetlands and river edges in Queensland.
Crowsfoot (<i>Eleusine indica</i>)	Grass	A tufted erect perennial grass found throughout village areas and along tracks and roads.
Pink periwinkle (<i>Catharanthus roseus</i>)	Herb	An upright herbaceous perennial with dark green, lance-shaped leaves and abundant pale pink flowers. Seeds are dispersed by ants, wind and water. It was first recorded as naturalised in south-east Queensland in 1909 and is widely spread from north Queensland south to the New South Wales border. Common throughout Torres Strait.
Poinciana (<i>Delonix regia</i>)	Tree	A large spreading deciduous tree with fine deciduous leaves and attractive red flowers. Known to be invasive throughout

Species	Life Form	Comments
		the Pacific Islands and on basalt islands of Mer and Erub.
Purpletop Rhodes grass (<i>Chloris inflata</i>)	Grass	A perennial or annual grass ranging from 60 to 160 cm tall and forming clumps with runners that rapidly cover the ground surface. It spreads by rhizomes, rooting stolons and seeds. It is a native of Africa and is grown throughout tropical countries as a pasture species. It is widely naturalised in northern and eastern Australia and Torres Strait being tolerant of a range of soil and climate conditions. It is able to invade margins of native vegetation and disturbed areas on Poruma. It can be an aggressive invader of degraded land and coastal sites requiring active management. On Poruma it is found primarily on disturbed sites with ability to spread into natural habitats, particularly grasslands where it competes with native species.
Red Natal grass (<i>Melinis repens</i>)	Grass	A widespread perennial grassy weed common in the northern and eastern parts of Australia including Torres Strait. Occurs along disturbed areas with ability to invade margins of native vegetation and disturbed areas on Poruma. On Poruma it is found primarily on disturbed sites and has the ability to spread into natural habitats, particularly grasslands where it competes with native species.
Rhodes grass (<i>Chloris gayana</i>)	Grass	A perennial or annual grass ranging from 60 to 160 cm tall and forming clumps with runners that rapidly cover the ground surface. It spreads by rhizomes, rooting stolons and seeds. It is a native of Africa and is grown throughout tropical countries as a pasture species. It is widely naturalised in northern and eastern Australia and Torres Strait being tolerant of a range of soil and climate conditions. It is able to invade margins of native vegetation and disturbed areas on Poruma. It can be an aggressive invader of degraded land and coastal sites requiring active management. On Poruma it is found primarily on disturbed sites with ability to spread into natural habitats, particularly grasslands where it out-competes native species.
Stinking passionflower (<i>Passiflora foetida</i>)	Vine	A climbing or scrambling vine with leaves that are mostly 3-lobed and glandular hairy 4–12 cm long. Fruit are 2–4 cm wide, hairy, yellow-orange when ripe. Flowers are solitary, 3–5 cm wide, white to pale purple with a foetid smell. Small black seeds are spread by birds and mammals. It occurs throughout northern and sub-tropical Australia, often occurring within vegetation in good condition. Ripe fruits have a pleasant flavour but green fruits and leafy material are toxic.
Tridax daisy (<i>Tridax procumbens</i>)	Herb	An annual herb which is widespread on Poruma and other Torres Strait Islands. Occurs in disturbed areas and as a groundcover on foredune grassland and herbland communities.

Weed Threats

Weeds currently not recorded on Poruma yet which are capable of causing long-term changes to the island's vegetation are as follows.

Table 5. Major weed threats

Species	Comments
Annual mission grass (<i>Cenchrus pedicellatus</i> subsp. <i>pedicellatus</i>)	A robust annual grass known from northern Australia including northern Cape York, and Mua. The invasion of annual mission grass is listed as a Key Threatening Processes under the EPBC Act. It threatens biodiversity in

Species	Comments
	northern savannas by competing with native annual grass species and rapidly occupying disturbed areas with the ability to remain green until the late dry season providing fuel for fires which occur later and are hotter than normal seasonal fires (DEWHA 2011).
Barleria (<i>Barleria prionitis</i>)	This plant is considered an emerging environmental weed, which has the potential to seriously degrade habitats on coral cay islands, particularly in vine thickets and shrublands on sand dunes where there are canopy openings or disturbance. It is recognized as one of 28 weeds on the <i>Alert List for Environmental Weeds</i> (NHT 2003). The plant is currently known from Boigu Island.
Cupids flower (<i>Ipomoea quamoclit</i>)	A slender vine originally from India and now naturalised across northern Australia and on the east coast south to northern New South Wales. Existing infestations on other islands such as Mabuiag have the potential to disperse.
Indian calapo (<i>Calopogonium mucunoides</i>)	A vigorous short-lived viney creeper which is native to South America and introduced to northern Australia as a pasture legume. It establishes from seed, and rapidly forms dense mats of foliage 30-50 cm high often climbing and smothering adjoining vegetation. It is less common than siratro and butterfly pea however existing infestations on other islands such as Mabuiag have the potential to disperse.
Praxelis (<i>Praxelis clematidea</i>)	Praxelis is a highly invasive erect, branched, unpleasant-smelling herb known on Erub, Badu, Mua and also recorded from Masig. It is a native of South America, and known to spread rapidly by wind-blown seeds along roadsides. It can spread into native bushland forming dense stands that exclude other vegetation.

6.0 Fauna (Animals)

For the purposes of this report, terrestrial fauna includes amphibious species such as crocodiles and amphibians, and aerial species such as swifts. It does not include marine species and hence marine turtles, sea snakes and sea birds are excluded. Sea birds include all members of the Order Procellariiformes such as shearwaters and petrels, as well as frigatebirds (family Fregatidae), boobies (family Sulidae) and tropicbirds (family Phaethontidae). Some species of tern (family Laridae) are largely marine but are usually considered as shorebirds rather than sea birds (e.g. Pringle 1987).

For the majority of Torres Strait Islands there is a lack of systematic survey of fauna habitats. Given its small size and limited terrestrial habitat, Poruma is however one of the most intensively surveyed islands in the broader Torres Strait Island group per unit area. A desktop review of the EHP WildNet (Wildlife Online) database, Online Zoological Collections of Australian Museums (OZCAM 2011), the EPBC Online Protected Matters Search Tool maintained by the DSEWPC (2011g), was supported by analysis of the survey results of RPS (2010b) and information on culturally significant flora in Leary & David (1994). Other records are incidental, or part of broader regional surveys targeted towards particular life forms (e.g. Draffan *et al.* 1983; Clarke 2004; Garnet *et al.* 2000; Hall 2008; Helgen 2004) of which studies of avifauna (birds) have been most comprehensive.

The desktop review identified 66 fauna species that have been reported for Poruma (**Appendix D**) including one frog, eight reptile, 54 bird and three mammal species. This can be compared with the 384 terrestrial fauna species that have been reported for the broader Torres Strait island group (**Appendix D**). Of the animals reported for the island, one reptile, one bird and

three mammal species are introduced. An additional two species have been identified by the Protected Matters Search Tool as possibly occurring on the island.

6.1 Culturally Important Fauna Species

Over 100 years ago, English anthropologist Alfred Cort Haddon (1912:230) noted Torres Strait Islanders' familiarity with the natural world:

"[they] are good field naturalists and have names for a large number of plants and animals. A considerable number of plants are utilised in one way or another, more so than we have mentioned in these Reports. Although the land fauna is deficient in forms of economic importance, the natives have names for animals which are not of value to them, and are acquainted with their habits; their knowledge of the natural history of marine animals being very extensive. The uses and properties of most of the plants are known to them".

The region's birds, mammals and reptiles have cultural significance for Torres Strait Islanders. Many feature in local myths and legends, and some are also clan totems (*augadh*). On Poruma Island, clan totems include hammerhead shark, turtle and stingray.

The calls of some birds are recognized as omens, foretelling events such as weather, the arrival of a ship or the death of a relative (e.g. Haddon 1908:260-261). Others are 'calendar species' which alert people to the fact that a particular food resource is now available. Feathers from birds such as herons (*Egretta sacra* and *Ardea* spp.) and the cassowary (*Casuarius casuarius* – obtained from Papua New Guinea traders) continue to be used for traditional headdresses in some parts of the island group.

Leary & David (1994) indicate a wide range of marine and land based resources utilised by the Poruma community for food and other purposes. Resources of major importance to the community such as shell fish and reef fish are primarily collected from rock platforms and reefs around the island. These include: octopus, *ithayl* -spider shell (*Lambis lambis*), *kirith kirith* - stromb shell (*Strombus luhuanus*), *parsarl* -golden lined spinefoot (*Sterna linneatus*), and *kibbim*/black spinefoot (*Siganus spinus*). Other resources such as green turtles, hawksbill turtle eggs, sea bird eggs, trochus, mackerel, sardine, various reef fish, crayfish, and wongai plum (*Manilkara kauki*) are harvested from the numerous reefs, islets and cays which form part of the Poruma sea country (Leary & David 1994).

The Torres Strait imperial pigeon or "*ginau*" (*Dacula bicolor*) is occasionally hunted for meat and is reported to pass through Poruma on its northern migration between December and February (O. Pearson pers. com. May 2012, Leary & David 1994). Other culturally significant bird species documented by Leary and David (1994) include the brown booby (for eggs and meat), egrets and spoonbills (for feathers), reef herons in grey phase (for meat and feathers), frigate birds (as pets and for feathers), superb fruit doves (meat), bar shouldered doves (meat) whimbrels and curlews (meat although rarely eaten).

6.2 Fauna Habitat Values

Poruma is a small island with limited habitat diversity. Only 29 % (11 ha) of the islands natural vegetation remains intact with the remainder occupied by infrastructure including houses and other amenities. There is some structural diversity in the natural habitats that remain which range from native grassland, shrubland and vine forest. The island is also more topographically variable than the majority of coral cays in the Torres Strait, possibly accounting for the higher levels of fauna diversity in some groups (reptiles in particular) when compared to coral cays of much greater size such as Masig (154 ha compared to 38 ha for Poruma). As an example, eight reptile species have been recorded on Poruma whilst on Masig four have been recorded to date. The faunal diversity however, as it is with all coral cays in the Torres Strait when compared to the larger continental islands, remains relatively depauperate.

The major value of the island habitats is as a foraging resource, roosting and nesting site for birds. The small 2.2 ha remnant of vine forest on the island provides a significant seasonal resource for frugivorous birds as well as nesting and roosting sites for some species. Of the 66 fauna species recorded on the island 55 (83 %) are birds, many of which are transient or migratory species. Littoral margins of the island, particularly in those less disturbed portions of the coastal fringe, as well as the fringing exposed reef floats, provide a temporary stop-over for migratory species as well as serving an important habitat for a number of waders and terns. Significant bird species utilising this habitat include the little tern, eastern curlew and beach stone-curlew. These species are further discussed further in **Section 6.3**.

6.3 Fauna Species with Conservation Significance

In this report fauna of conservation significance include:

- Species listed as Critically Endangered, Endangered or Vulnerable under EPBC Act including those listed as Migratory.
- Species listed under Endangered, Vulnerable or Near-Threatened under NC Act.
- Species considered of 'Critical' or 'High' priority under the Back on Track framework (DERM 2011a).

Other species may be assessed as being significant at the regional scale (i.e. Torres Strait) by the study team based on criteria such as local rarity, state and bioregional endemism, limits of distribution and disjunct occurrences.

6.3.1 Endangered, Vulnerable and Near-Threatened Species

A total of four species of conservation significance (threatened species) at either state or federal level have been reported on the island, with an additional two species predicted to occur (see **Table 6**). There are also an additional 23 migratory species considered to have significance at federal level that are reported to occur on the island (**Appendix D**). Those EVNT species predicted to occur on Poruma Island are also listed in **Table 6**. The predicted occurrence of

false water mouse is considered anomalous and should be disregarded due to lack of suitable habitat.

Table 6. Endangered, Vulnerable and Near-Threatened fauna species¹ reported or predicted² to occur on Poruma.

Scientific Name ³	Common Name	Status ⁴			Source ⁶
		EPBC Act	NC Act	BoT ⁵	
SPECIES REPORTED					
<i>Esacus magnirostris</i>	Beach stone-curlew	-	V	High	Published record (RPS, 2010b)
<i>Sterna albifrons</i>	Little tern	M	E	High	Draffan 1983
<i>Numenius madagascariensis</i>	Eastern curlew	M	NT	-	Draffan 1983, 3D Env 2012
<i>Haematopus fuliginosus</i>	Sooty oyster catcher	-	NT	-	Draffan 1983
SPECIES PREDICTED ²					
<i>Pteropus conspicillatus</i>	Spectacled flying fox	V	-	-	Predicted by the EPBC Protected Matters database
<i>Crocodylus porosus</i>	Saltwater crocodile	-	V	-	Predicted by the EPBC Protected Matters database
<i>Xeromys myoides</i>	False water mouse	V	V	High	Predicted by the EPBC Protected Matters database

1. Listed as Endangered, Vulnerable, Near-Threatened under the EPBC Act 1999 and/or the NC Act 1992 or of critical or high priority under the Back on Track prioritisation framework (DERM 2011a).
2. Predicted by the EPBC Protected Matters Search Tool maintained by DSEWPC (2011g). Only noted if not recorded from another source.
3. Nomenclature follows the Australian Faunal Directory (DSEWPC 2011d).
4. Status: E = Endangered, V = Vulnerable, NT = Near-Threatened, M = Migratory, LC = Least Concern (Common).
5. BoT = Back on Track priority species.
6. Known from Museum records, published literature (eg Draffan *et al.* 1983; Clarke 2004a); b) WildNet database and/or reports and other grey literature (e.g. Schaffer 2010). These sources are not necessarily mutually exclusive.

Beach Stone-curlew (*Esacus magnirostris*)

NC Act: Vulnerable

Beach stone-curlew is considered of 'Critical' priority under the Back on Track species prioritisation framework (DERM 2011a). The species was formerly known as beach thick-knee and as *Burhinus neglectus*.

The beach stone-curlew generally occurs singularly or in pairs, and occasionally in small groups of up to six birds. The species is exclusively coastal, occurring on all types of beaches, especially near river mouths, on mudflats, near mangroves, and occasionally on coastal lagoons. It is typically more common on islands than the mainland (Lane 1987; Marchant & Higgins 1993). The species is mainly nocturnal or crepuscular and adult birds appear to be sedentary. The species feeds predominately on crabs and other marine invertebrates in the intertidal zone and a single egg is laid in a scrape in the sand, often in the same area year after year (Clancy 1986; Marchant & Higgins 1993).

Beach stone-curlews are found around eastern and northern Australia from Nambucca Heads in New South Wales (and occasionally south to Victoria) to Port Cloates in Western Australia and

extend into New Guinea, the Solomon Islands and Indonesia (Marchant & Higgins 1993). Draffan *et al.* (1983) report the species from 33 Torres Strait Islands in total, in every area except the north-west. A single Wildnet record is reported for Dauan.

This species is still found in locations where human activity is high but the lack of young birds in such areas indicates that reproduction is being affected by human disturbance (Freeman 2003). Breeding success may also be significantly reduced from predation by cats, dogs and feral pigs. Much of the species' habitat in Australia, particularly on islands, is secure. However, because beach stone-curlews occur at low densities and occupy linear habitats, the potential for local extinctions to become regional ones is increased (Garnett & Crowley 2000).

The species was observed on Poruma by RPS (2010b) although no observations related to population size or extent have been made. The species may be threatened by feral species (cats, dogs and rats are present on Poruma) and disturbance by humans, particularly when nesting.

Little tern (*Sternula albifrons*)

EPBC Act: Migratory; **NC Act:** Endangered

Listed under the EPBC Act as *Sterna albifrons* (Bonn Convention, CAMBA, JAMBA, ROKAMBA).

The little tern is also considered of 'High' priority under the Back on Track species prioritisation framework (DERM 2011a).

The little tern is found along a variety of coastal areas, including open beaches, lagoons, estuaries, river mouths, lakes, bays, harbours and inlets, especially those with exposed sandbanks. They feed primarily on small fish, crustaceans and other invertebrates and nest on open sandy beaches. Nesting occurs mainly from September to January but in northern Australia nesting also occurs from April to July. Little terns breed in small colonies (Pringle 1987; Higgins & Davies 1996).

The species occurs in Europe, Asia and Australasia and within Australia occurs along the coastal regions of eastern Australia, south to Tasmania, and across northern Australia, west to northern parts of Western Australia (Higgins & Davies 1996). The little tern is mainly a summer visitor to northern Australia, including Torres Strait, though there is a winter-breeding population in the Gulf of Carpentaria (Blakers *et al.* 1984). In the Torres Strait Draffan *et al.* (1983) reports the species from 13 islands, including Poruma, Badu, Mer and Erub. It is also known from Boigu (Clarke 2004b; DERM 2010a), Mua (Ingram 2008) and Iama (Conics 2008b). A single WildNet record is reported from Dauan. Draffan *et al.* (1983) described it as an uncommon summer visitor throughout the Torres Strait. In summer of 2002, Clarke (2004b) recorded 151 individuals on Boigu Island, approximately one third of which were in, or near, full breeding plumage,

suggesting that the northern Torres Strait Islands may be more important for the species than previously thought.

The little tern in Australia is both increasing in abundance and expanding its distribution. The species has a naturally high rate of breeding failure, with ground-nesting making it vulnerable to natural events that contribute to low success, such as loss of eggs and chicks through native predators, flooding of nesting sites (including high tides), and adverse weather conditions (Garnett & Crowley 2000). Little terns are also threatened by human disturbance at nesting colonies, encroachment of vegetation in colonies (Blakers *et al.* 1984), nest predation by rats, gulls and feral pigs, and by degradation of estuaries, pesticide residues in fish, and oil-fouling of both birds and beaches (Garnett & Crowley 2000). Little tern is unlikely to breed on Poruma Island and therefore threats are likely to be minimal.

Eastern Curlew (*Numenius madagascariensis*)

EPBC Act: Migratory (Bonn Convention, CAMBA, JAMBA, ROKAMBA)

NC Act: Near-Threatened

The eastern curlew is mostly confined to coastal habitats, particularly estuaries, harbours and coastal lagoons. They mainly forage on open intertidal mudflats, sandflats and saltmarsh, often near mangroves, and occasionally on ocean beaches. Roosting occurs on sandy spits and islets, in mangroves and saltmarsh, and along high water mark on beaches (Pringle 1987; Higgins & Davies 1996). The species usually feeds individually or in small groups (Pringle 1987), though large numbers may congregate at high tide roosts (Lane 1987).

Eastern curlews breed in eastern Siberia during the northern hemisphere summer and arrive in north-eastern Australia as early as late July, but most individuals arrive in eastern Australia by late August and September (Ueta *et al.* 2002). Birds begin to depart to return to breeding grounds around March and April (Lane 1987). However, a significant percentage of the Australian population remains through the Australian winter, particularly in northern Australia (Pringle 1987; Driscoll & Ueta 2002). In Australia eastern curlews occur in suitable habitat on all coasts (Higgins & Davies 1996). In the Torres Strait Draffan *et al.* (1983) reported them from 18 islands, including Mua, Badu, Mer, Erub, Poruma and Boigu, and there is a single WildNet record from Mabuiag (DERM 2010e) and an unpublished record from Iama (Conics 2008a). The species is likely, at least on passage, on any island that has suitable foraging habitat.

The Australian eastern curlew population is estimated at 19 000 and numbers have fallen significantly in some southern areas. In Tasmania populations have declined by 65% (Reid & Park 2003). It is unknown as to whether these declines are a result of overall population decline or a change in non-breeding range. Eastern curlews are easily disturbed by people at foraging and roosting sites (Higgins & Davies 1996; Taylor & Bester 1999) and are often the first species in a high-tide roost to take to flight if disturbed, relocating to alternative roosts often some

considerable distance away (Lane 1987). Eastern curlews will take off when humans approach to within 30-100m (Taylor & Bester 1999) and sometimes are disturbed within 250m of approach (Higgins & Davies 1996). Pollution may have also reduced food availability (Higgins & Davies 1996).

Draffan *et al.* (1983) provide no detail on local numbers lack of formal survey work is required to provide an accurate indication of their numbers on Poruma. The species is most likely to be threatened by disturbance when foraging and such a threat would only be significant during passage to northern hemisphere breeding grounds. The species was observed during the May 2012 field visit (D. Stanton pers. obs.).

Sooty oystercatcher (*Haematopus fuliginosus*)

NC Act: Near-Threatened

The sooty oystercatcher is restricted to marine coastal habitats, with a preference for rocky headlands and ledges, coral reefs, and sandy beaches near intertidal mudflats and rocky areas, usually within 50m of the shore line (Blakers *et al.* 1984; Marchant & Higgins 1993). They forage around exposed rocks at low tide for molluscs, crustaceans, other invertebrates and small fish. The species is resident, maintaining territories all year round (Marchant & Higgins 1993).

Sooty oystercatchers are endemic to Australia, not extending north to New Guinea despite records from the Torres Strait. The species breeds in all Australian states and is most common in south-eastern Australia (Pringle 1987; Marchant & Higgins 1993). Draffan *et al.* (1983) reports the species from Poruma (Coconut), Channel Rock, Twin and Saddle Islands and considered it a non-breeding visitor to Torres Strait. There is also an unconfirmed record from Iama (Conics 2008a).

The sooty oystercatcher can be inconspicuous on rocky shores and if present only sporadically, may be under-recorded due to a lack of consistent survey effort. Breeding occurs mainly October to January and may begin as early as June in the tropics (Pringle 1987; Marchant & Higgins 1993). They often roost and breed on offshore islands, nesting in shallow depressions on a range of substrates including sand, gravel, coral rubble and rocks in quiet, isolated spots above the high-tide mark (Marchant & Higgins 1993). On light coloured beaches sooty oystercatchers place eggs in low visibility nest sites next to and under vegetation (Lauro & Nol 1995). The species is threatened by human disturbance and damage to feeding, nesting and roosting areas and from predation by feral animals such as dogs (*Canis lupus*), cats (*Felis catus*) (NSW NPWS 2002) and rats (*Rattus rattus*). These threats would be relevant to the species on Poruma.

6.3.2 Migratory Species

Fifty-seven bird species listed as Migratory under the EPBC Act are known to occur in Torres Strait (**Appendix D**). The Vulnerable (NC Act) salt-water crocodile is also listed as Migratory

under the EPBC Act and is predicted by the EPBC MNES search engine to occur on Poruma. A number of other species also migrate into or through the Torres Strait but are not listed under the EPBC Act. Unless otherwise stated it should be assumed that reference to Migratory species in this report refers only to those species listed as such under the EPBC Act. **Table 7** lists the 23 Migratory species reported to occur on Poruma Island, with an additional 34 birds that potentially occur based on records on adjacent islands and suitable habitat. All species are listed as Least Concern under the NC Act unless otherwise noted.

Table 7. Migratory¹ species reported or predicted to occur on Poruma

Scientific Name ²	Common Name	Comments ³
SPECIES RECORDED		
<i>Ardea modesta</i> ⁴	eastern great egret	Draffan 1983, Conics 201a, Leary & David 1994
<i>Pandion cristatus</i> ⁵	eastern osprey	3D Env 2012
<i>Anous stolidus</i>	common noddy	Leary & David (1994)
<i>Numenius madagascariensis</i> ⁶	eastern curlew	Draffan 1983, 3D Env 2012
<i>Actitis hypoleucos</i> ⁷	common sandpiper	WildNet
<i>Arenaria interpres</i>	ruddy turnstone	WildNet & Draffan 1983
<i>Calidris ruficollis</i>	red-necked stint	WildNet & Draffan 1983
<i>Calidris tenuirostris</i>	great knot	WildNet & Draffan 1983
<i>Charadrius leschenaultii</i>	greater sand plover	Wildnet
<i>Charadrius mongolus</i>	lesser sand plover	WildNet, Draffan 1983, Conics 2010a
<i>Egretta sacra</i>	eastern reef egret	WildNet, Draffan 1983, Conics 2010a
<i>Limosa lapponica</i>	bar-tailed godwit	Draffan 1983
<i>Merops ornatus</i>	rainbow bee-eater	WildNet
<i>Tringa brevipes</i> ⁸	grey-tailed tattler	WildNet & Draffan 1983
<i>Tringa nebularia</i>	common greenshank	WildNet & Draffan 1983
<i>Numenius phaeopus</i>	whimbrel	Draffan 1983
<i>Pluvialis fulva</i>	pacific golden plover	WildNet, Conics 2010a
<i>Rhipidura rufifrons</i>	rufous fantail	Draffan 1983
<i>Sterna anaethetus</i>	bridled tern	Draffan 1983, Leary & David 1994
<i>Sterna sumatrana</i>	black naped tern	Draffan 1983, Leary & David 1994
<i>Sternula albifrons</i> ¹⁰	little tern	Draffan 1983
<i>Thalasseus bengalensis</i> ¹¹	lesser crested tern	Leary & David 1994
<i>Xenus cinereus</i>	terek sandpiper	WildNet & Draffan 1983
ADDITIONAL POSSIBLE MIGRATORY SPECIES		
<i>Crocodylus porosus</i>	salt water crocodile	Predicted to Occur – MNES database search
<i>Apus pacificus</i>	fork-tailed swift	No Records
<i>Ardea ibis</i>	cattle egret	No Records
<i>Calidris acuminata</i>	sharp-tailed sandpiper	No Records
<i>Calidris alba</i>	sanderling	No Records
<i>Calidris canutus</i>	red knot	No Records
<i>Calidris ferruginea</i>	curlew sandpiper	No Records
<i>Calidris melanotos</i>	pectoral sandpiper	No Records
<i>Chardrius bicinctus</i>	double banded plover	No Records
<i>Chlidonias leucopterus</i>	white-winged black tern	No Records
<i>Coracina tenuirostris melvillensis</i>	(melville) cicadabird	No Records
<i>Cuculus optatus</i> ¹²	oriental cuckoo	No Records
<i>Gallinago megala</i>	swinhoe's snipe	No Records
<i>Haliaeetus leucogaster</i>	white-bellied sea-eagle	No Records
<i>Hirundo rustica</i>	barn swallow	No Records
<i>Hydroprogne caspia</i>	caspian tern	No Records

Scientific Name ²	Common Name	Comments ³
<i>Limosa limosa</i>	black-tailed godwit	No Records
<i>Monarcha melanopsis</i>	black-faced monarch	No Records
<i>Myiagra cyanoleuca</i>	satin flycatcher	No Records
<i>Numenius minutus</i>	little curlew	No Records
<i>Plegadis falcinellus</i>	glossy ibis	No Records
<i>Pluvialis squatarola</i>	grey plover	No Records
<i>Sterna dougallii</i>	roseate tern	No Records
<i>Sterna hirundo</i>	common tern	No Records
<i>Symposiachrus trivirgatus</i> ¹³	spectacled monarch	No Records
<i>Tringa glareola</i>	wood sandpiper	No Records
<i>Tringa incana</i> ⁹	wandering tattler	No Records
<i>Tringa stagnatilis</i>	marsh sandpiper	No Records
<i>Vanellus miles</i>	masked lapwing	No Records

1. Listed as Migratory under the EPBC Act 1999.
2. Nomenclature follows the Australian Faunal Directory (DSEWPC 2011d).
3. Known from Museum records, published literature (eg Storr 1973; Draffan *et al.* 1983; Wilson 2005), WildNet database and/or reports and other grey literature (eg Smith & Smith 2006; Natural Solutions 2008). These sources are not necessarily mutually exclusive. No additional species was predicted by the EPBC Protected Matters Search Tool maintained by DSEWPC (2011g).
4. Listed under the EPBC Act (CAMBA, JAMBA) as Great Egret *Ardea alba*. Australian birds elevated to full species level as *A. modesta* (Kushlan & Hancock 2005; Christidis & Boles 2008).
5. Listed under the Bonn Convention as Osprey *Pandion haliaetus*. Australian birds have been elevated to species level as *P. cristatus* (Wink *et al.* 2004; Christidis & Boles 2008).
6. Listed as Near-Threatened under the NC Act.
7. Also listed under CAMBA and ROKAMBA as *Tringa hypoleucos*.
8. Also listed under the Bonn Convention and JAMBA as *Heteroscelus brevipes*.
9. Also listed under the Bonn Convention and JAMBA as *Heteroscelus incanus*.
10. Listed under the EPBC Act (Bonn Convention, CAMBA, JAMBA, ROKAMBA) as *Sterna albifrons*. Listed under the NC Act as Endangered.
11. Listed under the EPBC Act (CAMBA) as *Sterna bengalensis*.
12. Listed under the EPBC Act (CAMBA, JAMBA, ROKAMBA) as *Cuculus saturatus*. Australian birds elevated to full species level as *A. optatus* (Christidis & Boles 2008).
13. Listed under the EPBC Act (Bonn Convention) as *Monarcha trivirgatus*.

6.3.3 Species of Regional Significance

The *Action Plan for Australian Birds 2000* list provides a list of bird species or subspecies that occur on Poruma and meet the criteria for listing as Vulnerable under the EPBC Act. These species should be considered regionally significant. None of these species have been recorded on Poruma.

6.4 Pest Fauna Species

Exotic (introduced) fauna species reported for Poruma Island are the house sparrow (*Passer domesticus*), black rat (*Rattus rattus*), domestic dog (*Canis familiaris*) and cat (*Felis catus*).

House sparrow is unlikely to pose any threat to native species on Poruma and no action is required for the species.

Dogs are a threat to ground nesting birds, particularly the beach stone-curlew. Although house cats in Australian suburbs have been shown to kill mainly introduced rats and mice, native

wildlife are also killed, including mammals, birds, reptiles and frogs. With access to undisturbed habitat, it is likely that they would have a substantial impact on native fauna (Barratt 1997).

The black rat poses concern to culturally significant flora, and native fauna/bird species particularly during nesting where eggs may be vulnerable to foraging. Diete (2010) recorded high densities in and around houses and in all the vegetated habitats on Poruma Island with reports of occasional outbreaks causing potentially serious health problems to the local islander community, damage to household goods and infrastructure. Recent work on Poruma and Mer suggest that the control of rats in and around houses provide only temporary reduction in rat numbers and associated damage and that the only long-term management option is the eradication of the introduced rat population (Diete 2010, Leung unpubl. data). Diete (2010) reports personal communications with indigenous islanders on Poruma Island which suggest that exotic rodents were unknown prior to 30 years ago, thus indicating that the invasion of Torres Strait Islands by exotic rodents coincided with increased visitation from the mainland and improved transportation technologies in the region.

Examination of stomach contents of rats captured on Poruma by Diete (2010) were comprised primarily of the fruits coconut (*Cocos nucifera*), wongai (*Manilkara kauki*), fig (*Ficus* sp.) and sea almond (*Terminalia catappa*). The eradication of exotic rodents from islands has recently been identified as a priority for biodiversity conservation in Australia.

6.5 Threats

The major threats to fauna in any location are loss, degradation and fragmentation of habitat. These processes may be due to deliberate clearing, damage and or predation by feral and domestic animals, storm and tidal damage, erosion and weed invasion. The large number of exotic weeds on the island in particular those highly invasive species such as leucaena, agave, lantana, and yellow bells, have potential to significantly alter habitat function. Exotic predators, such as dogs, cats, and particularly rats may have already impacted fauna populations with their continued presence posing an ongoing threat to native fauna, either directly through predation or by disturbance. By far the greatest threat posed to the island in the long term is sea level rise although the impacts and rate of advancement are uncertain and difficult to mitigate.

6.6 Future work

Being a small island with a limited number of habitats, Poruma is one of the most intensively surveyed islands for fauna in the Torres Strait. It is important however that continued information be collected on the islands fauna assemblage, particularly for bird species. In addition to general opportunistic survey methods, the following actions are recommended:

High Priority

Targeted surveys to identify important areas of habitat and roosting sites for the beach stone-curlew.

The location of any breeding sites for the beach stone-curlew should be recorded so that these sites can be monitored and afforded protection from threatening processes. Vigilant recording of any other species sighted on the island, particularly the conservation significant species including eastern curlew, sooty oystercatcher and little tern should be an ongoing action.

Eradication of black rats

Studies on the population size of black rats on the island have been carried out through the University of Queensland. Recommendations follow those of (Diete 2010) toward eradication of exotic rodents.

Determining presence and populations of feral cats and wild dogs.

Domestic cats occur on the island and it is likely that feral populations occur. In regard to the latter, the first priority is to carry out spotlighting surveys in and around the rubbish tip on a regular basis. If cats or dogs are evident, sand padding of tracks on the remoter parts of the island will provide additional data on population size and movement. This information is critical to allow development of a targeted control plan. The process may require involvement of training in feral animal survey and control techniques.

7.0 Profiles for Poruma Habitats

This section presents a summary of current knowledge, management issues and recommended management actions for the habitats that occur on Poruma. As context it is noted that the vegetation on the island has been affected by human occupation and settlement.

“Pre-contact Kulkalgal had acted both deliberately and inadvertently upon their surroundings. For their gardens they cleared land, marked permanent boundaries, planted, harvested, placed increase statues, brought new plant species from elsewhere, collected seeds for replanting. For their settlements they built huts, kooda and skullhouses, cleared open spaces for meeting places, criss-crossed their islands with well-trodden paths, constructed burial mounds, put up temporary shelters and windbreaks, cut wood and bamboo to build fires, house supports, shelters and drying racks, took the hard wood of the mangrove to make digging sticks and the softer wongai wood to carve totemic figures and harpoon heads” (Shnukal 2004).

Leary & David (1994) indicate that major impacts to the island have been; the clearing of vegetation for settlement over the western third of the island; vegetation clearing over the central part of the island for the airstrip; and clearing on the eastern end of the island for the garbage disposal area.

7.1 Deciduous/Semi Deciduous Vine Forest and Vine Thicket

7.1.1 Status of Ecological Knowledge

Deciduous and semi-deciduous vine forest and thicket, (mapped as VC 2m), occurs exclusively on coral cays of the central group of islands of Torres Strait. A single small remnant area is present on Poruma, although it is likely that it was once considerably more extensive. The canopy is simple comprising and dominated by wongai (*Manilkara kauki*), helicopter tree (*Gyrocarpus americanus* subsp. *americanus*), coral tree/nawai (*Erythrina variegata*), wana (*Thespesia populneoides*), *Millettia pinnata*, and kubil gim (*Diospyros maritima*). A sparse shrub layer features *Aglaia elaeagnoidea*, *Capparis lucida*, *Capparis nummularia*, mukamai (*Cordia subcordata*), *Drypetes deplanchei*, kurad (*Eugenia reinwardtiana*), *Exocarpos latifolius*, *Gymnosporia inermis*, *Micromelum minutum*, *Phyllanthis novae-hollandiae*, *Sterculia quadrifida* and *Turraea pubescens*. This vegetation community is reported to have been heavily impacted in the Central Island Group by firewood harvesting to service the trepang industry (Shnukal 2004).

7.1.2 Ecological / Cultural Considerations

Habitat Condition: The single intact example of this forest demonstrates a relatively undisturbed canopy with the best preserved habitat located on the northern eastern side of the island adjacent to the airstrip. Although the canopy has been subject to minor disturbance, few exotic species have penetrated the canopy margins.



Photograph 5. Typical vine forest on Poruma. Nawai (*Erythrina insularis*) on left.

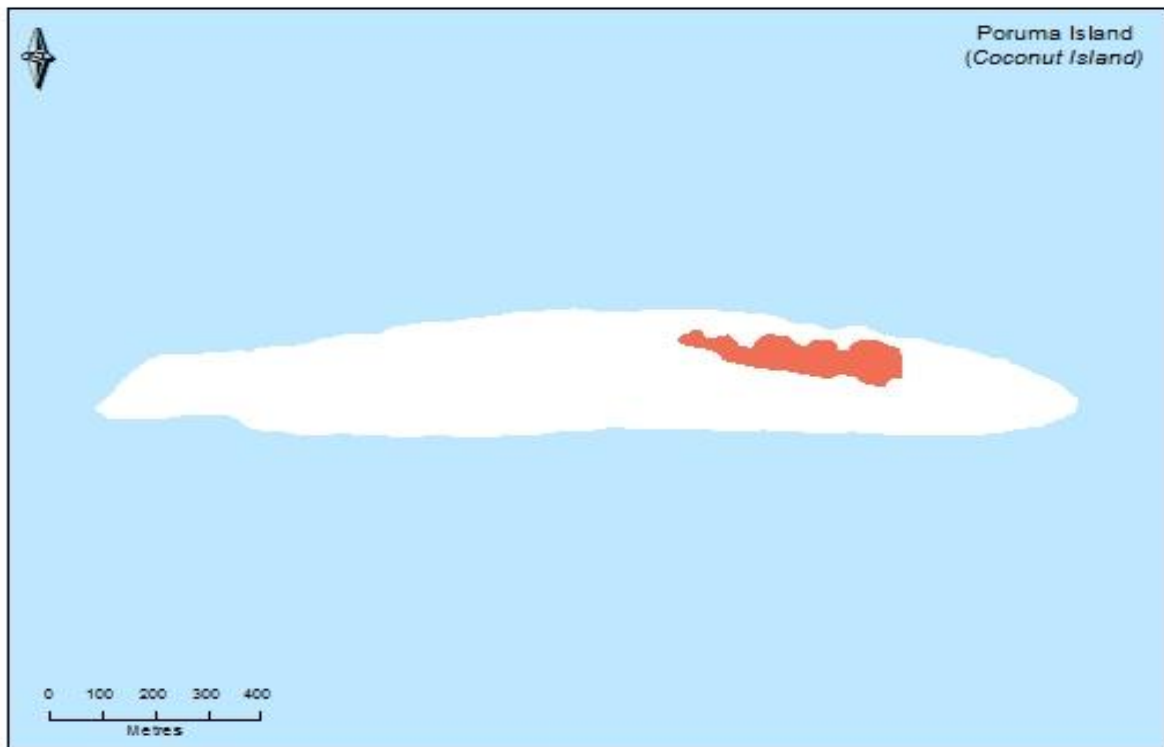


Figure 3. Distribution of vine forest and thicket on Poruma.

Fauna: The fauna assemblage associated with this habitat is simple, comprising a limited number of ground dwelling reptiles. It is however an important habitat for frugivorous birds which include the superb fruit dove and Torres Strait imperial pigeon. The habitat may also provide roosting sites for beach stone-curlew. Further survey across a range of seasons will aid characterisation of the habitats full faunal assemblage.

Flora: The habitat supports the regionally significant vine, Chalmers aristlochia (*Aristolochia chalmersii*) (refer **Section 5.2.1**).

Cultural Perspectives: Vine forests on Poruma provide an abundance of cultural resources evidenced by 30 of the 51 culturally significant plant species occurring within. These forests provide the original habitat of wongai plum which is of high significance to Kulkalgal.

7.1.3 Management Considerations

The habitat has a restricted regional distribution and has been heavily fragmented and modified across much of its original extent. This is manifest in the 'of concern' status under the *Vegetation Management Act* (1999). Semi-deciduous vine forests associated with coral cays are a restricted and fragile habitat requiring highly specific edaphic conditions, in particular a threshold depth of well-drained calcareous sand and availability of fresh groundwater.

Historically the habitat has been reduced in area by clearing for settlement and infrastructure development. Whilst future clearing impacts remain a possibility, the habitat currently faces its greatest threat from exotic weed species invasion. At present, minimal active management is required although this may change rapidly given the range of potentially invasive plant species which currently occur on the island. Regular patrols, focusing initially on disturbed margins of vine forest areas should continuously monitor for expansion of existing species and any emergence of exotic plants such as *barleria* or *praxelis* which have not yet reached the island. Canopy openings and other forms of disturbance to this habitat may provide a niche for invasion of exotic species.

Longer-term threats include those impacts associated with coastal erosion, sea level rise and changing climatic regimes. Salinisation of the fresh groundwater lense through overdraw of the resource may also be a future threat to this forest. The impacts of changing shorelines and coastal erosion should also be monitored on a regular basis. Management actions can be considered if damage to this habitat is noted.

7.1.4 Summary of Recommended Management Actions

The information provided in **Table 8** below aims to summarise the key issues, actions and priorities so as to aid the transfer of information into the Poruma Island Working on Country Plan. Priority categories are adapted from the Draft Plan of Management for Pulu Indigenous Protected Area (Hitchcock *et al.* 2009) as follows:

Immediate Priority Actions – Actions required for management issues which have potential to significantly alter or damage the islands natural or cultural values in the short term (0-5 years).

High Priority Actions – Actions required for management issues which have potential to result in significant damage of the islands natural or cultural values within the medium term (5-15 years) or where lack of knowledge significantly hampers the ability to manage a habitat effectively.

Moderate Priority Actions – Actions required for management issues which have potential to result in significant damage of the islands natural or cultural values within the long term (>15 years) or where there is a knowledge gap that does not detract significantly from the ability to manage a habitat effectively.

Table 8. Summary of management actions for evergreen and semi-evergreen vine forests.

Management Category	Context/Issue	Actions	Priority
Fauna Surveys	Fauna composition within this habitat requires further definition.	Opportunistic collections of fauna and observations relating to fauna usage within this habitat should be undertaken as part of rangers general duties. Maintain focus on ethnotaxonomy to feed into Traditional Ecological Knowledge (TEK).	Moderate
Plant Surveys	Flora composition is documented although limited to rapid surveys. Potential exists for species not previously recorded on the island, particularly during wet season survey. Monitoring through bi-annual ground flora surveys provides opportunities for ranger training and occurrence of new records for the island including invasive species.	Carry out regular flora field surveys with focus on ranger training, collection of new records for the island and important cultural resource species. Collect leaf specimens and photograph plants with known uses/values and that may have been used in the past, and catalogue. Update island species list as new information becomes available.	Moderate
Traditional Ecological Knowledge	Plant and animal lists provided in the appendices provide a good foundation for increasing TEK and ethnotaxonomy.	Collect and collate TEK knowledge within this habitat gained through fauna and flora survey actions on an ongoing basis.	High
Fire Management	Fire should be excluded from this habitat. The vine forest is fringed by dune grassland which is subject to irregular burning.	Observe the general impacts of grassland fires on this habitat. Any impact to this community by fire should be documented and appropriate management actions devised. This may include regular back-burning on the margins of this habitat which provides protection from fire events and promotes expansion of the vine forest margins.	Moderate
Threatened Species Management	<u>Flora</u> : Significant flora species are limited to a slender vine (<i>Aristolochia chalmersii</i>) which is also a butterfly food plant. The ecology of this species is poorly documented. <u>Fauna</u> : Composition of fauna within this habitat is poorly known.	<u>Flora</u> : Targeted surveys to determine the population size of the vine Chalmers aristolochia and to determine threatening processes. <u>Fauna</u> : Further baseline information is required (see fauna surveys) before discrete management actions can be defined. Adopt a structured fauna assessment program as per recommendation set out in Section 6.5 .	Moderate High
Invasive Species	<u>Flora</u> : A number of weeds occur	<u>Flora</u> : No active weed control or	Moderate

Management Category	Context/Issue	Actions	Priority
Management	on the margins of vine forest vegetation and pose a long term threat to the habitat. <u>Fauna</u> : The impacts that rats, cats and possibly wild dogs are having on this habitat are unknown and need to be ascertained.	management currently required. Monitoring for new weed infestations, particularly for weeds including leucaena is required on a regular basis. <u>Fauna</u> : Populations of rats, cats and dogs should be assessed through appropriate methods with an eradication/ control program considered if required.	Immediate
Monitoring	Observations relating to any changes to habitat condition, particularly those arising from impacts from feral animals, weeds, or coastal erosion are required on a regular basis.	Carry out informal observation of habitat condition including health of canopy (monitoring for dieback) and presence of invasive weed species, on a regular annual to bi-annual basis.	High

7.2 Grassland / Coastal Dune Complexes

7.2.1 Status of Ecological Knowledge

Grassland habitats and coastal dune complexes are discussed as a single ecological unit due to the intimate relationship that exists between these habitat types on Poruma. As a whole, these habitats form a mosaic of grassland, forbland, and shrubland habitats that occupy the eastern portion of the island. The three dominant vegetation communities that comprise this complex are:

- An open to closed forbland complex composed of species including *Spinifex sericeus*, *Vigna marina*, *Ipomoea pes-capre* subsp. *brasiliensis*, *Cassytha filiformis* and a range of halophytic forbs such as *Sesuvium portulacastrum* (VC17j). The habitat represents the primary seral stage in the succession of bare beach sand to stable dune woodland / forest vegetation.
- Grasslands dominated by *Cenchrus brevisetosus* with *Thurarea involuta* (VC17d). Grasslands occupy wind exposed locations on a broad aeolian dune system, typically on the islands south-eastern portion.
- Low shrublands formed by *Premna serratifolia*, *Capparis sepiaria*, *Gymnosporia inermis*, *Colubrina asiatica*, *Casuarina equisetifolia*, *Cordia subcordata*, and *Drypetes deplanchei* (VC14y).

The coastal foredune community (17j) forms an almost universal cover on the majority of coastal foredune habitats throughout the Torres Strait Islands although its best development is often associated with sand cay islands of the eastern group, particularly on foredune communities where sand actively accumulates. The habitat, where better formed, has an uneven appearance accentuated by the groved nature of the community which has scattered clumps of trees and shrubs relatively well-spaced and separated by bare sand or sparse tussock grasses and herbs.



Figure 4. Distribution of dune grassland habitats on Poruma.

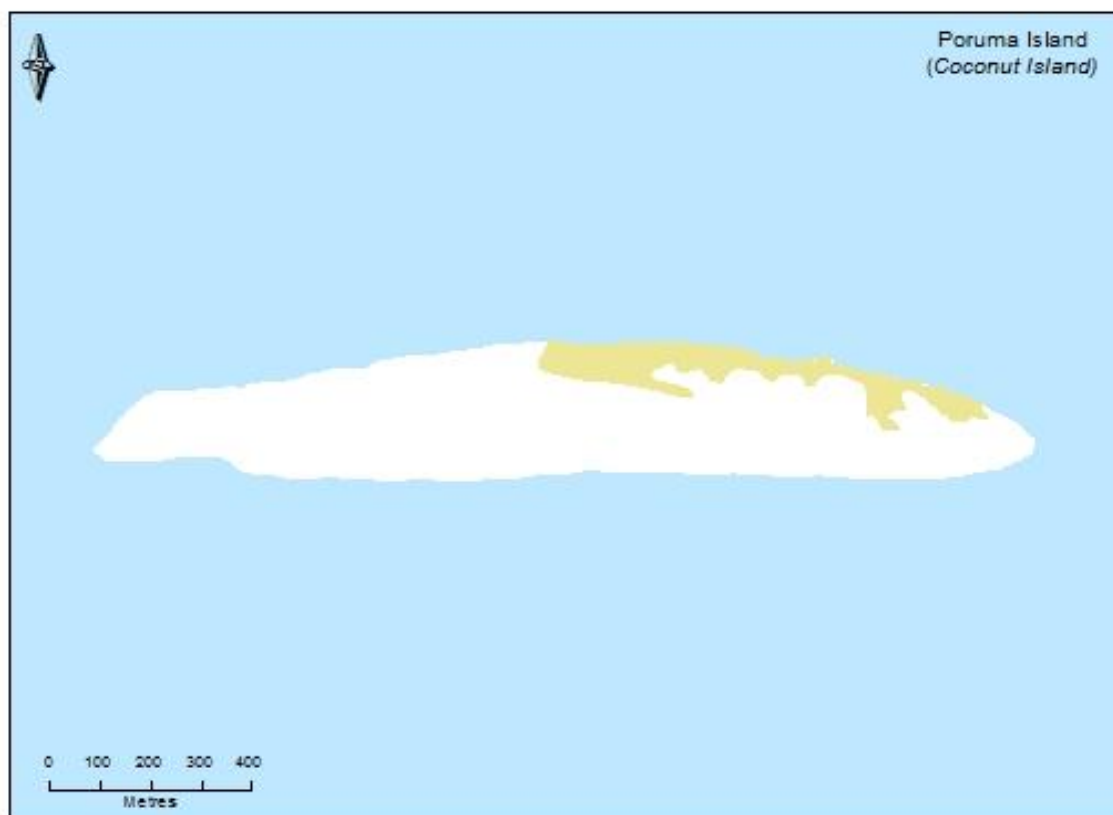


Figure 5. The distribution of dune shrublands on Poruma.

These are colonising communities forming on active foredunes and provide the primary function of stabilising mobile sand. They are highly sensitive to disturbance and destruction of colonising vegetation by fire, recreation (vehicle traffic) or exotic animals, may have a destabilising effect on dune morphology, leading to beach erosion. For this reason, they should be considered highly sensitive habitats and protected from elements of human disturbance as far as is practical. These habitats have been impacted by severe foredune erosion in some locations although an accreting sand spit on the far western tail of the island provides an example of an area where this habitat is expanding.



Photograph 6. Typical structure of RE3.2.24 (VC17j) on Poruma Island.

Dune grassland habitats (17d) are well developed on the eastern portion of the island where they inhabit a broad aeolian dune system. In the context of other Torres Strait coral cays, the association between grassland and aeolian dunes is considered unique although similar habitat/landform associations may be found on uninhabited islands in the vicinity. The derivation of these grassland habitats is unclear as there is no available historical information that documents the clearing of prior vine thicket habitat. The frequency and intensity of fire within this habitat is also unclear although grass fires have been reported by the local community on a periodic basis.



Photograph 7. Dune grassland demonstrating winnows formed by prevailing south-easterly trade winds.

Shrubland habitats are restricted to the islands north-eastern portion where they fringe the better developed vine thicket habitats. The habitats have a groved structure with individual clumps of trees separated by broad sandy areas which are variably blanketed with grasses and herbs including *Vigna marina*, *Ipomoea pes-capre* subsp. *brasiliensis*, *Cassytha filiformis* and *Cenchrus brevisetosus*. The shrubland habitat represents a likely seral stage in the ultimate development of vine forest.

7.2.2 Ecological / Cultural Considerations

Habitat Condition: Foredune habitats will be the initial point of impact for beachside erosion related to sea level rise and storm surges and foredune profiles are constantly adjusting in response to changing seasonal conditions and sedimentation rates. They have suffered severe attrition on the eastern and south facing coastline due to the incipient impacts of erosion and remaining examples are often poorly developed. There is considerable risk that exotic species, particularly gloriosa lily will spread throughout these habitats.

Dune grassland retains natural condition and is generally free from exotic species. The relatively simple floristic composition is attributed to persistent salt spray driven landward by onshore trade winds. Similarly, shrubland habitats demonstrate near natural condition and development is aided by the adjacent vine forest habitat, which being upwind, provides protection from wind exposure and salt spray.

Fauna: The habitat provides an important nesting ground for marine turtles and a number of bird species including the beach stone-curlew (*Esacus magnirostris*), listed as 'Vulnerable' under state legislation and little tern (*Sternula albifrons*) which is listed as 'Endangered' under state legislation.

Flora: This habitat supports populations of the regionally significant herb *Spermacoce* sp. (Lorim Point A. Morton AM1237). Poruma populations form part of its disjunct northern limit of distribution. It has been recorded from near the rubbish tip in grassland. The population size is unknown.

Cultural Perspectives: Groved thickets dispersed throughout the island provide habitat for a number of important food trees such as wongai (*Manilkara kauki*) and kurad (*Eugenia reinwardtiana*), and mipa (*Terminalia muelleri*). The habitat also provides an important repository for food resources such as turtle eggs. Sheltered pockets behind the dunes provided the location for historical garden areas.



Photograph 8. Elder Olandi Pearson showing TSRA Land team former garden areas behind the dune system with house grass (*Imperata cylindrica*).

7.2.3 Management Implications

The inherent sensitivity of these habitats presses the importance of adopting an appropriate management regime. Attempts at controlling foredune erosion have been largely unsuccessful. Whilst some areas have responded to physical stabilisation (e.g. tractor tyres) in isolation, this has resulted in a general shift in the erosion centre along the coastline with escalation of erosion along the adjacent shoreline. Hence, apart from the immediate protection of infrastructure, physical stabilisation of eroding foredunes may not mitigate an overall decrease in the extent of this habitat on the island.

Due to their sensitive and often transitional nature, fire should be excluded from all habitats within this grouping due to its destabilising effect on landform and tendency to simplify habitat diversity. Whilst dune grasslands may carry fire, it has a tendency to temporarily reduce ground cover resulting in the possible acceleration of foredune erosion.

All habitats should also be monitored for weed invasion, in particular gloriosa lily which is spreading rapidly throughout the town centre and threatens the integrity of more intact habitats.

7.2.4 Summary of Recommended Management Actions

Table 9. Summary management recommendations for coastal beach complexes.

Management Category	Context/Issue	Actions	Priority
Fauna Surveys	Limited previous survey.	Design and implement a structured fauna survey program supported by specialists which targets the identification of sensitive bird rookeries for management focus.	High
Plant Surveys	Information on flora composition is incomplete and limited to rapid surveys.	Carry out additional flora field surveys across seasons with focus on wet season herbs and grasses. Collect specimens and photograph plants with known uses/values that may have been used in the past, and catalogue.	Moderate
Threatened Species Management	<u>Flora:</u> <i>Spermacoce</i> sp. (Lorim Point A. Morton AM1237).	<u>Flora:</u> Ensure rangers can identify this plant to enable population size and extent to be	Moderate

Management Category	Context/Issue	Actions	Priority
	<p>Fauna: Dune complexes provide habitat for a range of significant fauna species including beach stone-curlew, little tern as well as nesting grounds for marine turtles.</p>	<p>determined.</p> <p>Fauna: Further baseline information is required (see fauna surveys) before discrete management actions can be fully defined. Survey should also identify the extent to which exotic predators (dogs and cats) are utilising these sites for hunting purposes.</p> <p>The location of nesting, and foraging sites for the beach stone-curlew should be identified by GPS for incorporation within the GIS database.</p> <p>A program for monitoring for numbers and timing of significant migratory birds should be developed and implemented. This to include ranger training in methods.</p> <p>The community should be made aware of critical habitat areas and recreational activities within these areas should be monitored or controlled.</p>	High
Traditional Ecological Knowledge	Plant and animal lists provided in the Appendices provide a good foundation for increasing TEK and ethnotaxonomy.	Collect and collate TEK knowledge through fauna and flora survey actions, and from interviews with elders on an ongoing basis.	High
Fire Management	Over burning leading to the loss of species diversity and habitat structure and destruction of cultural sites.	Fire should be excluded from these habitats.	Immediate
Invasive Species Management	<p>Flora: The habitat is currently impacted by a number of weeds.</p> <p>Fauna: Composition of invasive fauna within this habitat is poorly known. Potential for impacts on fauna particularly nesting birds, by rats, feral cats and dogs.</p>	<p>Flora: All beachfront habitats should be monitored for infestation of exotic species, particularly gloriosa lily, during routine patrols. Any observed infestation should be documented and eradication/ control measures implemented immediately.</p> <p>Fauna: Invasive fauna to be determined from fauna survey results. Assess cat activity levels through nocturnal spotlighting around dump, sand padding techniques, and consultation with community members. Implement control where appropriate.</p>	<p>High</p> <p>Moderate</p>
Monitoring	Observations relating to any changes to habitat condition should be documented so that the risk these changes pose to long-term habitat stability can be assessed and appropriate management responses formulated.	<p>All beachfront habitats should be informally monitored for infestation of exotic species, and other aspects of land degradation on a minimum 6 monthly interval during routine patrols.</p> <p>It is important that location and track logs of informal monitoring</p>	High

Management Category	Context/Issue	Actions	Priority
		<p>exercises be recorded to ensure at risk habitats are not overlooked.</p> <p>Areas of beach erosion should be monitored on a regular basis through establishment of permanent photographic monitoring points.</p>	
Cultural Heritage	The cultural heritage values of this habitat have not been documented.	Document the cultural significance of these habitats through interviews with knowledgeable members of the community.	Moderate

7.3 Cleared Areas, Exotic Vegetation and Regrowth / Plantation Forests

With a relatively large population and small land area, there is considerable pressure on Poruma Islanders to further modify the natural environment for a range of community needs. The trend of landscape modification has been ongoing on Poruma Island since human arrival. At current levels, heavily modified environments (excluding anthropogenic vine thickets) account for 36 ha or 95% of the islands total area. Degraded areas host a considerable number of exotic weed species which have potential to spread to less disturbed habitats on Poruma and adjacent Islets. The majority of the 43 introduced species on the island occur in degraded areas. The more problematic of these have been previously discussed. A structured program of weed planning, awareness, and control within the community areas is required to prevent the spread of these species throughout the island landscape.

Also included within this category is a narrow fringe of coastal she-oak mixed with coconut (*Cocos nucifera*) on the southern–central portion of the island coastline. From historical imagery and discussions with Poruma elders, the plantation is estimated at 20 – 25 yrs age, demonstrating a characteristic canopy height of 8 – 12 m and partial canopy closure in some locations. The plantation forest appears to have assisted stabilisation of the foredune and be at least partially responsible for localised accretion of a narrow sand berm above the high tide mark. The accretion of the narrow bench contrasts with the severely eroded foredune that is typical on much of the broader island coastline suggesting that the plantation has provided local benefits to shoreline stability.

7.3.1 Management Implications

A comprehensive program of weed assessment, followed by strategic control and eradication around the community is required to minimise the risk of spread of invasive species into natural habitats. Weed surveys are routinely carried out by DAFF. A close partnership between the DAFF field botanists and the ranger program is an important foundation to protecting the island from highly invasive weeds. A focus on building the rangers knowledge on identifying, mapping and assessing weeds particularly those capable of inducing major environmental damage is required.



Photograph 9. Area of disturbed vegetation on Poruma with weed infestations of yellow bells (far right) and Manilla rope (foreground right).



Photograph 10. *Casuarina equisetifolia* plantings on the south side of Poruma.

7.3.2 Summary of Recommended Management Actions

Table 10. Summary of management actions for cleared and disturbed areas.

Management Category	Context/Issue	Actions	Priority
Cultural Heritage	Cultural heritage values may occur throughout cleared and degraded areas.	Implement surveys of the cultural heritage values of this habitat. In consultation with the community, give consideration to protecting/managing these values through fencing and signage.	Immediate
Fauna Surveys	NA	No actions.	-
Plant Surveys	NA	No actions	-
Threatened Species Management	Flora: NA Fauna: NA	Flora: No actions. Fauna: No actions.	- -
Traditional Ecological Knowledge	The recording of TEK may include places, stories, and cultural resources which occur in cleared and degraded areas.	Collect and collate TEK and from interviews with elders on an ongoing basis.	High
Invasive Species Management	<u>Flora:</u> Many weeds are known from within and on the disturbed margins of the community. <u>Fauna:</u> Populations of cats, dogs and rats originate from the community area.	<u>Flora:</u> Undertake a program of weed assessment around the community followed by strategic control and eradication. Monitor success of control measures of highly invasive weeds. Foster a close partnership between the DAFF field botanists and the rangers program as an important foundation to protecting the island from highly invasive weeds. Train rangers in weed identification. <u>Fauna:</u> Train rangers in feral animal monitoring methods. Particularly monitoring and control of the exotic black rat and feral cats. Assess cat and dog activity levels by installation and monitoring of sand pads on nearby tracks, nocturnal spotlighting, and consultation with community members. Implement control where appropriate.	Immediate Immediate Immediate Immediate Immediate
Monitoring	NA	See invasive plant species.	-

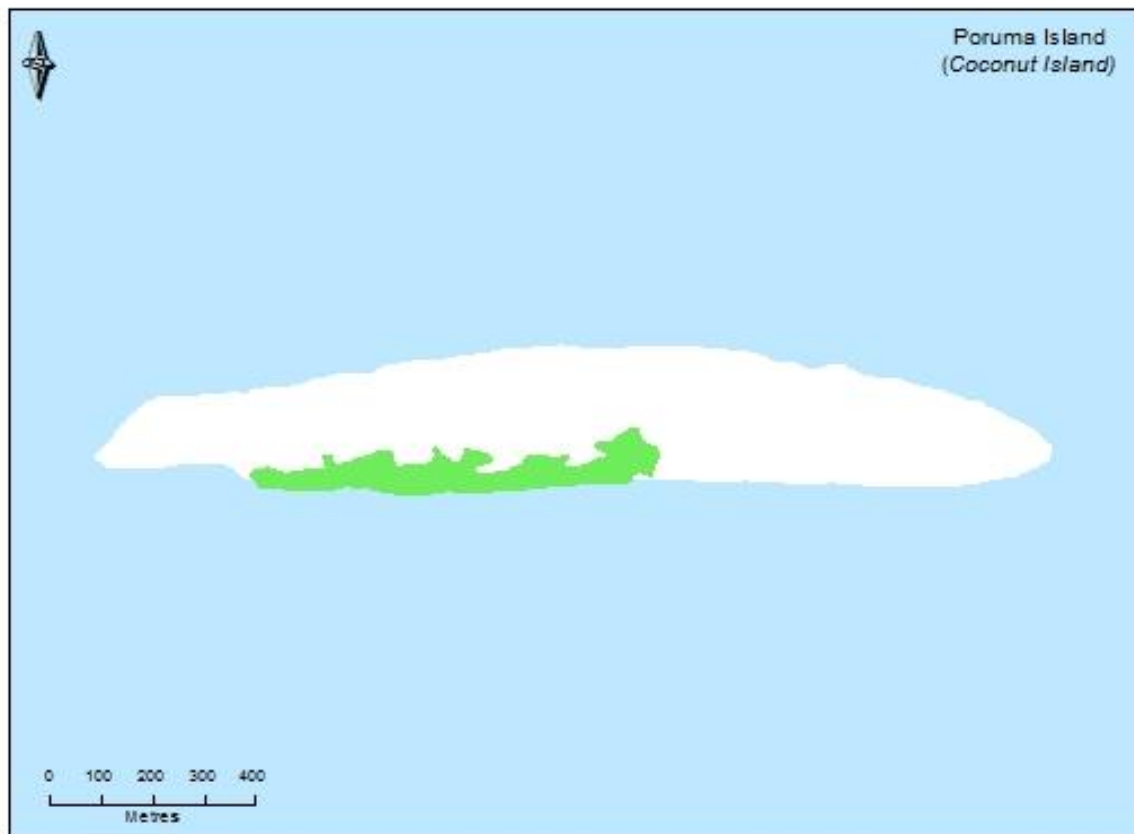


Figure 6. Location of plantation communities on Poruma

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9.0 Glossary

Aeolian: Pertaining to transport by wind, particularly wind-blown sand.

Beach Rock: A hardpan layer formed by cemented coral or shells.

Bioregion: The bioregion forms the primary level of classification for terrestrial biodiversity values on a state and nationwide basis. Thirteen bioregions are classified in Queensland with the Torres Strait Islands being a sub-province of the broader Cape York Peninsula bioregion.

Broad Vegetation Group: The highest level of classification used to describe plant assemblages in the Torres Strait Islands, typically referring to plant habit and structure.

Deciduous: A tree species that undergoes a seasonal shedding of leaves, typically being leafless in the drier seasonal periods (e.g. *Bombax ceiba*).

Edaphic: Pertaining to characteristics of the soil including moisture, drainage and fertility.

Evergreen: A tree or vegetation community that retains foliage on an annual basis i.e. always has leaves.

Holocene: The period of time less than 11 thousand years to present. Less than 5 thousand years old is considered to be 'Late Holocene'.

Igneous Rock: A rock formed by cooling and solidification of molten magma or lava.

Notophyll: A category of leaf size with a leaf blade for 7.5 to 12.5 cm long.

Obligate Seeder: A plant that can only regenerate after fire from a seed or stored seed bank.

Pleistocene: The period of time between 11 thousand and 1.8 million years old.

Quaternary: The period of time between present and 1.8 million years old, which is subdivided into Pleistocene and Holocene ages.

Regional Ecosystem: The primary unit against which Queensland's Vegetation Management Act (1999) is regulated and as such, the classification has specific legislative significance. The classification of regional ecosystems is based on a hierarchical system with a three part code defining bioregion, followed by land zone, and then vegetation.

Savanna: A habitat typified by grasses where trees do not form a closed canopy.

Semi-evergreen: A tree or forest type whose pattern of leaf loss can be related to specific periods of environmental stress. In semi-evergreen vine forest, only portions of the canopy will be subject to leaf loss at a particular time.

Semi-deciduous: A rainforest or vine thicket type in which a component of the forest canopy trees and canopy emergents are seasonally (obligate) deciduous.

Vine Thicket: A vegetation community that is formed by predominantly soft leaf (rainforest) trees and shrubs, typically with dense layers of wiry lianes (vines) growing from ground level and reaching canopy height. Thicket is in reference to canopy height with the predominant canopy forming at < 9m.

Vine Forest: A vegetation community commonly referred to as rainforest, that is formed by predominantly soft leaf (rainforest) trees and shrubs. Dense cover of lianes (vines) and epiphytes are common at all structural levels. Vine forest is differentiated from vine thicket by height, with predominant vine forest canopy being > 9m.

10.0 Appendices

Appendix A. Queensland Govt. vegetation structural classification

Structural formation classes qualified by height for Non-Rainforest Vegetation: Neldner *et al.* 2005) modified from Specht (1970).

Projective Foliage Cover	70-100%	30-70%	10-30%	<10%
Approximate Crown Cover %	80 - 100%	50 - 80%	20 - 50%	< 20%
Crown separation	closed or dense	mid-dense	sparse	very sparse
Growth Form ⁴	Structural Formation Classes (qualified by height)			
Trees > 30m	tall closed-forest (TCF)	tall open-forest (TCF)	tall woodland (TW)	tall open-woodland (TOW)
Trees 10 – 30m	closed-forest (CF)	open-forest (OF)	woodland (W)	open-woodland (OW)
Trees < 10m	low closed-forest (LCF)	low open-forest (LOF)	low woodland (LW)	low open-woodland (LOW)
Shrubs 2 - 8m	closed-scrub (CSC)	open-scrub (OSC)	tall shrubland (TS)	tall open-shrubland (TOS)
Shrubs 1 - 2m	closed-heath (CHT)	open-heath (OHT)	shrubland (S)	open-shrubland (OS)
Shrubs <1m	-	dwarf open-heath (DOHT)	dwarf shrubland (DS)	dwarf open-shrubland (DOS)
Succulent shrub	-	-	succulent shrubland (SS)	dwarf succulent shrubland (DSS)
Hummock grasses	-	-	hummock grassland (HG)	open hummock grassland (OHG)
Tussock grasses	closed-tussock grassland (CTG)	tussock grassland (TG)	open tussock grassland (OTG)	sparse-tussock grassland (STG)
Herbs	closed-herbland (CH)	Herbland (H)	open-herbland (OH)	sparse-herbland (SH)
Forbs	closed-forbland (CFB)	Forbland (FB)	open-forbland (OFB)	sparse-forbland (SFB)
Sedges	closed-sedgeland (CV)	Sedgeland (V)	open-sedgeland (OV I)	-

⁴ Growth form of the predominant layer (the ecologically dominant layer).

Appendix B. Flora Species List, Poruma Island, Torres Strait, Queensland.

DG Fell 3D Environmental

- Nomenclature follows Bostock & Holland (2010) 'Census of the Queensland Flora'.
- Habitats refer to broad vegetation groups of Stanton *et al.* (2009).
- *Denotes naturalised or doubtfully naturalised taxa according to Bostock & Holland (2010).
- ^ denotes local - cultural significance.
- # denotes regional significance.
- Unnamed species followed by a collection number (i.e. DGF10153) are pending formal identification at Qld Herbarium.
- Common names follow Hyland *et al.* (2010).
- Weed lists compiled by Department of Agriculture Fisheries and Forestry Northern Australia Quarantine Strategy plant health surveillance activities 17/8/2011 and 31/7/2012 have been incorporated.
- Includes selected naturalised plants found in village areas which are considered potential weeds.

SUMMARY

- 180 species (1 fern, 179 angiosperms)
- 117 native (65%)
- 63 naturalised (35%)
- 71 families (60 native, 11 naturalised)
- Dominant families (native species): Poaceae 11, Fabaceae 7, Lamiaceae 5, Euphorbiaceae 4, Convolvulaceae 3
- 138 genera (100 native, 38 naturalised)
- 58 (32%) local/cultural significance (49 native, 9 naturalised)

Family	Botanical Name	Status	Common Name	Central Island Language Name ⁵	Dune vine forest - thicket	Casuarina woodland-dune shrubland	Dune grassland	Intertidal	Disturbed	H'breas (2012)	DAFF (2011, 2012)	DGF 2012 (v=vouche)	DGF photo	Phenology (June 12)
Ferns														
Polypodiaceae	<i>Microsorium grossum</i>	^			X							X	X	
Angiosperms (Flowering Plants)														
Acanthaceae	<i>Ruellia tuberosa</i>	*	minnieroot, spearpod						X		X	X	X	
	<i>Achyranthes aspera</i>		chaff burr		X	X			X			X	X	Ft
	<i>Asystasia gangetica</i> subsp. <i>gangetica</i>	*									X			
	<i>Barleria lupulina</i>	*Cult.	hophead Philippine violet						X		X			
Agavaceae	<i>Agave vivipara</i> var. <i>vivipara</i>	*^	Manilla rope						X		X	X	X	
Aizoaceae	<i>Sesuvium portulacastrum</i>	^	sea purslane	Gurawad			X					X	X	
Amaryllidaceae	<i>Priophrys amboinensis</i>		Christmas lily, Cardwell lily		X							X	X	
Anacardiaceae	<i>Semecarpus australiensis</i>	^	tar tree	Duha	X				X	X		X	X	
	<i>Buchanania arborescens</i>	^	little gooseberry tree	Cizergai					X			X		
	<i>Pleiogynum timorense</i>	Cult.	Burdekin plum						X			X	X	
Apocynaceae	<i>Catharanthus roseus</i>	*^	pink periwinkle	Binci			X		X		X	X	X	Flw
	<i>Calotropis procera</i>	*	calotropis, poison flower						X			X	X	Flw
	<i>Cryptostegia madagascariensis</i>	*Cult.	rubber vine						X		X			
	<i>Nerium oleander</i>	*	oleander						X			X	X	
Araliaceae	<i>Polyscias macgillivrayi</i>	^	whistle tree		X					X		X		
Arecaceae	<i>Cocos nucifera</i>	*^	coconut		X	X	X		X			X	X	
Aristolochiaceae	<i>Aristolochia chalmersii</i>		Chalmers aristolochia		X							Xv	X	Flw
Asteraceae	<i>Bidens pilosa</i>	*	cobblers pegs				X		X	X		X		Ft
	<i>Blainvillea dubia</i>						X		X			X		
	<i>Cyanthillium cinereum</i>								X		X			
	<i>Eleutheranthera ruderalis</i>	*	ogiera						X		X			
	<i>Sphagnetocola trilobata</i>	*	Singapore daisy						X		X	X		
	<i>Synedrella nodiflora</i>	*	cinderella weed						X		X	X		Flw
	<i>Tridax procumbens</i>	*^	tridax daisy			X	X		X		X	X	X	Flw
Avicenniaceae	<i>Avicennia marina</i>		grey mangrove					X		X				

⁵ The allocation and spelling of all language names needs to be verified by traditional owners. The information is provided as a starting point toward future development of TEK initiatives.

Family	Botanical Name	Status	Common Name	Central Island Language Name ⁵	Dune vine forest - thicket	Casuarina woodland-dune shrubland	Dune grassland	Intertidal	Disturbed	H'breas (2012)	DAFF (2011, 2012)	DGF 2012 (v=vouche)	DGF photo	Phenology (June 12)
Bignoniaceae	<i>Tecoma stans</i> var. <i>stans</i>	*	yellow bells						X	X	X	X	X	Flw
Bombacaceae	<i>Bombax ceiba</i> var. <i>leiocarpum</i>		canoe tree					X		X		X		
Boraginaceae	<i>Cordia subcordata</i>	^	golden trumpet tree	Mukamai	X				X	X		X	X	Flw, ft
Caesalpiniaceae	<i>Delonix regia</i>	*	poinciana, christmas tree					X			X	X	X	
	<i>Senna occidentalis</i>	*	coffee senna						X			X	X	Ft
	<i>Caesalpineia bonduc</i>		nicker nut			X						X		
	<i>Tamarindus indicus</i>	*^	tamarind						X			X		
Campanulaceae	<i>Wahlenbergia caryophylloides</i>		blue bells		X		X			X		X		Flw
Capparaceae	<i>Capparis lucida</i>		coast caper		X					X		X		
	<i>Capparis sepiaria</i>		wild orange		X	X			X			X		Flw
	<i>Capparis nummularia</i>				X							X		
Caricaceae	<i>Carica papaya</i>	*	paw paw						X		X	X		
Casuarinaceae	<i>Casuarina equisetifolia</i>	^	horsetail she oak	gaiboi, gabui	X	X	X		X			X	X	
Celastraceae	<i>Gymnosporia inermis</i>			Pitader		X	X					X		Flw, ft
	<i>Salacia chinensis</i>	^	jaffa bush		X		X			X		X	X	
Cleomaceae	<i>Cleome tetrandra</i>		tick weed		X		X		X			X	X	
	<i>Cleome viscosa</i>		tick weed		X		X		X	X		X		Flw
Clusiaceae	<i>Calophyllum inophyllum</i>		beach touriga			X			X	X		X	X	
Colchicaceae	<i>Gloriosa superba</i>	*	glory lily						X	X	X	X	X	Flw
Combretaceae	<i>Quisqualis indica</i>		Rangoon creeper							X	X	X		
	<i>Terminalia arenicola</i>	^	brown damson	Imipa	X	X			X			X		
	<i>Terminalia catappa</i>	^	beach almond	Merkai		X	X		X	X		X	X	
	<i>Terminalia muelleri</i>		Australian almond	Mipa	X				X	X		Xv	X	Flw, ft
Commelinaceae	<i>Tradescantia spathacea</i>	*	Moses in the cradle					X		X	X	X		
	<i>Commelina</i> sp.		scurvy weed		X	X	X		X			X		Flw
Convolvulaceae	<i>Evolvulus alsinoides</i> var. <i>decumbens</i>		dwarf morning glory			X	X			X		X	X	Flw
	<i>Ipomoea batatas</i>	*	sweet potato	^					X			X		
	<i>Ipomoea hederifolia</i>	*	scarlet creeper						X	X		X	X	Flw
	<i>Ipomoea macrantha</i>		morning glory		X				X			X	X	Flw
	<i>Ipomoea pes-caprae</i> subsp. <i>brasilensis</i>	^	goats foot convolvulus			X	X		X	X		X	X	Flw
	<i>Jacquemontia paniculata</i>		jacquemontia			X		XX		X		X		Flw
Cucurbitaceae	<i>Diplocyclos palmatus</i>		striped cucumber		X	X	X			X		Xv	X	Flw
	<i>Muelleragia timorensis</i>	^	spitting cucumber		X							Xv		Flw
Cyperaceae	<i>Bulbostylis barbata</i>		water grass			X	X			X		X		
	<i>Cyperus pedunculatus</i>		pineapple grass				X					X		
	<i>Cyperus</i> sp. (DGF)					X	X		X			Xv	X	

Family	Botanical Name	Status	Common Name	Central Island Language Name ⁵	Dune vine forest - thicket	Casuarina woodland-dune shrubland	Dune grassland	Intertidal	Disturbed	H'breccs (2012)	DAFF (2011, 2012)	DGF 2012 (v=vouche)	DGF photo	Phenology (June 12)
Dioscoreaceae	<i>Dioscorea transversa</i>	^	Yam		X							X	X	
Dracaenaceae	<i>Sansevieria trifasciata</i> var. <i>trifasciata</i>	*	Mothers in law tongue						X	X	X	X	X	
Ebenaceae	<i>Diospyros compacta</i>	^	An Australian ebony	kubi	X							Xv		
	<i>Diospyros maritima</i>	^	broad leaved ebony	kubil gim	X					X		X	X	Juv.ft
Euphorbiaceae	<i>Acalypha lanceolata</i> var. <i>lanceolata</i>								X	X				
	<i>Euphorbia cyathophora</i>	*	painted spurge			X	X		X	X	X	X	X	Flw
	<i>Euphorbia heterophylla</i>	*	painted spurge			X	X		X			X		Flw
	<i>Euphorbia hirta</i>	*	asthma plant				X		X		X	X	X	Flw
	<i>Euphorbia pallens</i>		beach euphorbia				X					Xv	X	Flw
	<i>Euphorbia tannensis</i> var. <i>tannensis</i>		euphorbia		X							Xv	X	Flw
	<i>Macaranga tanarius</i>	^	macaranga	bibi	X				X	X		Xv		Flw
	<i>Manihot esculenta</i>	*	Cassava	cassava					X			X		
	<i>Ricinus communis</i>	*^	castor oil bush	lam					X	X	X	X		Ft
Fabaceae	<i>Abrus precatorius</i>	^	gidee gidee, crabs eye		X				X			X	X	
	<i>Canavalia papuana</i>	^	beach bean				X					X		Flw
	<i>Clitoria ternatea</i> *	*	butterfly pea						X		X	Xv	X	Flw
	<i>Crotalaria goreensis</i>	*	gambia pea						X		X			
	<i>Desmodium tortuosum</i>	*	beggar weed						X	X	X	X		Ft
	<i>Desmodium triflorum</i>	*	creeping tickfoil						X		X	X		
	<i>Erythrina insularis</i>	^	coral tree	nawar	X				X	X		X	X	Ft
	<i>Erythrina variegata</i>	^	coral tree	nawar	X							X		Ft
	<i>Indigofera tinctoria</i>	*	Indigo						X	X	X	X		Ft
	<i>Indigofera</i> sp. (DGF)								X			Xv	X	
	<i>Macroptilium atropurpureum</i>	*	Siratro						X		X	X	X	
	<i>Millettia pinnata</i>	^	Indian beech, pongamia tree	gub	X				X	X		X		
	<i>Rynchosia minima</i> var. <i>minima</i>		rynchosia		X	X			X			Xv	X	
	<i>Sophora tomentosa</i> var. <i>australis</i>		silver bush				X					Xv	X	Flw, ft
	<i>Stylosanthes hamata</i>	*	Townsville stylo						X		X			
	<i>Stylosanthes humilis</i>	*	Townsville stylo						X		X	X	X	Flw
	<i>Stylosanthes scabra</i>	*	Townsville stylo						X		X			
	<i>Tephrosia laxa</i>				X	X			X	X		Xv		Flw
	<i>Tephrosia</i> sp. (DGF)				X							Xv		Flw
	<i>Vigna marina</i>	^	dune bean				X					X	X	Flw
Goodeniaceae	<i>Scaevola taccada</i>		sea lettuce	dell		X	X					X	X	Flw

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Hernandiaceae	<i>Gyrocarpus americanus</i> subsp. <i>americanus</i>	^	helicopter tree	apai	X				X	X		X		
Lamiaceae	<i>Anisomeles malabrica</i>		chodhava	kibur		X			X			X		Flw
	<i>Clerodendrum inerme</i>		scrambling clerodendrum				X		X			X		Flw
	<i>Clerodendrum longiflorum</i> var. <i>glabrum</i>	^	lolly bush		X				X	X		X		Flw
	<i>Hyptis suaveolens</i>	*	cockatoo bush		X				X		X	X	X	
	<i>Premna serratifolia</i>	^	coastal premna	komak	X	X	X		X	X		X	X	
	<i>Vitex trifolia</i>		three leaf vitex				X		X			X	X	
Lauraceae	<i>Cassytha filiformis</i>	^	Dodder	muzurhu	X	X	X		X	X		X	X	Ft
Lythraceae	<i>Pemphis acidula</i>	^	digging stick tree	mur		X						X	X	Flw
Malvaceae	<i>Hibiscus tiliaceus</i>	^	cottonwood, beach hibiscus tree			X			X			X		Flw
	<i>Sida acuta</i>	*	Sida						X		X			
	<i>Sida pusilla</i>	*	A sida						X	X		X		
	<i>Malvastrum coromandelianum</i> subsp. <i>coromandelianum</i>	*	false mallow						X		X	X		
	<i>Thespesia populnioides</i>	^	Pacific rosewood	wana	X							Xv	X	Flw
Meliaceae	<i>Aglaiia eleagnoidea</i>	^	Coastal boodyara	usarkun	X							X		
	<i>Turraea pubescens</i>		Turraea		X					X		X		Ft
	<i>Vavaea amicornum</i>		Vavaea		X									
Mimosaceae	<i>Acacia oraria</i>	Cult.?	coastal wattle		X	X			X			Xv	X	Bud
	<i>Leucaena leucacephala</i>	*	Leucaena			X			X		X	X	X	
Moraceae	<i>Ficus opposita</i>		sandpaper fig		X							X	X	
	<i>Ficus virens</i>	Cult.	white fig	darhny					X	X		X	X	Ft
Myrtaceae	<i>Eugenia reinwardtiana</i>	^	cedar bay cherry	kurad	X							X		
	<i>Syzygium branderhorstii</i>	Cult.	Lockerbie satin ash	uzu					X	X		X		Flw
	<i>Syzygium aquem</i>	Cult.	bell fruit						X			X	X	
Nyctaginaceae	<i>Boerhavia mutabilis</i>	^	tar plant	aipi			X		X	X		X		Flw
Pandanaceae	<i>Pandanus tectorius</i>	^	screw pine			X	X		X			X	X	
Passifloraceae	<i>Passiflora foetida</i>	*^	wild passionfruit		X	X	X		X	X	X	X		
Pedaliaceae	<i>Josephinia imperatricis</i>		A sand burr	puti		X	X		X	X		X	X	Flw
Plumbaginaceae	<i>Plumbago zeylanica</i>		wild plumbago		X					X		X		Ft
Phyllanthaceae	<i>Breynia cernua</i>		lmer		X	X			X			X		
	<i>Flueggea virosa</i> subsp. <i>melanthesioides</i>	^	white current, white fruit	kupi		X			X			X		Bud
	<i>Phyllanthus amarus</i>	*	bahupatra						X		X	X		
	<i>Phyllanthus novae-hollandiae</i>		phyllanthus		X							X	X	

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Pittosporaceae	<i>Pittosporum ferrugineum</i> subsp. <i>ferrugineum</i>		rusty pittosporum		X							Xv		
Poaceae	<i>Bothriochloa bladhii</i> subsp. <i>bladhii</i>		forest bluegrass						X			X		
	<i>Bothriochloa pertusa</i>	*	Indian couch						X			X		
	<i>Cenchrus brevisetosus</i>		dune grass						X	X				
	<i>Cenchrus echinatus</i>	*	Mossman river grass				X		X	X	X	X		
	<i>Cenchrus pedicellatus</i> subsp. <i>pedicellatus</i>	*	annual mission grass						X	X		X		
	<i>Cenchrus pedicellatus</i> subsp. <i>unispiculus</i>	*	kyasuma grass						X		X			
	<i>Cynodon dactylon</i>	*	common couch						X		X	X		
	<i>Dactyloctenium aegyptium</i>	*	button grass						X		X	X		
	<i>Digitaria ciliaris</i>	*	summer grass						X		X	Xv		
	<i>Eleusine indica</i>	*	crows foot grass						X		X	X		
	<i>Eragrostis</i> sp. (DGF)		A love grass		X				X			Xv		
	<i>Eragrostis tenuella</i>		love grass						X		X	X		
	<i>Imperata cylindrica</i>	^	blady grass	house grass		X	X					X	X	
	<i>Lepturus repens</i>		lepturus				X			X		X		
	<i>Melinis repens</i>	*	red natal grass						X			X		Flw
	<i>Perotis rara</i>		comet grass		X		X			X		X		
	<i>Themeda triandra</i>		kangaroo grass							X				
	<i>Themeda arguens</i>						X					X		
	<i>Thuarea involuta</i>		kuroiwa grass				X		X	X		X	X	
Portulacaceae	<i>Portulaca oleracea</i>	*	pig weed						X		X	X		
	<i>Talinum triangulare</i>	*	Ceylon spinach						X		X			
Putranjivaceae	<i>Drypetes deplanchei</i>	^	yellow boxwood	aka	X					X		X	X	Ft
Rhamnaceae	<i>Colubrina asiatica</i>	^	colubrina, beach berry bush	gurigur	X							X	X	Ft
Rhizophoraceae	<i>Rhizophora apiculata</i>		tall stilted mangrove					X				Xv	X	
Rosaceae	<i>Suriana maritima</i>		bay cedar									Xv	X	Flw
Rubiaceae	<i>Cylcophyllum maritimum</i>	^	coastal canthium									Xv		
	<i>Guettarda speciosa</i>	^	sea randa, beach gardenia	budu	X				X	X		X	X	Flw
	<i>Morinda citrifolia</i>	^	Noni	auboi	X				X	X		X		Flw, ft
	<i>Oldenlandia corymbosa</i>	*							X		X	Xv		Flw
	<i>Spermacoe</i> sp. (Lorim Point A.Morton AMX237)	#			X		X			X				
Rutaceae	<i>Micromelum minutum</i>		lime berry	hapi, gait gait	X				X	X		X	X	Ft

Family	Botanical Name	Status	Common Name	Central Island Language Name ⁵	Dune vine forest - thicket	Casuarina woodland-dune shrubland	Dune grassland	Intertidal	Disturbed	H'breas (2012)	DAFF (2011, 2012)	DGF 2012 (v=vouche)	DGF photo	Phenology (June 12)
Santalaceae	<i>Exocarpos latifolius</i>		broad leaved ballart		X					X		X		
Sapindaceae	<i>Cupaniopsis anacardioides</i>		Tuckeroo							X				
	<i>Dodonaea polyandra</i>		hop bush							X		X		
	<i>Dodonaea viscosa</i>		hop bush	Saipai (Lawrie), yulapi (A. Pearson)	X				X			X	X	Ft
Sapotaceae	<i>Manilkara kauki</i>		Wongai	ubar	X				X	X		X	X	Ft (juv)
	<i>Pouteria obovata</i>		northern yellow boxwood		X							X		
Solanaceae	<i>Physalis angulata</i>	*^	cape gooseberry						X		X			
Stackhousiaceae	<i>Stackhousia intermedia</i>				X	X	X			X		Xv	X	Flw
Sterculiaceae	<i>Sterculia quadrifida</i>		peanut tree		X							Xv		
Taccaceae	<i>Tacca leontopetaloides</i>	^	arrowroot	gasi								X		Dead stems
Thymeliaceae	<i>Wickstroemia indica</i>		tie bush		X				X			X	X	Flw
Turneraceae	<i>Turnera subulata</i>	*	white alder						X		X			
	<i>Turnera ulmifolia</i>	*	yellow alder						X	X	X	X	X	Flw
Urticaceae	<i>Pilea microphylla</i>	*	artillery plant						X		X			
Verbenaceae	<i>Stachytarpheta jamaicensis</i>	*	snake weed			X	X		X		X	X	X	Flw
	<i>Lantana camara</i>	*	Lantana			X			X			X	X	Flw
Vitaceae	<i>Cayratia cardiophylla</i>		large leaf water vine		X					X		Xv		
	<i>Cayratia trifolia</i>		slender water vine		X	X			X	X		Xv		
Zygophyllaceae	<i>Tribulus cistoides</i>		Caltrope	puti		X	X			X		X		Flw

Appendix C. Preliminary List of Culturally Significant Plants for Poruma Island

Scientific Name	Language Name	Common Name	Life Form	Broad Use	Part Used	Broad Habitat	Source
<i>Abrus precatorius</i>	TBD	Gidee gidee	Vine	Material	Black and red seeds used for decorative purposes i.e. necklaces and bracelets. Seeds shot through paw paw stems for kids play.	Vine forest & thickets, & shrublands.	Olandi Pearson pers. comm. (May 2012).
<i>Agave sisalana</i> *	Manilla rope	Manilla rope	Succulent shrub	Material	Leaves cut and soaked in water to extract fibre for traditional grass skirts. Spike used for holding leaves in a fence or wind barrier.	Vine forests and thickets, dune shrublands, grasslands, and disturbed areas.	Olandi Pearson pers. comm. (May 2012).
<i>Aglaia eleagnoidea</i>	TBD	Coastal boodyara	Tree	Material	Strong timber known to be once used for building purposes on other islands.	Vine forests and thickets.	N. Gibuma pers. com. Nov. 2011.
<i>Boerhavia mutabilis</i>	ipee, ipi	Tar plant	Herb	Material	Once used as a succulent green feed for pigs.	Dune foreshores.	Olandi Pearson pers. comm. (May 2012).
<i>Buchanania arborescens</i>	TBD	Little gooseberry tree	Tree	Food	Small black fruits eaten as a snack when ripe on other islands.	Vine forests & thickets.	-
<i>Caesalpinia bonduc</i>	TBD	Nicker nut	Shrub/Vine	Material	Seeds known to be used on other islands for playing marbles.	Margins of vine forests near coast.	N. Gibuma pers. com. Nov. 2011.
<i>Calophyllum inophyllum</i>	gaiwar?	Beach touriga	Tree	TBD	TBD	TBD	-
<i>Cassytha filiformis</i>	muzurru	Dodder laurel	Vine	Material	Stems	Vine forests and thickets, dune shrublands and grasslands.	Olandi Pearson pers. comm. (May 2012).
<i>Catharanthus roseus</i> *	binci	Madagascar periwinkle	Herb	Material	Flowers used as a decoration.	Disturbed foreshores.	Olandi Pearson pers. comm. (May 2012).
<i>Cocos nucifera</i>	urub	Coconut	Palm	Food Material	Kernel	Planted locations.	
<i>Colubrina asiatica</i>	gurigal	Colubrina or beach berry bush	Shrub	Material	Leaves in water to wash hands. Ladies used to dig roots to expose inner skin (bark) and extract put in	Margins of vine forests near coast.	Olandi Pearson pers. comm. (May

Scientific Name	Language Name	Common Name	Life Form	Broad Use	Part Used	Broad Habitat	Source
					rag and used as a shampoo to clean hair and make shiny.		2012).
<i>Cordia subcordata</i>	mukamai	Golden trumpet tree	Tree	Material	Young fruits eaten (coconut taste). Timber used for drums on other islands.	Vine forests and thickets.	Olandi Pearson pers. comm. (May 2012).
<i>Diospyros maritima</i>	kubil gim	Coastal ebony	Tree	Indicator	Fruit ripening yellow is a sign for turtle abundance. Sap of leaves and stem and fruit is toxic.	Vine forests and thickets.	Olandi Pearson pers. comm. (May 2012).
<i>Dodonaea poyandra</i> , <i>D. viscosa</i>	yellapui	Hop bush	Shrub	TBD	TBD	Dune shrublands	Olandi Pearson pers. comm. (May 2012).
<i>Drypetes deplanchei</i>	ak	Yellow box wood	Tree	Material	Dried leaves traditionally used for storing wongai plums on Masig and Warraber.	Vine forests and thickets.	Dan Mosby (Oct 2007).
<i>Erythrina insularis</i>	nawai	Coral tree	Tree	Material	Glossy seeds used for decorative purposes i.e. necklaces and bracelets. Soft timber easily worked. Note that stems of trees washed up on beach were taken to Warraber as cuttings and planted.	Vine forests and thickets.	Olandi Pearson pers. comm. (May 2012).
<i>Erythrina variegata</i>	nawai	Coral tree	Tree	Material	Glossy seeds used for decorative purposes i.e. necklaces and bracelets. Soft timber easily worked.	Vine forests and thickets.	Olandi Pearson pers. comm. (May 2012).
<i>Eugenia reinwardtiana</i>	kurad	Cedar bay cherry	Shrub	Food	Ripe fruits eaten as a snack.	Vine forests and thickets.	Olandi Pearson pers. comm. (May 2012).
<i>Exocarpos latifolius</i>	TBD	Broad leaved ballart	Shrub	Food	Small fruit eaten when ripe.	Vine forest & thickets, & shrublands.	Olandi Pearson pers. comm. (May 2012).
<i>Ficus virens</i>	darni tree	Fig	Tree	TBD	TBD	Community area	-
<i>Guettarda speciosa</i>	bodo	Beach gardenia	Tree	Material	Leaves for Kup Muri	Vine forests and thickets, dune shrublands.	Olandi Pearson pers. comm. (May 2012).

Scientific Name	Language Name	Common Name	Life Form	Broad Use	Part Used	Broad Habitat	Source
<i>Gyrocarpus americanus subsp. americanus</i>	aipai	Helicopter tree	Tree	Material	Light timber used for sailing boats.	Vine forests and thickets.	Olandi Pearson pers. comm. (May 2012).
<i>Hibiscus tiliaceus</i>	TBD	Cottonwood hibiscus	Tree	Material	Light wood for making small racing canoes. Fibrous bark possibly used for fibre.	Dune shrublands.	Olandi Pearson pers. comm. (May 2012).
<i>Ipomoea pes capre var. brasiliensis</i>	TBD	Goats foot convolvulus	Herb/Vine	Material	Stems for tying.	Foreshore grasslands.	Olandi Pearson pers. comm. (May 2012).
<i>Macaranga tanarius</i>	TBD	Macaranga	Shrub, small tree	Material	Leaves cut and used for kup muri. Red sap in broken branches used as an adhesive.	Vine forests and thickets, and dune shrublands.	Olandi Pearson pers. comm. (May 2012).
<i>Manihot esculenta*</i>	TBD	Cassava	Shrub	Food	Tuber used for food.	Disturbed areas.	TBD
<i>Manilkara kauki</i>	ubar	Wongai	Tree	Food Material	Fruit are eaten. Strong timber favoured for dugong spears and carving.	Vine forests & thickets.	Olandi Pearson pers. comm. (May 2012).
<i>Micromelum minutum</i>	bom	Lime berry	Shrub	TBD	TBD	Vine forests and thickets.	-
<i>Milletia pinnata</i>	gub	Pongamia	Tree	Material	Good timber cut down on small islands for fires curing bech de mer.	Vine forests and thickets.	Olandi Pearson pers. comm. (May 2012).
<i>Morinda citrifolia</i>	auboi	Noni plum	Shrub	Medicinal	Fruit. Fruit ripens white. Eaten raw or fruit boiled up and juice drunk for illness. Leaves cut and heated/boiled. Juice mixed with coconut oil and put on sores.	Vine forests and thickets. Disturbed areas and gardens.	Olandi Pearson pers. comm. (May 2012).
<i>Pandanus spirilis</i>	TBD	Pandanus	Pandanus Palm	Food Material	Kernel of individual fruit segments hammered out when dry and eaten. Leaves used for fibre making baskets, mats. Used for making paint brushes.	Vine thicket, dune shrublands.	Olandi Pearson pers. comm. (May 2012).
<i>Passiflora foetida*</i>	TBD	Stinking or wild passionfruit	Vine	Food	Small fruit eaten as a snack when ripe.	Vine forest & thickets, & shrublands, disturbed areas.	Olandi Pearson pers. comm. (May 2012).

Scientific Name	Language Name	Common Name	Life Form	Broad Use	Part Used	Broad Habitat	Source
<i>Pemphis acidula</i>	TBD	Pemphis	Shrub	Material	Strong timber used for firewood.	Mangrove margins.	-
<i>Premna serratifolia</i>	komak	Premna	Shrub	Food	Fruit edible when pink before turning black.	Vine thicket, dune shrublands.	Olandi Pearson pers. comm. (May 2012).
<i>Polyscias macgillivraei</i>	whistle plant	Whistle plant	Shrub	Material	Leaves cut and used for kup muri. Leaf stems broken at base and used for toy whistle.	Vine thicket	Olandi Pearson pers. comm. (May 2012).
<i>Cenchrus brevisetosus</i>	nygai	TBD	Grass	Material	Children use stems for play fights.	Dune grasslands.	Olandi Pearson pers. comm. (May 2012).
<i>Ricinus communis</i> *	lam	Castor oil bush	Shrub	Medicinal	Leaves crushed and juice mixed with coconut oil to heal sores. Leaf put on womans stomach to straighten baby. In WW2 seeds reportedly crushed up and put in food to kill Japanese.	Disturbed areas	Olandi Pearson pers. comm. (May 2012).
<i>Salacia chinensis</i>	jaffa fruit	Salacia	Shrub	Food	Fruit ripening red is edible. Stems twisted in a bundle and fire wood stored inside.	Vine thicket, dune shrublands.	Olandi Pearson pers. comm. (May 2012).
<i>Semecarpus australiensis</i>	duha	Tar tree	Tree	Material, food	Leaves used for toy sailing boats. Seeds extracted and roasted in coals. Sap toxic.	Vine thicket	Olandi Pearson pers. comm. (May 2012).
<i>Sesuvium portulacastrum</i>	gurawad	Sea purslane	Herb	Not known	Succulent leaves and stems once fed to pigs to make fat.	Dune foreshores.	Olandi Pearson pers. comm. (May 2012).
<i>Sterculia quadrifida</i>	TBD	Peanut tree	Tree	Food	Seeds eaten	Vine forest & thickets.	Olandi Pearson pers. comm. (May 2012).
<i>Syzygium aqeum</i>	TBD	Bell fruit	Tree	Food	Fruit eaten. It is unlikely that this plant grows in the wild in Torres Strait however is now domesticated and planted in home gardens.	House gardens.	-
<i>Syzygium</i>	uzu	Lockerbie satin ash	Shrub/Tree	Food	Fruit eaten. This plant grows in the	House gardens.	-

Scientific Name	Language Name	Common Name	Life Form	Broad Use	Part Used	Broad Habitat	Source
<i>branderhorstii</i>					wild on Mua, Erub, Dauan however is now domesticated and planted in home gardens.		
<i>Tacca leontopetaloides</i>	gasi	Native arrowroot	Tuber	Food	Tuber dug, prepared and eaten.	Vine forests and thickets, dune shrublands, grasslands.	Olandi Pearson pers. comm. (May 2012).
<i>Terminalia catappa</i>	merkai	Sea almond	Tree	Food	Outer skin of fruit eaten when ripe. Inner nut eaten when dry. Leaves cut and used for kup muri.	Community areas.	Olandi Pearson pers. comm. (May 2012).
<i>Terminalia muelleri</i>	mipa	Australian almond	Shrub or small tree	Food	Fleshy skin of small purplish-black fruit eaten when ripe.	Vine forest & thickets, & shrublands.	Olandi Pearson pers. comm. (May 2012).
<i>Thespesia populnea</i>	wana	Pacific rosewood	Shrub/Tree	Material	Round fruit used for toys.	Mangrove margins.	Olandi Pearson pers. comm. (May 2012).
<i>Thespesia populneoides</i>	wana	Pacific rosewood	Shrub/Tree	Material	Round fruit used for toys.	Mangrove margins.	Olandi Pearson pers. comm. (May 2012).
<i>Tridax procumbens</i> *	daisy	Tridax daisy	Annual herb	Medicinal, Material	Decoction of leaves used for treating cuts and sores. Flowers weaved into daisy chain for decoration.	Disturbed areas, coastal dunes complex.	Olandi Pearson pers. comm. (May 2012).

Appendix D. Terrestrial Vertebrates Known¹ or Predicted² to Occur on the Islands of Torres Strait and their Occurrence on Poruma Island.

Family	Scientific Name ³	Common Name	Status ⁴			Poruma
			EPBC Act	NC Act	BoT	
AMPHIBIANS						
Myobatrachidae	<i>Limnodynastes ornatus</i>	ornate burrowing frog		LC		
Myobatrachidae	<i>Uperoleia lithomoda</i>	stonemason toadlet		LC		
Myobatrachidae	<i>Uperoleia mimula</i>	mimic toadlet		LC		
Hylidae	<i>Litoria bicolor</i>	northern dwarf tree frog		LC		
Hylidae	<i>Litoria caerulea</i>	green tree frog		LC		RPS 2010b
Hylidae	<i>Litoria gracilentia</i>	dainty green tree frog		LC		
Hylidae	<i>Litoria infrafrenata</i>	white-lipped tree frog		LC		
Hylidae	<i>Litoria nasuta</i>	rocket frog		LC		
Hylidae	<i>Litoria nigrofrenata</i>	bridle frog		LC		
Hylidae	<i>Litoria rubella</i>	red tree frog		LC		
Microhylidae	<i>Austrochaperina gracilipes</i>	slender frog		LC		
Microhylidae	<i>Cophixalus</i> sp.	no common name		LC		
Ranidae	<i>Rana daemeli</i>	wood frog		LC		
Bufonidae	<i>Rhinella marina</i>	cane toad		I		
REPTILES						
Crocodylidae	<i>Crocodylus porosus</i>	salt-water crocodile	M	V		Predicted by EPBC protected matters search
Gekkonidae	<i>Cyrtodactylus lousiadensis</i>	ring-tailed gecko		LC		
Gekkonidae	<i>Gehyra baliola</i>	short-tailed dtella		LC		
Gekkonidae	<i>Gehyra dubia</i>	dubious dtella		LC		QM, RPS 2010b
Gekkonidae	<i>Gehyra variegata</i>	tree dtella		LC		
Gekkonidae	<i>Hemidactylus frenatus</i>	house gecko		I		AM, QM, RPS 2010b
Gekkonidae	<i>Heteronotia binoei</i>	bynoe's gecko		LC		
Gekkonidae	<i>Lepidodactylus lugubris</i>	mourning gecko		LC		QM, RPS 2010b
Gekkonidae	<i>Lepidodactylus pumilus</i>	slender chained gecko		NT		

Family	Scientific Name ³	Common Name	Status ⁴			Poruma
			EPBC Act	NC Act	BoT	
Gekkonidae	<i>Nactus eboracensis</i>	no common name		LC		
Gekkonidae	<i>Nactus 'pelagicus'</i>	pelagic gecko		LC		
Gekkonidae	<i>Oedura rhombifer</i>	zigzag velvet gecko		LC		
Gekkonidae	<i>Pseudothecadactylus australis</i>	giant tree gecko		LC		
Pygopodidae	<i>Lialis burtonis</i>	burton's snake-lizard		LC		
Scincidae	<i>Bellatorias frerei</i>	major skink		LC		
Scincidae	<i>Carlia coensis</i>	coen rainbow-skink		LC		
Scincidae	<i>Carlia longipes</i>	closed-litter rainbow-skink		LC		AM, QM, RPS 2010b
Scincidae	<i>Carlia macfarlani</i>	closed-litter rainbow-skink		LC		AM, RPS 2010b
Scincidae	<i>Carlia quinquecarinata</i>	no common name		LC		
Scincidae	<i>Carlia sexdentata</i>	no common name		LC		
Scincidae	<i>Carlia storri</i>	brown bicarinate rainbow-skink		LC		
Scincidae	<i>Cryptoblepharus litoralis litoralis</i>	supralittoral shinning-skink		LC		RPS 2010b
Scincidae	<i>Cryptoblepharus virgatus</i>	cream-striped shinning-skink		LC		AM, QM, RPS 2010b
Scincidae	<i>Ctenotus inornatus</i>	bar-shouldered ctenotus		LC		
Scincidae	<i>Ctenotus robustus</i>	robust ctenotus		LC		
Scincidae	<i>Ctenotus spaldingi</i>	straight-browed ctenotus		LC		
Scincidae	<i>Emoia atrocostata</i>	littoral whiptail-skink		NT		
Scincidae	<i>Emoia longicauda</i>	shrub whiptail-skink		LC		
Scincidae	<i>Eremiascincus pardalis</i>	lowlands bar-lipped skink		LC		
Scincidae	<i>Eugongylus rufescens</i>	bar-lipped sheen-skink		LC		Wildnet, AM, RPS 2010b
Scincidae	<i>Glaphyromorphus crassicaudus</i>	cape york mulch-skink		LC		
Scincidae	<i>Glaphyromorphus nigricaudis</i>	black-tailed bar-lipped skink		LC		
Scincidae	<i>Glaphyromorphus pumilus</i>	dwarf mulch-skink		LC		
Scincidae	<i>Lygisaurus macfarlani</i>	translucent litter-skink		LC		
Agamidae	<i>Chlamydosaurus kingii</i>	frilled lizard		LC		
Agamidae	<i>Diporiphora bilineata</i>	two-lined dragon		LC		
Agamidae	<i>Lophognathus temporalis</i>	swamplands lashtail		LC		
Varanidae	<i>Varanus gouldii</i>	gould's goanna		LC		
Varanidae	<i>Varanus indicus</i>	mangrove monitor		LC		
Varanidae	<i>Varanus mertensi</i>	mertens' water monitor		LC		
Varanidae	<i>Varanus panoptes</i>	yellow-spotted monitor		LC		

Family	Scientific Name ³	Common Name	Status ⁴			Poruma
			EPBC Act	NC Act	BoT	
Varanidae	<i>Varanus prasinus</i>	emerald monitor		NT		
Varanidae	<i>Varanus scalaris</i>	spotted tree monitor		LC		
Varanidae	<i>Varanus tristis</i>	black-tailed monitor		LC		
Typhlopidae	<i>Ramphotyphlops braminus</i>	flowerpot blind snake		I		
Typhlopidae	<i>Ramphotyphlops leucoproctus</i>	cape york blind snake		LC		
Typhlopidae	<i>Ramphotyphlops polygrammicus</i>	north-eastern blind snake		LC		
Boidae	<i>Antaresia cf childreni</i>	children's python		LC		
Boidae	<i>Antaresia maculosa</i>	spotted python		LC		
Boidae	<i>Liasis fuscus</i>	water python		LC		
Boidae	<i>Morelia amethystina</i>	amethyst python		LC		
Boidae	<i>Morelia kinghorni</i>	scrub python		LC		
Colubridae	<i>Boiga irregularis</i>	brown tree snake		LC		
Colubridae	<i>Cerberus australis</i>	bockadam		LC		
Colubridae	<i>Dendrelaphis calligastra</i>	northern tree snake		LC		
Colubridae	<i>Dendrelaphis punctulatus</i>	common tree snake		LC		
Colubridae	<i>Stegonotus cucullatus</i>	slaty-grey snake		LC		
Colubridae	<i>Stegonotus parvus</i>	slate-brown snake		LC		
Elapidae	<i>Acanthophis praelongus</i>	northern death adder		LC		
Elapidae	<i>Demansia papuensis</i>	papuan whipsnake		LC		
Elapidae	<i>Demansia vestigiata</i>	black whipsnake		LC		
Elapidae	<i>Furina tristis</i>	brown-headed snake		LC		
Elapidae	<i>Pseudechis papuanus</i>	papuan black snake		LC		
Elapidae	<i>Oxyuranus scutellatus</i>	papuan taipan		LC		
BIRDS						
Megapodiidae	<i>Alectura lathamii</i>	australian brush-turkey		LC		
Megapodiidae	<i>Megapodius reinwardt duperryi</i>	orange-footed scrubfowl		LC		
Phasianidae	<i>Coturnix ypsilophora</i>	brown quail		LC		
Anseranatidae	<i>Anseranas semipalmata</i>	magpie goose		LC		
Anatidae	<i>Dendrocygna guttata</i>	spotted whistling-duck		LC		
Anatidae	<i>Dendrocygna eytoni</i>	plumed whistling-duck		LC		
Anatidae	<i>Dendrocygna arcuata</i>	wandering whistling-duck		LC		
Anatidae	<i>Tadorna radjah</i>	radjah shelduck		NT		

Family	Scientific Name ³	Common Name	Status ⁴			Poruma
			EPBC Act	NC Act	BoT	
Anatidae	<i>Chenonetta jubata</i>	australian wood duck		LC		
Anatidae	<i>Nettapus pulchellus</i>	green pygmy-goose		LC		
Anatidae	<i>Anas gracilis</i>	grey teal		LC		
Anatidae	<i>Anas superciliosa</i>	pacific black duck		LC		
Podicipedidae	<i>Tachybaptus novaehollandiae</i>	australasian grebe		LC		
Columbidae	<i>Columba livia</i>	rock dove		I		
Columbidae	<i>Geopelia striata papua</i>	emerald dove		LC		
Columbidae	<i>Geopelia striata</i>	peaceful dove		LC		
Columbidae	<i>Geopelia humeralis</i>	bar-shouldered dove		LC		Wildnet, Draffan, RPS 2010b, Leary & David 1994
Columbidae	<i>Ptilinopus magnificus</i>	wompoo fruit-dove		LC		
Columbidae	<i>Ptilinopus superbus</i>	superb fruit-dove		LC		Leary & David (1994)
Columbidae	<i>Ptilinopus regina</i>	rose-crowned fruit-dove		LC		Wildnet, Leary & David (1994)
Columbidae	<i>Ptilinopus iozonus</i>	orange-bellied fruit-dove		LC		
Columbidae	<i>Ducula mullerii</i>	collared imperial-pigeon		LC		
Columbidae	<i>Ducula bicolor</i>	pied imperial-pigeon		LC		RPS 2010b, Draffan, Leary & David (1994)
Columbidae	<i>Lopholaimus antarcticus</i>	topknot pigeon		LC		
	<i>Colonectris leucomelus</i>	streaked shearwater	M	LC		
Podargidae	<i>Podargus strigoides</i>	tawny frogmouth		LC		
Podargidae	<i>Podargus papuensis</i>	papuan frogmouth		LC		
Eurostopodidae	<i>Eurostopodus mystacalis</i>	white-throated nightjar		LC		
Eurostopodidae	<i>Eurostopodus argus</i>	spotted nightjar		LC		
Caprimulgidae	<i>Caprimulgus macrurus</i>	large-tailed nightjar		LC		
Apodidae	<i>Collocalia esculenta</i>	glossy swiftlet		LC		
Apodidae	<i>Aerodramus terraereginae</i>	australian swiftlet		NT		
Apodidae	<i>Aerodramus vanikorensis</i>	uniform swiftlet		LC		
Apodidae	<i>Hirundapus caudacutus</i> ⁵	white-throated needletail	M	LC		
Apodidae	<i>Mearnsia novaeguineae</i>	papuan spine-tailed swift		LC		
Apodidae	<i>Apus pacificus</i>	fork-tailed swift	M	LC		
Apodidae	<i>Apus affinis</i>	house swift		LC		
Anhingidae	<i>Anhinga novaehollandiae</i>	australasian darter		LC		

Family	Scientific Name ³	Common Name	Status ⁴			Poruma
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Phalacrocoracidae	<i>Microcarbo melanoleucos</i>	little pied cormorant		LC		
Phalacrocoracidae	<i>Phalacrocorax carbo</i>	great cormorant		LC		
Phalacrocoracidae	<i>Phalacrocorax sulcirostris</i>	little black cormorant		LC		
Phalacrocoracidae	<i>Phalacrocorax varius</i>	pied cormorant		LC		
Pelecanidae	<i>Pelecanus conspicillatus</i>	australian pelican		LC		Draffan, Leary & David 1994
Ciconiidae	<i>Ephippiorhynchus asiaticus</i>	black-necked stork		NT		
Ardeidae	<i>Ixobrychus dubius</i>	australian little bittern		LC		
Ardeidae	<i>Ixobrychus flavicollis</i>	black bittern		LC		
Ardeidae	<i>Ardea pacifica</i>	white-necked heron		LC		
Ardeidae	<i>Ardea modesta</i> ⁶	eastern great egret	M	LC		
Ardeidae	<i>Ardea intermedia</i>	intermediate egret		LC		Wildnet, Draffan
Ardeidae	<i>Ardea sumatrana</i>	great-billed heron		LC		
Ardeidae	<i>Ardea ibis</i> ⁷	cattle egret	M	LC		
Ardeidae	<i>Butorides striata</i>	striated heron		LC		Wildnet, Conics 2010b
Ardeidae	<i>Egretta picata</i>	pied heron		LC		
Ardeidae	<i>Egretta novaehollandiae</i>	white-faced heron		LC		Draffan
Ardeidae	<i>Egretta garzetta</i>	little egret		LC		
Ardeidae	<i>Egretta sacra</i>	eastern reef egret	M	LC		Draffan, Conics 2010b, Leary & David 1994
Ardeidae	<i>Nycticorax caledonicus</i>	nankeen night-heron		LC		Wildnet, Conics 2010b
Threskiornithidae	<i>Plegadis falcinellus</i>	glossy ibis	M	LC		
Threskiornithidae	<i>Threskiornis molucca</i>	australian white ibis		LC		
Threskiornithidae	<i>Threskiornis spinicollis</i>	straw-necked ibis		LC		
Threskiornithidae	<i>Platalea regia</i>	royal spoonbill		LC		
Accipitridae	<i>Pandion cristatus</i> ⁸	eastern osprey	M	LC		3D Environmental 2012
Accipitridae	<i>Elanus axillaris</i>	black-shouldered kite		LC		
Accipitridae	<i>Hamirostra melanosternon</i>	black-breasted buzzard		LC		
Accipitridae	<i>Aviceda subcristata</i>	pacific baza		LC		
Accipitridae	<i>Haliaeetus leucogaster</i>	white-bellied sea-eagle	M	LC		
Accipitridae	<i>Haliastur sphenurus</i>	whistling kite		LC		
Accipitridae	<i>Haliastur indus</i>	brahminy kite		LC		
Accipitridae	<i>Milvus migrans</i>	black kite		LC		

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Accipitridae	<i>Accipiter fasciatus</i>	brown goshawk		LC		Draffan
Accipitridae	<i>Accipiter cirrhocephalus</i>	collared sparrowhawk		LC		
Accipitridae	<i>Accipiter novaehollandiae</i>	grey goshawk		NT		
Accipitridae	<i>Circus assimilis</i>	spotted harrier		LC		
Accipitridae	<i>Circus approximans</i>	swamp harrier		LC		
Accipitridae	<i>Erythrotriorchis radiatus</i>	red goshawk	V	E	high	
Accipitridae	<i>Aquila gurneyi</i>	gurney's eagle		LC		
Falconidae	<i>Falco cenchroides</i>	nankeen kestrel		LC		
Falconidae	<i>Falco berigora</i>	brown falcon		LC		
Falconidae	<i>Falco longipennis</i>	australian hobby		LC		
Falconidae	<i>Falco peregrinus</i>	peregrine falcon		LC		
Fregatidae	<i>Fregata ariel</i>	lesser frigatebird		LC		Draffan, RPS 2010b, Leary & Draffan 1994
Fregatidae	<i>Fregata minor</i>	greater frigatebird		LC		
Gruidae	<i>Grus rubicunda</i>	brulga		LC		
Rallidae	<i>Porphyrio porphyrio</i>	purple swamphen		LC		
Rallidae	<i>Eulabeornis castaneoventris</i>	chestnut rail		LC		
Rallidae	<i>Rallina tricolor</i>	red-necked crane		LC		
Rallidae	<i>Gallirallus philippensis</i>	buff-banded rail		LC		
Rallidae	<i>Porzana pusilla</i>	baillon's crane		LC		
Rallidae	<i>Porzana fluminea</i>	australian spotted crane		LC		
Rallidae	<i>Porzana tabuensis</i>	spotless crane		LC		
Rallidae	<i>Amauornis cinerea</i>	white-browed crane		LC		
Rallidae	<i>Amauornis moluccana</i>	pale-vented bush-hen		LC		
Sulidae	<i>Sula leucogaster</i>	brown booby		LC		
Otididae	<i>Ardeotis australis</i>	australian bustard		LC		
Burhinidae	<i>Burhinus grallarius</i>	bush stone-curlew		LC		
Burhinidae	<i>Esacus magnirostris</i>	beach stone-curlew		V	high	RPS 2010b
Haematopodidae	<i>Haematopus longirostris</i>	australian pied oystercatcher		LC		Wildnet, Draffan, RPS 2010a
Haematopodidae	<i>Haematopus fuliginosus</i>	sooty oystercatcher		NT		Draffan
Recurvirostridae	<i>Himantopus himantopus</i>	black-winged stilt		LC		
Charadriidae	<i>Pluvialis fulva</i>	pacific golden plover	M	LC		Wildnet, RPS 2010b

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Charadriidae	<i>Pluvialis squatarola</i>	grey plover	M	LC		
Charadriidae	<i>Charadrius ruficapillus</i>	red-capped plover		LC		
Charadriidae	<i>Charadrius bicinctus</i>	double-banded plover	M	LC		
Charadriidae	<i>Charadrius mongolus</i>	lesser sand plover	M	LC		Wildnet, Draffan, RPS 2010b
Charadriidae	<i>Charadrius leschenaultii</i>	greater sand plover	M	LC		Wildnet
Charadriidae	<i>Erythronyx cinctus</i>	red-kneed dotterel		LC		
Charadriidae	<i>Vanellus miles</i>	masked lapwing		LC		
Scolopacidae	<i>Gallinago hardwickii</i>	latham's snipe	M	LC		
Scolopacidae	<i>Gallinago megala</i>	swinhoe's snipe	M	LC		
Scolopacidae	<i>Limosa limosa</i>	black-tailed godwit	M	LC		
Scolopacidae	<i>Limosa lapponica</i>	bar-tailed godwit	M	LC		Draffan, RPS 2010a
Scolopacidae	<i>Numenius minutus</i>	little curlew	M	LC		
Scolopacidae	<i>Numenius phaeopus</i>	whimbrel	M	LC		Draffan
Scolopacidae	<i>Numenius madagascariensis</i>	eastern curlew	M	NT		Draffan, 3D Env 2012
Scolopacidae	<i>Xenus cinereus</i>	terek sandpiper	M	LC		Wildnet, Draffan
Scolopacidae	<i>Actitis hypoleucos</i> ⁹	common sandpiper	M	LC		Wildnet
Scolopacidae	<i>Tringa brevipes</i> ¹⁰	grey-tailed tattler	M	LC		Draffan, Wildnet, RPS 2010b
Scolopacidae	<i>Tringa incana</i> ¹¹	wandering tattler	M	LC		
Scolopacidae	<i>Tringa nebularia</i>	common greenshank	M	LC		Wildnet, Draffan,
Scolopacidae	<i>Tringa stagnatilis</i>	marsh sandpiper	M	LC		
Scolopacidae	<i>Tringa glareola</i>	wood sandpiper	M	LC		
Scolopacidae	<i>Arenaria interpres</i>	ruddy turnstone	M	LC		Wildnet, Draffan
Scolopacidae	<i>Calidris tenuirostris</i>	great knot	M	LC		Wildnet, Draffan
Scolopacidae	<i>Calidris canutus</i>	red knot	M	LC		
Scolopacidae	<i>Calidris alba</i> ¹²	sanderling	M	LC		
Scolopacidae	<i>Calidris ruficollis</i>	red-necked stint	M	LC		Wildnet, Draffan, RPS 2010b
Scolopacidae	<i>Calidris melanotos</i>	pectoral sandpiper	M	LC		
Scolopacidae	<i>Calidris acuminata</i>	sharp-tailed sandpiper	M	LC		
Scolopacidae	<i>Calidris ferruginea</i>	curlew sandpiper	M	LC		
Sturnidae	<i>Acridotheres tristis</i>	common mynah		I		
Turnicidae	<i>Turnix maculosus</i>	red-backed button-quail		LC		Wildnet, Draffan
Turnicidae	<i>Turnix pyrrhotorax</i>	red-chested button-quail		LC		

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Glareolidae	<i>Glareola maldivarum</i>	oriental pratincole	M	LC		
Glareolidae	<i>Stiltia isabella</i>	australian pratincole		LC		
Laridae	<i>Anous stolidus</i>	common noddy	M	LC		Leary & David 1994
Laridae	<i>Anous minutus</i>	black noddy		LC		Wildnet, Draffan
Laridae	<i>Onychoprion anaethetus</i> ¹³	bridled tern	M	LC		Draffan, Leary & David 1994
Laridae	<i>Onychoprion fuscata</i>	sooty tern		LC		
Laridae	<i>Sternula albifrons</i> ¹⁴	little tern	M	E	high	Draffan
Laridae	<i>Gelochelidon nilotica</i>	gull-billed tern		LC		
Laridae	<i>Hydroprogne caspia</i>	caspian tern	M	LC		
Laridae	<i>Chlidonias hybrida</i>	whiskered tern		LC		
Laridae	<i>Chlidonias leucopterus</i>	white-winged black tern	M	LC		
Laridae	<i>Sterna dougallii</i>	roseate tern	M	LC		
Laridae	<i>Sterna striata</i>	white-fronted tern		LC		
Laridae	<i>Sterna sumatrana</i>	black-naped tern	M	LC		Draffan, Leary & David 1994
Laridae	<i>Sterna hirundo</i>	common tern	M	LC		
Laridae	<i>Thalasseus bengalensis</i> ¹⁵	lesser crested tern	M	LC		Leary & David 1994
Laridae	<i>Thalasseus bergii</i>	crested tern		LC		Draffan, RPS 2010b
Laridae	<i>Chroicocephalus novaehollandiae</i>	silver gull		LC		Wildnet, Draffan, RPS 2010a
Cacatuidae	<i>Probosciger aterrimus</i>	palm cockatoo		NT		.
Cacatuidae	<i>Eolophus roseicapilla</i>	galah		LC		
Cacatuidae	<i>Cacatua galerita</i>	sulphur-crested cockatoo		LC		
Psittacidae	<i>Trichoglossus haematodus caeruliceps</i>	rainbow lorikeet		LC		
Psittacidae	<i>Cyclopsitta species</i>	fig-parrot species				
Psittacidae	<i>Eclectus roratus polychloros</i>	eclectus parrot		LC		
Psittacidae	<i>Geoffroyus geoffroyi aruensis</i>	red-cheeked parrot		LC		
Cuculidae	<i>Centropus phasianinus</i>	pheasant coucal		LC		
Cuculidae	<i>Eudynamys orientalis</i>	eastern koel		LC		
Cuculidae	<i>Eudynamus scolopacea</i>	common koel		LC		
Cuculidae	<i>Urodynamys taitensis</i>	long-tailed cuckoo		LC		
Cuculidae	<i>Scythrops novaehollandiae</i>	channel-billed cuckoo		LC		
Cuculidae	<i>Chalcites basalis</i>	horsfield's bronze-cuckoo		LC		
Cuculidae	<i>Chalcites osculans</i>	black-eared cuckoo		LC		

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Cuculidae	<i>Chalcites lucidus</i>	shining bronze-cuckoo		LC		
Cuculidae	<i>Chalcites minutillus</i>	little bronze-cuckoo		LC		Wildnet
Cuculidae	<i>Cacomantis pallidus</i>	pallid cuckoo		LC		
Cuculidae	<i>Cacomantis castaneiventris</i>	chestnut-breasted cuckoo		LC		Draffan
Cuculidae	<i>Cacomantis flabelliformis</i>	fan-tailed cuckoo		LC		
Cuculidae	<i>Cacomantis variolosus</i>	brush cuckoo		LC		
Cuculidae	<i>Cuculus optatus</i> ¹⁶	oriental cuckoo	M	LC		
Strigidae	<i>Ninox connivens</i>	barking owl		LC		
Strigidae	<i>Ninox novaeseelandiae</i>	southern boobook		LC		
Tytonidae	<i>Tyto longimembris</i>	eastern grass owl		LC		
Alcedinidae	<i>Ceyx azureus</i>	azure kingfisher		LC		
Alcedinidae	<i>Ceyx pusilla pusilla</i>	little kingfisher		LC		
Halcyonidae	<i>Tanysiptera sylvia</i>	buff-breasted paradise-kingfisher		LC		
Halcyonidae	<i>Tanysiptera galatea</i>	common paradise-kingfisher		LC		
Halcyonidae	<i>Tanysiptera hydrocharis</i>	little paradise-kingfisher				
Halcyonidae	<i>Dacelo leachii</i>	blue-winged kookaburra		LC		
Halcyonidae	<i>Syma torotoro</i>	yellow-billed kingfisher		LC		
Halcyonidae	<i>Todiramphus macleayii</i>	forest kingfisher		LC		
Halcyonidae	<i>Todiramphus sanctus</i>	sacred kingfisher		LC		Wildnet, Draffan, RPS 2010a
Halcyonidae	<i>Todiramphus chloris</i>	collared kingfisher		LC		
Meropidae	<i>Merops ornatus</i>	rainbow bee-eater	M	LC		Wildnet
Coraciidae	<i>Eurystomus orientalis</i>	dollarbird		LC		
Oceanitidae	<i>Oceanites oceananicus</i>	wilson's storm petrel		LC		
Pittidae	<i>Pitta erythrogaster</i>	red-bellied pitta		LC		
Pittidae	<i>Pitta versicolor</i>	noisy pitta		LC		
Ptilonorhynchidae	<i>Ptilonorhynchus nuchalis</i>	great bowerbird		LC		
Acanthizidae	<i>Sericornis beccarii</i>	tropical scrubwren		LC		
Acanthizidae	<i>Gerygone levigaster</i>	mangrove gerygone		LC		
Acanthizidae	<i>Gerygone magnirostris brunneipectus</i>	large-billed gerygone		LC		
Acanthizidae	<i>Gerygone palpebrosa</i>	fairy gerygone		LC		
Meliphagidae	<i>Meliphaga notata</i>	yellow-spotted honeyeater		LC		
Meliphagidae	<i>Meliphaga gracilis</i>	graceful honeyeater		LC		

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Meliphagidae	<i>Lichenostomus versicolor</i>	varied honeyeater		LC		Wildnet, Draffan, RPS 2010b
Meliphagidae	<i>Manorina melanocephala</i>	noisy miner		LC		
Meliphagidae	<i>Ramsayornis modestus</i>	brown-backed honeyeater		LC		Draffan
Meliphagidae	<i>Conopophila albogularis</i>	rufous-banded honeyeater		LC		Draffan
Meliphagidae	<i>Myzomela obscura fumata</i>	dusky honeyeater		LC		
Meliphagidae	<i>Myzomela erythrocephala infusata</i>	red-headed honeyeater		LC		Wildnet
Meliphagidae	<i>Myzomela sanguinolenta</i>	scarlet honeyeater		LC		RPS 2010b
Meliphagidae	<i>Cissomela pectoralis</i>	banded honeyeater		LC		
Meliphagidae	<i>Lichmera indistincta</i>	brown honeyeater		LC		
Meliphagidae	<i>Philemon buceroides</i>	helmeted friarbird		LC		
Meliphagidae	<i>Philemon argenticeps</i>	silver-crowned friarbird		LC		
Meliphagidae	<i>Philemon corniculatus</i>	noisy friarbird		LC		
Meliphagidae	<i>Philemon citreogularis</i>	little friarbird		LC		
Meliphagidae	<i>Xanthotis flaviventer saturator</i>	tawny-breasted honeyeater		LC		
Pomatostomidae	<i>Pomatostomus temporalis</i>	grey-crowned babbler		LC		
Campephagidae	<i>Coracina novaehollandiae</i>	black-faced cuckoo-shrike		LC		Wildnet, Draffan, RPS 2010b
Campephagidae	<i>Coracina papuensis</i>	white-bellied cuckoo-shrike		LC		
Campephagidae	<i>Coracina lineata</i>	barred cuckoo-shrike		LC		
Campephagidae	<i>Coracina tenuirostris melvillensis</i>	(melville) cicadabird	M	LC		
Campephagidae	<i>Lalage tricolor</i>	white-winged triller		LC		
Campephagidae	<i>Lalage leucomela</i>	varied triller		LC		
Pachycephalidae	<i>Pachycephala melanura</i>	mangrove golden whistler		LC		
Pachycephalidae	<i>Pachycephala rufiventris</i>	rufous whistler		LC		
Pachycephalidae	<i>Colluricincla megarrhyncha</i>	little shrike-thrush		LC		
Oriolidae	<i>Sphecotheres vieilloti</i>	australasian figbird		LC		
Oriolidae	<i>Oriolus flavocinctus</i>	yellow oriole		LC		
Oriolidae	<i>Oriolus sagittatus</i>	olive-backed oriole		LC		
Artamidae	<i>Artamus leucorhynchus</i>	white-breasted woodswallow		LC		Draffan, RPS 2010b
Artamidae	<i>Artamus cinereus</i>	black-faced woodswallow		LC		
Artamidae	<i>Artamus minor</i>	little woodswallow		LC		
Artamidae	<i>Cracticus quoyi alecto</i>	black butcherbird		LC		
Dicruridae	<i>Dicrurus bracteatus carbonarius</i>	spangled drongo		LC		

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Rhipiduridae	<i>Rhipidura rufifrons</i>	rufous fantail	M	LC		Draffan
Rhipiduridae	<i>Rhipidura phasiana</i>	mangrove grey fantail		LC		
Rhipiduridae	<i>Rhipidura rufiventris gularis</i>	northern fantail		LC		
Rhipiduridae	<i>Rhipidura leucophrys melaleuca</i>	willie wagtail		LC		
Corvidae	<i>Corvus orru orru</i>	torresian crow		LC		
Monarchidae	<i>Myiagra ruficollis</i>	broad-billed flycatcher		LC		
Monarchidae	<i>Myiagra rubecula</i>	leaden flycatcher		LC		
Monarchidae	<i>Myiagra cyanoleuca</i>	satin flycatcher	M	LC		
Monarchidae	<i>Myiagra alecto</i>	shining flycatcher		LC		
Monarchidae	<i>Myiagra inquieta</i>	restless flycatcher		LC		
Monarchidae	<i>Monarcha melanopsis</i>	black-faced monarch	M	LC		
Monarchidae	<i>Monarcha frater</i>	black-winged monarch	M	LC		
Monarchidae	<i>Symposiachrus trivirgatus</i> ¹⁷	spectacled monarch	M	LC		
Monarchidae	<i>Grallina cyanoleuca</i>	magpie-lark		LC		
Monarchidae	<i>Arses telescopthalmus</i>	frilled monarch		LC		
Paradisaeidae	<i>Phonygammus keraudrenii</i>	trumpet manucode		LC		
Paradisaeidae	<i>Ptiloris magnificus</i>	magnificent riflebird		LC		
Petroicidae	<i>Microeca flavigaster</i>	lemon-bellied flycatcher		LC		
Petroicidae	<i>Peneoenanthe pulverulenta</i>	mangrove robin		LC		
Petroicidae	<i>Drymodes superciliaris</i>	northern scrub-robin		LC		
Cisticolidae	<i>Cisticola exilis</i>	golden-headed cisticola		LC		
Acrocephalidae	<i>Acrocephalus australis</i> ¹⁸	australian reed-warbler	M	LC		
Megaluridae	<i>Megalurus timoriensis</i>	tawny grassbird		LC		
Megaluridae	<i>Megalurus gramineus</i>	little grassbird		LC		
Timaliidae	<i>Zosterops citrinella</i>	pale white-eye		LC		Wildnet, Draffan, RPS 2010b
Timaliidae	<i>Zosterops lateralis</i>	silveryeye		LC		
Hirundinidae	<i>Hirundo rustica</i>	barn swallow	M	LC		
Hirundinidae	<i>Hirundo neoxena</i>	welcome swallow		LC		
Hirundinidae	<i>Petrochelidon ariel</i>	fairy martin		LC		
Hirundinidae	<i>Petrochelidon nigricans</i>	tree martin		LC		
Hirundinidae	<i>Cecropis daurica</i> ¹⁹	red-rumped swallow	M	LC		
Turdidae	<i>Zoothra sp.</i>	thrush species		LC		

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Sturnidae	<i>Aplornis cantoroides</i>	singing starling		LC		
Sturnidae	<i>Aplornis metallica</i>	metallic starling		LC		
Sturnidae	<i>Sturnus tristis</i>	common myna		I		
Nectariniidae	<i>Dicaeum geelvinkianum</i>	red-capped flowerpecker		LC		
Nectariniidae	<i>Dicaeum hirundinaceum</i>	mistletoebird		LC		
Nectariniidae	<i>Nectarinia jugularis</i>	olive-backed sunbird		LC		Wildnet, Draffan, RPS 2010b
Estrildidae	<i>Poephila personata</i>	masked finch		LC		
Estrildidae	<i>Lonchura punctulata</i>	nutmeg mannikin		I		
Estrildidae	<i>Lonchura castaneothorax</i>	chestnut-breasted mannikin		LC		Draffan, Wildnet, RPS 2010b
Passeridae	<i>Passer domesticus</i>	house sparrow		I		Wildnet, RPS 2010b
Motacillidae	<i>Motacilla</i> sp.	yellow wagtail species	M	LC		
MAMMALS						
Tachyglossidae	<i>Tachyglossus aculeatus</i>	short-beaked echidna		LC		
Peramelidae	<i>Isodon macrourus</i>	northern brown bandicoot		LC		
Peramelidae	<i>Isodon obesulus</i>	southern brown bandicoot		LC		
Macropodidae	<i>Macropus agilis</i>	agile wallaby		LC		
Pteropodidae	<i>Dobsonia magna</i>	bare-backed fruit-bat		NT		
Pteropodidae	<i>Macroglossus minimus</i>	northern blossom-bat		LC		
Pteropodidae	<i>Syconycteris australis</i>	common blossom-bat		LC		
Pteropodidae	<i>Nyctimene cephalotes</i>	torresian tube-nosed bat		NT		
Pteropodidae	<i>Nyctimene robinsoni</i>	eastern tube-nosed bat		LC		
Pteropodidae	<i>Pteropus alecto</i>	black flying-fox		LC		
Pteropodidae	<i>Pteropus conspicillatus</i>	spectacled flying-fox	V	LC	high	Predicted by the EPBC Protected Matters Search Tool
Pteropodidae	<i>Pteropus macrotis</i>	large-eared flying-fox		LC		
Pteropodidae	<i>Pteropus scapulatus</i>	little red flying-fox		LC		
Pteropodidae	<i>Pteropus banakrisi</i>	torresian flying-fox		LC		
Rhinolophidae	<i>Rhinolophus philippinensis</i> (large form)	greater large-eared horseshoe bat	E	E	high	
Hipposideridae	<i>Hipposideros ater aruensis</i>	(eastern) dusky leaf-nosed bat		LC		
Hipposideridae	<i>Hipposideros cervinus</i>	fawn leaf-nosed bat		V	high	
Hipposideridae	<i>Hipposideros diadema</i>	diadem leaf-nosed bat		LC		
Emballonuridae	<i>Saccolaimus saccolaimus nudiclunatus</i>	bare-rumped sheath-tail bat	CE	E	high	

Family	Scientific Name ³	Common Name	Status ⁴			Poruma
			EPBC Act	NC Act	BoT	
Emballonuridae	<i>Saccolaimus mixtus</i>	papuan sheath-tail bat		NT		
Emballonuridae	<i>Taphozous australis</i>	coastal sheath-tail bat		V	high	
Molossidae	<i>Chaerephon jobensis</i>	northern freetail-bat		LC		
Molossidae	<i>Mormopterus beccarii</i>	beccari's freetail-bat		LC		
Vespertilionidae	<i>Chalinolobus nigrogriseus</i>	hoary wattled bat		LC		
Vespertilionidae	<i>Miniopterus australis</i>	little bent-wing bat		LC		
Vespertilionidae	<i>Miniopterus schreibersii</i>	eastern bent-wing bat		LC		
Vespertilionidae	<i>Myotis macropus</i>	large-footed myotis		LC		
Vespertilionidae	<i>Nyctophilus bifax</i>	eastern long-eared bat		LC		
Vespertilionidae	<i>Pipistrellus</i> sp.	pipistrelle species		LC		
Vespertilionidae	<i>Pipistrellus adamsii</i>	forest pipistrelle bat		LC		
Vespertilionidae	<i>Pipistrellus weaustalis</i>	northern pipistrelle bat		LC		
Muridae	<i>Conilurus penicillatus</i>	brush-tailed tree-rat	V	LC		
Muridae	<i>Hydromys chrysogaster</i>	water-rat		LC		
Muridae	<i>Melomys burtoni</i>	grassland melomys		LC		
Muridae	<i>Melomys capensis</i>	cape york melomys		LC		
Muridae	<i>Melomys rubicola</i>	bramble cay melomys	E	E	high	
Muridae	<i>Mus musculus</i>	house mouse		I		
Muridae	<i>Pseudomys delicatulus</i>	delicate mouse		LC		
Muridae	<i>Rattus exulans</i>	pacific rat		I		
Muridae	<i>Rattus norvegicus</i>	brown rat		I		
Muridae	<i>Rattus rattus</i>	black rat		I		Conics 2010a
Muridae	<i>Xeromys myoides</i>	water mouse	V	V	high	
Canidae	<i>Canis familiaris</i>	domestic dog		I		3D Env 2012
Felidae	<i>Felis catus</i>	cat		I		3D Env 2012
Equidae	<i>Equus caballus</i>	horse, brumby		I		
Suidae	<i>Sus scrofa</i>	pig		I		
Bovidae	<i>Capra hircus</i>	goat		I		
Cervidae	<i>Cervus timorensis</i>	rusa deer		I		

⁸ Known from Museum records, published literature (eg Tyler 1972; Draffan *et al.* 1983; Whittier & Moeller 1993; Clarke 2004a, b; 2005, 2006; Wilson 2005; Ingram 2008), WildNet database and/or reports and other grey literature (eg Smith & Smith 2006; Borsboom 2007; RPS 2010a, Schaffer 2010). These sources are not necessarily mutually exclusive and many records are un-confirmed. Some appear unreliable. WildNet database searches were conducted for Boigu, Saibai, Bramble Cay, Erub (Darnley), Mer (Murray), Mabuiag, Iama (Yam), Mua, Badu, Possession, Thursday, Wednesday, Horn, Hammond and Prince of Wales Islands.

- 9 Predicted by the EPBC Protected Matters Search Tool maintained by the Department of Sustainability, Environment, Water, Population and Communities, Canberra (DSEWPC) <http://www.environment.gov.au/erin/ert/epbc/index.html>. Only noted if not recorded from another source.
- 10 Nomenclature follows the Australian Faunal Directory maintained by DSEWPC. <http://www.environment.gov.au/biodiversity/abrs/online-resources/fauna/afd/index.html>
- 11 Status: CE = Critically Endangered, E = Endangered, V = Vulnerable, NT = Near-Threatened, M = Migratory, LC = Least Concern (Common), I = Introduced (Exotic) under the *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act) and/or *Nature Conservation Act* 1992 (NC Act). BoT = species listed as critical or high priority under the Back on Track species prioritisation framework. Department of Environment and Resource Management, Brisbane.
http://www.derm.qld.gov.au/wildlife-ecosystems/wildlife/back_on_track_species_prioritisation_framework/index.html.
- 12 Also listed under the EPBC Act as *Chaetura caudacuta* (ROKAMBA).
- 13 Listed under the EPBC Act as Great Egret *Ardea alba* (CAMBA, JAMBA). Australian birds elevated to full species level as *A. modesta* (Kushlan & Hancock 2005; Christidis & Boles 2008).
- 14 Listed under CAMBA as *Ardeola ibis*, listed under JAMBA as *Bubulcus ibis*.
- 15 Listed under the Bonn Convention as Osprey *Pandion haliaetus*. Australian birds have been elevated to species level as *P. cristatus* (Wink *et al.* 2004; Christidis & Boles 2008).
- 16 Also listed under CAMBA and ROKAMBA as *Tringa hypoleucos*.
- 17 Also listed under the Bonn Convention and JAMBA as *Heteroscelus brevipes*.
- 18 Also listed under the Bonn Convention and JAMBA as *Heteroscelus incanus*.
- 19 Also listed under ROKAMBA as *Crocethia alba*.
- 20 Listed under the EPBC Act as *Sterna anaethetus* (CAMBA, JAMBA).
- 21 Listed under the EPBC Act as *Sterna albifrons* (Bonn Convention, CAMBA, JAMBA, ROKAMBA).
- 22 Listed under the EPBC Act as *Sterna bengalensis* (CAMBA).
- 23 Listed under the EPBC Act as *Cuculus saturatus* (CAMBA, JAMBA, ROKAMBA). Australian birds elevated to full species level as *A. optatus* (Christidis & Boles 2008).
- 24 Listed under the EPBC Act as *Monarcha trivirgatus* (Bonn Convention).
- 25 Listed under the EPBC Act as Clamorous Reed-warbler *Acrocephalus stentoreus* (Bonn Convention). Australian birds elevated to full species level as *A. australis* (Higgins *et al.* 2006b).
- 26 Listed under the EPBC Act as *Hirundo daurica* (ROKAMBA).

Appendix E. Profiles of Migratory Fauna Species Potentially occurring on Poruma Island and Surrounding Islets

Waders

Life history: Waders listed as Migratory under the EPBC Act that have been recorded in the Torres Strait include plovers, sandpipers and oriental pratincole. Sandpipers are known by a number of common names including snipe, godwit, curlew, tattler, knot and stint. The majority of the waders recorded occur in coastal areas, particularly in the intertidal zone, on mudflats, sandflats, beaches, saltmarsh, coastal lagoons and mangroves. Some also forage and/or roost on rocky shores. Many of these species are also found on freshwater and artificial waterbodies such as rivers, streams, swamps, dams and sewage ponds. Two species are unlikely to be found in the intertidal zone, oriental pratincole and wood sandpiper. Oriental pratincole is largely restricted to grasslands and other open areas and wood sandpiper occurs on freshwater waterbodies (Pringle 1987). None of these wader species breed in Australia but individuals of some species, especially large sandpipers such as eastern curlew and bar-tailed godwit, may be present year-round.

Flat tidal shores with extensive muddy intertidal areas support the most species and individuals, though some waders feed in mangroves forests at low tide (Lane 1987). The coastal species have a life cycle driven largely by the tidal cycle, roosting in mixed species flocks above the high water mark at high tide and moving to feeding areas as the tide recedes. Most of these species are gregarious, wary and fly strongly and swiftly (Pringle 1987; Geering *et al.* 2007). Smaller species, such as red-necked stint and curlew sandpiper, feed for longer each tide cycle than do larger species and may continue to feed in non-tidal areas during high tide (Lane 1987).

Other than double-banded plover (*Charadrius bicinctus*), which breeds in New Zealand, all the Migratory waders breed in the northern hemisphere during the Australian winter. Migration to Australia after breeding starts in mid-July and finishes by December. Birds begin returning to breeding grounds as early as mid-February, though most birds leave in mid-March (Lane 1987).

Threats: Although none of the species breed in Australia they are susceptible to loss of foraging and roosting habitat and to disturbance when foraging or roosting by human activities and feral and domestic animals. Such disturbance may limit their ability to undertake long migration flights through depletion of their energy reserves. Pollution may also affect the intertidal invertebrate species on which so many Migratory waders depend (Lane 1987). Poruma Island provides some habitat for waders but threats appear limited to disturbance on mudflats, beaches and around mangroves. This will be most relevant prior to return passage in autumn.

Terns

Life history: Six Migratory tern species have been recorded from Poruma Island, though other species are also expected to occur. Many tern species are cosmopolitan, with very large distributions. Most species are coastal, found in a variety of habitats, including open beaches, lagoons, estuaries, river mouths, lakes, bays, harbours and inlets. Some species do also occur on

inland freshwater habitats and others are largely restricted to pelagic waters. Fish is the major food item but crustaceans and insects are also taken by some and those species that feed in freshwater may also eat reptiles, frogs and small mammals. Most terns are gregarious when feeding and are colonial nesters, with most of the species that breed in Australia simply laying their eggs in shallow depressions, though noddies will nest in trees (Pringle 1987; Higgins & Davies 1996).

Threats: Ground-nesting makes many species susceptible to loss of eggs and chicks through native and feral predators and adverse weather conditions. Colonies can be threatened by human disturbance and birds are affected by degradation of feeding areas, pesticide residues in fish, and oil-fouling, both of birds and beaches. Birds occasionally are tangled in fishing nets (Blakers *et al.* 1984; Higgins & Davies 1996; Garnett & Crowley 2000). There is likely to be little, if any, breeding by terns on Poruma Island. Threats appear to be minimal.

Hérons and egrets

Life history: The family Ardeidae includes herons, egrets and bitterns and all species are characterised by long necks and legs and long sharp bills. Although there is variation, most species forage in shallow water and eat fish, crustaceans, frogs, insects and other small animals (McKilligan 2005). Three species listed as Migratory occur in the Torres Strait; eastern great egret, cattle egret and eastern reef egret.

Eastern great egrets are generally associated with shallow water, both freshwater and saline, but also occur in dry habitats. The species occurs on coastal and inland habitats, including rivers, estuaries, tidal mudflats, swamps, man-made dams and ponds, sewage farms and wet pasture. Eastern great egrets eat mainly fish but also small vertebrates such as frogs and aquatic insects (Pringle 1985; Marchant & Higgins 1990; McKilligan 2005). The cattle egret inhabits grasslands, wetlands and wooded lands, often foraging away from water in grassland, pasture and crops. The species is strongly associated with grazing animals in Australia, but also forages at garbage tips, follows machinery, and feeds independently. Cattle egrets feed on invertebrates, especially grasshoppers, and small vertebrates such as frogs, reptiles and mammals (Pringle 1985; Marchant & Higgins 1990). Eastern reef egret is found on coastlines, foraging on rocky and muddy shores. The species eats mostly fish, but also crustaceans, molluscs, bird chicks and turtle hatchlings (McKilligan 2005).

Eastern great egret is common and widespread in Australia even in some arid areas. The cattle egret occurs in all Australian states and mainland territories. Eastern reef egret occurs along most of the Australian coastline. All three species extend through the Torres Strait into south-east Asia. The cattle egret has a limited distribution in the Torres Strait but has been undergoing a global expansion of range (Pringle 1985; Marchant & Higgins 1990; McKilligan 2005). It may become more widespread and common in the Torres Strait if there are changes to land use which favour the species.

Threats: The eastern great egret is threatened by destruction and modification of freshwater habitats by drainage and groundwater extraction, clearing, livestock, burning, increased salinity and weed invasions (Marchant & Higgins 1990). The most important issue is the allocation of water from

regulated rivers in sufficient quantity and with appropriate timing to maintain suitable wetland conditions (Maddock 2000). The cattle egret is also threatened by loss of breeding habitat through drainage of wetlands and river regulation and water harvesting that prevent or limit flooding of temporary wetlands. Nestlings may be susceptible to predation by cats (DSEWPC 2011b). Eastern reef egrets can be disturbed by human activity near nest sites and are threatened by reclamation of tidal areas and deepening of channels. However, the species often tolerates human presence and roosts, and sometimes breeds, on artificial structures (Marchant & Higgins 1990).

Neither eastern great nor cattle egret is likely to breed on Poruma Island and threats appear minimal. Eastern reef egret may breed and would be susceptible to disturbance at its nest. The level of threat is likely to be minor.

Swifts

Life history: In Australia the white-throated needletail and fork-tailed swift are almost completely aerial species, possibly even sleeping on the wing. These species are sometimes found roosting in trees and may on rare occasions rest in trees and on the ground during the day. They are found over a wide variety of habitat, including forest, open areas, modified land and the ocean. Foraging for aerial invertebrates occurs at heights from less than one metre up to more than 1000 metres (Higgins 1999).

Both species breed in Asia and arrive in Australia in September/October and leave by April. Some birds may over-winter. White-throated needletail is widespread in eastern and south-eastern Australia and fork-tailed swift is widespread throughout Australia (Higgins 1999). The total population of white-throated needletail is unknown but it is described as abundant in some regions of Australia (Chantler 1999). A comparison of Birds Australia atlas data between 1977–81 and 1998–2002 indicates that the species has undergone a decline in both its area of occupancy and extent of occurrence in Australia (Blakers *et al.* 1984; Barrett *et al.* 2003). Worldwide the fork-tailed swift is thought to have a stable population with no evidence for any declines or substantial threats (BirdLife International 2011).

Threats: Both species are occasionally killed by collision with man-made structures, and fork-tailed swifts are occasionally killed by cats (Higgins 1999), but there is no apparent major threat to either species overall, either in Australia or elsewhere (DSEWPC 2011a, f). A potential threat is a reduction in prey due to loss of habitat (Low 1995; DSEWPC 2011a). Neither species would be subject to any significant level of threat on Poruma Island.

Raptors

Life history: The family Accipitridae includes a very large number of species with an enormous variety of body sizes, prey species and habitat use. The two Migratory raptors, eastern osprey and white-bellied sea-eagle, are, however, very similar in much of their life history. Both species occur along the entire Australian coastline and extend far inland, typically along major rivers or on large lakes and reservoirs. Eastern osprey feeds on fish but the white-bellied sea-eagle also eats

mammals, birds, reptiles and carrion. Both species will nest on cliffs and in large trees but eastern osprey also nest on artificial structures such as power poles and towers (Debus 1998; NSW NPWS 2002). Established breeding pairs are mostly sedentary although there is evidence that territorial adults move long distances. Inland territorial birds are probably more dispersive than those on the coast and may move as waters disappear (Debus 1998).

Threats: The eastern osprey population in Australia has decreased since European settlement but has been recovering in recent years (Olsen 1998). They are threatened by loss of existing and suitable replacement breeding trees, disturbance at the nest site, reduction in quality and quantity of fish stocks, collision with or electrocution by power lines, and the use of pesticides (NSW NPWS 2002). The white-bellied sea-eagle is threatened by clearing of forests and the consequent loss of optimal breeding sites (Marchant & Higgins 1993) and disturbance at nest sites (Debus 1998). Neither species is likely to be threatened by current land use practices on Poruma Island.

Oriental Cuckoo (*Cuculus optatus*)

Listed under the EPBC Act (CAMBA, JAMBA, ROKAMBA) as *Cuculus saturatus*. Australian birds elevated to full species level as *A. optatus* (Christidis & Boles 2008).

The oriental cuckoo breeds in northern Asia with birds spending the non-breeding season in south-east Asia, New Guinea, the Solomons and Australia. The species mostly occurs on the northern and eastern coasts of Australia, between September and April. Most birds do not arrive in Australia until December. Oriental cuckoos occur in rainforest, vine thicket and open forest and woodland. The species is sometimes found in mangroves and is often recorded in gardens and plantations. It feeds on invertebrates, particularly caterpillars (Blakers *et al.* 1984; Higgins 1999).

Threats: The species is sometimes killed by cats and by collisions with windows and lighthouses (Higgins 1999). Clarke (2004b) recorded Oriental Cuckoo over the township and around the refuse dump. Draffan *et al.* (1983) state that it occurs in wooded areas, including mangroves. Oriental cuckoo is likely to be a regular visitor to Poruma Island, occurring in almost any habitat other than grasslands. Threats would be minimal.

Rainbow bee-eater (*Merops ornatus*)

The rainbow bee-eater occurs in almost any habitat. The species eats insects, preferring bees and wasps, which are mostly caught in the air, and will also take food from the ground or vegetation and occasionally water. It is widespread in Australia, New Guinea, Indonesia and Micronesia. In northern Australia populations are present in coastal or sub-coastal areas where they breed in the riparian areas and move into more open habitat after the breeding season. Breeding may take place individually or in colonies, nesting in burrows in soft sand or soil (Higgins 1999; Boland 2004a).

Threats: The species appears little threatened, although cane toads have been found to prey on the eggs and nestlings (Boland 2004b). Draffan *et al.* (1983) describe rainbow bee-eater as an abundant

passage migrant in Torres Strait and the species could occur in, or over, all habitats on Poruma Island. Cane toads are not reported for the island and threats to rainbow bee-eater would be minimal.

Passerines

Ten species of Migratory passerine are known from the Torres Strait. These species may be split into two broad groups, species that occur mostly in wooded habitats and those that occur mostly in open habitats. Members of these pairings may not be particularly closely related.

Wooded habitat species

Life history: Six of the Migratory passerine species that occur in Torres Strait occur mostly in wooded habitats. All of these birds, (Melville) cicadabird (subspecies *melvillensis*), rufous fantail, satin flycatcher, black-faced, black-winged and spectacled monarchs, occur in rainforest, melaleuca woodlands, mangroves and occasionally open forests, except for satin flycatcher, which typically avoids closed forest. All the species are insectivorous, though the cicadabird may also eat some fruit and seeds. All breed in Australia and, except for black-winged monarch; all are at least partly resident in Australia. Some individuals of black-winged monarch may also be present year-round (Higgins *et al.* 2006a).

Threats: Threats include the loss and fragmentation of habitat, especially along the migratory routes, and predation of eggs and young by the black rat (*Rattus rattus*) (Higgins *et al.* 2006a). All six species do or could occur on Poruma Island and would use any wooded areas. Black rats are known to occur on Poruma.

Open habitat species

Life history: Four of the Migratory passerine species that occur in Torres Strait occur mostly in open habitats.

Reed-warblers in Australia were previously thought to be a subspecies of the migratory clamorous reed-warbler (*Acrocephalus stentoreus*). They are now considered a full species, Australian reed-warbler (*A. australis*), and all movements are thought to occur within Australia. Australian reed-warblers typically occur in reeds and other dense vegetation in and adjacent to a variety of wetland types. They feed on insects and spiders. The species is not known to breed in the Torres Strait (Higgins *et al.* 2006b).

Barn and red-rumped swallows are both widespread species, particularly in the northern hemisphere, and neither breeds in Australia. Barn swallow is an annual visitor to northern Australia in small numbers but red-rumped swallow may not be present every year. Both species feed in open areas, particularly over wetlands, cane fields and sporting fields and often perch on overhead wires.

Yellow wagtail is listed under the EPBC Act as *Motacilla flava* sens. lat. The birds that occur in Australia are now treated as full species, eastern yellow wagtail (*M. tschutschensis*) and green-

headed yellow wagtail (*M. taivana*) (Christidis & Boles 2008). They were previously regarded as subspecies of *M. flava*, which is no longer considered to occur in Australia. The occurrence of yellow wagtails in the Torres Strait appears unconfirmed but yellow wagtails have been reported for Boigu, Thursday and Horn Islands (Baxter 2010) and are likely to occur as irregular visitors on many of the Torres Strait Islands.

Yellow wagtails occur in open areas with low vegetation, especially in cultivation and on lawns, sporting fields and air fields. They are often recorded near water. Yellow wagtails are probably regular wet season non-breeding visitors to north Queensland. Diet consists mainly of invertebrates, taken mostly from the ground and occasionally from the air (Higgins *et al.* 2006b).

Threats: The major threat to Australian reed-warbler is loss of habitat due to coastal development in natural habitat areas (Higgins *et al.* 2006b). Barn and red-rumped swallows appear to be increasing in numbers in Australia, though this may be due to an increase in observers. Neither species appears subject to any particular threat in Australia. Threats to yellow wagtail in Australia are unknown.

Australian reed-warbler is not known from Poruma Island and is not expected to occur. Draffan *et al.* (1983) report the species only from south-western islands in Torres Strait. Barn and red-rumped swallows are known from Boigu Island but their status there, as for yellow wagtail, is unknown. Increased clearing of wooded areas would actually benefit these species and threats appear minimal.

Appendix F. Weed Images



Photograph 11. Yellow alder (*Turnera almifolia*) on Poruma gardens.



Photograph 12. Butterfly pea (*Clittorea ternatea*) on Poruma.



Photograph 13. Painted spurge (*Euphorbia heterophylla*) groundcover on Poruma.



Photograph 14. Mint weed (*Hyptis suaveolens*) groundcover with snake weed (*Stachyarrheta jamaicensis*) on Poruma.



Photograph 15. Heavy infestations of agave on Poruma dunes.



Photograph 16. Oleander (*Nerium oleander*).



Photograph 17. Infestation of gloriosa lily on Poruma foreshore.



Photograph 18. Infestation of mothers in law tongue on Poruma foreshore.

