



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

January 2013

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



Australian Government



TSRA
www.tsra.gov.au

3D Environmental
vegetation analysis and mapping specialists

Cover image: 3D Environmental (2013)

EXECUTIVE SUMMARY

Mer (Murray) Island is located in the eastern Torres Strait. It occupies a total area of 406 ha, and is formed on a volcanic vent which rises to height of 210m. The stark vent which dominates the island landscape is known as 'Gelam', the creator of the dugong in Torres Strait Island mythology. The volcanic vent of Mer is unique in an Australian context, being the only known example of a volcanic vent forming a discrete island within Australian territory. The vegetation on Mer is controlled largely by variations in soil structure and fertility. The western side of the island, which is formed on extremely porous volcanic scoria or ash, is covered in grassland due to extreme soil drainage on the volcano rim. The eastern side, which supports more luxuriant rainforest vegetation and garden areas, occupies much more fertile and favourably drained basaltic soil.

A total of six natural vegetation communities, within five broad vegetation groups and two regional ecosystems are recognised on the island, representing approximately 2% of regional ecosystems recorded across the broader Torres Strait Island landscape. The ecosystems recorded are however unique to the Eastern Island Group, in particular Mer and Erub, and have no representation elsewhere in Queensland. There are also a number of highly significant culturally influenced forest types on the island which provide a window into the islands past traditional agricultural practices. Observations suggest that the island has been essentially developed as a permaculture from the time of earliest human settlement.

There are currently 299 flora species recorded on the island which comprises 215 (72%) native taxa, with 84 (28%) introduced species. This represents approximately 22% of the known flora for the Torres Strait Island group. There are 82 families with 217 genera (168 native genera). One species of tree *Alectryon repandodentatus*, is listed as Endangered under Commonwealth (EPBC Act) and State (NC Act) legislation. One species *Globba marantina*, is Vulnerable, and an additional four species *Alpuda mutica* (a grass), *Fatoua villosa* (a herb), *Neololeba atra* (a bamboo on vine thicket margins), and *Chrysophyllum roxburghii* (a tree) are listed as Near-Threatened under the NC Act. A further 17 species are considered to have significance at a local and regional level. Based on preliminary information, some 136 plant species are known to be culturally significant which accounts for 44% of the island flora.

As for the majority of Torres Strait Islands there is a considerable lack of systematic survey of fauna habitats on the island. Desktop reporting indicates 115 fauna species have been reported for Mer Island including three frog, 34 reptile, 71 bird and seven mammal species. Of these, one reptile, two bird and four mammal species are introduced, five species are considered significant under either state or federal legislation and two species of reptile have their sole Australian representation either on Mer Island or within the broader Eastern Island Group. This can be compared with the 384

terrestrial fauna species that have been reported for the broader Torres Strait Island group which includes 14 frog, 67 reptile, 263 bird and 40 mammal species.

Within the five broad vegetation groups (or management units) identified on the island, a number of issues for future management are identified as necessary for the future biodiversity maintenance and ecological health of the island. These include:

- Control of the exotic weed lantana which at current rates of invasion will have entirely displaced native grassland habitats on the island within 10 to 15 years.
- Control of a number of additional invasive weeds which are also threatening biodiversity values on the island.
- Continued collection of floristic information, specifically those plants that are important as a traditional resource.
- Extensive ecological monitoring and assessment to develop the appropriate strategies to eradicate exotic rodents.
- Further active fauna survey to further define island scale habitat usage of a number of significant fauna species.
- Further survey and documentation of the complex and diverse cultural landscape on the island.

It is important that any future surveys on Mer be collaborative with the Meriam Gesep a Gur Rangers and include study of traditional ecological knowledge and ethno-taxonomy. This is also relevant to recommended land management practices which must be implemented in consultation with the island PBC in a culturally acceptable manner.

ACKNOWLEDGEMENTS

The project has been funded through 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 and Michael Bradby of TSRA who administered the project and provided valuable input throughout. 3D Environmental also wish to acknowledge all Meriam Elders and thank the Mer Gedkem Le PBC and Meriam Le for access to the land. Much appreciation also to the Meriam Gesep A Gur Rangers Sabu Wailu and Ses Salee and TSRA Ranger Supervisor Don Whap for assistance in the field.

Input in regard to the islands cultural background and assistance in the field was provided by Dr Garrick Hitchcock. Fauna information was provided by Terry Reis and Rebecca Diете contributed information specific to invasive rodents. Mr Peter Stanton provided the text for fire in the ecological landscape. Dr Paul Forster of the Queensland Herbarium assisted with identification of plant specimens and provided advice on significant species distribution and ecology. Barbara Waterhouse and Steven McKenna of the Department of Agriculture, Forestry and Fisheries (DAFF) provided valuable information on the occurrence and distribution of weeds. All members of the expert technical panel provided essential input into the process and their contribution is most appreciated.

Table of Contents

1.0	Introduction	1
1.1	Cultural Setting.....	1
1.2	Geographic Setting	1
1.3	Geological Context.....	1
2.0	Methods	3
3.0	Aims and Objectives	3
4.0	Legislative and Policy Considerations	3
5.0	Vegetation and Flora	7
5.1	Vegetation Groups and Mapping	7
5.2	Flora Species	9
5.2.1	<i>Flora Species with Biodiversity Significance</i>	10
5.2.2	<i>Introduced Plants</i>	15
5.2.3	<i>Plants with Cultural Significance</i>	19
6.0	Fauna (Animals)	20
6.1	Culturally Important Fauna Species	21
6.2	Fauna Habitat Values.....	21
6.3	Fauna Species with Conservation Significance	22
6.3.1	<i>Critically Endangered, Endangered, Vulnerable and Near-Threatened Species</i> ...	23
6.3.2	<i>Profiles of Species listed as Endangered or Vulnerable under the EPBC Act and/or NC Act known from Mer Island</i>	24
6.3.3	<i>Migratory Fauna Species</i>	29
6.3.4	<i>Additional possible Migratory species</i>	30
6.3.5	<i>Species of Regional Significance</i>	31
6.4	Pest Fauna Species	32
6.5	Threats to Fauna and Habitat	33
6.6	Future Priorities	34
7.0	The Role of Fire in Savanna Landscapes	35
8.0	Mer Island as a Landscape in Balance	36
9.0	Management Profiles for Mer Island Habitats	38
9.1	Deciduous / Semi-deciduous Vine Forest and Thicket	38
9.1.1	<i>Status of Ecological Knowledge</i>	38
9.1.2	<i>Ecological / Cultural Considerations</i>	39
9.1.3	<i>Management Implications</i>	40
9.1.4	<i>Summary of Recommended Management Actions</i>	41
9.2	Coastal Headland Forest Complex	43

9.2.1	<i>Status of Ecological Knowledge</i>	43
9.2.2	<i>Ecological / Cultural Considerations</i>	43
9.2.3	<i>Management Implications</i>	44
9.2.4	<i>Summary of Recommended Management Actions</i>	44
9.3	Grassland and Grassland Complexes	46
9.3.1	<i>Status of Ecological Knowledge</i>	46
9.3.2	<i>Ecological / Cultural Considerations</i>	47
9.3.3	<i>Management Implications</i>	48
9.3.4	<i>Summary of Recommended Management Actions</i>	50
9.4	Successional Vine Forest Communities	52
9.4.1	<i>Status of Ecological Knowledge</i>	52
9.4.2	<i>Ecological / Cultural Considerations</i>	53
9.4.3	<i>Management Implications</i>	54
9.4.4	<i>Summary of Recommended Management Actions</i>	54
9.5	Anthropogenically Altered (secondary) Vine Forest and Thicket.....	55
9.5.1	<i>Status of Ecological Knowledge</i>	55
9.5.2	<i>Ecological / Cultural Considerations</i>	56
9.5.3	<i>Management Implications</i>	57
9.5.4	<i>Summary of Recommended Management Actions</i>	57
9.6	Cleared Areas, Exotic Vegetation and Regrowth Forests.	59
10.0 References and Bibliography		62
11.0 Glossary		72
Appendices		74
Appendix A.	Expert Panel Attendees	74
Appendix B.	Queensland Government vegetation structural classification	75
Appendix C.	Preliminary List Of Useful Plants Of Mer island, Torres Strait, Qld.	76
Appendix D.	Preliminary Flora Species List – Mer Island, Torres Strait, Queensland. ...	92
Appendix E.	Fauna of Mer Island, Torres Strait, Qld.....	105
Appendix F.	Information on Migratory Fauna Species Potentially occurring on Mer Island and Surrounding Islets	118

List of Figures

Figure 1. Location of Mer (Murray) Island	2
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 <i>et al.</i> 2009).	7
Figure 3. Distribution of semi-evergreen vine forest on Mer Island (place names after Lawrie, 1970).	39
Figure 4. Location of coastal headland forest complexes on Mer Island (place names after Lawrie, 1970).	44
Figure 5. Location of native grasslands on Mer Island (place names after Lawrie, 1970).....	48
Figure 6. The location of successional forest communities on Mer Island (place names after Lawrie, 1970).	53
Figure 7. The location of anthropogenically altered vine forest communities on Mer Island (place names after Lawrie, 1970).	56
Figure 8. The location of exotic forest communities dominated by exotic species on Mer Island (place names after Lawrie, 1970).	61

List of Tables

Table 1. Broad vegetation groups and relative contributions to island vegetation	8
Table 2. Descriptions of component vegetation communities and association with regional ecosystems currently recognised on Mer Island (from Stanton <i>et al.</i> 2009).	8
Table 3. Summary of the vascular flora of the Mer Island in relation to Torres Strait Islands, Cape York Peninsula and Great Barrier Reef Continental Islands and Queensland Flora.	9
Table 4. Summary of flora with biodiversity significance on Mer Island.	10
Table 5. Summary of regionally significant flora species, Mer Island.	14
Table 6. Weed threats.....	19
Table 7. Endangered, Vulnerable and Near-Threatened fauna species ¹ reported or predicted ² to occur on Mer Island.....	23
Table 8. Migratory ¹ species reported or predicted ² to occur on Mer Island.....	30
Table 9. Summary of management actions for semi-deciduous vine forest and thicket.	41
Table 10. Summary of management actions for coastal headland forest complexes.	44
Table 11. Summary of management actions for native grassland communities.	50
Table 12. Summary of management actions for successional forest communities.	54
Table 13. Summary of Management actions for anthropogenically altered vine forest t.	57

1.0 Introduction

Murray Island, also referred throughout this document as Mer, represents one of seven islands within the broader Torres Strait Island group initially selected for the development of an island specific biodiversity management profile. The profile aims to document the biodiversity features, landscape processes, and cultural values (from both a landscape and site specific perspective) that are intrinsic to the island and develop management actions to ensure preservation or enhancement of those features. In the process of developing this plan, those sites and landscape features of specific cultural importance to the Mer (Meriam Le) people are recognised and recommendations contained within are pertinent to the management of important values from both a traditional cultural and western scientific perspective. The specific management recommendations detailed within this management profile will be directly incorporated into the developing 'Mer Island Working on Country Plan' for specific action.

1.1 Cultural Setting

The population of Mer at the 2006 census consists of 465 Indigenous and 12 non-Indigenous people. Land tenure is Crown Reserve with Native Title determined on 3/06/1992. The Registered Native Title Body Corporate¹ (RNTBC or PBC in shortened form) is the Mer Gedkem Le Traditional Land and Sea Owners (Torres Strait Islanders) Corporation who hold the title of the land on behalf of the traditional owners. The Meriam Le speak Miriam Mir, the dialect of Eastern Torres Strait Island Group.

1.2 Geographic Setting

Mer Island (shown in **Figure 1**), along with Erub (Darnley) and Ugar (Stephen) plus a number of smaller islands such as Dowar and Waier and sand cays including Bramble and Nepean form the Eastern Island Group. Mer, with an area of 406ha, is formed by a volcanic vent which rises to 210 m above sea level on the western rim of the volcanic cone. The stark volcanic vent which dominates the island landscape is known as 'Gelang', the creator of the dugong in Torres Strait Island mythology. The mean annual rainfall of 1 222mm (BOM 2008a) compares to 1 983mm on Badu Island, the wettest recording station in the Torres Strait (BOM 2008b), and Dauan, the driest recording station at 1 082mm (BOM 2008c).

1.3 Geological Context

The Eastern Island Group including the larger islands of Erub, Ugar, Mer and Bramble Cay are the result of Pleistocene age (<1.8Ma) volcanic activity. Mer represents the most spectacular expression of this activity with the main island and the two satellite islets of Waier and Dauar formed

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.

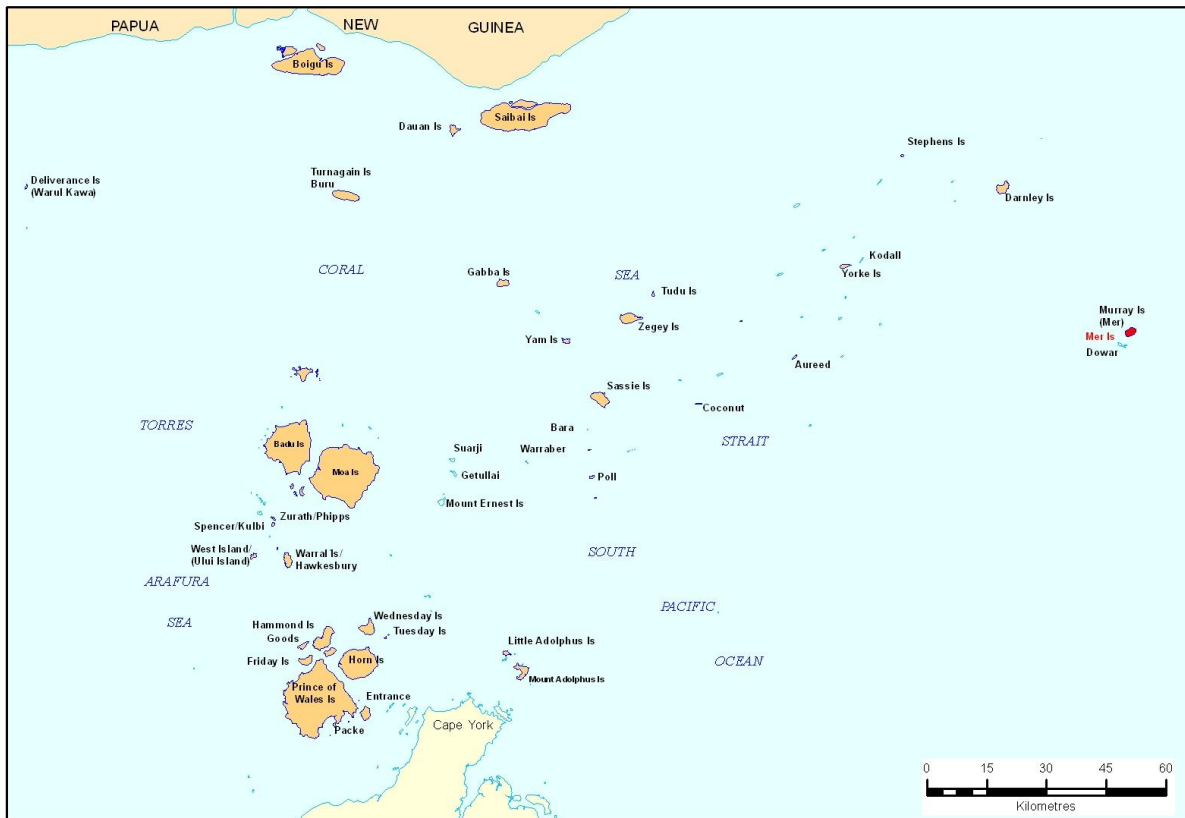


Figure 1. Location of Mer Island

on separate volcanic vents (Wilmott and Powell 1972). The main volcanic vent on Mer, with the steep outer wall of the cone rising directly behind the main area of settlement, is formed on poorly consolidated scoria and ash. The vent forms a moderately well preserved broad semi-circular rim which has breached, spilling lava to the east, with vesicular flow lava forming the more subdued eastern portion of the island. Volcanic activity has been recent enough on Mer and surrounding Islets for sheet flow morphology to remain evident on the outer slopes on the cone. The extremely porous nature of the scoria that forms the Mer Island vent results in extreme soil drainage, which has severely limited vegetation development on the western portion of the island.



Photograph 1. Well preserved sheet lava flows on the outer vent of the Dewart Islet volcanic vent.

2.0 Methods

This document provides a compendium of information that has been compiled from a range of sources, supplemented with information gathered from consultation with both technical experts and traditional land owners on Mer. In summary, the process undertaken to complete this biodiversity assessment includes:

1. Compilation of desktop resources which includes but is not limited to Stanton, Fell and Gooding (2009), Queensland Herbarium's HerbreCs Database (2011 extract), Queensland Museum fauna record extracts, Birds Australia database extract, WildNet database extracts, Conics Land Use Management Plan for Mer Island (Conics 2008) and numerous additional technical papers relating to both flora and fauna (see references section).
2. Presentation of this information at a workshop in Cairns, at which biodiversity information was presented to a range of technical experts for discussion and further input. A list of workshop attendees is provided in **Appendix A**.
3. An island based consultation with rangers and the broader island community was held on Mer Island between 29th March and 1st April 2011.

3.0 Aims and Objectives

The overall aim of this document is to compile and annotate existing information relating to island scale ecological process, introduce cultural interactions with these processes, and establish a framework of actions which can be drawn on by island rangers and managers to effectively manage the islands specific ecological and cultural values.

Owing to the long term occupancy of the islands (> 4 000 years), 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 is the safest management option. Habitat maintenance has therefore been a primary consideration during the compilation of this document although, on Mer Island, a number of problematic land management issues became apparent and these are documented for further consideration in this report. The specific actions that are adopted and direction of island scale ecological management will however be ultimately up to the discretion of the island rangers and traditional owners.

4.0 Legislative and Policy Considerations

Biodiversity is regulated at state and national levels by a range of legislative mechanisms which classify fauna species, flora species and habitats according to their rarity (at a range of scales), population size, distribution and threats. The legislative classification is generally used as a

surrogate for assigning significance to a particular species or ecological value. Relevant components of the major legislative mechanisms that require consideration are described 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). The *Nature Conservation (Wildlife) Regulation 2006* is sub-ordinate to the NC Act and defines seven classes that are:

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

These classes collectively relate to native species and 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 broader 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 maintained by EHP. The Vegetation Management Status (VMS) of a regional ecosystem is described in line with the following:

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, the majority of vegetation scheduled under the VMA as 'of concern' on Mer (e.g. vine thicket ecosystems classified under RE3.8.5) 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 000ha. The regional ecosystem mapping available for Mer provides accurate information on the legislative significance of vegetation on the island offering an information planning resource for the Mer community, the TSIRC and the TSRA. For example, if a radio tower was proposed for a specific area on remnant vegetation on Mer which supported a regional ecosystem (vegetation type) that was 'Endangered' or 'Of Concern', then clearing of this vegetation without authorisation is in breach of the VMA. Liaison with regulators (EHP) should be undertaken to determine the conditions that must be met for clearing to be authorized. 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* (LPA) provides a framework and powers for improved management of weeds, pest animals and the stock route network. The act provides for designation of threat classes to exotic species 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 threat are declared within 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 Ecologically Sensitive Area.

For example, if a Class 2 weed such as Gamba grass (*Andropogon gayanus*) was found on Mer, there is a requirement under the Act for landowners to take reasonable steps to control and manage the weed.

In addition, the draft TSRA LMSU Pest Management Plan for Mer forms a policy document to guide field and administrative staff and communities toward cooperative involvement of an integrated and coordinated approach to pest management across the Island. The commonwealth also provides an inaugural list of 'Weeds of National Significance (WONS)' based their perceived threat to a range of environmental, social and cultural values at a national level.

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 five priority levels for action to remediate declining Queensland wildlife being 'Critical Priority (CR)', 'High Priority (H)', 'Medium Priority (M)' and 'Low Priority (L)'. The information within this document will be valuable in future reassessments of BoT in the Torres Strait.

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).
- 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 authorization from the regulator (Australian Government) who is likely to provide conditions under which the interference can take place. Interference (such as removal of the protected plant species such as *Alectryon repandodontatus*) without authorization is in breach of the EPBC Act.

5.0 Vegetation and Flora

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. Mer), island groups (Eastern 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 which considers the dominant life form (tree or grass), height of the tallest strata, and canopy closure. The structural classification used by the Queensland Government is included within **Appendix B**.

Vegetation structural groupings (*i.e.* shrubland etc) are used to define **Broad Vegetation Groups** (BVGs) which 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. REs as described in **Section 4** comprise a group of vegetation communities, although unlike BVGs, consider regional distribution and geology within their classification. REs must be considered due to their legislative implications although in this document, BVGs have been used as a principle unit to define habitat management groupings.

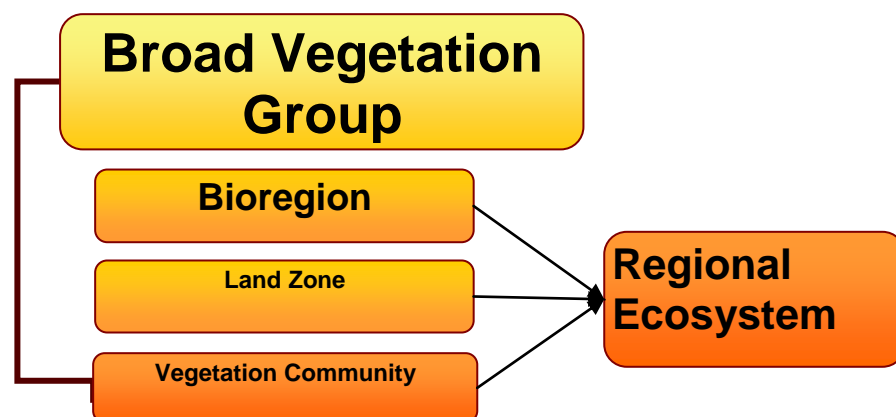


Figure 2. Diagrammatic illustration of the hierarchy and relationship between components of the vegetation classification system used in the Torres Strait Island vegetation mapping study (Stanton *et al.* 2009).

Vegetation Classification on Mer Island: For management purposes, the island's vegetation is classified into BVGs, herein referred to as habitats as 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 provided in **Table 2**. Further characterisation of habitat types is provided in the following text.

Table 1. Broad vegetation groups and relative contributions to Mer Island vegetation

Broad Vegetation Group/ Habitat**	Component Vegetation Communities**	Area (ha)	Contribution
Deciduous / Semi-deciduous vine forest and vine thicket	2j, 2w	79	19.7
Coastal headland forest complex	15a	5	1.5
Grasslands and grassland complexes	17b	161	37.8
Successional vine forest communities	21a	10	2.7
Anthropogenically altered (secondary) vine forest and thicket	22a	49	12.3
Regrowth	RE	15	3.8
Exotics	Exotics/ Bamboo	66	16.5
Cleared Areas	CI	21	5.5
Total		406	100

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

Vegetation Community	Description	Geological Association	Regional Ecosystem	VMS ¹	BDS ²
2j	Semi-deciduous notophyll vine forest + <i>Bombax ceiba</i> var. <i>leiocarpum</i> + <i>Diospyros hebecarpa</i> +/- <i>Alectryon repandodentatus</i> +/- <i>Cupaniopsis</i> <i>anacardiodes</i> + <i>Alstonia</i> <i>spectabilis</i> +/- <i>Melicope</i> <i>peninsularis</i> .	Basalt scree slopes	3.8.5a	OC	OC
2w	Deciduous vine thicket + <i>Garuga floribunda</i> var. <i>floribunda</i> + <i>Gyrocarpus</i> <i>americanus</i> + <i>Bombax</i> <i>ceiba</i> var. <i>leiocarpum</i> +/- <i>Antiaris toxicaria</i> var. <i>macrophylla</i> .	Mid and upper slopes along gully lines	3.8.5c	OC	OC
15a	Semi-deciduous vine thicket / <i>Pandanus</i> sp. open forest complex (2w/11a – 60-40).	Steep escarpments on exposed basalt headlands	3.8.5e	OC	OC
17b	<i>Themeda triandra</i> +/- <i>Imperata cylindrica</i> +/- <i>Mnesithea rottboellioides</i> grassland.	Hillslopes on volcanic ash and scoria	3.8.4b	OC	OC
21a	Low vine forest and vine	Sheltered	3.8.5d	OC	OC

Vegetation Community	Description	Geological Association	Regional Ecosystem	VMS ¹	BDS ²
	thicket with <i>Barringtonia calypttrata</i> + <i>Macaranga involuocrata</i> var. <i>mallotoides</i> + <i>Hibiscus tiliaceus</i> + <i>Semecarpus australiensis</i> successional vine forest and thicket.	pockets on volcanic ash and scoria			
22a	Tall palm (<i>Cocos nucifera</i>) woodland and open forest with mesophyll/notophyll vine forest sub-canopy of <i>Myristica insipida</i> and <i>Lepidopetalum fructoglabrum</i> .	Flat topped hillslopes on basalt	Non-remnant	Non-remnant	Non-remnant

1. Vegetation Management Status and per the Vegetation Management Act, 1999.

2. Biodiversity Status as designated by EHP.

5.2 Flora Species

The composition of the Mer flora has been compiled from analysis of Queensland Herbarium data (Herbrechts 2011), Australian Tropical Herbarium data (ATH 2011), 3D Environmental survey data (Stanton *et al.* 2007), and field surveys carried out by 3D Environmental with Miriam Rangers in March 2010. The total known flora of 299 species comprises 215 native species (see **Appendix D**) and represents approximately 22% of the known flora for the Torres Strait Islands. There are 82 families with 217 genera (168 native genera). The 84 introduced species account for 28% of the island flora. A comparison of the island flora in relation to other Torres Strait islands and regional floras is provided in **Table 3**.

Table 3. Summary of the vascular flora of Mer Island in relation to Torres Strait Islands (Stanton *et al.* 2009), Cape York Peninsula (Neldner and Clarkson 1995 in Neldner 1998) and Great Barrier Reef Continental Islands (Batianoff & Dilleward 1997) and Queensland Flora (Bostock and Holland 2010).

Islands	Families/Species	Pteridophytes	Gymnosperms	Angiosperms	Total
Mer	Families	3	0	78	82
	Species	7	0	291	299
Iama	Families	2	0	79	81
	Species	2	0	257	259
Boigu	Families	3	0	69	72
	Species	4	0	239	243
Mabuiag	Families	2	1	101	104
	Species	4	1	429	434
Badu	Families	11	2	117	130
	Species	17	2	586	592
Torres Strait Islands (Combined)	Families	15	1	158	174
	Species	39	1	1,289	1,330
Cape York Peninsula	Families ²	30	5	183	218
	Species	157	6	3,173	3,338
Great Barrier Reef Continental Islands ³	Families	25	5	165	195
	Species	97	7	2,091	2,195
Qld Flora	Species	392	68	9,246	9,706

² Cape York flora utilises Henderson (2002).

³ Batianoff & Dilleward (1997) identify 552 continental islands along the east coast of Queensland within the Great Barrier Reef Marine Park (GBRMP), a total land area of about 1 627 km².

The 28% of the islands vascular flora that is naturalised compares to 15% for Torres Strait Islands (Stanton *et al.* 2009), 7.4% for Cape York Peninsula (Neldner & Clarkson 2005), and 13% for Queensland (Bostock & Holland 2010).

5.2.1 Flora Species with Biodiversity Significance

An assessment of significant flora species draws from the data sources identified above and seeks to provide details sufficient to document additional flora and habitats that should be considered a priority and focus for management actions. With consideration of the existing Torres Strait Region Back on Track Species Prioritisation program (DERM 2009) and ongoing assessments of the status of Queensland flora by the Queensland Herbarium, additional and complementary species management criteria have been assessed. Species have been broadly categorised into significance categories (i.e. national, state, regional and cultural) based on criteria, which include legislative status, threatened or sensitive, restricted, otherwise noteworthy, or of cultural value. Culturally significant species are assessed separately. The 23 species identified as having significance at the national, state, and regional level are summarised in **Table 4** below.

Table 4. Summary of flora with biodiversity significance on Mer Island.

Species	National EPBC	State NC Act	Regionally Significant	Broad Vegetation Group
<i>Alectryon repandodentatus</i> (Sapindaceae)	E	E	-	Semi-deciduous notophyll vine forest, Successional vine shrubland, Mesophyll vine forest with emergent coconut, Deciduous notophyll vine thicket.
<i>Globba marantina</i> (Zingiberaceae)	-	V	-	Semi-deciduous notophyll vine forest margins and grasslands.
<i>Alpuda mutica</i> (Poaceae)	-	NT	-	Semi-deciduous vine thicket margins and grassy headlands.
<i>Fatoua villosa</i> (Moraceae)	-	NT	-	Semi-deciduous vine thicket margins.
<i>Neololeba atra</i> (Poaceae)	-	NT	-	Semi-deciduous notophyll vine forest
<i>Chrysophyllum roxburghii</i> (Sapotaceae)	-	NT	Disjunct	Semi-deciduous notophyll vine forest margins.
<i>Acronychia sp.</i> (Batavia Downs J.R.Clarkson+ 8511) (Rutaceae)	-	-	Cape York endemic. Disjunct Northern limit of distribution	Semi-deciduous notophyll vine forest.
<i>Aristolochia acuminata</i> (Aristolochiaceae)	-	-	Disjunct	Successional vine shrubland/grassland
<i>Arytera pseudofoveolata</i> (Sapindaceae)	-	-	Disjunct	Semi-deciduous notophyll vine forest.
<i>Cordia myxa</i> (Boraginaceae)	-	-	Disjunct	Semi-deciduous notophyll vine forest.
<i>Crotalaria sp.</i> (Torres Strait J.R. Clarkson 2044) (Fabaceae)	-	-	Disjunct Northern limit of distribution	Grassland
<i>Cycas scratchleyana</i> (Cycadaceae)	-	-	Disjunct PNG species at southern limit of distribution	Non remnant
<i>Derris rubrocalyx subsp. rubrocalyx</i>	-	-	Disjunct Northern limit of	Semi-deciduous notophyll vine forest.

Species	National EPBC	State NC Act	Regionally Significant	Broad Vegetation Group
(<i>Fabaceae</i>)			distribution	
<i>Derris</i> sp. (<i>Claudie River</i> (LJ Webb 8348) (<i>Fabaceae</i>)	-	-	Disjunct Northern limit of distribution	Semi-deciduous notophyll vine forest.
<i>Euphorbia plumerioides</i> (<i>Euphorbiaceae</i>)	-	-	Disjunct	Semi-deciduous vine thicket/Pandanus open forest complex.
<i>Ficus tinctoria</i> (<i>Moraceae</i>)	-	-	Disjunct	Semi-deciduous notophyll vine forest, Mesophyll vine forest with emergent coconut.
<i>Flacourtia</i> sp. (<i>Shiptons Flat</i> L.W.Jessup 3200) (<i>Flacourtiaceae</i>)	-	-	Cape York endemic. Disjunct Northern limit of distribution	Semi-deciduous notophyll vine forest, Successional vine shrubland, Mesophyll vine forest with emergent coconut.
<i>Lepidopetalum fructoglabrum</i> (<i>Sapindaceae</i>)	-	-	Disjunct Locally restricted.	Mesophyll vine forest with emergent coconut.
<i>Smilax blumei</i> (<i>Smilacaceae</i>)	-	-	Disjunct	Semi-deciduous notophyll vine forest, Successional vine shrubland, Mesophyll vine forest with emergent coconut.
<i>Syzygium bungadinnia</i> (<i>Myrtaceae</i>)	-	-	Cape York endemic. Disjunct Northern limit of distribution. Cultural uses.	Mesophyll vine forest with emergent coconut.
<i>Syzygium puberulum</i> (<i>Myrtaceae</i>)	-	-	Disjunct. Locally rare with restricted habitat. Cultural uses.	Semi-deciduous notophyll vine forest, Successional vine shrubland, Mesophyll vine forest with emergent coconut.
<i>Uvaria rufa</i> (<i>Annonaceae</i>)	-	-	Disjunct. Locally rare. Cultural uses.	Semi-deciduous notophyll vine forest, Successional vine shrubland, Mesophyll vine forest with emergent coconut.
<i>Welchiodendron longivalve</i> (<i>Myrtaceae</i>)	-	-	Highly disjunct.	Not known.

National Significance

One species listed on the EPBC Act is known to occur.

***Alectryon repandodentatus* – Endangered (*Sapindaceae*):** A small to medium tree, with soft hairy pinnate leaves (1-3 pairs of leaflets), rusty, golden-coloured hairs on new growth and branchlets, and reddish new leaf shoots. New foliage is flushed with red. It is only known from rainforest on Mer, Erub, and Dauan Islands, and from Lockerbie near Bamaga, Cape York Peninsula from semi-deciduous mesophyll vine forest. It also occurs in Papua New Guinea, in the Central district (Fell and Stanton pers. obs.).

It is a common species on Mer occurring throughout the eastern end of the islands in and on the margins of vine forest and thicket and disturbed vine forest communities. Habitat is threatened by invasion by lantana, leucaena and tropical kudzu, clearing for infrastructure

and inappropriate fire regimes. Information on phenology, dispersal mechanisms and reproduction ecology is not known.



Photograph 2. Leaves of the Endangered tree *Alectryon repandodentatus*.

State Significance

Six species listed on the Amended Regulations of the NC Act are known to occur.

***Alectryon repandodentatus* - Endangered (Sapindaceae):** see above

***Globba marantina* - Vulnerable (Zingiberaceae):** *Globba marantina* is a perennial herbaceous ginger which is distributed exclusively, but widely, south of extreme southern India from Sri Lanka to the Solomon Islands (Williams *et al.* 2004). On Mer it occurs in grasslands and the margins of closed forest (Wannan & Bousi 2004). The ginger is widely used throughout its distribution. Information regarding its traditional use on Mer requires further investigation, as does details on population and habitat preference.

Mauritian grass – Near-Threatened (*Apluda mutica*) (Poaceae): A perennial grass known from India through SE Asia to the Torres Strait where it has been recorded from Saibai Island in Pandanus woodlands and also on Mer (Clayton *et al.* 2011, Symons 2011) and Erub. The grass has been recorded from the margins of disturbed vine forest on sand in the community area (Wannan & Bousi 2003), and may also occur in grassland habitat. Information on its ecology, population size and habitat preference is currently lacking. Lantana invasion and conversion of grassland into shrubland are identified as threatening processes.

Star apple – Near-Threatened (*Chrysophyllum roxburghii*) (Sapotaceae): The presence of this tree on Mer was first identified by Freebody (2002) with a single large tree to 25m recorded beside a road adjoining transitional vine forest (see **Photographs 3 & 4**). The tree occurs in Cape York Peninsula, known only from well developed alluvial rainforest on the Claudie River, and east of Coen in the McIlwraith Range, with a disjunct southern limit of distribution near Isabella Falls (Hyland *et al.* 2001). In Torres Strait it is limited to well developed rainforest on Mua and Dauan Islands (granitic substrates) and in disturbed vine forest on basalt on Mer. These are highly disjunct occurrences of a species which also occurs in Asia,

Malesia and the Solomon Islands. Whilst not known to be eaten on Mer, the fruit is considered edible in parts of Asia and Africa.



Photograph 3 (left). Leaves of *Chrysophyllum roxburghii*; **Photograph 4.** Fruit and seeds.

Cape bamboo – Near Threatened (*Neololeba atra*) (Poaceae): A native bamboo known from Torres Strait, Cape York and North Eastern Qld in the understorey of rainforest habitats. Also occurs in New Guinea, the Moluccas, northern Sulawesi and the Philippines. On Mer it is typically associated with the understorey of vine forests (2j). Known also in the Torres Strait from Mua (1i, 2o, 3d), Badu (4a), Dauan (7a), Iama, Erub and Naghir. Populations on Mer are considered restricted but robust although possibly threatened in the long term by invasion of lantana.



Photograph 5. The native bamboo *Neololeba atra*.

Hairy crabweed – Near-Threatened (*Fatoua villosa*) (Moraceae): A herb to 1m in height which occurs in the northern parts of Western Australia and from Japan, Thailand, Indochina, Melanesia and the Pacific Islands. On Mer it is known the margins of vine thickets, often on sandy areas. Information on its ecology, population size and habitat preference necessary for its management is currently lacking.

Regional Significance

The classification of regionally significant species 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. The 17 species recognised on Mer are summarised in **Table 5** below.

Table 5. Summary of regionally significant flora species, Mer Island.

Species	Comments
<i>Acronychia</i> sp. (<i>Batavia Downs</i> J.R.Clarkson+ 8511) (Rutaceae)	A small tree endemic to the Cape York Peninsula (CYP) Bioregion. Populations on Mer are highly disjunct representing a northern limit of distribution.
<i>Aristolochia acuminata</i> (Aristolochiaceae)	A vine recorded on Mer in grassland shrubland complex on basalt hills. It has been recorded on a number of islands including Dauan, Iama, Mua and Gebbar, and from SE Asia, Papua New Guinea (PNG) and the Solomons. Torres Strait populations are disjunct representing the northern limits of Australian distribution. The species is a food plant for the larval stages of the Cape York birdwing and red bodied swallowtail butterflies (Common & Waterhouse 1981). Habitat on Mer is threatened by lantana invasion.
<i>Arytera pseudofoveolata</i> (Sapindaceae)	A small tree which occurs in vine forest areas of Mer. It is also known from Lockerbie near Bamaga, Albany island, Thursday Island and Mua Island, and in PNG. The Torres Strait island occurrences are part of a number of disjunct populations and the northern limit of the species distribution in Australia.
<i>Cordia myxa</i> (Boraginaceae)	This small tree is thought to be introduced with origins in Africa or Asia and now naturalised in parts of northern Australia (Hyland et al. 2011). It is however rare in Torres Strait being recorded on Mer and in well developed semi-deciduous vine forest on Prince of Wales Island (Stanton et al. 2009). These populations are disjunct.
<i>Crotalaria</i> sp. (<i>Torres Strait</i> J.R. Clarkson 2044) (Fabaceae)	A highly disjunct species only known from a few islands in Torres Strait and the northern Barrier Reef continental islands. Populations on Mer are known from Herbarium specimen with limited details regarding habitat and abundance. The Mer occurrence is disjunct representing the northern limit of distribution.
<i>Cycas scratchleyana</i> (Cycadaceae)	Three individuals of this large cycad are known from Mer. It is otherwise known from eastern PNG. The Mer populations are highly disjunct and represent the only record of the species in Australian territory (see Forster 2005).
<i>Derris rubrocalyx</i> subsp. <i>rubrocalyx</i> (Fabaceae)	A robust vine inhabiting vine forest margins. The Mer occurrence is disjunct and representing the northern limit of distribution being otherwise known from Lockerbie near Bamaga.
<i>Derris</i> sp. (<i>Claudie River</i> (LJ Webb 8348) (Fabaceae)	A robust vine inhabiting vine forest margins. The Mer occurrence is disjunct being otherwise known from Lockerbie near Bamaga and Iron Range.
<i>Euphorbia plumerioides</i> (Euphorbiaceae)	Shrub 1-4m known from vine thicket and pandanus open forest complexes on steep coastal headlands (Stanton & Fell pers. obs. March 2011, DGF10871+DJS). The Mer population is highly disjunct and otherwise recorded from Torres Strait on Prince of Wales Island (Fell pers. obs. 2010) and Badu. Also occurs in north eastern CYP and PNG.
<i>Ficus tinctoria</i> (Moraceae)	A strangling fig occurring in vine forest on basalt. Population currently not known. The dye from the fruit is extracted and used as a traditional dye for fabric in India. Occurs in South Pacific Islands and Asia with an Australian population in the Kimberley and possibly CYP. Mer populations are disjunct.
<i>Flacourtia</i> sp. (<i>Shiptons Flat</i> L.W.Jessup 3200) (Flacourtiaceae)	A small tree endemic to the CYP bioregion. Populations on Mer and Erub are disjunct and represent northern limits of distribution. It occurs throughout the understorey of vine thicket on basalt. Populations appear robust.
<i>Lepidopetalum fructoglabrum</i> (Sapindaceae)	Populations of this small rainforest tree are predominately found in the understorey of former garden areas in the forested eastern parts of the island. The species also occurs in CYP and PNG. Occurrences in Torres

Species	Comments
	Strait are disjunct and limited to Mer and Erub. The species has cultural values based on traditional use.
<i>Smilax blumei</i> (<i>Smilacaceae</i>)	A slender vine that occurs in vine thickets and forests on Mer. Rare and poorly known in Torres strait with the Mer Island occurrence representing a disjunct population. Also known from Malasia.
<i>Syzygium bungadinnia</i> (<i>Myrtaceae</i>)	A tree to 20m restricted on Mer to vine forest. An endemic to the Cape York bioregion occurring from Iron Range in the south to the Torres Strait Islands. The Mer occurrence is part of a number of highly disjunct populations in Torres strait, which represent the northern limits of distribution. Known also from Mabuia, Mua, Badu, and Dauan. Fruit is edible.
<i>Syzygium puberulum</i> (<i>Myrtaceae</i>)	An attractive shrub to small tree with edible red fruit. Populations are predominantly found in the understorey of former garden areas in the forested eastern parts of the island. The species also occurs in CYP and PNG. Occurrences in Torres Strait are disjunct and limited to Mer, Erub, and Dauan. The species has cultural values based on traditional use.
<i>Uvaria rufa</i> (<i>Annonaceae</i>)	A scrambling shrub or liana known from vine forest and thicket habitats between Coen and Thailand. Occurrences on Mer as well as Badu, Mabuia, Mua, Prince of Wales and lama are disjunct and restricted. Fruit is edible.
<i>Welchiodendron longivalve</i> (<i>Myrtaceae</i>)	There is a 1970 collection of this species by M. Lawrie in the records of the Qld Herbarium. This represents a highly disjunct occurrence for a species otherwise known from northern CYP and on continental islands such as Muralug, Zuna, Wednesday, Hammond, Badu, Mua, Mabuia, and Gebbar. The plant has not been observed by the authors on the island.



Photograph 6 (left). Leaves and fruit of *Uvaria rufa*; **Photograph 7.** Flowering specimen *Uvaria rufa*

5.2.2 Introduced Plants

Information on weed species has been sourced from Stanton *et al.* (2009), Queensland Herbarium specimen data, field data of Fell (2009, 2010), previous studies of Wannan & Bousi (2003) and personal communication with Barbara Waterhouse and Steven McKenna from DAFF.

The use of the land by Miriam people for gardening and as a resource for traditional resources is long standing, and the cultural links with the South Pacific Region and Papua New Guinea is likely to have facilitated the movement of plants throughout the region (Haddon 1935, Shukul 2004, McNiven). Many of these introductions were useful plants of horticulture for example banana (*Musa* spp.), cassava (*Manihot* spp.), taro (*Calocasia* spp.), papaya (*Papaya carica*), and yams (*Dioscorea*

spp.), however others such as poinciana (*Delonix regia*) and hibiscus (*Hibiscus* spp.) etc. have been introduced for aesthetic horticultural values.

These early and more recent anthropogenic introductions together with those plants brought to the island by natural dispersal mechanisms of wind, water and birds, total 84 species which accounts for 28% of the island flora (**Appendix C**). As for all of the inhabited Torres Strait Islands the majority of these introductions are associated with disturbed and developed areas within and surrounding the Mer community and fringing disturbed sites such as major roads and tracks, dump, airfield, recreation areas and cemetery. Remnant vegetation throughout the island is increasingly becoming affected by weeds with a number of species posing serious threats to the islands natural and cultural values.

Declared Weeds

Declared weeds under the LP Act recorded on the island are:

Lantana (*Lantana camara*)

Lantana is a Class 3 Declared Weed and listed as Weed of National Significance (WONS). It is currently widespread on Mer, Erub and Ugar and poses a potential threat to deciduous vine thickets and forests on other Torres Strait Islands. The weed is a climbing shrub and is thought to have been brought to Mer as a garden plant for its attractive flowers. The fertile and well drained basalt soils are ideal for the plant and over many years it has slowly but surely established itself over the island via seed dispersal by birds. Lantana now occurs along tracks and on the margins of disturbed areas in the eastern parts of the island. Dense forested vegetation seems to be currently limiting its infiltration into the forest interior, however it is highly probable that its invasion into forest gaps is inevitable. Its proliferation within the grasslands and shrublands in the western parts of the island is more robust. Large areas of the steep slopes of Gelam are heavily infested and isolated patches are beginning to colonise throughout the grassland ecosystem. Without urgent management intervention Lantana will continue its inevitable course toward total transformation of the island landscape, and thus critically impact the preservation of the Miriam environment and culture.

To achieve the management of habitats currently impacted by lantana there is a requirement for planning, raising community awareness, resourcing, training, and habitat management. An integrated control program using fire management, and herbicide control methods of splatter gun application of glyphosate and cut stump application is required. Recommendations for the management in habitats are provided in relevant sections of the document.

Yellow Bells (*Tecoma stans* var. *stans*)

Yellow bells is a class 3 declared species under the LPA medium to tall 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. Large infestations were observed in March 2011 on the north facing slopes of Gelam. The origin of the infestation is from the seeds of plants in the community area being blown up the slope on the prevailing winds.

Environmental Weeds Present

Leucaena (Leucaena leucocephala)

An exotic tall shrub to small tree up to about 6 m tall with fine bipinnate leaflets. The weed is present on Boigu, Saibai, Mua, Erub, Ugar, Thursday and Horn Islands. The weed is entrenched within the community area with dense infestations in the cemetery, house yards, and along roadsides throughout the eastern parts of the island. Given the abundance of the plant and its roadside occurrence there is a very high likelihood that it will be dispersed to other parts of the island by mechanical means such as machinery and associated soil movement, and vehicles. Grassland habitats are currently free of the weed however future invasion is expected without management intervention. *Leucaena* therefore poses a significant threat to cultural and natural values of the island. Recommendations for the management in habitats are provided in relevant sections of the document.

Tropical kudzu (Pueraria montana var. lobata)

Tropical Kudzu is a robust and aggressive tropical legume with large hairy trifoliate leaves and a large edible underground tuber. Kudzu is originally from Asia, and is naturalised in New Guinea, other parts of Malesia and the Pacific Islands where it is utilised as a forage crop, a food resource, and for medicinal purposes. It is now naturalised in Cape York Peninsula, north-eastern Queensland and southwards as far as north-eastern New South Wales usually growing on disturbed sites and agricultural land, and sometimes on rain forest margins. On mainland Queensland the vine is a Class 2 declared weed and is listed as noxious in NSW. The International Union for Conservation of Nature has listed kudzu among the world's 100 worst invasive species (IUCN Global Invasive Species Database 2002) and it is a severe problem in the USA and Japan.

Kudzu has been present in Queensland since at least 1941 and its origin is unclear. The Torres Strait recorded occurrences are from Dauan, Mua, Hammond, Erub and Hammond Islands (Herbrechs Data 2011). Torres Strait Islanders consider it to be native and there is some evidence that it has a long history of use and transportation as a source of food, possibly originating in Asia but then taken south through Indonesia and across the Pacific (Csurhes 2008). On Mer the tuber is a traditional food resource known as 'Weskapu'.

The declared status of kudzu does not apply in the Torres Strait. Recent studies (Csurhes 2008) have raised doubts as to the botanical identity of the plant given that Torres Strait Islands populations do not appear to be invasive and appear far less aggressive than kudzu in South East Queensland. However on the evidence of recent field observations (D. Fell pers. obs. March 2011), Kudzu was affecting native vegetation by climbing and smothering forest edges, and is therefore considered as an emerging threat to forest ecosystems on Mer. Further observations are required to monitor the spread of kudzu on Mer and its impact on native vegetation.

Praxelis (*Praxelis clematidea*)

Praxelis is a highly invasive erect, branched, unpleasant-smelling herb thought to have been introduced as a contaminant of building materials or equipment. 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 monospecific stands that exclude other vegetation. Praxelis is known to invade grasslands, woodlands and rock pavements in the Mareeba and Mt Molloy districts and therefore is considered a serious threat to similar habitats on Mer and Erub.

Snake vine (*Merremia dissecta*)

A slender vine with tuberous roots originally from the Americas, and now naturalised in Western Australia, Northern Territory, Cape York Peninsula and north-eastern Queensland and southwards as far as south-eastern Queensland (Hyland et al. 2011). It also occurs in Malesia and other places in the tropics. Recent observations (March 2011) indicate several snake vine infestations along roadside vegetation and sprawling over adjoining vine thicket. It has a potential to further spread throughout the island.




Grassy Weeds

Grassy weeds are widespread throughout the disturbed areas and some species pose a threat to intact grassland habitats. Introduced grasses which commonly occur in the community area include Mossman River grass (*Cenchrus echinatus*), itchgrass (*Rottboellia cochinchinensis*), and giant panic (*Megathyrsus maximus* var. *maximus*).

Weed Threats

This section considers those weeds not recorded on Mer which are capable of causing long-term changes to biodiversity as identified in **Table 6**.

Table 6. Weed threats

Species	Comments	Photograph ⁴
Gamba grass (<i>Andropogon gayanus</i>)	Gamba is a Class 2 Declared Weed that has not yet been recorded in Torres Strait however, it is considered a serious potential threat. Together with Annual Mission Grass it is listed as a Key Threatening Processes under the EPBC Act. It is widespread in the Bamaga district of northern Cape York Peninsula (Fell <i>et al.</i> 2009). The grass is an aggressive colonist which develops a standing biomass of 5-7 times that of native species resulting in extremely intense fires (Rossiter <i>et al.</i> 2003).	 <p data-bbox="979 674 1334 703">Gamba grass near Injinoo (April 09).</p>
Annual mission grass (<i>Cenchrus pedicellatum</i> subsp. <i>unispiculum</i>)	An aggressive robust annual grass capable of inducing habitat change through altering fire behaviour. Known from Mua (St Pauls), Mabuiag, Masig, Poruma and Horn Islands. The invasion of annual mission grass is listed as a Key Threatening Processes under the EPBC Act. It threatens biodiversity in 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).	 <p data-bbox="979 1032 1342 1111">(source NT Govt.) http://www.nt.gov.au/nreta/natres/weeds/find/missiongrass.html</p>
Singapore daisy (<i>Sphagneticola trilobata</i>)	Singapore daisy is a Class 3 declared vigorous creeping ground cover. The plant will out-compete natural habit and is a significant threat to riparian and swampy habitats across the island. Control of new populations is a priority management action.	

5.2.3 Plants with Cultural Significance

Information on useful plants of Mer compiled in this study is preliminary in nature. It has been sourced from a review of the available literature including Haddon (1912a, 1912b), review of notes from botanical specimens collected by M. Lawrie lodged with the Queensland Herbarium, and recent preliminary field work with Miriam Rangers. It is intended as a foundation for the ongoing recording of Traditional Ecological Knowledge (TEK) as part of the Land and Sea Ranger working on country plans. Detailed ethnobotanical studies within a formal TEK system are required to complement the existing list of useful plants and local language names. This includes information on uses, seasonality, habitat, distribution, abundance, phenology, and the relationships to story and culture.

⁴ All photographs D.Fell & D. Stanton unless otherwise noted.

The preliminary list provided in **Appendix C** recognises 136 species with known uses. This represents 44% of the island flora. Of these, 88 have language names which have been documented. Thirty one species are introduced (naturalised), some of which [e.g. coconut (*Cocos nucifera*), kudzu (*Pueraria montana* var. *lobata*), stinking passionflower (*Passiflora foetida*), bamboo (*Bambusa vulgaris*), and mango (*Mangifera indica*)] may occur within remnant vegetation, often in the vicinity of old settlement and garden sites. Others such as cassava (*Manihot esculenta*), tree cashew (*Anacardium occidentale*), sisal hemp (*Agave vivipara* var. *vivipara*), ringworm shrub (*Senna alata*), and tridax daisy (*Tridax procumbens*) are abundant in community areas and disturbed margins. Sorbi (*Syzygium branderhorstii*) is a favoured fruit tree often planted in gardens and also as a common component within the forests of the eastern part of the islands.

6.0 Fauna (Animals)

As for the majority of Torres Strait Islands, avifauna (birds) have been the most comprehensively studied component of Torres Strait's terrestrial fauna. Other records are incidental, or part of broader regional surveys targeted towards particular groups (e.g. Draffan *et al.* 1983, Clarke 2004, Garnet *et al.* 2000, Hall 2008, Helgen 2004). Surveys on Mer by Conics (2009d) and more recently by Deite (2010) represent the most comprehensive data available for the island. The latter survey conducted a live trapping program on Mer Island during the wet and dry season and involved a total trapping effort in grassland, remnant forest, non-remnant forest and littoral habitat of 3 427 trap nights for Elliott traps, 862 for pitfall traps and 440 for snap traps. The results of this survey effort confirm the presence of the native grassland melomys in grassland habitat as well two reptiles (*Bellatorias frerei* and *Eugongylus rufescens*).

In addition, there is little available information on the cultural significance of terrestrial fauna species. Some data on this topic can be found in the *Reports of the Cambridge Anthropological Expedition to Torres Straits* (Haddon 1901-1935). Systematic collecting across the range of habitats is however likely to greatly increase the number of known species and further contribute to the identification and development of management strategies. It is therefore recommended that surveys become an identified ranger work activity, supported by relevant specialists.

The desktop review identified 115 fauna species that have been reported for Mer Island (**Appendix E**). This includes three frog, 34 reptile, 71 bird and seven mammal species. Of these, one reptile, two bird and four mammal species are introduced. An additional fauna species has been identified by the Protected Matters Search Tool as a possible occurrence. This can be compared with the 384 terrestrial fauna species that have been reported for the broader Torres Strait Island group which includes 14 frog, 67 reptile, 263 bird and 40 mammal species.

6.1 Culturally Important Fauna Species

The current information on useful animals of Mer Island available is scant. Whilst insufficient to provide any detailed account, the familiarity of Torres Strait Islanders' with the natural world was noted over 100 years ago by the English anthropologist Alfred Cort Haddon (1912:230):

'[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 also have cultural significance for Torres Strait Islanders. Many feature in local myths and legends, and some are clan totems such as the rose-crowned fruit dove (*Ptilinopus regina*) known as dibadiba in Meriam Le. The calls of some birds are recognised 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.

Further fieldwork by the Land and Sea Rangers coupled with review of literature is required, with all information incorporated into an appropriate Traditional Ecological Knowledge (TEK) system. This includes information on uses, habitat, distribution, abundance, and most importantly the relationships to story and culture. The fauna species list provided in **Appendix E** of this report provides a foundation to incorporate language names and habitats.

6.2 Fauna Habitat Values

Prior to the recent small mammal trapping surveys of Diете (2010) there has been very limited fauna work conducted on Mer Island with very few documented records of even common species. Mer has 20 areas of remnant vine forest or vine thicket, covering a total of approximately 93 hectares interspersed with sprawling garden areas and regrowth. There is one very large area of grassland on Mer Island, of 161 hectares. The island is fringed by a mosaic of rocky and sandy shores with extensive tidal flats exposed at low tide (Conics 2009d). The fragmented nature of the vine forest and the lack of mangroves suggest that any as yet unreported fauna species are likely to frequent the foreshore or be more generalist, open country species.

The reported frog fauna is three species (**Appendix E**), all widespread, common species. There is a WildNet record of wood frog (*Rana daemeli*) for the island. This species occurs on mainland Australia and Papua New Guinea but is seldom reported from the Torres Strait. The frog fauna of

the Torres Strait is somewhat depauperate based on known records, and the majority of species is confined to larger islands such as Mua and/or islands close to Cape York Peninsula. A few additional species may yet be found on Mer, but these are likely to be common, widespread species, particularly those associated with human habitation and modified areas.

The reptile assemblage, 34 species (**Appendix E**), is very large in terms of the overall terrestrial vertebrate assemblage of 115 species, and reflects both collecting undertaken for the Australian Museum and limited work on birds and mammals. The size and location of the island suggest that few unrecorded species of reptile should be expected to be found, though clarification of a few species is recommended.

Most of the bird species recorded in the Torres Strait are highly mobile and many are migratory, including many species that are not listed as Migratory under the EPBC Act. It is likely that any additional species reported for Mer Island will be highly mobile species, particularly those associated with foreshore habitats.

Thirty-four native mammal species are reported or predicted for the Torres Strait (**Appendix E**), though the likelihood of some of these species actually occurring is considered doubtful and the identification of other species is questioned. Regardless, the native mammal fauna of the Strait is dominated by bats, with 20 reported species. Seven rodents are reported, though only one, grassland melomys (*Melomys burtoni*), is widespread. No dasyurids or possums and gliders are reported, and current records of macropods are limited to islands to the south. At this stage the only native mammals reported from Mer Island are grassland melomys and northern blossom-bat (*Macroglossus minimus*), and the unconfirmed wallaby in 1974 (Ingram 2008). It is likely that a number of micro-bat species, including coastal sheath-tail bat, will also be reported during future survey work. Ground-dwelling species are much less likely given the nature of the vegetation.

6.3 Fauna Species with Conservation Significance

In this report fauna of conservation significance include:

- Species listed as Critically Endangered, Endangered or Vulnerable under the Commonwealth's EPBC Act 1999.
- Species listed under Endangered, Vulnerable or Near-Threatened under Queensland's NC Act).
- Species listed as Migratory under the EPBC Act due to their inclusion under one of more of the following:
 - Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention),
 - China-Australia Migratory Bird Agreement (CAMBA)
 - Japan-Australia Migratory Bird Agreement (JAMBA)

- Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA)
- Species considered of ‘Critical’ or ‘High’ priority under the Back on Track framework (DERM 2011).

6.3.1 Critically Endangered, Endangered, Vulnerable and Near-Threatened Species

The following section provides an overview of those species that are known to occur, or potentially occur on Mer Island. Twenty-five of the 384 species reported or predicted for the Torres Strait are listed as Critically Endangered, Endangered, Vulnerable or Near-Threatened under the EPBC Act and/or NC Act. Fifty-eight species are listed as migratory under the EPBC Act (see **Appendix E**). Of these, five species of conservation significance are reported from or predicted to occur on Mer including two reptiles, two birds and one mammal as identified in **Table 7**. Given that there are no confirmed records on spectacled flying fox in the Torres Strait Islands, this species is considered unlikely to occur despite its predicted occurrence by the EPBC protected matters search tool. The islands of the Torres Strait have been inadequately surveyed for fauna so records and predictions from throughout the Strait are included to aid in the identification of additional likely species for Mer Island.

Table 7. Endangered, Vulnerable and Near-Threatened fauna species¹ reported or predicted² to occur on Mer Island.

Scientific Name ³	Common Name	Status ⁴			Comments ⁶
		EPBC Act	NC Act	BoT ⁵	
SPECIES REPORTED					
<i>Lepidodactylus pumilis</i>	slender chained gecko		NT		Database & published records.
<i>Varanus prasinus</i>	emerald monitor		NT		Database record.
<i>Numenius madagascariensis</i>	eastern curlew	M	NT		Database & published records.
<i>Sternula albifrons</i> ⁷	little tern	M	E	high	Database, published & unpublished records.
SPECIES PREDICTED					
<i>Pteropus conspicillatus</i>	spectacled flying-fox	V	LC	high	Predicted by the EPBC Protected Matters Search Tool – occurrence considered unlikely.

1. Listed as Endangered, Vulnerable, Near-Threatened or Migratory 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 2011).
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: 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 Storr 1973; Draffan *et al.* 1983), WildNet database and/or reports and other grey literature (eg Conics 2009a). These sources are not necessarily mutually exclusive.
7. Listed under the EPBC Act as *Sterna albifrons* (Bonn Convention, CAMBA, JAMBA, ROKAMBA).

Additional possible EVNT species

Mer Island, due to its small size and isolation from large land masses, provides resources for only a limited number of EVNT species. It is expected that salt-water crocodile is present and littoral whiptail-skink, given its rafting abilities, may also occur. Beach stone-curlew is known from 34 islands in the Torres Strait and is likely to occur. Although known from only a few Torres Strait islands the coastal sheath-tail bat is considered to possibly occur. Species profiles for those EVNT species known or expected to occur are provided in **Section 6.3.2**.

6.3.2 Profiles of Species listed as Endangered or Vulnerable under the EPBC Act and/or NC Act known from Mer Island

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 Badu, Mua, Mer (Mer), Erub 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.

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 30-100 m (Taylor & Bester 1999) and sometimes are disturbed within 250 m of approach (Higgins & Davies 1996). Pollution may have also reduced food availability (Higgins & Davies 1996).

Little tern (*Sternula albifrons*)

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

NC Act: Endangered

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 in 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). Draffan *et al.* (1983) reports the species from 13 islands, and describes it as an uncommon summer visitor throughout the Torres Strait.

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). On Mer Island it is likely to be threatened only if breeding occurs on the island.

Beach stone-curlew (*Esacus magnirostris*)

NC Act: Vulnerable

Beach stone-curlew is also considered of 'Critical' priority under the Back on Track species prioritisation framework (DERM 2011a). 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. The species occurs on Mabuiag Island (Conics 2009b; Watson 2009, Watson & Hitchcock in press).

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). On Mer Island the species may be threatened by feral species particularly dogs, and disturbance by humans, particularly when nesting.

Emerald monitor (*Varanus prasinus*)

NC Act: Near-Threatened

The emerald monitor is an arboreal species, living in the upper canopy of rainforest and monsoon forest (Wilson 2005), in palm forest, mangroves (Greene 1986; Cogger 2000), cocoa plantations (Greene 1986), vine thickets (Schaffer 2010) and around lagoons (Cogger 2000). The species uses its prehensile tail to forage among slender branches and outer foliage (Wilson & Swan 2010) and eats mainly katydids and other small arthropods and occasionally rodents (Greene 1986). Emerald Monitors lay eggs in termite mounds in trees (Greene 1986; Ehmann 1992).

The emerald monitor is widespread in Papua New Guinea. In Australia it is restricted to several islands in the Torres Strait, south to Mua Island, where it is known as Wyniss (Wilson & Swan 2010). The species is known from Boigu (Clarke 2004a; Schaffer 2010, Stanton & Fell pers. obs. 2010); Mua (Whittier & Moeller 1993; Wilson 2005; Ingram 2008; DERM 2010f), Badu (Borsboom 2007 in Conics 2009a) and Mer Islands (DERM 2010d; OZCAM 2011).

The emerald monitor is one of the most poorly known monitors (Greene 1986) and threats to the species in Australia are unknown. However, in Papua New Guinea the species is targeted by the pet trade, though the threat is considered low (Allison 2006). The emerald monitor is highly desired by reptile keepers and illegal collecting could become a threat in the Torres Strait. The species

would be threatened by habitat clearance. Given its known diet the emerald monitor does not appear susceptible to mortality through attempted ingestion of cane toads *Rhinella marina* as per many other species of varanid (eg Shine 2010). On Mer, the species is probably most at threat to loss and degradation of vine thicket habitat.

Slender chained gecko (*Lepidodactylus pumilis*)

NC Act: Near-Threatened

The slender chained gecko is found in southern New Guinea, the Torres Strait and the tip of Cape York (Covacevich *et al.* 1982; Ehmann 1992). In the Torres Strait there is a WildNet database record from Mer Island (DERM 2010d), and a Queensland Museum specimen (reported in Conics 2008b) and a record by Ingram (2008) from Mua Island. There are also Australian Museum specimens from Mer, Saibai, Masig, Hammond and Prince of Wales Islands (OZCAM 2011) and it is likely the species occurs more widely through the region than is yet documented.

The species is arboreal and occurs in open and closed forests and coastal habitats (Ehmann 1992; Wilson & Swan 2010) and in human dwellings (Wilson 2005). The female lays two eggs per clutch under bark or within closed-in vegetation. Nesting is often communal and takes place during the warmer wet months (Ehmann 1992).

Threats to the species are unknown. Ehmann (1992) states the species is common and secure. However, the species is not known from any national park or other reserve affording protection (Covacevich *et al.* 1982). The slender chained gecko may be threatened by loss of habitat due to clearing and/or rising sea levels and storm surges as a result of climate change and by competition with House Gecko *Hemidactylus frenatus*, in both natural habitats and on buildings (Case *et al.* 1994; Buden 2007; Hoskin 2010). House gecko is present on Mer Island but is unlikely to pose a threat to any possible population of slender chained gecko unless it spreads into natural habitats.

Littoral whiptail-skink (*Emoia atrocostata*)

NC Act: Near-Threatened

The littoral whiptail-skink is found on rocky shores and in foreshore vegetation, including mangrove forests. It shelters in rock recesses and crevices, in tree root crevices and in logs. It readily swims in tidal pools and can remain submerged for short periods (Heatwole 1975; Ehmann 1992). Cogger (2000) states that the species also occurs in lowland forests, coastal scrubs and grasslands near beaches but Hediger (1933-34 in Heatwole 1975) states that it is never found more than 100 m from the sea.

The littoral whiptail-skink is widespread from Japan, through south-east Asia and into the south-west Pacific. It is found on the tip of Cape York Peninsula and islands of the Torres Strait (Ehmann

1992; Wilson 2005). Cogger (2000) considers its distribution poorly known and despite references to its occurrence on Torres Strait Islands there is no available record for any island except Boigu Island (Wilson 2005; Schaffer 2010). Ingram (2008) refers to a WildNet record from Mua but the species was not returned by a search of the database in 2010 (DERM 2010f) and the validity of the record is uncertain. *Emoia* species are efficient rafters and colonise islands on floating debris (Wilson 2005) and it is likely to occur on Torres Strait Islands in addition to Boigu.

Ehmann (1992) states the littoral whiptail-skink is abundant and secure. It is a common mangrove species in some areas and is especially abundant on rocky foreshores (Cogger 2000). Threats are unknown, however small reptiles, including littoral whiptail-skink, are eaten by cats (*Felis catus*) on Christmas Island. However, the species made up a very small percentage of known prey (Tidemann *et al.* 1994), possibly due to cats spending little time foraging in foreshore habitats. On Mer Island the littoral whiptail-skink would be threatened by feral cats, and loss of mangroves due to clearing or storm damage.

Salt-water crocodile (*Crocodylus porosus*)

EPBC Act: Migratory (Bonn Convention)

NC Act: Vulnerable

Listed as estuarine crocodile under the Queensland *Nature Conservation (Wildlife) Regulation* 2006.

The salt-water crocodile occurs in tidal rivers, coastal floodplains and swamps, extending hundreds of kilometres inland along major drainage systems, but is also seen regularly in the open ocean (Webb *et al.* 1983; Read *et al.* 2004; Wilson & Swan 2010). The species is found from India through south-east Asia to the western Pacific and northern Australia (Wilson & Swan 2010). In Australia the species is most common in large areas of productive wetlands and estuaries (Fukuda *et al.* 2007). In Queensland, salt-water crocodiles are mainly found in coastal areas north of the Fitzroy River, with only infrequent sightings to the south (QPWS 2007). The highest densities in Queensland are found in north-west Cape York Peninsula (Read *et al.* 2004; EPA 2007). Salt-water crocodile is known from Mabuiag (Watson 2009), Saibai, Thursday (OZCAM 2011), Boigu (Schaffer 2010) and Mua Islands (Terry Reis *pers. obs.*). The species is likely to occur throughout the Torres Strait, including Mer Island.

The salt-water crocodile is still threatened by drowning in fishing nets (Ehmann 1992) with juveniles more likely to become entangled. This does not appear to pose a major threat to the species (EPA 2007). A lack of suitable nesting habitat appears to be the most significant limiting factor for the recovery of the species in Queensland (Read *et al.* 2004). On Mer Island the salt-water crocodile may be threatened by entanglement in fishing nets and by direct human persecution but currently such threats are likely to be minor.

Coastal sheathtail bat (*Taphozous australis*)

NC Act: Vulnerable

The coastal sheathtail bat is also considered of 'High' priority under the Back on Track species prioritisation framework (DERM 2011). It is seldom found more than a few kilometres from the ocean, where it roosts in sea caves, rock fissures, boulder piles and, occasionally, in buildings (Churchill 2008; Richards 2008). Colonies are usually of two to 25 individuals, though up to 100 have been recorded. The species is often found on islands and will forage on nearby mainland (Churchill 2008). Foraging occurs in a wide range of habitats, including open eucalypt forest, coastal heathlands, grasslands, sand dune scrub, monsoon forests and mangroves (Duncan *et al.* 1999; Churchill 2008). Little is known of its breeding biology but most births probably occur from September to November (Churchill 2008; Richards 2008).

The coastal sheathtail bat occurs from Shoalwater Bay on the central Queensland coast north to Torres Strait and extraliminally in Papua New Guinea (Duncan *et al.* 1999; Churchill 2008). In the Torres Strait there are 15 Australian Museum specimens from Possession Island (OZCAM 2011), two WildNet records (DERM 2010f) and Queensland Museum specimen (reported in Conics 2008b) from Mua Island, and observations and Anabat recordings from Pulu (Watson 2009). Conics (2009d) recorded no micro-bats of any species during their survey of Mer Island but the presence of sea cliffs suggests likely roost sites and the species is predicted to occur.

Major threats to the species probably include loss of foraging habitat from coastal development and roost disturbance, particularly in the southern part of their range (Duncan *et al.* 1999). On Mer Island the coastal sheathtail bat would be threatened by disturbance to any roosts and maternity sites and by loss of foraging habitat.

6.3.3 Migratory Animal Species

Fifty-seven bird species listed as Migratory under the EPBC Act are known to occur in Torres Strait. The vulnerable (NC Act) salt-water crocodile is also listed as migratory under the EPBC Act and is expected to occur on Mer Island. 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. Further discussion of these species within groups based on behavioural traits, habitat use and threats is provided in **Appendix F**.

Table 8. Migratory¹ species reported or predicted² to occur on Mer Island.

Scientific Name ²	Common Name	Comments ³
SPECIES REPORTED		
<i>Apus pacificus</i>	Fork-tailed swift	Published record.
<i>Ardea modesta</i> ⁴	Eastern great egret	Database record.
<i>Egretta sacra</i>	Eastern reef egret	Database, published & unpublished records.
<i>Pandion cristatus</i> ⁵	Eastern osprey	Unpublished record.
<i>Haliaeetus leucogaster</i>	white-bellied sea-eagle	Database record.
<i>Pluvialis fulva</i>	Pacific golden plover	Database record.
<i>Pluvialis squatarola</i>	Grey plover	Published record.
<i>Charadrius mongolus</i>	Lesser sand plover	Database record.
<i>Numenius phaeopus</i>	Whimbrel	Database, published & unpublished records.
<i>Numenius madagascariensis</i> ⁶	Eastern curlew	Database & published records.
<i>Tringa brevipes</i> ⁷	Grey-tailed tattler	Database, published & unpublished records.
<i>Tringa incana</i> ⁸	Wandering tattler	Database & published records.
<i>Tringa nebularia</i>	Common greenshank	Published record.
<i>Arenaria interpres</i>	Ruddy turnstone	Database record.
<i>Calidris acuminata</i>	Sharp-tailed sandpiper	Database record.
<i>Anous stolidus</i>	Common noddy	Database & published records.
<i>Onychoprion anaethetus</i> ⁹	Bridled tern	Database record.
<i>Sternula albifrons</i> ¹⁰	Little tern	Database, published & unpublished records.
<i>Chlidonias leucopterus</i>	White-winged black tern	Published record.
<i>Sterna sumatrana</i>	Black-naped tern	Database & published records.
<i>Sterna hirundo</i>	Common tern	Database & published records.
<i>Thalasseus bengalensis</i> ¹¹	Lesser crested tern	Database & published records.
<i>Merops ornatus</i>	Rainbow bee-eater	Database & published records.
<i>Coracina tenuirostris melvillensis</i>	(Melville) cicadabird	Published record. Subspecies not recorded.
<i>Symposiachrus trivirgatus</i> ¹²	Spectacled monarch	Database & published 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), WildNet database and/or reports and other grey literature (eg Conics 2009d). These sources are not necessarily mutually exclusive. No additional species were 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 the Bonn Convention and JAMBA as *Heteroscelus brevipes*.
8. Also listed under the Bonn Convention and JAMBA as *Heteroscelus incanus*.
9. Listed under the EPBC Act as *Sterna anaethetus* (CAMBA, JAMBA).
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 (Bonn Convention) as *Monarcha trivirgatus*.

6.3.4 Additional possible Migratory species

Of the other 32 species of Migratory bird known from the Torres Strait, white-throated needletail (*Hirundapus caudacutus*), greater sand plover (*Charadrius leschenaultia*), bar-tailed godwit (*Limosa*

lapponica), black-tailed godwit (*L. limosa*), terek sandpiper (*Xenus cinereus*), common sandpiper (*Actitis hypoleucos*), great knot (*Calidris tenuirostris*), curlew sandpiper (*Calidris ferruginea*), caspian tern (*Hydroprogne caspia*), roseate tern (*Sterna dougallii*), rufous fantail (*Rhipidura rufifrons*) and black-faced monarch (*Monarcha melanopsis*) are expected to occur on Mer Island on a regular basis. The remaining 20 species are all possible as sporadic (not annual) visitors except for double-banded plover (*Charadrius bicinctus*), which is considered very unlikely based on known movements and cattle egret (*Ardea ibis*) and glossy ibis (*Plegadis falcinellus*), for which there is no suitable habitat.

6.3.5 Species of Regional Significance

Slate-brown snake (*Stegonotus parvus*) is widespread in Papua New Guinea but in Australia is known only from Mer Island. There are two WildNet database records and four specimens (Ehmann 1992). The species is widespread in lowland Papua New Guinea but its biology is poorly known (Wilson & Swan 2010). As Mer Island is the only location within Australian territory from which the slate-brown snake is known, the species is considered of significance. Survey work should be undertaken to identify its status on the island. The similar slaty-grey snake (*S. cucullatus*) is also reported on Mer Island (Ehmann 1992) and any future records of slate-brown snake will need to be confirmed.

Carlia quinquecarinata is a recently described skink which is possibly restricted to Erub Island, though the species probably occurs on Mer Island and possibly in Papua New Guinea (Donnellan *et al.* 2009). Conics (2009d) report a survey record of *C. cf quinquecarinata*⁵ but unfortunately provide no detail. It is not known if a specimen was provided to a museum and the possible presence of *C. quinquecarinata* on Mer Island still requires clarification. Should the species be present then Mer and Erub Islands are the only Australian locations and may prove to be the entire distribution of the species. Given recent recognition of new species of *Carlia* in the region through a combination of morphology and DNA analysis, it is possible that there is an undescribed species on Mer Island, as suggested by Conics (2009d).



Photograph 8. Photograph of *Carlia quinquecarinata* taken on Erub Island in notophyll vine forest. (Photo D. Stanton).

⁵ cf. is short for 'confer' and means 'compare with'. Conics are inferring that the animal was most similar to *C. quinquecarinata* but is sufficiently different that it may be a separate species.

There is similar taxonomic confusion with scrub and amethyst pythons on Mer Island, and in the Torres Strait in general. Scrub python (*Morelia kinghorni*), was formerly considered conspecific with amethyst python (*M. amethystina*) and is still recognised as such by the *Australian Faunal Directory* (DSEWPC 2011d). Harvey *et al.* (2000) described *M. kinghorni* as a full species, a taxonomy that has since been accepted by others (e.g. Freeman & Freeman 2009; Wilson & Swan 2010). Wilson and Swan (2010) no longer include *M. amethystina* as a species occurring in Australian territory. Australian Museum specimens of both species are listed for Masig Island (OZCAM 2011) and such apparent discrepancies in distribution are likely to be due to a delay in recognition of the changed taxonomy. Conics (2009d) refer to *M. kinghorni* in their summary table of fauna species for Mer Island, even though the actual WildNet record to which they refer is *M. amethystina* '(New Guinean form)'. Such reporting is presumably an attempt to match the revised taxonomy but only adds to the confusion. The two species are very difficult to identify in the field and, should the taxonomic revision be valid, it is possible that both species do occur in the Torres Strait. The exact identify of any *Morelia* species on Mer Island should be ascertained whenever possible in order to resolve the distributional limits of the two species. Specimens, under appropriate permits, or precise descriptions and/or photographs may be required to identify individuals reliably.

Ingram (2008) reports that an unknown species of wallaby was killed on Mer Island in 1974. His informant did not know the origins of the animal. There is archaeological evidence of agile wallaby (*Macropus agilis*) on Mua Island (McNiven & Hitchcock 2004; Ingram 2008) and the species is known from Mai and Friday Islands. The wallabies on Mua may have been translocated (McNiven & Hitchcock 2004) and it is likely that the animal reported in 1974 was brought to Mer Island by humans. Further investigation of this event is warranted as records of macropods are significant within Torres Strait.

6.4 Pest Fauna Species

Exotic (introduced) fauna species reported for Mer Island are house gecko, rock dove (feral pigeon - *Columba livia*), house sparrow (*Passer domesticus*), pacific rat (*Rattus exulans*), house mouse (*Mus musculus*), dog, and cat. Pacific Rat has been documented on Mer Island, through a single specimen collected in the late 1800s (Taylor & Horner 1973) in Diets (2011).

House gecko is considered a threat to native species through competition in both natural habitats and on buildings (Case *et al.* 1994; Hoskin 2010). There are records of native arboreal geckoes on Mer Island, *Gehyra* and *Lepidodactylus* species, including the Near-Threatened (NC Act) slender chained gecko. Any reptile survey on the island should seek to identify the local distribution of house gecko. Conics (2009d) only reported house gecko in modified areas but the species could spread into natural habitats.

In Australia the rock dove lives mostly in urban areas, typically nesting on buildings and other artificial structures. The species also nests on cliffs and in tree hollows (Higgins & Davies 1996). In the Torres Strait the species is a vagrant, with an individual present on Mer Island for a few weeks in 1978 (Draffan *et al.* 1983). The single WildNet record may refer to the same individual as many historical records have been entered into the WildNet database. Conics (2009d) did not record the species and it may no longer occur on Mer Island. House sparrow is still present on Mer Island (Conics 2009d) but is unlikely to pose any threat to native species and no action is required for the species.

Conics (2009d) reported no evidence of the exotic rats despite targeted efforts to trap them, and recent surveys by Diете (2010) did not detect exotic rodents in any natural habitat on the island. However a smaller trapping effort (323 Elliott and 212 snap trap nights) in the community area detected the presence of roof rats and house mice. Diете (2010) considers that the robust populations of the grassland melomys in grassland habitat could possibly be a factor which restricts the distribution of exotic rodents through competition. On-going monitoring is required until extirpation appears likely. A baiting program in the community area by University of Queensland researchers is current through funding under the Caring for our Country program. The first pulse was carried out in February 2011 with subsequent pulses scheduled for June and September 2011 (R. Diете pers. comm. May 2011).

Conics (2009d) state that dogs and cats are present in considerable numbers on Mer Island and although not critically impacting habitats on the island do pose an environmental health risk. Dogs are a threat to ground nesting birds and are a disturbance factor for waders and terns. Cats are significant predators of native animals and have been implicated in the extinction of native species both on islands (Bloomer and Bester 1992) and on mainland Australia (Dickman *et al.* 1993). It is not just feral cats that kill native animals. 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. Cat predatory behaviour appears largely opportunistic, though small mammals are preferred. Therefore, should house cats have access to relatively undisturbed habitats it is likely that they would have a substantial impact on native fauna, particularly mammals (Barratt 1997). Conics (2009d) and Diете (2010) recorded high abundance of grassland melomys (*Melomys burtoni*) which suggests that cats are not, at this stage, having a significant impact. Nonetheless, control measures are recommended.

6.5 Threats to Fauna and Habitat

The major threats to fauna in any location are loss, degradation and fragmentation of habitat. These processes may be due to deliberate clearing or may be the result of inappropriate fire regimes, damage by feral and domestic herbivores, storm damage and weed invasion. Weed invasion may not simply alter the plant species assemblage but can also choke out ground cover, reducing suitability for ground-dwelling species, and increase fire frequency and intensity, thus altering plant

species composition and physical structure even further. Weeds are identified as a significant threat to native habitats on Mer Island, particularly lantana (*Lantana camara*) and non-native bamboo species.

Exotic predators, such as dogs and cats, pose a threat to native fauna, either directly through predation or by disturbance. At this stage the most significant potential threats to native fauna on Mer are the possible introduction of the exotic cane toad and rats (*Rattus*) species. Cane toads would have dramatic impacts on the varanid (goanna) and snake fauna and, given the small size of the island, could lead to local extinctions. Pacific and black rats are an even greater potential threat given their agility and generalist diet.

Hunting may pose a threat to some species. Species likely to be targeted include varanids, pythons and pigeons. Hunting should be regulated so as to be sustainable.

6.6 Future Priorities

It is important that the faunal values of Mer Island be more comprehensively identified so that the most important conservation elements are managed appropriately. In addition to general systematic survey methods for the compilation of the fauna species assemblage for the island, the following actions are recommended:

High Priority

- Extensive ecological monitoring and assessment is required to develop the appropriate strategies to eradicate exotic rodents from Mer Island (see Diете 2010).

Medium Priority

- Micro-bat surveys.
- Mega-bat surveys.
- Foreshore surveys for beach stone-curlew.
- Identification of any breeding areas for terns.
- Identification of the most important foraging and high roost sites for waders.
- Reptile survey, with particular emphasis on *Carlia* spp., *Morelia* spp., emerald monitor, littoral whiptail-skink and slender chained gecko.

7.0 The Role of Fire in Savanna Landscapes

Most of Cape York Peninsula, and hence Torres Strait Island plant communities will burn if enough fuel is present. The exceptions are rainforest communities, communities of rocky areas and some wetland areas such as mangroves and the deeper permanent swamps. We know from the historical record and anthropological studies that the landscape of Cape York Peninsula when Europeans arrived was the product of traditional burning practices and land use that had changed little over many thousands of years and had led to stability in the nature of the plant communities and the way they were distributed across the landscape.

The loss of traditional burning practices in recent times has led to a loss of that stability as vegetation types that had evolved under particular fire regimes were subjected to new regimes⁶. In many areas this destabilisation has led to widespread loss of plant communities and inevitably will be found to have led to serious loss of the species of plants and animals that depend upon them.

In the history of the indigenous occupation of Cape York Peninsula and Torres Strait Islands, there were dramatic changes in plant communities as the climate shifted under a rapid succession of global ice ages, but these changes happened over thousands of years. It is clear from the nature of recent changes however that they have been greater in the periods of as little as fifty years than occurred in those in those millennia prior to European arrival. It is not the change itself that is the problem but its rapidity. Species cannot evolve rapidly enough to accommodate it and the inevitable result will be the loss of species.

The reasons that the indigenous people of northern Australia used fire have been well documented (Russell Smith *et al.* 2009). They included managing to favour various species of food plants, to protect sacred places, to attract game or drive them towards the spears of hunters and to create open landscapes that made travel easy and ambush by enemies difficult. Above all however, they burnt for their own safety. As people who used fire in their daily lives they had to burn to manage the fuel around them, thus avoiding situations where a stray spark landing in heavy fuel could threaten their lives.

In Torres Strait, the ongoing use of fire is evident on the majority of islands and there is no doubt that it has been fundamental in shaping and modifying vegetation cover and influencing habitat diversity across the islands. McNiven (2008) notes the ethnographic record of Haddon (1935) where fire use formed an integral part of garden preparation and land cleaning in the late 1800's, and evidence of fire is also in the pollen and phytolith record (Rowe 2006, Parr & Carter 2003).

The fire dependence of the non-rainforest communities is related largely to the regeneration strategies of the species within them. Some have woody fruits which have to be cracked by heat to

⁶ Fire regimes are defined by the frequency of fires and their season of occurrence, both of which have relationship to their relative severity

release the seed and most require bare ground and sunlight for those seeds to germinate and grow. Many perennial grasses begin to decline and die after several years without fire. Some species will only generate from seed and others are capable of resprouting after fire. Of those species that will germinate and grow through heavy litter, all still require sunlight to survive and most will not persist under a wildfire regime of infrequent hot fires.

In post - European northern Australia, altered fire regimes have led to massive loss of open forest and woodland habitats in the high rainfall areas, particularly the north east coast of Cape York Peninsula. In that area fire has disappeared completely because of the complexity of the landscape, with numerous streams and rainforest areas which have made it impossible for individual fires to spread very far. The result has been widespread development of a dense understory of shrubs and trees which is preventing the regeneration of the canopy. The end result will be the replacement of open forest areas with rainforest related vegetation. In areas of shallow soils dominated by shrubs, there has been a progressive loss of species as they reach the end of their life cycle and die without replacement.

The land management imperatives that now arise as a result of the influences discussed above are to maintain fire in those plant communities that will still support it in order to stabilise them against further change, and to ensure that the prevailing fire regime is one of numerous small cool fires rather than widespread late dry season fires.

8.0 Mer Island as a Landscape in Balance

The volcanic islands of Mer, its associated islets of Dowar and Waier, Erub and Ugar are unique in an Australian context. These are the only tropical islands in Australian territory formed from basaltic lava. Whilst the basaltic soils made the islands particularly amenable to cropping and agriculture, as evidenced by the extensive nature of garden areas throughout the islands interior, it also introduces a number of pressing land management problems. The most problematic of these is the islands capacity for weed invasion and this tendency will be constantly referred to in the habitat management profiles presented in following sections.

Large areas of the island have essentially been managed as a perma-culture since the advent of human occupation 4000 years ago. Whilst intensive farming concentrated on those areas of more favourable soil, resulting in relatively broad scale anthropogenic alteration of vine forest habits, seemingly less productive habitats such as grasslands were also managed for cultural purposes. Such cultural purpose may have been as simple as maintaining ease of access, or to manage a material resource. As an example, harvested fresh leaves of blady grass were used as a primary roofing material (Bully Sailor pers. comm. March 2011) on Erub. Throughout traditional occupation, the only feasible means of maintaining these grassland areas would have been fire. A long term and seasonally consistent approach to fire management would have maintained an equilibrium between grassland and vine forest habitat, holding grassland areas in a metastable state. Irregular hot fire

events push back vine forest margins to all but the most topographically protected and sheltered locations favouring the expansion of grassland habits. In turn, a reduction in fire frequency and intensity will generally result in encroachment of grassland areas by rainforest shrubs and trees. It should be stressed that neither vine forest nor grassland habitat should be considered superior in terms of habitat value or landscape function. Both habitats host their own unique array of fauna and flora and there is likely to be co-dependence of a number of specialist vine forest and grassland fauna species. This equilibrium between grasslands, vine forest and woodland habitats is an intrinsic feature of continental island ecosystems along Queensland's entire coastline, particularly apparent in the Palm and Whitsunday Island groups and on Hinchinbrook Island in the Wet Tropics Bioregion, although perhaps to a lesser extent in the latter example.

A number of specific interest groups regularly question the role of fire as a modern landscape management tool. It is however beyond doubt that wholesale removal of fire from the island landscape will alter island scale bio-diversity values. A simple example is the importance of grassland habitats to the native rodent burton's melomys (*Melomys burtonii*). Loss of grassland habitat will decrease the population of this species, also affecting those species such as the scrub python and reptiles of the *Varanus* genus (goanna) which rely on the melomys as a source of food.

With the recent advent of exotic weeds, particularly lantana (*Lantana camara*) which was introduced to the Eastern Island Group in the mid 1900's, the removal of fire has perhaps more catastrophic consequences. Whereas grassland areas may have persisted in areas of extreme soil drainage on the rim of Gelam even with the removal of fire from the island, these rockier areas are now being smothered by thickets of lantana. Lantana thickets now pervade those metastable grassland habitats that, prior to arrival of lantana, would have converted over time to low vine thicket scrubs as regular burning ceased. There has been an observed massive expansion of lantana on the grassy slopes of Gelam between 2007 (an earlier visit by the authors) and 2011. The pertinence of this observation is that grassland firing was banned as a practice from the island ten years prior due to cultural concerns. Given the rapid advance of lantana observed, it is feasible that within 10 to 20 years, very few areas of natural grassland will remain and the island will be covered in dense, impenetrable thickets of lantana. Other invasive weeds of concern to Mer habitats are praxelis and leucaena.

This rapid expansion of lantana is considered the most critical ecological process affecting the island at present. Without intervention, these grassland habitats, which have great significance as a cultural landscape as well as habitat importance will rapidly be lost to a sprawling exotic weed. Notes and recommendations concerning the management of these grasslands, in respect to lantana encroachment in particular, are made in the following biodiversity profiles.



Photograph 9 (left). Lantana thickets in a light green wash in November 2007 below the inner rim of Gelam, and **Photograph 10.** Lantana thickets as a bright green flush in March 2011 with photograph taken looking toward the same location.

9.0 Management Profiles for Mer Island Habitats

9.1 Deciduous / Semi-deciduous Vine Forest and Thicket

9.1.1 Status of Ecological Knowledge

Semi - deciduous vine thicket occurs on the western portion of the island where vesicular basaltic flow lava forms a suitable substrate for its development. The occurrence of well preserved examples is limited with the large areas subject to severe anthropogenic disturbance associated.

Vegetation community 2j is the dominant vine forest community on the island. The typical canopy structure of this VC is broken, often with significant canopy gaps extending to near ground level. The uneven nature of the canopy can be attributed to disturbance in some form, possibly with extreme wind as a major contributing factor. Dominant canopy species comprise *Bombax ceiba* var. *leiocarpum*, *Diospyros hebecarpa*, *Alectryon repandodentatus* (Endangered), *Adenanthera pavonina*, *Wrightia pubescens* subsp. *penicillata*, and *Antiaris toxicaria* var. *macrophylla*. *Bombax ceiba* var. *leiocarpum* always forms the emergent layer. *Diospyros hebecarpa* is the dominant sub-canopy species in most locations examined. It should be noted that whilst *Cupaniopsis anacardioides* was a dominant sub-canopy species on Erub, no specimens were recorded on Mer.

The vine thicket community 2w occurs on steep escarpments on the east facing coastline where canopy development is restricted by constant salt laden south-east trade winds. Canopy species in VC2w species include *Antiaris toxicaria* var. *macrophylla*, *Garuga floribunda* var. *floribunda*, *Gyrocarpus americanus* subsp. *americanus* and *Bombax ceiba* var. *leiocarpum*. Ground cover comprises abundant slender vines and low shrubs forming sparse cover over a substrate typically composed of basalt rubble.

9.1.2 Ecological / Cultural Considerations

Habitat Condition: Large areas of vine thicket have been altered both naturally and through anthropogenic disturbance. Copses of *Bambusa vulgaris* are scattered throughout the habitat and other non-native species including poinciana (*Delonix regia*) and mango (*Mangifera indica*) dominate the canopy in some places, although these areas have been mapped as separate entities wherever possible. Tropical kudzu, a smothering vine is overtopping extensive areas of vine forest and garden areas and is becoming a serious threat to intact vine forest habitats.



Photograph 11 (left). The best development of VC2j on Mer Island behind the islands accommodation quarters, and: **Photograph 12.** Low wind sheared deciduous vine thicket (VC2w) on a steep east facing escarpment.

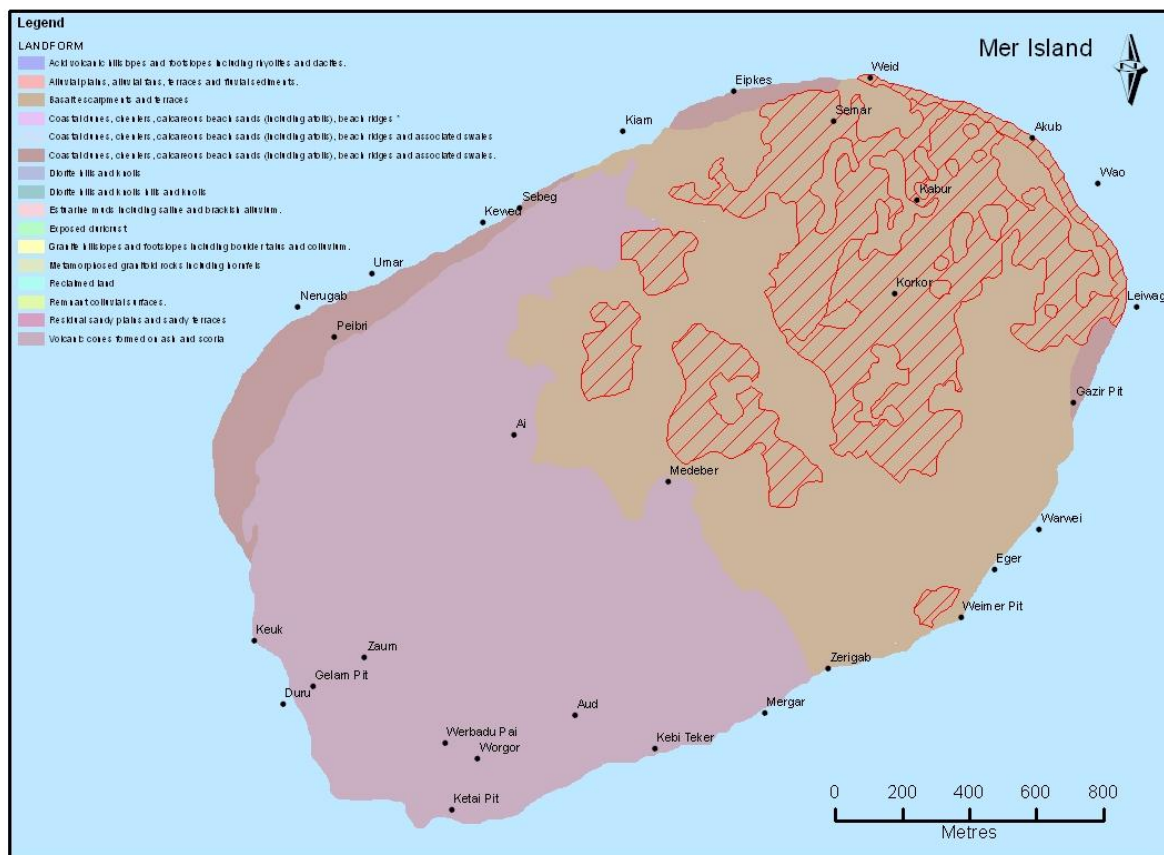


Figure 3. Distribution of semi-evergreen vine forest on Mer Island (place names after Lawrie, 1970).



Photograph 13. Groves of poinciana (*Delonix regia*) in the central portion of the island.

Fauna: The fauna known to utilise this habitat most extensively are ground dwelling reptiles as well as frugivorous birds. Vine forest provides habitat for threatened species including the emerald monitor (*Varanus prasinus*) and slender-chained gecko (*Lepidodactylus pumilis*). The endemic skink species, *Carlia quinquecarinata* is also considered likely to occur in this habitat.

Flora: The habitat is known to support a number of significant species.

- *Alectryon repandodentatus* (Endangered EPBC, NC Act)
- *Neololeba atra* (Near-Threatened NC Act)
- *Chrysophyllum roxburghii* (Near-Threatened NC Act)
- *Acronychia* sp. (*Batavia Downs J. R. Clarkson+ 8511*) (regionally significant)
- *Arytera pseudofoveolata* (regionally significant)
- *Cordia myxa* (regionally significant)
- *Derris rubrocalyx subsp. rubrocalyx* (regionally significant)
- *Derris* sp. (*Claudie River (LJ Webb 8348)*) (Regionally Significant)
- *Ficus tinctoria* (Regionally Significant)
- *Flacourtia* sp. (*Shiptons Flat L.W.Jessup 3200*) (regionally significant)
- *Smilax blumei* (regionally significant)
- *Uvaria rufa* (regionally significant)

Cultural Perspectives: The habitat, including highly disturbed and altered occurrences, host an abundance of plant resources (refer **Appendix C**). The full extent of resource utilisation within this habitat requires further consideration.

9.1.3 Management Implications

This habitat is currently self-maintaining although it is threatened by continued attrition, due both to the clearing for development and invasion by exotic weeds. Of greatest concern is tropical kudzu (*Pueraria montana var. lobata*) which is smothering extensive areas of vine forest canopy and regrowth vegetation. Areas of vine forest regeneration are also compromised by recruitment of exotic species, in particular leucaena (*Leucaena leucocephala*), poinciana (*Delonix regia*), dense

thickets of lantana in canopy gaps, and snake vine (*Merremia dissecta*) on forest margins. Whilst the invasion of exotic species in vine forest habitats is at a scale that is beyond any short term and readily achievable solution, maintenance of the better preserved examples of this habitat should be undertaken on a regular basis. Selected areas of vine thicket regrowth should also be earmarked for maintenance, particularly control of leucaena and lantana where these species are limiting the recruitment and development of native colonising species.

9.1.4 Summary of Recommended Management Actions

The information provided in **Table 9** below aims to summarise the key issues, actions and priorities so as to aid the transfer of information into the Mer 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 (0-5years).

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 9. Summary of management actions for semi-deciduous vine forest and thicket.

Management Category	Context/Issue	Actions	Priority
Fauna Surveys	Fauna composition within this habitat is poorly documented.	Design and implement a structured fauna survey and trapping program based on priority recommendations contained in Section 6.6 . Maintain focus on ethnotaxonomy to feed into TEK.	Moderate
Plant Surveys	Flora composition is poorly documented and limited to rapid surveys.	Carry out additional flora field surveys with focus on collection of new records for the island and important cultural resource species. Collect leaf specimens and/or 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	Composition of TEK within this habitat is poorly known. Plant and	Collect and collate TEK knowledge within this habitat	High

Management Category	Context/Issue	Actions	Priority
Knowledge	animal lists provided in the Appendices provide a good foundation for increasing TEK and ethnotaxonomy.	gained through fauna and flora survey actions on an ongoing basis.	
Fire Management	This habitat is not threatened by fire incursion.	No actions required	Not Required
Threatened Species Management	<p><u>Flora</u>: The habitat is suffering continued degradation through smothering by exotic vines, particularly tropical kudzu.</p> <p><u>Fauna</u>: Composition of fauna within this habitat is poorly documented.</p>	<p><u>Flora</u>: The Endangered small tree <i>Alectryon repandodentatus</i> has a robust population on the island although the long term impacts of canopy smothering and expansion of bamboo copses is a possible long threat to the species. Control of weeds in selected high quality populations will aid long term preservation of the species.</p> <p><u>Fauna</u>: Further baseline survey information is required in regard to habitat usage by threatened species, particularly the emerald monitor and slender-chained gecko.</p>	<p>Moderate</p> <p>Moderate</p>
Invasive Species Management	<p><u>Flora</u>: Tropical kudzu and <i>Merremia dissecta</i> threaten extensive areas of vine thicket canopy through its smothering action. Lantana, leucaena and poinciana are all impacting recruitment of native vine forest species in areas of vine thicket regeneration.</p> <p><u>Fauna</u>: The composition of invasive fauna within this habitat requires further study. There is considerable potential for impacts on fauna by feral cats and dogs.</p>	<p><u>Flora</u>: An accessible pilot area should be selected for management of tropical kudzu. The selected area should represent a better preserved vine thicket habitat and be relatively free from the weed except on the habitat margins. Experimental cutting and poisoning of the vine on the margins should be undertaken to free canopy and allow natural forest regeneration.</p> <p><u>Fauna</u>: A programme for the eradication of the pacific rats from Mer Island has been undertaken and this is possibly the highest priority management action. Continued monitoring for this species is required as a priority future action. Further survey into the usage of this habitat by feral (and domestic) cats is required.</p>	<p>High</p> <p>High</p>
Monitoring	The success of any weed control efforts in promoting natural species recruitment and regeneration requires documentation.	The success of eliminating smothering canopy infestations of tropical kudzu can best be undertaken with use of a permanent photographic site supplemented by notes in regard to the observed response in canopy recruitment.	High

9.2 Coastal Headland Forest Complex

9.2.1 Status of Ecological Knowledge

This habitat represents a complex of vine thicket and low open forest mapped on the steep south-east facing basaltic escarpment of the island. The components, which comprise vine thicket type 2w and an undescribed low open forest of *Pandanus* sp., form a complex mosaic on the escarpment with canopy components regularly mixing. This is a habitat that has been shaped by extreme environmental conditions, clearly evident in the strongly windswept crowns of the vine thicket complex component, which occupies the more exposed positions on the escarpment. The anthropogenic usage and alteration of this habitat has been limited by its inaccessible topographic position.



Photograph 14. Low forest of pandanus on the north-east escarpment of Mer.

9.2.2 Ecological / Cultural Considerations

Current Condition: Non-native species including poinciana (*Delonix regia*) dominate the canopy in some places, although these areas have been separated in habitat mapping wherever distinction is possible. Persistent trade winds and salt spray have resulted in a dense low canopy which prevents the establishment of exotic species within this habitat, except in those areas where the habitat has been physically disturbed.

Fauna: The habitat usage by fauna species is likely to mirror semi-deciduous vine forest, providing potential habitat for threatened species including the emerald monitor (*Varanus prasinus*) and slender-chained gecko (*Lepidodactylus pumilis*). The endemic skink species, *Carlia quinquecarinata* is also considered likely to occur in this habitat.

Flora: Significant species known to occur are *Alectryon repandodentatus* (Endangered EPBC, NC Act) and the regionally significant species *Euphorbia plumerioides*.

Cultural Perspectives: Due to the general inaccessibility of this habitat, utilisation is likely to have been limited. Traditional usage of pandanus and other plants within this habitat requires further documentation.

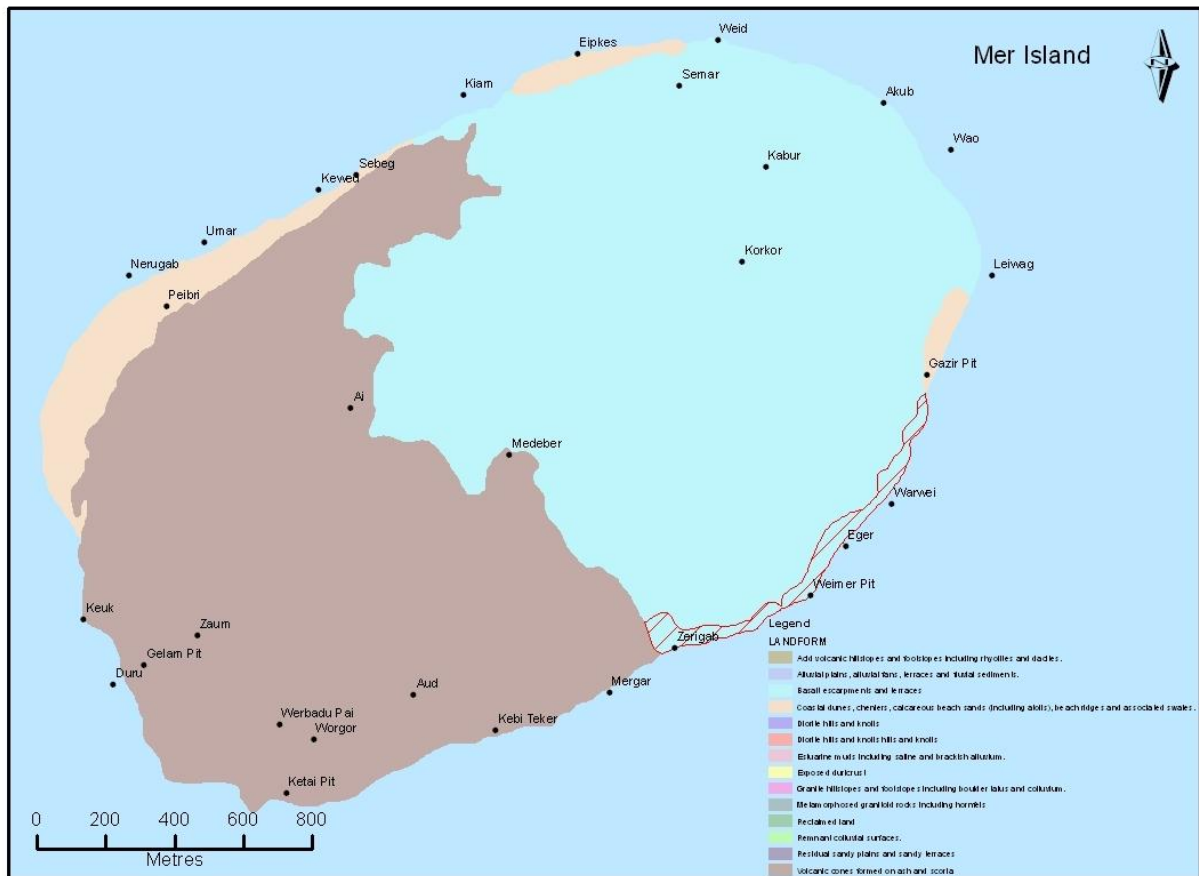


Figure 4. Location of coastal headland forest complexes on Mer Island (place names after Lawrie, 1970).

9.2.3 Management Implications

This habitat is currently self-maintaining, with structure and floristic composition influenced heavily by strong southerly trade winds which blow for extended periods during the cooler winter months. With the absence of any notable physical disturbance and general lack of exotic weed species except for scattered copses of poinciana (near dwellings) no specific management actions are warranted in this habitat.

9.2.4 Summary of Recommended Management Actions

The recommended management actions for this habitat are summarised in **Table 10** below.

Table 10. Summary of management actions for coastal headland forest complexes.

Management Category	Context/Issue	Actions	Priority
Fauna Surveys	Fauna composition within this habitat is poorly documented.	Fauna survey recommendations can be undertaken in conjunction with semi-deciduous vine thickets (see Table 10)	Moderate

Management Category	Context/Issue	Actions	Priority
Plant Surveys	Flora composition is poorly documented and limited to rapid surveys.	Carry out additional flora field surveys with focus on collection of new records for the island and important cultural resource species. Collect leaf specimens and/or 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	TEK within this habitat is poorly known or documented.	Obtain and collate traditional knowledge of resource utilization within this habitat on an opportunistic basis through community consultation. Photographs of any traditional important resources would be useful.	Moderate
Fire Management	This habitat is not threatened by fire incursion.	No actions required	Not Required
Threatened Species Management	<u>Flora</u> : The habitat is currently self maintaining and not suffering major degradation. The habitat hosts well developed populations of <i>Alectryon repandodentatus</i> (Endangered EPBC, NC Act).	<u>Flora</u> : The Endangered small tree <i>Alectryon repandodentatus</i> has a robust population on the island and this habitat provides stability for the species in a landscape that is otherwise subject to broadscale impacts of weed invasion. No direct action for management of this species is currently required although vigilance in opportunistic monitoring of habitat condition should be considered important.	Moderate
	<u>Fauna</u> : Composition of fauna within this habitat is poorly documented although is likely to mirror semi-deciduous vine thicket habitats.	<u>Fauna</u> : Further baseline survey information is required in regard to habitat usage by threatened species, particularly the emerald monitor and slender-chained gecko. This information can be obtained in conjunction with fauna survey efforts in semi-deciduous notophyll vine forest.	Moderate
Invasive Species Management	<u>Flora</u> : Extensive infestation of exotic flora species is not expected to occur within this habitat due to harsh environmental conditions. The observed dumping of garden waste may lead to the introduction of exotic shrubs and ground covers into disturbed areas. <u>Fauna</u> : The invasive fauna utilization of this habitat requires further study as per semi-deciduous vine thicket habitats documented in Table 10 .	<u>Flora</u> : Observations relating to any new introductions of exotic species into this habitat should be an ongoing component of the ranger program. There is some potential for lantana to exploit canopy gaps in this habitat which may lead to ongoing habitat degradation. <u>Fauna</u> : Recommendations as per semi-deciduous vine forest (see Table 10)	Moderate High
Monitoring	Whilst generally free from exotic species, this habitat is threatened by introduction of exotic species	Regular opportunistic monitoring of habitat condition, particularly in regard to new weed arrivals or	Moderate

Management Category	Context/Issue	Actions	Priority
	through dumping of garden waste or physical disturbance which may create a niche for weed establishment.	areas of disturbance is required. The locations of newly observed exotic species and any specific action taken should be documented.	

9.3 Grassland and Grassland Complexes

9.3.1 Status of Ecological Knowledge

Grassland communities occur on the western portion of Mer Island associated entirely with extremely porous volcanic cinder. The grassland habitat is sharply separated from vine forest communities to the east which occupy basaltic lithologies on more fertile soils. Native grassland communities on Mer Island are more diverse than those on neighbouring Erub, dominated by *Mnesithea rottboellioides*, *Themeda triandra*, *Imperata cylindrica* and a range of herb and sprawling vine species. Areas subject to shrubby thickening are typically colonised by *Premna serratifolia*, *Barringtonia calyptrata*, *Cordia dichotoma*, *Flueggea virosa* subsp. *melanthesoides*, *Clerodendrum* sp., *Psychotria* sp., *Aristolochia acuminata* and *Ficus opposita*.

The literature suggests considerable conjecture about the provenance of grasslands on Mer Island. Draffan *et al.* (1983) in Freebody (2002), and Stocker (1978), refer to the use of fire in vine forest areas (with a closed canopy) on Mer causing habitat alteration and a reduction of the total area of closed forest to fire climax grasslands. Field observation however indicates that the grassland community on Mer occupies a cinder cone, which imposes unique edaphic conditions on vegetation communities in the form of extreme drainage. The considerable number of volcanic vents and basalt regolith on Australia's north-eastern region that naturally support grasslands in much wetter or similar climates (e.g. Seven Sisters near Yungaburra, Mount Fox and Clump Point in Queensland's wettest coastal location), offer evidence to suggest that the grasslands on these islands were not necessarily preceded by vine forest. Historical annotations by Haddon (1901 - 1935) provide clear evidence that the landscape dynamic has changed little in the period of European influence. An extract from Haddon quotes: "*the crescentic valley, crater, or "big valley" Aupaut, being formed in a porous volcanic ash, is somewhat arid; the vegetation consists of coarse grass, low scrub and scattered coconut palms and presents a marked contrast to the remainder of the island; the steep slopes are unusually bare*" (Haddon 1901 -1935, Part 1, Chapter 3, pp30). The argument that Mer once supported a blanketing vine forest community that was cleared and burnt to produce the grassland habitat that is apparent in today's landscape is questionable. There is however second hand information provided by a ship builder to Haddon (1901) to suggest some areas of this grassland were once occupied by a woodland prior to Haddon's expedition to the islands. This information is however non-specific.

There is no doubt that fire controls vine forest distribution on the cone to a considerable extent. Grasslands in the broad central crater of Gelam were observed to be in the process of rapid colonisation by vine thicket shrubs and this thickening had advanced considerably since 2007 when these grassland habitats were last observed by the authors. Much of this has likely occurred in the time since firing of these grasslands was banned on the island due to cultural concerns (pers. comm. Ses Salee, March 2011). The freshness of the volcanic flow and eruptive features on the high rim and the steep west facing outer slopes of Gelam, coupled with the lack of strong shrubby recruitment in these areas, suggests that these areas have been historically stable as grasslands since human occupation.



Photograph 15 (left). Grassland habitat dominated by *Mnesithea rottboellioides* on the Mer cinder cone, and; **Photograph 16.** Native grassland in excellent condition on the south-east facing escarpment of Gelam.

9.3.2 Ecological / Cultural Considerations

Current Condition: Grassland condition is variable across the island although it has visibly declined since previous observations were made in 2007. Lantana forms dense thickets over large areas of Gelam, particularly in upper slope regions below the volcanic rim. Lantana, mixed with vine thicket shrubs, is also invading grassland in the inner portions of the volcanic crater due to long absence of fire. Other exotic species observed in the grassland habitat include *Passiflora foetida*, *Passiflora suberosa*, *Stachytarpheta jamaicensis* and *Calopogonium mucunoides*. Yellow bells (*Tecoma stans*) is also becoming a problematic weed in grasslands upslope behind the township where its wind-blown seed is prolifically germinating.

The best preserved examples of native grassland were observed on the south-east facing coastal escarpment of Gelam where these habitats are dominated by native species with particularly good cover of kangaroo grass (*Themeda triandra*).

Fauna: The fauna species within this habitat is likely to be relatively simple. Conics (2009d) report healthy populations of grassland melomys (*Melomys burtonii*).

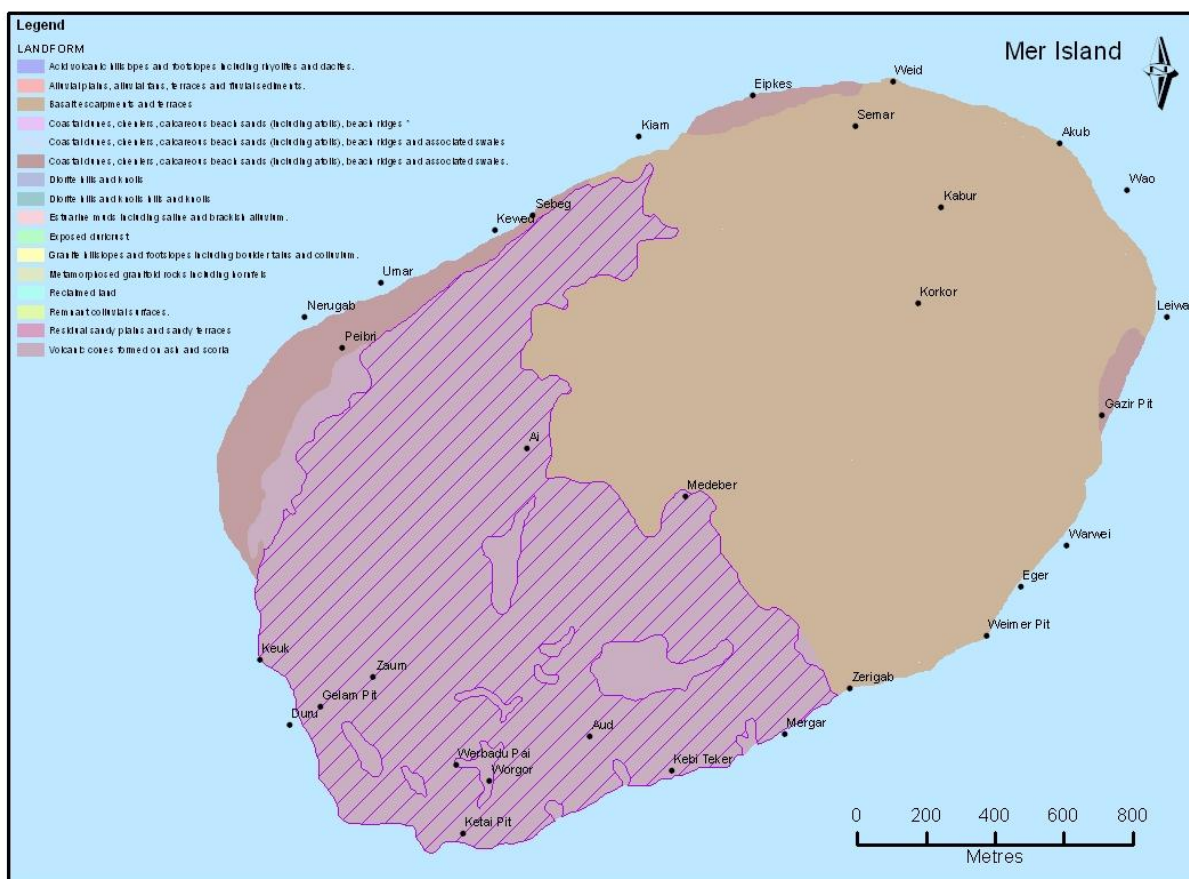


Figure 5. Location of native grasslands on Mer Island (place names after Lawrie, 1970)

Flora: Significant species known to occur are the ginger *Globba marantina* (Vulnerable NC Act), the Near-Threatened grass *Alpuda mutica*, and the regionally significant vine *Aristolochia acuminata*. The ecology of these species on the island is not known.

Cultural Perspectives: Whilst it is considered that large areas of this grassland are naturally occurring and stable, anthropogenic burning of the grasslands was undoubtedly undertaken by traditional occupants to maintain ease of access and manage specific cultural resources such as grasses for roofing. The stark grassy hill of Gelam presents perhaps the most striking cultural landscape in the Torres Strait Island group.

9.3.3 Management Implications

A general observation made following the consultative visit in March 2011, is that within 10-20 years, native grasslands will be rare habitats on the island unless there is some form of strong and consistent management intervention. Without intervention, grasslands will inevitably be replaced by dense impenetrable thickets of lantana, in places mixed with vine thicket shrubs. Whilst this will impact upon natural ecological function on the island, the loss of this dramatic cultural landscape should also be considered highly significant.

Fire and targeted herbicide application are two fundamental tools that can be utilised to manage lantana infestations within the grasslands. Manual methods such as cutting and swabbing and physical extraction of lantana copses are also useful supplementary management measure in areas of moderate to low infestation, although these will be most successful when utilised in combination with fire and herbicide application.

It is understood that firing on Gelam is banned due to cultural concerns. This cultural restriction on firing has however not been considered in compilation of these management recommendations which are provided solely for the purpose of presenting lantana control techniques which have been proven to be effective on a large scale. It is ultimately up to the Meriam people to decide whether these recommendations are culturally acceptable. It should be noted that the recommendations made within are also broadly consistent with recommendations made in the *Draft Strategic Plan for Lantana 2011 – 2016* (NRMCANZ, 2011). The Meriam Le have an advantage in lantana management however in that they have the ability to utilise fire as a management tool in a far more robust capacity than most parts of mainland Australia, if they choose to do so.

Broad recommendations for management are made below although these will require refinement based on field logistics, experience and community desires.

Fire: The current exclusion of fire on the island has undoubtedly been the major factor in recent rapid expansion of lantana on Gelam. In order to control further spread of lantana into grassland habitats, it is recommended that the following actions be considered.

- Fire should be re-introduced into the landscape as soon as is feasibly possible.
- Grassland areas should be subject to a mosaic burning regime with numerous small fires that are initiated as soon as grasses will feasibly burn. This will effectively reduce fuel loads in grassland areas.
- Hot fire events can be targeted towards areas of dense lantana thickets late in the dry season without the risk that these hot fires will burn out extensive areas of the island and threaten property.
- This mosaic burning regime should be maintained on an annual basis although it is likely that large areas of grassland will not burn on any given year to due to insufficient fuel loads.

It is likely that this mosaic burning pattern will take several years to have an impact on the extent of lantana in the grassland, although when conducted effectively, it will stabilise the further spread of lantana into currently unaffected habitats.

Herbicide: Instructions on the usage of herbicide to target lantana infestation are contained in Stock *et al.* (2009) and it is not intended that detailed instruction on mixing ratios and application methods be provided in this document. The following practices should however be considered.

- Overspray dense thickets or copses of lantana with the aid of a spatter gun and low toxicity herbicide (glyphosate). Do not use this technique where lantana occurs as scattered shrubs in native grassland as this will destroy the native grasses that are to be promoted.
- Follow up spraying should be undertaken on a 3-monthly basis until the infestation is completely eradicated.
- Use concentrated herbicide to swab the cut stems of lantana in low density infestations (particularly in native grassland areas) for effective eradication.

General Recommendations: The following general recommendations are made in regard to lantana control practice.

- Undertake initial stages of lantana control in a small contained area where the effectiveness of the techniques can readily be observed and assessed. Ensure control of lantana is achieved in the initial pilot area before the effort is extended.
- Attempt to integrate the use of chemicals, landscape burning, and physical means of lantana control to the affect that these methods reinforce each other (e.g. use follow up storm burning in areas where chemical control has been implemented to promote the growth of new grass in areas previously occupied by lantana).
- Ensure control and monitoring points, including photographic records, are erected in pilot areas to document and demonstrate the success of the eradication effort.

9.3.4 Summary of Recommended Management Actions

Recommended management actions are summarised in **Table 11** below.

Table 11. Summary of management actions for native grassland habitats on Mer.

Management Category	Context/Issue	Actions	Priority
Fauna Surveys	Fauna composition within this habitat is relatively simple although requires further documentation. Refer to recent trapping program of Diete (2010).	Incorporate results of recent fauna trapping programs into rangers information base. Undertake opportunistic fauna survey in this habitat, record and identify species observed.	Moderate
Plant Surveys	Flora composition is limited to rapid surveys.	Carry out additional flora field surveys with focus on collection of important cultural resource species. Update island species list as new information is available.	Moderate
Traditional Ecological Knowledge	TEK within this habitat is poorly known or documented.	Obtain and collate traditional knowledge of resource utilization within this habitat. Particular information on the historic usage of particular grass species would be particularly useful.	Moderate
Fire Management	Dramatic changes in ecology and floristic composition are occurring in this habitat due to removal of fire from the landscape for cultural	Consider re-introduction of fire into the landscape if cultural acceptance of the practice changes. Follow	Immediate

Management Category	Context/Issue	Actions	Priority
	purposes. This includes infestations with exotic species.	recommendations for fire made in Section 9.3.3.	
Threatened Species Management	<p><u>Flora:</u> Three significant flora species are currently known from this habitat.</p> <p><u>Fauna:</u> The use of this habitat by significant fauna species is not known although it is not expected to be critical habitat for any known or potentially occurring fauna species.</p>	<p><u>Flora:</u> Carry out targeted surveys for <i>Globba marantina</i>, <i>Alpuda mutica</i> and <i>Aristolochia acuminata</i> to determine population size and distribution. Follow management recommendations made in Section 9.3.3 to maintain native grassland habitats in a sustainable manner and ensure ongoing survival of the habitat in the island landscape.</p> <p><u>Fauna:</u> Follow management recommendations made in Section 9.3.3 to maintain native grassland habitats in a sustainable manner and ensure ongoing survival of the habitat in the island landscape.</p>	<p>Moderate</p> <p>Moderate</p>
Invasive Species Management	<p><u>Flora:</u> Extensive infestation of exotic flora (lantana) threatens the long term natural biodiversity of this habitat.</p> <p><u>Fauna:</u> The invasive fauna utilization of this habitat has been subject to recent studies (see Dietsch 2010). Particular attention should be paid to usage of this habitat by feral cats as well as ongoing monitoring of pacific rat populations.</p>	<p><u>Flora:</u> Undertake habitat management protocols detailed in Section 9.3.3.</p> <p><u>Fauna:</u> Continued monitoring for the pacific rat and the abundance of grassland melomys is required as a priority future action. Further survey into the usage of this habitat by feral (and domestic) cats is required.</p>	<p>Immediate</p> <p>High</p>
Monitoring	The effectiveness of measures implemented to control lantana requires documentation.	<p>The construction of photographic monitoring points in pilot areas for lantana control is required prior to programme commencement.</p> <p>Photographic monitoring points should be erected in areas of high quality grassland to provide a baseline measure as well as a means to measure weed spread and new weed introductions.</p> <p>Continued monitoring for the grassland melomys, reptiles and pacific rat is required as a priority future action.</p>	Immediate

9.4 Successional Vine Forest Communities

9.4.1 Status of Ecological Knowledge

This habitat occurs in sheltered positions on the volcanic cone of Gelam (the western portion of Mer Island) occupying gully lines incised into the main cinder cone. It forms a dense thicket to low closed thicket, generally with canopy heights in the 4m to 8m range. The dominant upper stratum includes *Semecarpus australiensis*, *Cerbera manghas*, *Macaranga tanarius*, *Hibiscus tiliaceus*, *Mangifera indica*, *Barringtonia calyptata*, *Myristica insipida* var. *insipida*, *Pouteria obovata*, *Alstonia spectabilis*, and *Premna dallachyana*. Vines such as *Mucuna gigantea* and *Entada phaseoloides* are locally common and *Bombax ceiba* var. *leiocarpum* may be present as a sparse emergent in the more advanced successional stages. The development of these communities is controlled by both fire and edaphic conditions. It should also be noted that whilst the climax stage of this VC is possibly VC2j, the extreme drainage conditions imposed by the porous cinder substrate is likely to limit successional forest development and it is expected that even advanced successional stages will be relatively depauperate both in stature and floristics. Cessation of regular burning will possibly facilitate the expansion of depauperate thickets at the expense of grasslands. Evidence from historical photographs (1988) indicates that these communities have been in a state of meta-stability up to recent periods when removal of fire from the landscape facilitated their expansion.



Photograph 17 & 18. Early stage successional forest on Mer Island forming a low closed thicket with dominant *Macaranga tanarius*.

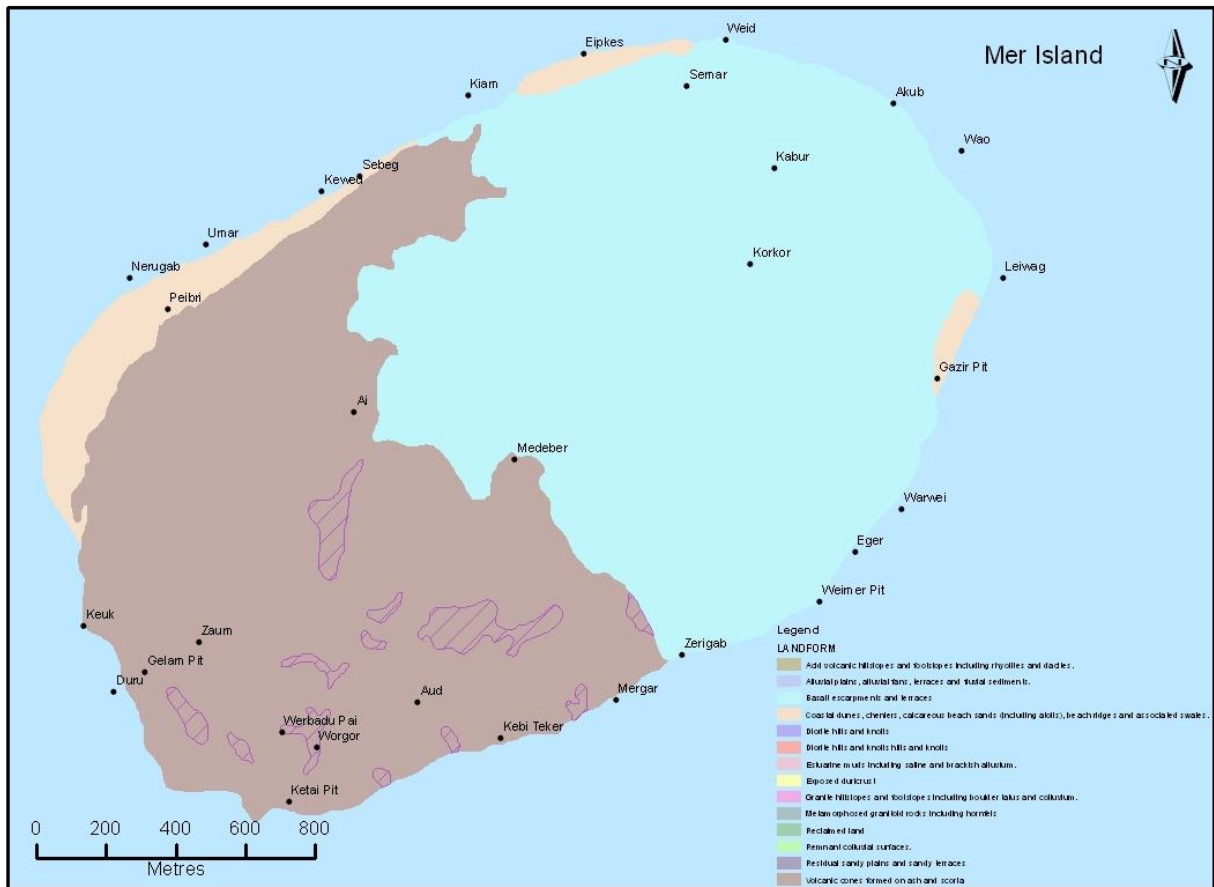


Figure 6. The location of successional forest communities on Mer Island (place names after Lawrie, 1970).

9.4.2 Ecological / Cultural Considerations

Current Condition: Thickets of lantana are common on the vine forest margins, intruding into the interior of the community in some places. The relative density of the canopy in this habitat prevents the advent of major weed incursions.

Fauna: The fauna species within this habitat is likely to be relatively simple although it is yet to be documented. It is not expected to provide habitat for species that have not been recorded in other habitats on the island.

Flora: The following species have the potential to occur in this habitat:

- *Alectryon repandodentus*
- *Globba marantina*
- *Alpuda mutica*
- *Aristolochia acuminata*

- *Crotalaria sp.* (Torres Strait J.R. Clarkson 2044)
- *Flacourtia sp.* (Shiptons Flat L.W.Jessup 3200)
- *Smilax blumei*
- *Uvaria rufa*

Cultural Perspectives: In terms of human occupation of Mer Island, this is a relatively recent habitat that is in early stages of development. The cultural significance of this habitat is unknown.

9.4.3 Management Implications

Management of this habitat should be considered in conjunction with broader management of native grassland habitats. Considerable expansion of this habitat has occurred with the recent removal of fire from the Mer Island landscape. In this regard, the current burning regimes favour development of this habitat over native grassland. The equilibrium between the two habitats is complicated by lantana which is similarly expanding rapidly in infestation extent. Stabilisation of this habitat, as with lantana can only be facilitated by re-introduction of burning into the Mer Island landscape.

9.4.4 Summary of Recommended Management Actions

Table 12. Summary of management actions for successional forest communities.

Management Category	Context/Issue	Actions	Priority
Fauna Surveys	Fauna composition within this habitat is relatively simple although requires further documentation,	Undertake opportunistic fauna survey in this habitat, record and identify species observed.	Moderate
Plant Surveys	Information on flora composition is limited to rapid surveys.	Additional opportunistic flora field surveys can be undertaken with a focus on collection of important cultural resource species. This is a relatively simple habitat in terms of species composition and it is not expected that the known species within this habitat will expand considerably.	Moderate
Traditional Ecological Knowledge	TEK within this habitat is poorly known or documented.	The traditional usage of plant species within this habitat should be documented for future reference.	Moderate
Fire Management	This habitat is expanding rapidly due to removal of fire from the Mer Island landscape.	Consider re-introduction of fire into the landscape if cultural acceptance of the practice changes. Follow recommendations for fire made in Section 9.3.3.	Immediate
Threatened Species Management	<u>Flora:</u> No significant flora species are currently known from this habitat although a number of species have the potential to occur. <u>Fauna:</u> The use of this habitat by significant fauna species is not known.	<u>Flora and Fauna:</u> Due to the recent nature and simple structure of this habitat, it is a relatively low priority for future fauna survey work. The abundance and recruitment of <i>Alectryon repandodontatus</i> and other significant species within this habitat should be noted for future reference.	Moderate

Management Category	Context/Issue	Actions	Priority
Invasive Species Management	<u>Flora:</u> Infestation of lantana is prominent on the margins of this habitat, threatening the long-term viability of habitat succession.	<u>Flora:</u> Undertake habitat management protocols detailed in Section 9.3.3.	Immediate
	<u>Fauna:</u> The invasive fauna utilization of this habitat requires further study with reference to Diets (2010).	<u>Fauna:</u> As with all habitats on the island, attention should be paid to usage of this habitat by feral cats as well as ongoing monitoring of pacific rat populations.	Moderate
Monitoring	The effectiveness of measures implemented to control lantana requires documentation.	The construction of photographic monitoring points in pilot areas for lantana control is required prior to programme commencement. Photographic monitoring points should be erected in areas of high quality grassland to provide a baseline measure as well as a means to measure weed spread and new weed introductions. Continued monitoring for the Pacific rat is required as a priority future action across all habitats on the island.	Moderate

9.5 Anthropogenically Altered (secondary) Vine Forest and Thicket

9.5.1 Status of Ecological Knowledge

This habitat has been included for its unique cultural values. This closed forest component has a general canopy height range of 18 to 30 m, comprising a mix of native food trees, typically sorbi (*Syzygium branderhorstii*), mig (*Syzygium bungadinnia*), kud (*Syzygium puberulum*), and udlagerlager (*Lepidopetalum fructoglabrum*) with exotic species including *Cocos nucifera* and *Mangifera indica*. Where mapped, the majority of these areas are on level topography with a sparse understorey and free of the surface rock that is otherwise abundant on hillslope situations.

Field evidence suggests that these areas were once utilised as traditional garden sites where cultivation of food trees such as *Syzygium branderhorstii*, *Syzygium aqueum* and *Mangifera indica* occurred under coconut groves. In some areas, old rotting coconut stumps can be observed in the understorey. The role Torres Strait Islander people have had in shaping the vegetation communities of the Torres Strait (see Parr and Carter 2003, Carter 2004, McNiven 2007, Rowe 2007, Barham 1999) is evident through the length of continuous occupation +2 500 years BP which relied on land and marine resource exploitation inclusive of extensive garden cultivations.



Photograph 19 Former cultivated area with *Cocos nucifera* mixed with exotic and native food trees.

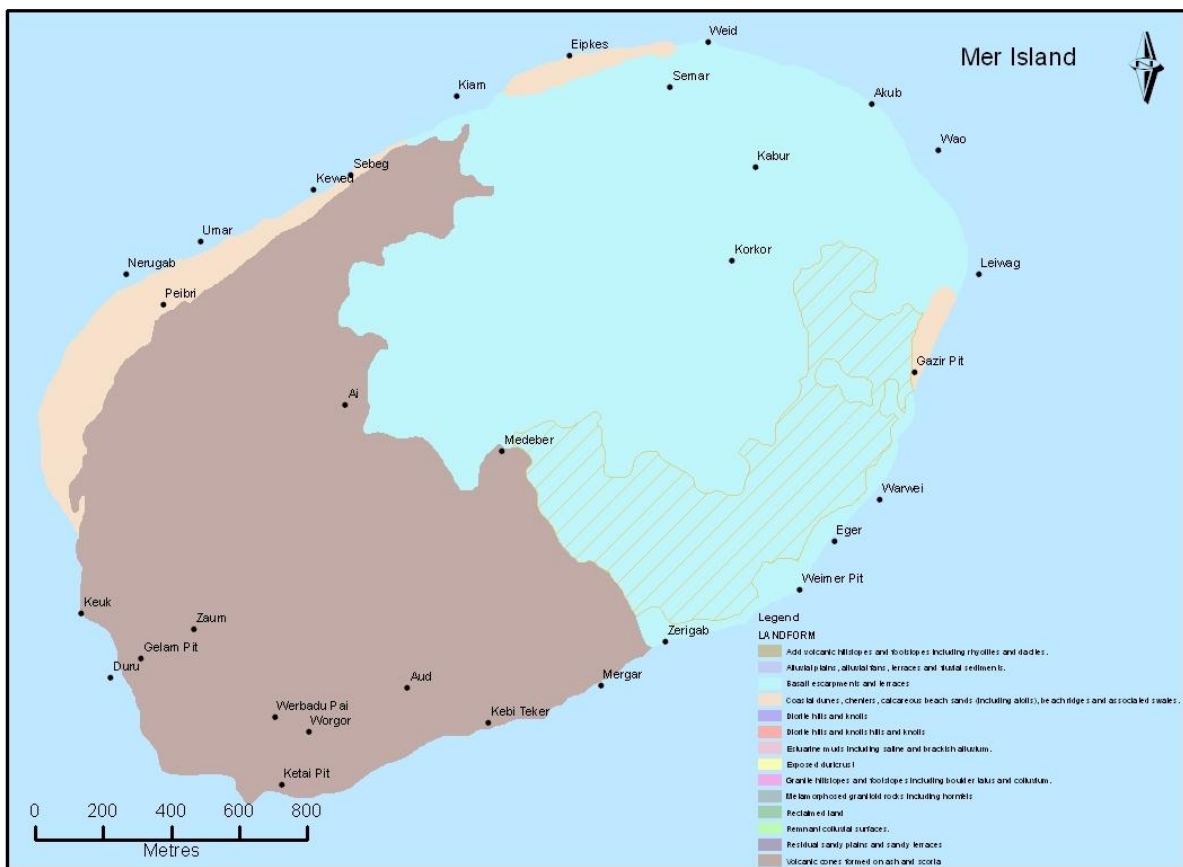


Figure 7. The location of anthropogenically altered vine forest communities on Mer Island (place names after Lawrie, 1970).

9.5.2 Ecological / Cultural Considerations

Habitat Condition: This habitat is a product of anthropogenic alteration and hence habitat condition cannot readily be discussed in terms of naturalness or similarity to natural habitats. It is however rapidly developing the structure of an intact vine forest habitat and is relatively diverse in terms of its

constituent floristic assemblage. It is expected that this habitat will have similar fauna habitat values to intact semi-deciduous vine forest stands.

Fauna: The assemblage of fauna within this habitat will most likely mimic that of intact semi-deciduous vine forest and include ground dwelling reptiles as well frugivorous birds. This habitat is likely to provide habitat for threatened species including the emerald monitor (*Varanus prasinus*) and slender-chained gecko (*Lepidodactylus pumilis*). The endemic skink species, *Carlia quinquecarinata* is also considered likely to occur in this habitat.

Flora: The habitat is known to support *Alectryon repandodentatus* (Endangered EPBC, NC Act), and the regionally significant *Syzygium bungadinnia* and *Lepidopetalum fructoglabrum*.

Cultural Perspectives: This habitat is essentially a long term established permaculture with traditional food trees including sorbi (*Syzygium branderhorstii*), mig (*Syzygium bungadinnia*), kud (*Syzygium puberulum*), udlagerlager (*Lepidopetalum fructoglabrum*), mango, and coconut. In this regard, it holds particular cultural significance, providing a record of traditional agricultural practice in the eastern Torres Strait Islands.

9.5.3 Management Implications

This habitat is currently self-maintaining although it may be at long term risk of degradation through infestation of tropical kudzu (*Pueraria montana var. lobata*) which is smothering extensive areas of vine forest canopy and regrowth vegetation across the eastern portion of the island. Whilst the habitat is classified as non-remnant under the VMA (1999), this by no means degrades its value as a significant habitat worthy of preservation. Canopy gaps within this habitat may facilitate invasion of pest plant species including leucaena (*Leucaena leucocephala*), poinciana (*Delonix regia*), lantana and snake vine (*Merremia dissecta*).

9.5.4 Summary of Recommended Management Actions

The information provided in **Table 13** below summarises recommendations pertaining to the management of this habitat.

Table 13. Summary of management actions for anthropogenically altered vine forest and thicket.

Management Category	Context/Issue	Actions	Priority
Fauna Surveys	Fauna composition within this habitat is poorly documented.	In consideration of recent trapping surveys of Diete (2010) design and implement a structured fauna survey and trapping program based on priority recommendations contained in Section 6.6 . Maintain focus on ethnotaxonomy to feed into TEK.	Moderate
Plant Surveys	Flora composition is poorly documented and limited to rapid surveys.	Carry out additional flora field surveys with focus on collection of important cultural resource	Moderate

Management Category	Context/Issue	Actions	Priority
		species. Collect leaf specimens and/or photograph plants with known uses/values and that may have been used in the past, and catalogue.	
Traditional Ecological Knowledge	TEK within this habitat is poorly known. 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. The significance of this habitat as a cultural resource as well as traditional farming practice which shaped the landscape should be documented for future reference.	High
Fire Management	This habitat is not threatened by fire incursion.	No actions required.	Not Required
Threatened Species Management	<u>Flora</u> : The habitat is suffering continued degradation through smothering by exotic vines, particularly tropical kudzu.	<u>Flora</u> : The Endangered small tree <i>Alectryon repandodentatus</i> is known to occur within this habitat although the population is robust and requires little active management or documentation.	Moderate
	<u>Fauna</u> : Composition of fauna within this habitat is poorly documented.	<u>Fauna</u> : Further baseline survey information is required in regard to habitat usage by threatened species, particularly the emerald monitor and slender-chained gecko.	Moderate
Invasive Species Management	<u>Flora</u> : Tropical kudzu threatens this habitat. Lantana, leucaena, snake vine and poinciana may also impact this habitat if these species exploit canopy gaps.	<u>Flora</u> : No direct action at this stage as there are a large number of habitats suffering degradation that are in greater need of attention. Continued assessment of this habitat should be undertaken as a component of general ranger duties to identify any problematic weed outbreaks that require attention.	Moderate
	<u>Fauna</u> : The composition of invasive fauna within this habitat requires further study. There is considerable potential for impacts on fauna by feral cats and dogs.	<u>Fauna</u> : A programme for the eradication of the pacific rats from Mer Island is currently being undertaken and this is possibly the highest priority management action. Further survey into the usage of this habitat by feral (and domestic) cats is required.	High
Monitoring	The success of any weed control efforts in promoting natural species recruitment and regeneration requires documentation.	Continued informal monitoring of this habitat should be undertaken as a regular component of ranger management duties to identify any potentially problematic weed outbreaks. Continued monitoring for Pacific rat is required as a priority future action although this pertains to all habitats on the island.	High

9.6 Cleared Areas, Exotic Vegetation and Regrowth Forests.

With a relatively large population and small land area, there is considerable pressure on Mer Islanders to modify the natural environment for habitation infrastructure towards a range of community needs. The trend of landscape modification has been ongoing on Mer Island since human arrival.

The extensive bamboo groves that are prominent on the island provide a significant cultural resource. These habitats mosaic with adjacent vine forest communities and garden sites, either spreading from former traditional garden areas, or as discrete groves within the forest. The spatial distribution of these exotic forest copses is provided in **Figure 8**. The historical record as reviewed by McNiven (2008) reveals the existence of bamboo groves throughout the Torres Strait, more specifically in the Eastern Islands in 1793, the western islands in 1845, and on Kirriri (Hammond) in 1867, with indications that groves continued to be established in the late nineteenth century. *Bambusa vulgaris* is the most likely bamboo to form the communities mapped in this exercise although a number of species are recorded for the region (see McNiven 2008). The native *Neololeba atra* (listed as Near-Threatened under the *Nature Conservation Act*), occurs in the Wet Tropics, Iron Range-McIlwraith and Lockerbie areas of north-eastern Queensland and also in Papua New Guinea and New Britain (Hyland *et al.* 2003). It is known from the Torres Strait from Mer, Naghir, Ugar and Iama (EPA 2007), and from Badu and Mua Islands (Fell pers. obs.), however it is generally restricted to the understorey and rainforest margins and does not form mappable communities.

Other significant species known to be associated with areas of human occupation are the massive specimens of *Cycas scratchleyana* that occur in the main settlement area. Apart from these specimens, the species is restricted to Papua New Guinea, potentially indicative of historic trading patterns between Mer Islanders and the Papua New Guinea mainland.



Photograph 20 (left). A large specimen of *Cycas scratchleyana* from within the township area; and **Photograph 21.** Near-Threatened *Chrysophyllum roxburghii* rising above a grove of cultivated *Bambusa vulgaris*.

Although there are a number of highly significant plant records from degraded habitats on Mer Island, these habitats also host a considerable number of exotic weed species which have potential to spread to less disturbed habitats on Mer and adjacent Islets. The majority of the 84 introduced species on the island occur in degraded areas. The more problematic of these have been previously discussed in Section 5.2.2 however include:

- *Leucaena (Leucaena leucocephala).*
- *Gloriosa lily (Gloriosa superba).*
- *Lantana (Lantana camara).*
- *Yellow bells (Tecoma stans var. stans).*

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.

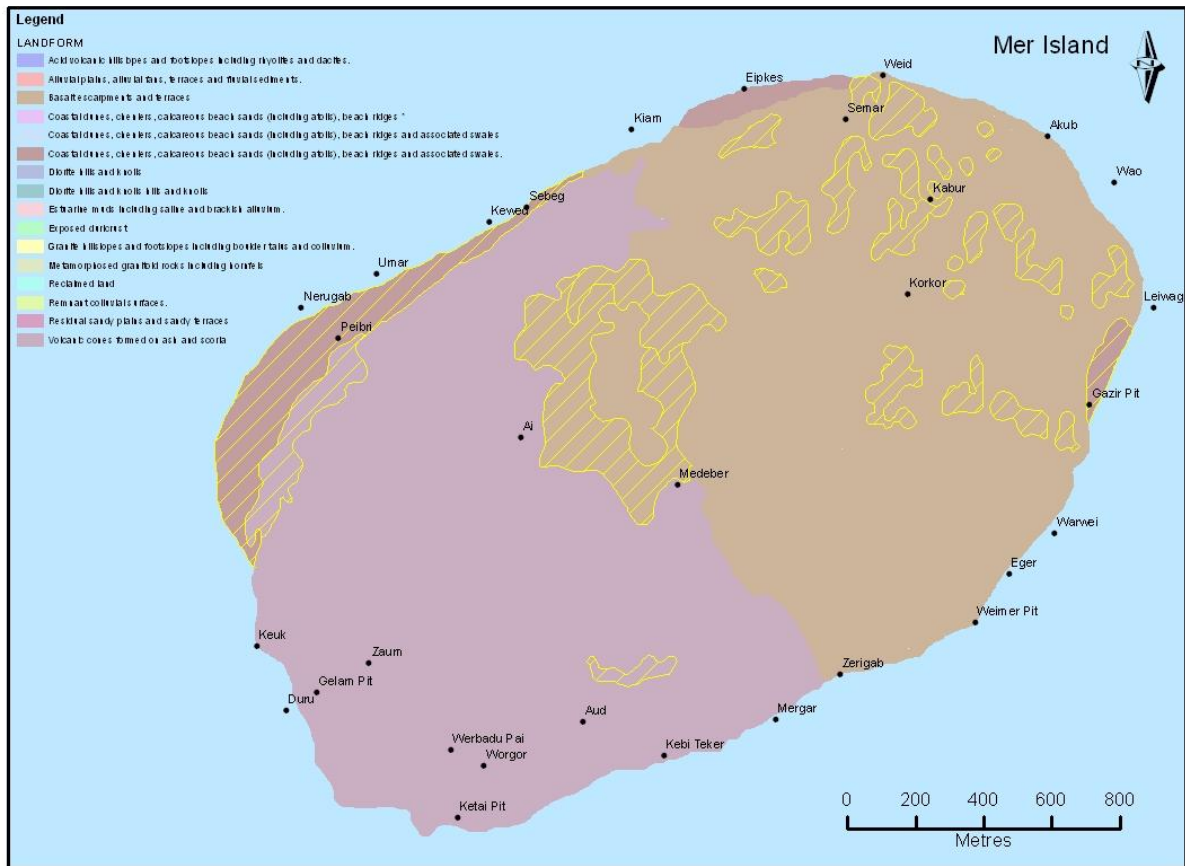


Figure 8. The location of exotic forest communities dominated by exotic species on Mer Island (place names after Lawrie, 1970).

10.0 References and Bibliography

- Allison, A. 2006. Reptiles and amphibians of the Trans-Fly Region, New Guinea. *Pacific Biological Survey, Bishop Museum, Hawaii*.
- Allison, A. & Kraus, F. 2006. Herpetofauna of the Papuan region: Frogs. *Pacific Biodiversity Information Forum*. <http://www.pbif.org/taxonomy/frogs.html>.
- Baittinoff, G.N. and Dillewaard, H.A. (1997). Floristic analysis of the Great Barrier Reef continental islands. *Queensland Herbarium, Department of Environment, Indooroopilly, Qld*.
- Bani, E. (2004). Evidence of cultural custodianship. In R. Davis (ed.), *Woven Histories Dancing Lives: Torres Strait Islander Identity, Culture and History*, pp. 31-32. Aboriginal Studies Press, Canberra.
- Baker-Gabb, D.J. (1986). Ecological release and behavioural and ecological flexibility in marsh harriers on islands. *Emu*, **86**: 71-81.
- Barratt, D.G. (1997). Predation by house cats, *Felis catus* (L.), in Canberra, Australia. I. Prey composition and preference. *Wildlife Research*, **24**: 263-277.
- Barrett, G., A. Silcocks, S. Barry, R. Cunningham & R. Poulter (2003). *The new atlas of Australian birds*. Birds Australia, Melbourne.
- Baxter, R. (2010). Trip report Torres Strait (Boigu-Saibai-Dauan) 16th-23rd Oct 2008. <http://www.birdingtours.com.au/ts.html>
- Berman, D. 2008. 'Horse *Equus caballus*,' in *The mammals of Australia, Third Edition*. eds. S. Van Dyck & R. Strahan, Reed New Holland, Sydney.
- BirdLife International (2011). Species factsheet: *Apus pacificus*. Downloaded from <http://www.birdlife.org> on 04/01/2011.
- Blakers, M., Davies, S.J.J.F. and Reilly, P.N. (1984). The atlas of Australian birds. *Melbourne University Press, Melbourne*.
- Boland, C.R.J. (2004a). Breeding biology of rainbow bee-eaters (*Merops ornatus*): a migratory, colonial, cooperative bird. *Auk*, **121**: 811-823.
- Boland, C.R.J. (2004b). Introduced cane toads are active nest predators and competitors of rainbow bee-eaters *Merops ornatus*: observational and experimental evidence. *Biological Conservation*, **120**: 53-62.
- Borsboom, A. (2007). Nomination to re-classify the 'rare' *Varanus prasinus* to 'Near-threatened' under the Nature Conservation Act 1992. *Biodiversity Sciences Environmental Sciences Division, Environmental Protection Agency*.
- Bostock, P.D. and Holland, A.E. (eds.) (2010). Census of the Queensland Flora 2010. *Queensland Herbarium, Department of Environment and Resource Management, Brisbane*.
- Bradley, J. J. (2005). 'Same time poison, same time good tucker': The cycad palm in the south west Gulf of Carpentaria'. *Journal of Australian Studies* 29: 86, 119 – 133

- Buden, D.W. (2007). Reptiles of Satawan Atoll and the Mortlock Islands, Chuuk State, Federated States of Micronesia. *Pacific Science*, **61**: 415-428.
- Bureau of Meteorology (BOM) (2008a). Rainfall Statistics, Recording Station 027016 – Mer Island. Available at www.bom.gov.au/climate/averages.
- Bureau of Meteorology (BOM) (2008b). Rainfall Statistics, Recording Station 027001 – Badu Island. Available at www.bom.gov.au/climate/averages.
- Bureau of Meteorology (BOM) (2008c). Rainfall Statistics, Recording Station 027011 – Dauan Island. Available at www.bom.gov.au/climate/averages.
- Case, T.J., Bolger, D.T. & Petren, K. (1994). Invasions and competitive displacement among house geckos in the tropical Pacific. *Ecology*, **75**: 464-477.
- Chantler, P. (1999). 'Apodidae (Swifts),' in Handbook of the Birds of the World. Vol. 5. Barn-owls to hummingbirds, eds. J. del Hoyo, A. Elliott & J. Sargatal, Lynx Edicions, Barcelona.
- Christidis, L. & Boles, W.E. (2008). Systematics and taxonomy of Australian birds. *CSIRO Publishing, Collingwood*.
- Churchill, S. (2008). Australian bats. Second Edition. *Allen & Unwin, Crows Nest*.
- Clancy, G.P. (1986). Observations of nesting beach thick-knees *Burhinus neglectus* at Red Rock, New South Wales. *Corella*, **10**: 114-118.
- Clarke, R.H. (2004a). A record of the emerald monitor *Varanus prasinus* from Boigu Island, Torres Strait, Australia. *Herpetofauna*, **34**: 70-71.
- Clarke, R.H. (2004b). The avifauna of northern Torres Strait: Notes on a wet-season visit. *Australian Field Ornithology*, **21**: 49-66.
- Clarke, R.H. 2006. Papuan spine-tailed swifts *Meamsia novaeguineae* on Boigu Island, Torres Strait, Queensland. *Australian Field Ornithology*, **23**: 125-129.
- Clarke, R.H. 2007. Orange-bellied fruit-dove *Ptilinopus iozonus* on Boigu Island, Torres Strait: The first record for Australian Territory. *Australian Field Ornithology*, **24**: 44-48.
- Clarke, R.H., Gosford, R., Boyle, A., Sisson, L. & Ewens, J.G. 2010. A specimen record of the little paradise-kingfisher *Tanysiptera hydrocharis* from Torres Strait, Queensland: A new bird for Australian Territory. *Australian Field Ornithology*, **27**: 165-173
- Clarke, R.H. (2004a). A record of the emerald monitor *Varanus prasinus* from Boigu Island, Torres Strait, Australia. *Herpetofauna*, **34**: 70-71.
- Clarke, R.H. (2004b). The avifauna of northern Torres Strait: Notes on a wet-season visit. *Australian Field Ornithology*, **21**: 49-66.
- Clarke, R.H. (2006). Papuan spine-tailed swifts *Meamsia novaeguineae* on Boigu Island, Torres Strait, Queensland. *Australian Field Ornithology*, **23**: 125-129.
- Clarke, R.H. (2007). Orange-bellied fruit-dove *Ptilinopus iozonus* on Boigu Island, Torres Strait: The first record for Australian Territory. *Australian Field Ornithology*, **24**: 44-48.
- Clarke, R.H., Gosford, R., Boyle, A., Sisson, L. & Ewens, J.G. (2010). A specimen record of the little paradise-kingfisher *Tanysiptera hydrocharis* from Torres Strait, Queensland: A new bird for Australian Territory. *Australian Field Ornithology*, **27**: 165-173.

Clayton, W.D., Vorontsova, M.S., Harman, K.T. and Williamson, H. (2011). GrassBase - The Online World Grass Flora. <http://www.kew.org/data/grasses-db.html>. [accessed 24 May 2011].

Cogger, H.G. (2000). Reptiles & amphibians of Australia. *Reed New Holland, Sydney*.

Commonwealth of Australia (1995). Regional Forest Agreements – The Commonwealth Position. *Commonwealth of Australia: Canberra*.

Conics 2008a. *Kubin environmental report: Torres Strait sustainable land use plan habitat and fauna assessment – Kubin Community, Moa Island*. Unpublished Report to Torres Strait Regional Authority.

Conics 2008b. *St Pauls environmental report: Torres Strait sustainable land use plan habitat and fauna assessment – St Pauls Community, Moa Island*. Unpublished Report to Torres Strait Regional Authority.

Conics 2008c. *Torres Strait Sustainable Land Use Plan Part 2 Boigu*. Unpublished Report to Torres Strait Regional Authority.

Conics 2009a. *Badu environmental report: Torres Strait sustainable land use plan habitat and fauna assessment – Badu*. Unpublished Report to Torres Strait Regional Authority.

Conics 2009b. *Iama Island Environmental Report: Torres Strait Sustainable Land Use Plan Habitat and Fauna Assessment*. Unpublished Report to Torres Strait Regional Authority.

Conics 2009c. *Mabuiag (Mabuiag Island) environmental report: Torres Strait sustainable land use plan habitat and fauna assessment – Mabuiag (Mabuiag Island)*. Unpublished Report to Torres Strait Regional Authority.

Conics 2009d. *Mer (Mer Murray Island) environmental report. Torres Strait Sustainable Land use plan habitat and fauna assessment – Mer (Murray Island)*. Unpublished Report to Torres Strait Regional Authority.

Conics 2010. *Torres Strait Sustainable Land Use Plan Part 2 Mer*. Unpublished Report to Torres Strait Regional Authority.

Covacevich, J.A. & Couper, P.J. 1994. Type specimens of frog and reptile species, Queensland Museum: Recent additions and new information. *Memoirs of the Queensland Museum*, **37**: 53-65.

Covacevich, J., Ingram, G.J. & Czechura, G.V. (1982). Rare frogs and reptiles of Cape York Peninsula, Australia. *Biological Conservation*, **22**: 283-294.

Csurhes, S. (2008). Pest plant risk assessment Kudzu *Pueraria montana var. lobata*. Biosecurity Queensland, Department of Primary Industries and Fisheries, Brisbane, Queensland.

Debus, S. (1998). The birds of prey of Australia: A field guide to Australian raptors. *Oxford University Press, Melbourne*.

Diete, R. (2010). The ecology of exotic rodents and non-target species on Torres Strait islands: implications for exotic rodent eradication. Unpublished Honours Thesis, BAppSc School of Animal Studies, The University of Queensland.

- Department of Environment and Resource Management (2010). Torres Strait Natural Resource Management Region Back on Track Biodiversity Planning Tool, *Department of Environment and Resource Management, Brisbane*.
- DERM (2010a). Wildlife Online Extract. Latitude: 9.2622 Longitude: 142.2095 Distance: 6 km. *Department of Environment and Resource Management. Extracted 15 October 2010.*
- DERM (2010b). Wildlife Online Extract. Latitude: 9.5874 Longitude: 143.7703 Distance: 9 km. *Department of Environment and Resource Management. Extracted 18 October 2010.*
- DERM (2010c). Wildlife Online Extract. Latitude: 9.8999 Longitude: 142.7747 Distance: 12 km. *Department of Environment and Resource Management. Extracted 15 October 2010.*
- DERM (2010d). Wildlife Online Extract. Latitude: 9.9149 Longitude: 144.052 Distance: 25 km. *Department of Environment and Resource Management. Extracted 15 October 2010.*
- DERM (2010e). Wildlife Online Extract. Latitude: 9.9534 Longitude: 142.1817 Distance: 10 km. *Department of Environment and Resource Management. Extracted 18 October 2010.*
- DERM (2010f). Wildlife Online Extract. Latitude: 10.1846 Longitude: 142.266 Distance: 9 km. *Department of Environment and Resource Management. Extracted 15 October 2010.*
- DERM (2010g). Wildlife Online Extract. Latitude: 10.1149 Longitude: 142.156 Distance: 7 km. *Department of Environment and Resource Management. Extracted 15 October 2010.*
- DERM (2011a). 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.
- DERM (2011b). Wildlife and ecosystems: Fawn leaf-nosed bat. Department of Environment and Resource Management, Brisbane. http://www.derm.qld.gov.au/wildlife-ecosystems/wildlife/az_of_animals/micro_bats_the_insect_terminators/fawn_leafnosedbat.html. Last updated 1 December 2010.
- Dickman, C.R., Pressey, C.L., Lim, L. & Parnaby, H.E. 1993. Mammals of particular conservation concern in the Western Division of New South Wales. *Biological Conservation*, **65**: 219-248.
- Diete, R. (2010). The ecology of exotic rodents and non-target species on Torres Strait islands: implications for exotic rodent eradication. Unpublished Honours Thesis, BAppSc School of Animal Studies, The University of Queensland.
- Donnellan, S.C., Couper, P.J., Saint, K.M. & Wheaton, L. 2009. Systematics of the *Carlia* 'fusca' complex (Reptilia: Scincidae) from northern Australia. *Zootaxa*, **2227**: 1-31.
- Draffan, R.D.W., Garnett, S.T. and Malone, G.J. (1983). Birds of the Torres Strait: An annotated list and biogeographical analysis. *Emu* 83: 207-234.
- Driscoll, P.V. & Ueta, M. (2002). The migration route and behaviour of eastern curlews *Numenius madagascariensis*. *Ibis*, **144**: 119-130.
- DSEWPC (2011a). *Apus pacificus* in Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: <http://www.environment.gov.au/sprat>.
- DSEWPC (2011b). *Ardea ibis* in Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: <http://www.environment.gov.au/sprat>.

- DSEWPC (2011c). *Ardea modesta* in Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: <http://www.environment.gov.au/sprat>.
- DSEWPC (2011d). Australian Faunal Directory. *Department of Sustainability, Environment, Water, Population and Communities, Canberra*. <http://www.environment.gov.au/biodiversity/abrs/online-resources/fauna/afd/index.html>.
- DSEWPC (2011e). *Conilurus penicillatus* — Brush-tailed Rabbit-rat, Brush-tailed Tree-rat. *Species Profile and Threats Database. Department of Sustainability, Environment, Water, Population and Communities, Canberra*. http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=132
- DSEWPC (2011f). *Hirundapus caudacutus* in Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: <http://www.environment.gov.au/sprat>.
- DSEWPC (2011g). *Protected Matters Search Tool*. Department of Sustainability, Environment, Water, Population and Communities. <http://www.environment.gov.au/epbc/pmst/index.html>.
- Duncan, A., Barker, G.B. & Montgomery, N. (1999). The action plan for Australian bats. Environment Australia, Canberra.
- Ehmann, H. (1992). Encyclopedia of Australian animals: Reptiles. *Angus and Robertson, Sydney*.
- EPA (2007). *Nature conservation (Estuarine Crocodile) plan 2007 and management program 2007-2017*. Environmental Protection Agency, Queensland.
- Fell, D.G. (2009). Report on the Vegetation and Flora of Pulu Islet: DG Fell Flora Surveys May 2009. Unpublished report to Arafura Consulting.
- Fell D.G., Lifu M., McIntyre-Tamwoy S., Roberts C., Leung L., Lynch A.J.J., Charlie B. and Lifu T. (2009). *Significant Species and Habitats of Greater Lockerbie Scrub, Cape York Peninsula, Queensland*. Unpublished report to the Queensland Government Department of Environment and Resource Management, Brisbane.
- Freeman, A.N.D. (2003). The distribution of beach stone-curlews and their response to disturbance on far north Queensland's Wet Tropical Coast. *Emu*, **103**: 369-372.
- Freeman, A. and Freeman, A. 2009. Habitat use in a large rainforest python (*Morelia kinghorni*) in the Wet Tropics of North Queensland, Australia. *Herpetological Conservation and Biology*, **4**: 252-260.
- Fukuda, Y., Whitehead, P. & Boggs, G. (2007). Broad-scale environmental influences on the abundance of saltwater crocodiles (*Crocodylus porosus*) in Australia. *Wildlife Research*, **34**: 167-176.
- Franklin, D. C., Matthews, R. and Lawes, J. (2010). History of the East Point monsoon forest. *Northern Territory Naturalist* (2010) **22**: 2-16.
- Garnett, S.T. and Crowley, G.M. (2000). The Action Plan for Australian Birds. *Environment Australia, Canberra*.
- Geering, A., Agnew, L. & Harding, S. (2007). Shorebirds of Australia. *CSIRO Publishing, Collingwood*.

- Greene, H.W. 1986. Diet and arboreality in the emerald monitor, *Varanus prasinus*, with comments on the study of adaptation. *FIELDIANA Zoology NEW SERIES*, No. **31**. Publication 1370.
- Haddon, A.C. (ed.) (1901-1935). *Reports of the Cambridge Anthropological Expedition to Torres Straits*. 6 Volumes. Cambridge University Press, Cambridge.
- Haddon, A.C. (1908). Religion. Pp. 241-280. In Haddon, A.C. (ed.) *Reports of the Cambridge Anthropological Expedition to Torres Straits. Volume 6: Sociology, Magic and Religion of the Eastern Islanders*. Cambridge: Cambridge University Press.
- Haddon, A.C. (1912a). Food and its preparation and narcotics. In A.C. Haddon (ed.), *Reports of the Cambridge Anthropological Expedition to Torres Straits. Volume 4: Arts and Crafts*, pp. 130-143. Cambridge University Press, Cambridge.
- Haddon, A.C. (1912b). Horticulture. In A.C. Haddon (ed.), *Reports of the Cambridge Anthropological Expedition to Torres Straits. Volume 4: Arts and Crafts*, pp. 144-151. Cambridge University Press, Cambridge.
- Haddon, A.C. (1912c). Science. Pp. 218-237. In Haddon, A.C. (ed.) *Reports of the Cambridge Anthropological Expedition to Torres Straits. Volume 4: Arts and Crafts*. Cambridge: Cambridge University Press.
- Haddon, A.C. & Rivers, W.H.R. (1904). Totemism. Pp. 153-193. In Haddon, A.C. (ed.) *Reports of the Cambridge Anthropological Expedition to Torres Straits. Volume 5: Sociology, Magic and Religion of the Western Islanders*. Cambridge: Cambridge University Press.
- Harvey, M.B., Barker, D.G., Ammerman, L.K. & Chippindale, P.T. 2000. Systematics of pythons of the *Morelia amethystina* complex (Serpentes: Boidae) with the description of three new species. *Herpetological Monographs*, **14**: 139-185
- Heatwole, H. (1975). Biogeography of reptiles on some of the islands and cays of eastern Papua-New Guinea. *Atoll Research Bulletin*, No. **180**.
- Hediger, H. (1933-34). Beitrag zur herpetologie und zoogeographie neu Britanniens und einiger umliegender Gebiete. *Jahrbücher*, **65**: 441-582.
- Higgins, P.J. ed. (1999). Handbook of Australian, New Zealand and Antarctic birds, Vol. 4, Parrots to dollarbird. *Oxford University Press, Melbourne*.
- Higgins, P.J. & Davies, S.J.J.F. eds. (1996). Handbook of Australian, New Zealand and Antarctic birds, Vol. 3, Snipe to pigeons. *Oxford University Press, Melbourne*.
- Higgins, P.J, Peter, J.M. & Cowling, S.J eds. (2006a). Handbook of Australian, New Zealand and Antarctic birds. Vol. 7. Boatbill to starlings. Part A: Boatbill to larks. *Oxford University Press, South Melbourne*.
- Higgins, P.J, Peter, J.M. & Cowling, S.J eds. (2006b). Handbook of Australian, New Zealand and Antarctic birds. Vol. 7. Boatbill to starlings. Part B: Dunnock to starlings. *Oxford University Press, South Melbourne*.
- Hoskin, C.J. (2010). The invasion and potential impact of the Asian house gecko (*Hemidactylus frenatus*) in Australia. *Austral Ecology*, DOI: 10.1111/j.1442-9993.2010.02143.x.
- Henderson, R.J.F. (2002) (Ed.). Names and Distribution of Queensland Plants, Algae and Lichens. *Queensland Herbarium Environmental Protection Agency, Brisbane*.

- Hitchcock, G., McNiven, I.J. and the Pulu Indigenous Protected Area (IPA) Committee (2009). Pulu Indigenous Protected Area Plan of Management. *Melbourne: Arafura Consulting. June 2009.*
- Ingram, G.J. (2008). The terrestrial vertebrates of Mua. In B. David, L. Manas and M. Quinnell (eds), *Gelam's Homeland: Cultural and Natural History on the Island of Mua, Torres Strait*, pp. 619-628. *Memoirs of the Queensland Museum (Cultural Heritage Series) 4(2).*
- Ingram, G.J. (2008). The terrestrial vertebrates of Mua, western Torres Strait. *Memoirs of the Queensland Museum, Cultural Heritage Series, 4:* 619-628.
- International Union for the Conservation of Nature (2000). Global Invasive Species database, viewed on 21 May 2011, www.issg.org/database/species/ecology.asp?si=81&fr=1&sts=sss
- Kushlan, J.A. & Hancock, J. (2005). *Heron Conservation*. Oxford University Press, Oxford.
- Landsberg, J. and Clarkson, J. R. (2004). Threatened Plants of Cape York Peninsula. Queensland Parks and Wildlife Service, Environmental Protection Agency, Cairns.
- Lane, B. A. (1987). *Shorebirds in Australia*. Nelson Publishers, Melbourne.
- Lawrie, M. (1970). Myths and Legends of the Torres Strait. *University of Queensland Press, St Lucia Brisbane.*
- Low, T. (1995). *The animals of Brisbane: A vertebrate status review*. Unpublished report prepared for Brisbane City Council.
- Maddock, M. (2000). 'Heron Conservation in Australasia and Oceania,' in *Heron Conservation*, eds. J.A. Kushlan & H. Hafner, Academic Press, Sydney.
- Marchant, S. & Higgins, P.J. eds. (1990). Handbook of Australian, New Zealand and Antarctic birds, Vol. 1, Ratites to Ducks, Part B, Australian pelican to ducks. *Oxford University Press, Melbourne.*
- Marchant, S. & Higgins, P.J. eds. (1993). Handbook of Australian, New Zealand and Antarctic birds, Vol. 2, Raptors to lapwings. *Oxford University Press, Melbourne.*
- McDowell, S.B. 1972. The species of *Stegonotus* (Serpentes, Colubridae) in Papua New Guinea. *Zoologische Mededelingen, 47:* 6-26.
- McKilligan, N. (2005). Herons, egrets and bitterns: Their biology and conservation in Australia. *CSIRO Publishing, Collingwood.*
- McNiven, I.J. and Hitchcock, G. (2004). Torres Strait Islander marine subsistence specialisation and terrestrial animal translocation. *Memoirs of the Queensland Museum (Cultural Heritage Series) 3(1):* 105-162.
- McNiven, I.J. & D. Wright (2008). Ritualised marine midden formation in Western Zenadh Kes (Torres Strait). In G. Clark, F. Leach and S. O'Connor (eds), *Islands of Inquiry: Colonisation, Seafaring and the Archaeology of Maritime Landscapes*. *Terra Australis 29:* 133-147.
- Menkhorst, P.W. & Knight, F. (2004). A field guide to the mammals of Australia. *Oxford University Press, Melbourne.*
- NRM CANZ - Natural Resource Ministerial Council of Australia and New Zealand (2011). Weeds of National Significance WONS Lantana (*Lantana camara*) Strategic Plan. *Australian Weeds Committee, Launceston.*

- Natural Solutions 2008a. Torres Strait Sustainable Land Use Plan Habitat and Fauna Assessment – Erub (Darnley) Island. *Natural Solutions Environmental Consultants Pty Ltd. Report prepared for the Torres Strait Regional Authority.*
- Natural Solutions 2008b. Torres Strait Sustainable Land Use Plan Habitat and Fauna Assessment – Iama Island. *Natural Solutions Environmental Consultants Pty Ltd. Report prepared for the Torres Strait Regional Authority.*
- Neal, R.A. (1989). An Archaeological Inspection of Alternative Telecom Locations on Mabuig and Yam Islands, Torres Strait. *Unpublished report to Queensland Department of Community & Ethnic Affairs.* Pirripoint Pty Ltd, Helidon, Queensland.
- Neldner, V. J., Fensham, R. J. Clarkson, J. R. and Stanton, J. P. (1997). The natural grasslands of Cape York Peninsula, Australia. Description, distribution and conservation status. *Biological Conservation* 81: 121-136.
- Neldner, V.J. and Clarkson, J.R. (1995). Vegetation Survey Mapping of Cape York Peninsula. In: Cape York Peninsula Land Use Strategy. *Office of the Co-ordinator General and Department of Environment and Heritage, Government of Queensland, Brisbane.*
- Neldner, V. J., Wilson, B. A., Thompson, E. J. and Dilleward, H. A. (2005). Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland. *Version 3.1. Updated September 2005. Queensland Herbarium, Environmental Protection Agency, Brisbane.*
- NSW NPWS (2002). Threatened species of the upper north coast of New South Wales: *Fauna. NSW Parks and Wildlife Service, Coffs Harbour.*
- Olsen, P. (1998). Australia's raptors: diurnal birds of prey and owls. *Supplement to Wingspan*, 8: I-XVI.
- OZCAM (2011). BioMaps. Online *Zoological Collections of Australian Museums.* <http://www.biomaps.net.au/biomaps2/>. Searched 11-18/2/2011.
- Pavey, C.R. & Kutt, A.S. (2008). 'Large-eared Horseshoe Bat *Rhinolophus philippinensis*,' in *The mammals of Australia*, Third Edition. eds. S. Van Dyck & R. Strahan, Reed New Holland, Sydney.
- Pringle, J.D. (1985). The waterbirds of Australia: The National Photographic Index of Australian wildlife. Angus and Robertson, North Ryde.
- Pringle, J.D. (1987). The shorebirds of Australia: *The National Photographic Index of Australian wildlife.* Angus and Robertson, North Ryde.
- QPWS (2007). Distribution and abundance of the estuarine crocodile (*Crocodylus porosus* Schneider, 1801) in waterways of Queensland's populated east coast. *Report to Hon. Lindy Nelson-Carr MP Minister for the Environment and Multiculturalism. Queensland Parks and Wildlife Service.*
- Read, M.A., Miller, J.D., Bell, I.P. & Felton, A. (2004). The distribution and abundance of the estuarine crocodile, *Crocodylus porosus*, in Queensland. *Wildlife Research*, 31: 527-534.
- Reid, T. & Park, P. (2003). Continuing decline of eastern curlew, *Numenius madagascariensis*, in Tasmania. *Emu*, 103: 279-283.

- Richards, G.C. (2008). 'Coastal Sheath-tailed Bat *Taphozous australis*,' in *The mammals of Australia*, Third Edition. eds. S. Van Dyck, & R. Strahan, Reed New Holland, Sydney.
- Ross, E. M. & Halford, D. A. (2007). Aristolochiaceae. *Flora of Australia* 2: 244-258. Australian Government Publishing Service, Canberra.
- Rossiter N. A., Setterfield. S. A., Douglas, M.M. and Hutley, L. B. (2003). Testing the fire grass cycle: alien grass invasion in the tropical savannas of northern Australia. *Diversity and Distributions* 9, 169-176.
- Russell-Smith, J., Stanton, J. P., Edwards, A. C. and Whitehead, J. P. (2004). Rainforest invasion of Eucalypt-dominated woodland savanna, Iron Range, north-eastern Australia: II. Rates of landscape change. *Journal of Biogeography* 31: 1305-1316.
- Russell-Smith, J, Whitehead, J. P., Williams, R. J. and Flannigan, M. (eds) (2003). Fire and savanna landscapes in northern Australia: regional lessons and global challenges. *International Journal of Wildland Fire* 12 247-440.
- Russell-Smith, J, Whitehead, Cooke, P. (eds) (2009). Culture, Ecology and Economy of Fire Management in North Australian Savannas: Rekindling the Wurk Tradition. *Tropical Savannas CRC, CSIRO Publishing, Collingwood, Victoria*.
- Shnukal, A. (2004). "The post-contact created environment in the Torres Strait central islands." *Memoirs of the Queensland Museum, Cultural Heritage Series* 3(1): 317-346.
- Shine, R. 2010. The ecological impact of invasive cane toads (*Bufo marinus*) in Australia. *Quarterly Review of Biology*, **85**: 253-291.
- Singleton, G.R. 2008. 'House Mouse *Mus musculus*,' in *The mammals of Australia*, *Third Edition*. eds. S. Van Dyck & R. Strahan, Reed New Holland, Sydney.
- Smith, N.M. (2003). Weeds of the Wet/Dry tropics of Australia. *Environment Centre of the Northern Territory, Darwin*.
- Smith, P. & Smith, J. (2006). Plants and birds of Erub Island, Torres Strait. *Report for Erub Island Council*.
- Space J. C. and Flynn, T. (2002). Report to the Government of Samoa on Invasive Plant Species of Environmental Concern. U.S.D.A. Forest Service Pacific Southwest Research Station Institute of Pacific Islands Forestry Honolulu, Hawai'i, USA.
- Stanton, D. J, Fell, D. G., and Gooding, D. O. (2009). Vegetation Communities and Regional Ecosystems of the Torres Strait Islands, Queensland, Australia. *Unpublished report to the Torres Strait Regional Authority, land and Sea Management Unit*.
- Stock, D., K.M. Johnson, A. Clark and E. van Oosterhout.(2009). Lantana Best Practice Manual and Decision Support Tool. *The Department of Employment, Economic Development and Innovation Queensland*.
- Storr, G.M. (1973). List of Queensland birds. *Western Australian Museum Special Publication No. 5*.
- Taylor, I.R. & Bester, A. (1999). The response of foraging waders to human recreation disturbance at Rhyll, Phillip Island, Victoria. *Stilt*, **35**: 67.
- Tidemann, C.R., Yorkston, H.D. & Russack, A.J. (1994). The diet of cats, *Felis catus*, on Christmas Island, Indian Ocean. *Wildlife Research*, **21**: 279-285.

- Tucker, A.D., Limpus, C.J., McCallum, H.I. & McDonald, K.R. (1997). Movements and home ranges of *Crocodylus johnstoni* in the Lynd River, Queensland. *Wildlife Research*, **24**: 379-396.
- Tyler, M.J. (1972). 'An analysis of the lower vertebrate faunal relationships of Australia and New Guinea,' in: *Bridge and barrier: The natural and cultural history of Torres Strait*, ed. D. Walker, Australian National University, Canberra.
- Ueta, M., Antonov, A., Artukhin, Y. & Parilov, M. (2002). Migration routes of eastern curlews tracked from far east Russia. *Emu*, **102**: 345-348.
- Van Dyck, S. (1996). *Xeromys myoides* Thomas, (1889) (Rodentia: Muridae) in mangrove communities of North Stradbroke Island, southeast Queensland. *Memoirs of the Queensland Museum*, **42**: 337-366.
- Warham, J. (1962). Bird islands within the Barrier Reef and Torres Strait. *Emu*, **62**: 99-111.
- Watson, J.J. (2009). Terrestrial vertebrate fauna of the Pulu Indigenous Protected Area, *Torres Strait. Report to Arafura Consulting.*
- Watts, C.H.S. & Aplin, K.P. (2008). 'Brown Rat *Rattus norvegicus*,' in *The mammals of Australia, Third Edition*. eds. S. Van Dyck & R. Strahan, Reed New Holland, Sydney.
- Watson, J.J. & Hitchcock, G. in prep: The terrestrial vertebrate fauna of Mabuiag. *Memoirs of the Queensland Museum, Cultural Heritage Series.*
- Webb, G.J.W., Sack, G.C., Buckworth, R. & Manolis, S.C. (1983). An examination of *Crocodylus porosus* nests in two Northern Australian freshwater swamps, with an analysis of embryo mortality. *Australian Wildlife Research*, **10**: 571-605.
- Whittier, J.M. & Moeller, D.R. (1993). *Varanus prasinus* (the emerald goanna) on Moa Island, Torres Strait, Australia. *Memoirs of the Queensland Museum*, **34**: 130.
- Williams, K.J., Kress, W.J. and Manos, P.S. (2004). The phylogeny, evolution, and classification of the genus *Globba* and tribe Globbeae (Zingiberaceae): appendages do matter. *American Journal of Botany*. 2004;91:100-114.
- Wilson, S. (2005). A field guide to reptiles of Queensland. *Reed New Holland, Sydney.*
- Wilson, S. & Swan, G. (2010). A complete guide to reptiles of Australia. *Third Edition. New Holland Publishers, Sydney.*
- Wink, M., Sauer-Gürth, H. & Witt, H.-H. (2004). 'Phylogenetic differentiation of the osprey *Pandion haliaetus* inferred from nucleotide sequences of the mitochondrial cytochrome b gene.' in *Raptors Worldwide*, eds. R.D. Chancellor & B.-U. Meyberg, WWGBP/MME, Budapest.

11.0 Glossary

Alluvium/ Alluvial: Sediments deposited by the action of flowing water, generally derived from the action of rivers or from wash of hillslopes.

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. Cotton Tree *Bombax ceiba*).

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

Endemic: A plant or animal that has at least 75% of its known range within a bioregion or which has a total range of 100,000 square km or less (Commonwealth of Australia 1995).

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

Holocene: The current geological epoch, which began approximately 11 thousand years ago. Between five thousand years ago and the present 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.

Pyrophytic: In relation to vegetation, refers to a habitat which benefits or regenerates following a fire event.

Pyrophobic: In relation to vegetation, a vegetation type which is fire intolerant, or is killed or damaged by a fire event.

Quaternary: The period of time between present and 1.8 million years old, which is sub-divided into the Pleistocene and Holocene epochs.

Regional Ecosystem: The primary unit against which Queensland's *Vegetation Management Act* (1999) is regulated and as such, the classification 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.

Appendices

Appendix A. Expert Panel Attendees

Expert	Organisation	Expertise	Inputs
David Stanton	3D Environmental	Vegetation and landscape mapping and assessment.	<ul style="list-style-type: none"> Specialist knowledge of Torres Strait vegetation community distribution, condition and landscape (geology, geomorphology).
David Fell	3D Environmental	Flora survey, species identification, species distribution and significant flora.	<ul style="list-style-type: none"> Specialist knowledge of Torres Strait and Cape York flora and habitats.
David Gooding	3D Environmental	GIS analyst.	<ul style="list-style-type: none"> Development and management of Torres Strait GIS.
Peter Stanton	Private Consultant	Landscape scale ecological and fire management.	<ul style="list-style-type: none"> Specialist regional knowledge of Cape York ecology Practical implementation of ecological management practices i.e. fire, weeds, vegetation change
Dr Jeremy Russell-Smith	Consultant - North Australian Indigenous Land & Sea Management Alliance (NAILSMA)	Sustainable ecological and cultural resource management.	<ul style="list-style-type: none"> PNG and regional northern Australian context Advice on integrated fire and cultural resource management Emissions abatement in tropical savanna fire regimes.
Dr Garrick Hitchcock	Arafura Consulting	Environmental anthropology and cultural resource use and management Torres Strait and PNG.	<ul style="list-style-type: none"> Cultural landscape context Integration of cultural resource values Cultural use of fauna, flora and habitats.
Terry Reis	Biodiversity Assessment and Management	Fauna ecology.	<ul style="list-style-type: none"> Identification and review of fauna values Fauna survey methods Management of habitat for fauna values.
Other engaged parties			
Dr Paul Forster	EHP - Qld Herbarium	Taxonomy and distribution of Qld flora.	<ul style="list-style-type: none"> Threatened flora distribution Conservation and listing context.
Keith Macdonald	EHP Threatened Species Unit	Fauna and flora ecology and distribution.	<ul style="list-style-type: none"> Back on Track methodology. Threatened fauna and flora distribution Conservation and listing context.
Tony O'Keeffe Michael Bradby	TSRA LMSU	Land and Sea Program and Ranger Project.	<ul style="list-style-type: none"> Project background, management and liaison. Protocols and process.

Appendix B. Queensland Government 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 ⁷	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)	-

⁷ Growth form of the predominant layer (the ecologically dominant layer).

Appendix C. Preliminary List Of Useful Plants Of Mer island, Torres Strait, Qld.

Collated by D. Fell - May 2011

Language names and uses recorded on March 2011 direct from information supplied by Miriam Rangers and Qld Herbarium vouchered specimen collections notes of M. Lawrie.

Scientific name	Miriam Language Name	Common Name	Life Form	Broad Use	Part Used	Broad habitat	Information Source
<i>Abroma molle</i>	Kosker Irgeir	Abroma	Shrub	Not known	Not Known	Disturbed margins of vine forest and thickets	Lawrie M.
<i>Abrus precatorius</i> subsp. <i>precatorius</i>	Not known	Gidee Gidee	Vine	Material	Tea made by boiling the seeds is said to be poisonous. Women use the seeds for beads, but boil them beforehand.	Vine forest and thickets	Lawrie M.
<i>Acalypha wilkesiana</i> *	Meyaur?	Copper leaf Acalypha	Herb/shrub	Material	Leaves used in wrapping banana's	Gardens	Lawrie M.
<i>Adenanthera pavonina</i>	Not known	Red Bead tree	Tree	Material	Seeds used in bead-making.	Vine forest and thickets	Lawrie M.
<i>Agave vivipara</i> var. <i>vivipara</i> *	Not known	Sisal Hemp	Succulent shrub	Material	Leaves dried and processed for fibre used for decorative skirts.	Disturbed areas.	
<i>Alectryon repandodentatus</i>	Not known		Tree	Material	Wood used as garden digging implement	Vine forest and thickets	Haddon

<i>Alpinia caerulea</i>	Deiar	Native Ginger	Tuberous herb	Food	Young seeds are edible when covered with flesh.	Vine forest and thickets	Lawrie M.
<i>Alstonia spectabilis</i> <i>subsp. spectabilis</i>	Koror	Hard Milkwood	Tree	Material	The timber was once used for building houses etc.	Vine forest and thickets	Lawrie M.
<i>Amorphophallus paeoniifolius</i>	Badi	Elephant Yam	Tuberous herb	Food	Edible tuber (after treatment).	Vine forest and thickets	Lawrie M.
<i>Ampelocissus acetosa</i>	Not Known	Native Grape	Fruit	Food	Ripe fruit eaten	Grasslands, shrublands, vine thicket margins.	
<i>Anacardium occidentale*</i>	Not Known	Cashew	Tree	Food	Fruit eaten	Gardens	
<i>Anisomeles malabarica</i>	Two names recorded by Lawrie 'Nani Gemlaggemlag' and 'Karep'.	Chodhava	Herb	Unknown	Unknown (A medicinal herb in India)		Lawrie M.
<i>Antidesma parviflora</i>	Not known	Black Currant Bush	Shrub	Food	Small purplish black fruit eaten (stains hands and mouth).	Vine thicket margins, grasslands.	
<i>Argusia argentea</i>	Kimiar Neizab	Octopus Bush	Shrub	Unknown	Unknown	Shorelines	Lawrie M.
<i>Arytera pseudofoveolata</i>	ur sekerseker		Tree	Material	Timber used for firewood.	Vine forest and thickets	Lawrie M.

<i>Artocarpus altilis</i> *		Breadfruit	Tree	Food	Fruit eaten	Gardens	
<i>Asystasia australasica</i>	Kapkep		Herb	Unknown	Unknown	Vine forest and thickets	Lawrie M.
<i>Bambusa vulgaris</i> *	Not Known	Bamboo	Bamboo grass	Material	Stems used for construction and various purposes.	Former garden areas.	
<i>Barringtonia calyptata</i>	Naur	Corn beef wood	Tree	Spiritual/Cultural	Boundary marker		
<i>Blumea lacera</i>	Tabo Lukup	Blumea	Herb	Unknown	Unknown	Grasslands	Lawrie M.
<i>Bombax ceiba var. leiocarpum</i>	kob	Bombax	Tree	Spiritual/Cultural	Flower	Vine forest and thickets	Lawrie M.
<i>Breynia cernua</i>	Bok	Coffee bush	Shrub	Unknown	Unknown	Vine forest and thickets	Lawrie M.
<i>Buchanania arborescens</i>	Not known	Little Gooseberry tree	Tree	Food	Small black fruits eaten as a snack when ripe.	Vine forest and thickets	
<i>Caesalpinia bonduc</i>	Zegerzeger	Nicker Nut	Shrub	Unknown	Unknown	Shorelines	Lawrie M.

<i>Callicarpa candicans</i>	Zib	Great woolly Malayan Lilac	Shrub	Unknown	Unknown	Vine forest and thickets	Lawrie M.
<i>Calocasia sp.*</i>	Taro	Taro	Tuberous herb	Food	Tuber eaten after preparation.	Gardens	
<i>Canna indica*</i>	Ses Kaba	Indian Shot	Herb	Unknown	Unknown	Gardens	Lawrie M.
<i>Carica papaya*</i>	Paw Paw	Paw Paw, Papaya	Fruit	Food	Fruit eaten	Gardens and disturbed vine forest.	
<i>Cassytha filiformis</i>	Not known	Dodder Laurel or Devils Twine	Vine	Food	Fruit eaten	Grasslands	
<i>Casuarina equisetifolia subsp. incana</i>	Gebar	Horsetail Oak	Tree	Unknown	Unknown	Shorelines	Lawrie M.
<i>Catharanthus roseus*</i>	Bingka	Madagascar Periwinkle	Herb	Medicinal	Restricted information	Shorelines, gardens.	Lawrie M.
<i>Celosia argentea*</i>	Magab	Plumed Cockscomb	Herb	Spiritual	This is the name given to a rooster's comb. Plant is placed on top of a basket of sweet potatoes to prevent them falling from basket.		Lawrie M.
<i>Cerbera manghas</i>	Kai	Beach Milkwood	Tree	Unknown	Seeds very toxic.	Vine forest and thickets	Lawrie M.

<i>Chamaecrista absus var. absus</i>	Utut Lu		Herb	Unknown	Unknown	Vine forest and thickets	Lawrie M.
<i>Chamaesyce atoto</i>	Susus Lu		Herb	Unknown	Unknown	Vine forest and thickets	Lawrie M.
<i>Chrysophyllum roxburghii</i>	Not known	Star Apple	Tree	Food	Fruit edible	Vine forest	
<i>Claoxylon hillii</i>	Zeiwet	Claoxylon	Shrub	Unknown	Unknown	Vine forest and thickets	Lawrie M.
<i>Clerodendrum costatum</i>	Zib	Witches Tongue	Shrub	Unknown	Unknown	Vine forest and thickets	Lawrie M.
<i>Clerodendrum inerme</i>	Kuirkuir'or Kuir Kuir	Scrambling Clerodendrum	Shrub	Unknown	Unknown	Shorelines	Lawrie M.
<i>Codiaeum variegatum var. moluccanum</i>	Mammam Wez.	Croton	Shrub	Unknown	Unknown	Vine forest and thickets	Lawrie M.
<i>Codiaeum Variegatum var. variegatum*</i>	Zarzar Wez and Umen Wez.	Croton	Shrub	Unknown	Unknown	Gardens	Lawrie M.
<i>Colubrina asiatica</i>	Suli	Colubrina	Shrub	Material	Roots and leave used in lieu of soap.	Shorelines	Lawrie M.

<i>Corchorus aestuans</i>	Titi		Shrub	Unknown	Unknown	Vine forest and thickets	Lawrie M.
<i>Cordia dichotoma</i>	Warupwarup or Warup Warup	Cordia or Glue Berry tree	Tree	Material	The juice of the berry is used as adhesive to glue skins to drums and for general purposes. Ripe berry is pink (flesh-coloured).	Vine forests and thickets.	Lawrie M.
<i>Cordia subcordata</i>	Mukes	Sea Trumpet	Tree	Material	Timber used for carving and other purposes.	Shorelines	Lawrie M.
<i>Curcuma australasica</i>	Teger	Cape York lily	Tuberous herb	Unknown	Unknown	Vine forest and thickets, grasslands.	Lawrie M.
<i>Cyanthillium cinereum</i>	3 names recorded by Lawrie Tirtir Nani Gemlag gemlag Tabo Lukup'.	Veronia	Herb	Unknown	Unknown	Grasslands	Lawrie M.
<i>Cyperus stoloniferus</i>	Eiu		Sedge	Material, Spiritual	Grass used for skirts. The nuts chewed and spat on to chest and back of turtles to make them grow fast.	Disturbed areas, shorelines	Lawrie M.
<i>Delonix regia</i> *	Christmas Tree	Poinciana	Tree	Material	Flowers used for decorations.	Gardens and disturbed areas.	
<i>Dicliptera glabra</i>	'Mam Sep Lukup' or 'Mam Li Lukup'.	Dicliptera	Herb	Medicinal	Restricted	Disturbed areas, grasslands	Lawrie M.
<i>Dioscorea esculenta</i> *	Not Known	Yam	Vine	Food	Tuber used for food.	Vine forest and thicket margins, shrublands.	

<i>Dioscorea transversa</i>	Not Known	Yam	Vine	Food	Tuber used for food.	Vine forest and thicket margins, shrublands.	
<i>Diospyros sp.</i>	Kub		Tree	Poisonous?	Orange coloured fruit, inedible, round, about 1.5 inches diam. Causes sores inside one.	Vine forest and thickets	Lawrie M.
<i>Emilia sonchifolia var. sonchifolia*</i>	Unknown	Sow Thistle	Herb	Medicinal	Milk squeezed from leaf of plant on to snake bite. There are no venomous snakes at Murray Island.	Disturbed areas, grasslands.	Lawrie M.
<i>Entada rheedii</i>	Sireb Lager (vine) Kobar (seed)	Matchbox Bean	Vine	Material	Used for tying palm leaves in building houses. The seed Kolar is used for rattles. Medicinal uses known from other regions. Seed used for food after treatment in other regions.	Vine forest and thickets	Lawrie M.
<i>Epipremnum pinnatum</i>	Puar Amisiramisir	Native Monstera	Hemi-epiphyte	Material	Used for making dance skirts (zazi). Medicinal uses known from other tropical regions.	Vine forest and thickets	Lawrie M.
<i>Erythrina variegata</i>	Unknown	Coral Tree	Tree	Material	Seeds used for decorative purposes on other islands.	Vine forest and thickets, Shorelines	Lawrie M.
<i>Eugenia reinwardtiana</i>	Not Known	Cedar Bay Cherry	Shrub	Food	Fruit eaten	Coastal shrublands, vine thickets.	
<i>Excoecaria agallocha</i>	Sirisap	Milky Mangrove	Shrub/tree	Poisonous	Milky sap and scraped bark to be poisonous.	Shorelines	Lawrie M.
<i>Fabaceae possibly Derris sp.</i>	Kabes		Vine	Unknown	Sweet-smelling white flowers.	Vine forest and thickets	Lawrie M.

<i>Fatoua villosa</i>	arzerarzer	Hairy Crabweed	Herb	Material	Scented root.	TBD	Lawrie M.
<i>Ficus fraseri</i>	Zewet	Sandpaper Fig	Tree	Unknown	Unknown	Vine forest and thickets	Lawrie M.
<i>Ficus opposita</i>	Zeiwet	Sandpaper Fig	Shrub	Material Food	Known use as sandpaper for implements and fruit as food in other regions and islands.	Grasslands and shrublands	Lawrie M.
<i>Flacourtia jangomas*</i>	Nikrin Kikrin	Indian Plum	Shrub	Food	Fruit eaten raw and used for jams etc in other regions.	Unknown	Lawrie M.
<i>Flagellaria indica</i>	Boz	Whip vine	Vine	Material	Used as rope and for tying in building by natives	Vine forest and thickets	Lawrie M.
<i>Flueggea virosa</i> <i>subsp. melanthesoide</i>	Weidweid	White Current Bush	Shrub	Food	Small white fruit are eaten on other islands and regions.	Grasslands and shrublands	Lawrie M.
<i>Globba marantina</i>	Unknown	Dancing Girl Ginger	Tuberous herb	Unknown	Unknown	Vine forest and thickets margins	Lawrie M.
<i>Graptophyllum pictum*</i>	Bebes	Jamaican Croton	Shrub	Unknown	Unknown	Garden areas	Lawrie M.
<i>Guettarda speciosa</i>	Unknown	Sea Randa or Zebra Wood	Tree	Material	Seed used for Boda Atag (island marbles).	Shorelines	Lawrie M.

<i>Gyrocarpus americanus subsp. americanus</i>	Kaper	Helicopter tree	Tree	Seasonal indicator.	When this tree is in flower, a good time for fishing. At the time fish swim in to feed on sardines.	Vine forest and thickets	Lawrie M.
<i>Hibiscus tiliaceus</i>	zem	Cottonwood Hibiscus	Tree	Material	Bark fibre	Shorelines	
<i>Indigofera colutea</i>	Tirtir		Low shrub	Unknown	Unknown	Shorelines, disturbed areas,	Lawrie M.
<i>Ipomoea eriocarpa</i>	Lukaz		Vine	Unknown	Unknown	Disturbed areas, grasslands	Lawrie M.
<i>Ipomoea nil*</i>	Sogi kordarkordar		Vine	Unknown	Unknown	Vine forest and thickets margins, disturbed areas.	Lawrie M.
<i>Ipomoea pes-caprae subsp. brasiliensis</i>	Wakor	Goats foot Convolvulus	Vine	Medicinal	Used for sores and tired jaws.	Shorelines	Lawrie M.
<i>Kaempferia sp. (Murray Island M.Lawrie 5)</i>	Kusibager	A ginger	Herb with rhizome	Unknown	Scented root.	Unknown	Lawrie M.
<i>Lagenaria siceraria*</i>	Kabor	Kalabash Gourd	Vine	Food Material?	Large pale green edible gourd.	Gardens	Lawrie M.
<i>Leea indica</i>	Kimiar Margibur	Bandicoot Berry	Shrub	Not Known	Not Known	Vine forest and thickets.	Lawrie M.

<i>Lepidopetalum fructoglabrum</i>	Udlagerlager and arep arep.	Earing tree	Tree	Material	Red seeds used as earrings.	Vine forest and thickets.	Lawrie M.
<i>Macaranga tanarius</i>	Ap	Macaranga	Tree/shrub	Material	Leaves used for Kup muaris on other islands. Glue extracted from broken branches on other islands.	Vine forest thickets and margins.	Lawrie M.
<i>Mangifera indica</i> *	Wai wi	Mango	Tree	Food	Fruit eaten	Gardens	
<i>Manihot esculenta</i> *	Not Known	Cassava	Tuberous herb/shrub	Food	Tuber used for food.	Gardens	
<i>Manilkara kauki</i>	Not Known	Wongai	Tree	Food Material	Edible fruit Timber for construction and carving	Shorelines Vine forests and thickets	
<i>Micromelum minutum</i>	Kimiar Margibur	Lime Berry	Tree/shrub	Unknown	Unknown	Vine forest and thickets	Lawrie M.
<i>Morinda citrifolia</i>	Ubar	Noni Bush	Shrub	Medicinal Material	Fleshy seeds formerly used as remedy for colds. Root boiled and used for yellow dye.	Coastal sites, gardens, vine forest thickets and forests.	Lawrie M.
<i>Mucuna gigantea</i>	Parad	Burny Bean	Vine	Material	Stem used as a skipping rope.	Vine forests and thickets	Lawrie M.
<i>Musa sp.</i> *	Not Known	Banana	Tree	Food Material	Fruit eaten Leaves used for food preparation	Gardens	

<i>Neololeba atra</i>	Not Known	Cape Bamboo	Bamboo	Material	Unknown	Vine forest and thickets	Lawrie M.
<i>Ocimum basilicum</i> *	'Pas'. 'Lewer Pas', 'Merauke Pas'.Cape York Pas.	Basil	Herb	Material Food	Used to perfume coconut oil. A few leaves used to season food.	Disturbed areas, gardens	Lawrie M.
<i>Ocimum tenuiflorum</i>	Tibei Pas	Basil	Herb	Material	Added to boiling coconut oil as a perfume.	Disturbed areas, grasslands.	Lawrie M.
<i>Operculina turpethum</i>	Kordorkordar		Vine	Unknown	Unknown	Unknown	Lawrie M.
<i>Pandanus spiralis</i>	Not known	Corkscrew Palm	Palm	Food, material	Kernel of individual fruit segments hammered out when dry and eaten. Leaves used for making baskets, mats etc.	Shorelines, shrublands	
<i>Passiflora foetida</i> *	Not Known	Wild Passionfruit	Vine	Food	Fruit eaten	Disturbed areas, grasslands.	
<i>Pemphis acidula</i>	Not Known	Pemphis	Shrub	Material	Timber used for firewood.	Shorelines.	
<i>Phaleria octandra</i>	Dum	Phaleria	Shrub	Unknown	Unknown	Vine forest and thickets	Lawrie M.
<i>Phyllanthus novae-hollandiae</i>	ari ari.	Phyllanthus	Shrub	Unknown	Unknown	Vine forest and thickets	Lawrie M.

<i>Physalis angulata</i> *	Not Known	Cape Gooseberry	Herb	Food	Edible fruit.	Disturbed areas, gardens.	Lawrie M.
<i>Pipturus argenteus</i>	Not Known	White Mulberry	Shrub	Unknown	Medicinal used from other regions.	Vine forest and thicket margins.	Lawrie M.
<i>Pleomele angustifolia</i>	Peiwer	Native Dracaena	Shrub	Unknown	Unknown	Vine forest and thickets	Lawrie M.
<i>Polyscias macgillivrayi</i>	Kosker Margibur		Shrub	Unknown	Unknown	Vine forest and thickets	Lawrie M.
<i>Polyscias scutellaria</i>	Ser		Shrub	Unknown	Unknown	Vine forest and thickets	Lawrie M.
<i>Premna serratifolia</i>	Gebi Kozo.	Coastal premna	Shrub	Unknown	Scented wood	Shorelines	Lawrie M.
<i>Pterocaulon sphacelatum</i>	Gabor		Herb	Spiritual/Cultural	Plant rubbed on body before working in the garden to keep body odour away from the plants. Some people throw branches around their yam gardens so that when the dew falls on them at night they will perfume the air and make it favourable to the growth of yams.	Grasslands	Lawrie M.
<i>Pueraria montana lobata</i> * var.	Weskepu	Kudzu	Vine	Food	Edible root.	Disturbed areas	Lawrie M.

<i>Rhodomyrtus macrocarpa</i>	Not Known	Finger Cherry	Shrub	Food	Fruit edible	Vine forest and thickets.	
<i>Rhynchosia acuminatissima</i>	Mirmar		Vine	Unknown	Unknown	Grasslands	Lawrie M.
<i>Rhynchosia minima</i> var. <i>australis</i>	'Tirtir' 'Lukaz		Vine	Unknown	Unknown	Grasslands	Lawrie M.
<i>Ricinus communis</i> *	gum	Castor Oil bush	Shrub	Unknown	Unknown	Disturbed areas	Lawrie M.
<i>Sansevieria trifasciata</i> var. <i>trifasciata</i> *	Kosker	Mother in law tongue	Herb	Unknown	Unknown	Gardens	Lawrie M.
<i>Scaevola taccada</i>	'Kosker Neizab'.	Sea Lettuce	Shrub	Unknown	Unknown	Shorelines	Lawrie M.
<i>Semecarpus australiensis</i>	Not Known	Tar Tree or Marking Nut Tree	Tree	Food	Part of fruit is eaten. Part of fruit together with leaves and sap are highly toxic causing inflammation.	Vine forest & disturbed areas.	
<i>Senna alata</i> *	Not Known	Candle bush or six o'clock	Shrub	Medicinal	The leaves are crushed and rubbed on the skin to cure tinea	.Disturbed areas and gardens.	Lawrie M.
<i>Sesuvium portulacastrum</i>	Not Known	Unknown	Herb	Material	Used for kup muari and to fatten pigs on other islands.	Shorelines	Lawrie M.

<i>Syzygium aqueum</i>	ero	Bell Fruit	Tree	Food	Edible fruit.	Gardens.	
<i>Syzygium branderhorstii</i>	Sorbi	Torres Strait Satin ash	Tree	Food	Edible fruit. Flowers grow out of limbs of tree.	Vine forests and thickets, gardens.	Lawrie M.
<i>Syzygium bungadinnia</i>	Mig	Paperbark Satinash	Tree	Food	White flowers. Fruit edible, white and round	Vine forests and thickets.	Lawrie M.
<i>Syzygium puberulum</i>	Kud	White Satinash	Tree	Food	Fruit creamy-pink, edible.	Vine forests and thickets.	Lawrie M.
<i>Syzygium suborbiculare</i>	Not Known	Lady Apple	Tree	Food	Fruit edible	Vine forests and thickets.	
<i>Tabernaemontana orientalis</i>	Not Known	Banana Bush	Shrub	Material	Forks of small branches favoured for shanghai (slingshot) construction.	Vine forest and thickets.	
<i>Tacca leontopetaloides</i>	Not Known	Arrowroot	Tuberous herb	Food	Tuber edible with preparation.	Vine forest and thickets, grasslands, shrublands.	
<i>Tephrosia maculata</i>	Sad		Shrub	Material	Leaves are mashed, mixed with sand, and thrown in water to kill fish. Said to have been brought to Mer Island from Darnley Island.		Lawrie M.
<i>Terminalia muelleri</i>	Meit		Tree	Medicinal	Juice from crushed leaf formerly used as ear-drops to relieve earache.		Lawrie M.

<i>Terminalia subacroptera</i>	Mipa		Tree	Food	Fruit edible	Vine thickets	
<i>Thespesia populneoides</i>	Zomae Ur buzi (branch)	Thespesia	Tree	Material	Round fruit used for toys. Bark with strong fibre.	Shorelines	
<i>Tridax procumbens*</i>	Not Known	Tridax Daisy	Herb	Medicinal	Decoction of leaves used for treating cuts and sores.	Disturbed sites.	
<i>Trophis scandens subsp. scandens</i>	Not Known	Burny Vine	Vine	Material	Vine used as tying rope in other islands and regions.		Lawrie M.
<i>Uvaria rufa</i>	Beri Beri		Vine/shrub	Food Material	Edible fruit, red like a plum. Scented root is mixed with coconut oil for use on hair.		Lawrie M.
<i>Vigna radiata var. sublobata</i>	Not Known		Vine	Unknown	Vine used as rope in other regions.	Shorelines	Lawrie M.
<i>Welchiodendron longivalve</i>	Badu	Yellow box penda	Tree	Unknown	Unknown	Unknown	Lawrie M.
<i>Wrightia pubescens subsp. penicillata</i>	Kareb		Shrub	Unknown	Unknown	Vine forest and thickets	Lawrie M.
<i>Xenostegia tridentata</i>	Tirtir		Herb	Unknown	Unknown	Grasslands	Lawrie M.

<i>Ximenea americana</i>	Potidan	Yellow plum	Shrub	Edible	Edible fruit yellow when ripe.	Shorelines	Lawrie M.
<i>Xylocarpus rumphii</i>	Kim	Puzzle tree	Tree	Material	Fruit used in games. Good timber.	Shorelines	Lawrie M.
<i>Zingiber officinale</i> *	Kera Kera	Common Ginger	Tuberous herb	Unknown	Unknown	Gardens	Lawrie M.
<i>Zingiber zerumbet</i> *	Madub Deiar	Ginger	Tuberous herb	Material	Showy bright red/pink flower similar to that of a ginger plant. Root said to be toxic.	Gardens, vine forests and thickets.	Lawrie M.

Appendix D. Preliminary Flora Species List – Mer Island, Torres Strait, Queensland.

D.G. Fell & D.J. Stanton 3D Environmental_27 April 2011 Version 3

Nomenclature follows Bostock & Holland (2010) 'Census of the Queensland Flora'.

* Denotes naturalised or doubtfully naturalised taxa according to Bostock & Holland (2010).

Unnamed taxa are followed by a collection number (i.e. DGF10153) pending formal identification at Qld Herbarium.

BROAD VEGETATION GROUPS (BVG) (from Stanton, Fell & Gooding 2009)

- 2 Deciduous/Semi-deciduous vine forest and thicket
- 5 Eucalyptus and Corymbia dominant open forests and woodlands
- 15 Coastal headland forest complexes
- 17 Grasslands and grassland complexes
- 21 Successional vine forest communities
- 22 Anthropogenically altered (secondary) vine forest and thicket
- C/B Cleared and heavily disturbed regrowth/Bamboo groves

SUMMARY

299 species (7 ferns, 1 cycad, 291
angiosperms)
215 native (72%)
84 naturalised (28%)
82 families
217 genera
168 native genera

Major families (native)

Fabaceae (25 species)
Poaceae (21)
Euphorbiaceae (10)
Moraceae (10)
Lamiaceae (9)
Apocynaceae (7)
Asteraceae (6)
Phyllanthaceae (5)

PRELIMINARY FLORA SPECIES LIST – MER ISLAND, TORRES STRAIT, QUEENSLAND⁸

Family	Species	BVG						
		2	15	17	21	22	CI/B	Total
Pteridiophytes (Ferns and Fern Allies)								
Adiantaceae	<i>Adiantum atroviride</i>		1					1
	<i>Adiantum philippense</i>	1						1
	<i>Cheilanthes nudiuscula</i>		1					1
Polypodiaceae	<i>Drynaria quercifolia</i>					1		1
	<i>Microsorium grossum</i>	1						1
Selaginellaceae	<i>Selaginella ciliaris</i>		1					1
	<i>Selaginella longiciliata</i>		1					1
Cycads								
Cycadaceae	<i>Cycas scratchleyana</i>						1	1
Angiosperms (Flowering plants)								
Acanthaceae	<i>Asystasia australasica</i>				1			1
	<i>Dicliptera glabra</i>	1						1
	<i>Graptophyllum pictum</i>					1		1
	<i>Hypoestes floribunda</i>	4				1		5
	<i>Pseuderanthemum variabile</i>		1					1
Aizoaceae	<i>Sesuvium portulacastrum</i>		1					1
Amaranthaceae	<i>Achyranthes aspera</i>			1				1
	<i>Alternanthera pungens*</i>						1	1
	<i>Amaranthus viridis*</i>						1	1
	<i>Celosia argentea*</i>						1	1
Amaryllidaceae	<i>Proiphys amboinensis</i>		1					1

⁸ Species list valid up to May 2011.

Family	Species	BVG						
		2	15	17	21	22	CI/B	Total
Anacardiaceae	<i>Mangifera indica</i> *	3			2	3		8
	<i>Semecarpus australiensis</i>	8	1		2	1		12
Annonaceae	<i>Annona muricata</i> *						1	1
	<i>Uvaria rufa</i>	2			1			3
Apocynaceae	<i>Alstonia spectabilis</i> subsp. <i>spectabilis</i>	5	1		3	1		10
	<i>Apocynaceae</i> vine (DGF8802+)		1					1
	<i>Apocynaceae</i> vine (DGF8971+)	1	1		1	1		4
	<i>Catharanthus roseus</i> *						1	1
	<i>Cerbera manghas</i>	1	1		2	3		7
	<i>Marsdenia velutina</i>	1						1
	<i>Parsonsia velutina</i>	1						1
	<i>Wrightia pubescens</i> subsp. <i>penicillata</i>	6			1			7
Araceae	<i>Alocasia macrorrhizos</i>					1		1
	<i>Amorphophallus paeoniifolius</i>	3			1			4
	<i>Epipremum pinnatum</i>	1				3		4
Araliaceae	<i>Polyscias macgillvraei</i>	2	2		1	1		6
	<i>Polyscias scutellaria</i>					1		1
	<i>Schefflera actinophylla</i>				1			1
Arecaceae	<i>Cocos nucifera</i> *	3	1		1	4		9
	<i>Ptychosperma macarthurii</i>	1	2					3
Aristolochiaceae	<i>Aristolochia acuminata</i>			1	1			2
Asteraceae	<i>Acanthospermum hispidum</i> *						1	1
	<i>Acmella grandiflora</i> var. <i>brachyglossa</i>			1				1
	<i>Ageratum conyzoides</i> subsp. <i>conyzoides</i> *						1	1
	<i>Blumea lacera</i>			1				1
	<i>Cyanthillium cinereum</i>			2				2

Family	Species	BVG						
		2	15	17	21	22	CI/B	Total
	<i>Emilia sonchifolia</i> var. <i>sonchifolia</i> *			1				1
	<i>Praxelis clematidea</i> *						1	1
	<i>Pterocaulon sphacelatum</i>			1				1
	<i>Synedrella nodiflora</i> *						1	1
	<i>Wedelia</i> sp. (DGF8813+)			1				1
	<i>Wollastonia biflora</i>			1				1
Avicenniaceae	<i>Avicennia marina</i> subsp. <i>eucalyptifolia</i>		1					1
Bignoniaceae	<i>Tecoma stans</i> var. <i>stans</i> *			1				1
Bixaceae	<i>Cochlospermum gillivraei</i>	1						1
Bombacaceae	<i>Bombax ceiba</i> var. <i>leiocarpa</i>	20	4		3	1		28
Boraginaceae	<i>Argusia argentea</i>		2					2
	<i>Cordia dichotoma</i>	1		2	1			4
	<i>Cordia myxa</i> *					1		1
	<i>Cordia subcordata</i>		1					1
Burseraceae	<i>Garuga floribunda</i> var. <i>floribunda</i>	2						2
Byttneriaceae	<i>Abroma molle</i>	1						1
Caesalpiniaceae	<i>Bauhinia monandra</i> *					1		1
	<i>Caesalpinia bonduc</i>		3					3
	<i>Chamaecrista absus</i> var. <i>absus</i>			1				1
	<i>Chamaecrista rotundifolia</i> var. <i>rotundifolia</i> *			1				1
	<i>Delonix regia</i> *	8			1	1	1	11
	<i>Senna alata</i> *	1					2	3
	<i>Senna occidentalis</i> *						1	1
Cannaceae	<i>Canna indica</i> *					1		1
Capparaceae	<i>Capparis lucida</i>				2			2
	<i>Capparis quiniflora</i>	3			1			4

Family	Species	BVG						
		2	15	17	21	22	CI/B	Total
	<i>Capparis sepiaria</i>	6	2		2	1		11
	<i>Capparis sp. (DGF8802+)</i>	2	1			2		5
Caricaceae	<i>Carica papaya*</i>	2				1		3
Casuarinaceae	<i>Casuarina equisetifolia subsp. incana</i>		1					1
Chenopodiaceae	<i>Salsola kali</i>			1				1
Cleomaceae	<i>Cleome viscosa</i>						1	1
Clusiaceae	<i>Calophyllum inophyllum</i>		1					1
Colchicaceae	<i>Gloriosa superba*</i>						1	1
Combretaceae	<i>Terminalia arenicola</i>					1		1
	<i>Terminalia catappa</i>						1	1
	<i>Terminalia muelleri</i>	1			1			2
Commelinaceae	<i>Commelina benghalensis*</i>			1				1
	<i>Commelina diffusa</i>			1				1
	<i>Commelina ensifolia</i>			1				1
Convolvulaceae	<i>Ipomoea eriocarpa</i>					1		1
	<i>Ipomoea hederifolia*</i>					1		1
	<i>Ipomoea nil*</i>					1		1
	<i>Ipomoea pes-capre subsp. brasiliensis</i>		1	1				2
	<i>Ipomoea quamoclit*</i>						1	1
	<i>Merremia dissecta*</i>				1			1
	<i>Merremia sp. (DGF8794+)</i>	1						1
	<i>Operculina turpethum</i>		1					1
	<i>Xenostegia tridentata</i>			1				1
Cucurbitaceae	<i>Lagenaria siceraria *</i>						1	1
	<i>Muellerargia timorensis</i>		1					1
Cyperaceae	<i>Cyperus compressus*</i>			1				1

Family	Species	BVG						
		2	15	17	21	22	CI/B	Total
	<i>Cyperus javanicus</i>			1				1
	<i>Cyperus stoloniferus</i>			1				1
Dioscoreaceae	<i>Dioscorea esculenta*</i>	2	2		1			5
	<i>Dioscorea sp. (DGF8820+)</i>	1						1
	<i>Dioscorea transversa</i>		1					1
Dracaenaceae	<i>Pleomele angustifolia</i>	10	2		2	2		16
	<i>Sansevieria trifasciata var. trifasciata*</i>						1	1
Ebenaceae	<i>Diospyros compacta</i>				1			1
	<i>Diospyros hebecarpa</i>	16	2		2			20
Euphorbiaceae	<i>Acalypha wilkesiana*</i>						1	1
	<i>Antidesma bunius</i>				1			1
	<i>Chamaesyce atoto</i>			1				1
	<i>Claoxylon hillii</i>	1				1		2
	<i>Cleistanthus xerophilus</i>	1						1
	<i>Codiaeum variegatum var. moluccanum</i>					1		1
	<i>Codiaeum variegatum var. variegatum*</i>					1		1
	<i>Euphorbia cyathophora*</i>					1		1
	<i>Euphorbia plumerioides</i>		1					1
	<i>Excoecaria agallocha</i>		1					1
	<i>Macaranga tanarius</i>	3	2		3			8
	<i>Mallotus philippensis</i>	1		1	1	1		4
	<i>Manihot esculenta*</i>		1					1
	<i>Ricinus communis*</i>						1	1
	<i>Tragia finalis</i>				1			1
Fabaceae	<i>Abrus precatorius subsp. precatorius</i>	3						3
	<i>Canavalia papuana</i>		1					1

Family	Species	BVG						
		2	15	17	21	22	CI/B	Total
	<i>Canavalia rosea</i>		1					1
	<i>Cathormion umbellatum subsp. moniliforme</i>				1			1
	<i>Clitoria ternatea*</i>						1	1
	<i>Crotalaria pallida var. obovata*</i>						1	1
	<i>Crotalaria retusa var. retusa*</i>						1	1
	<i>Crotalaria sp. (Torres Strait J.R.Clarkson 2044)</i>			1				1
	<i>Dendrolobium umbellatum (DGF8805+)</i>	2	1			1		4
	<i>Derris rubrocalyx subsp. rubrocalyx</i>	2						2
	<i>Derris sp. (Claudie River L.J.Webb+ 8348)</i>	1						1
	<i>Derris sp. (DGF8806+)</i>	3						3
	<i>Derris trifoliata</i>		2					2
	<i>Desmodium sp. (DGF8812+)</i>			1				1
	<i>Desmodium tortuosum*</i>						1	1
	<i>Entada rheedii</i>	2			2			4
	<i>Erythrina variegata</i>	1	1					2
	<i>Galactia muelleri</i>			1				1
	<i>Galactia sp. (Andoom A.Morton 1149)</i>			1				1
	<i>Galactia tenuiflora</i>			1				1
	<i>Indigofera colutea</i>		1					1
	<i>Indigofera polygaloides</i>		1					1
	<i>Inocarpus fagifer* (DGF8821+)</i>	1						1
	<i>Millettia pinnata</i>	2	2			1		5
	<i>Mucuna gigantea</i>	2		1	1	1		5
	<i>Ormocarpum orientale</i>					1		1
	<i>Pueraria montana var. lobata*</i>	1		1	1			3

Family	Species	BVG						
		2	15	17	21	22	CI/B	Total
	<i>Rhynchosia acuminatissima</i>			1				1
	<i>Rhynchosia minima</i> var. <i>australis</i>			1				1
	<i>Tephrosia maculata</i>			1				1
	<i>Teramnus labialis</i> *				1			1
	<i>Vigna radiata</i> var. <i>sublobata</i>			1				1
Flacourtiaceae	<i>Flacourtia jangomas</i> *					1		1
	<i>Flacourtia</i> sp. (<i>Shiptons Flat L.W.Jessup+ GJD3200</i>)					1		1
Flagellariaceae	<i>Flagellaria indica</i>	8	1		1	1		11
Goodeniaceae	<i>Scaevola taccada</i>		1					1
Hernandiaceae	<i>Gyrocarpus americanus</i> subsp. <i>americanus</i>	8	2					10
Lamiaceae	<i>Anisomeles malabarica</i>			3				3
	<i>Callicarpa candicans</i>				2			2
	<i>Clerodendrum costatum</i>	2	2	1				5
	<i>Clerodendrum floribundum</i>	1						1
	<i>Clerodendrum floribundum</i> var. <i>attenuatum</i>	1						1
	<i>Clerodendrum inerme</i>		1					1
	<i>Ocimum basilicum</i> *						1	1
	<i>Ocimum tenuiflorum</i>			1				1
	<i>Premna dallachyana</i>			1	3			4
	<i>Premna serratifolia</i>	1	1	1	1			4
	<i>Salvia misella</i> *						1	1
Lauraceae	<i>Litsea glutinosa</i>	6	2		2	1		11
Lecythidaceae	<i>Barringtonia asiatica</i>		1					1
	<i>Barringtonia calyprata</i>	2	1	2	4			9
Leeaceae	<i>Leea indica</i>	3	2			2		7
Malpighiaceae	<i>Ryssopterys timorensis</i>				1			1

Family	Species	BVG						
		2	15	17	21	22	CI/B	Total
Malvaceae	<i>Abutilon albescens</i>		1					1
	<i>Hibiscus rosasinensis*</i>						1	1
	<i>Hibiscus schizopetalus*</i>						1	1
	<i>Hibiscus tiliaceus</i>	2	3		2	2		9
	<i>Hibiscus vitifolius</i>		1					1
	<i>Malvastrum coromandelianum subsp. coromandelianum*</i>		1					1
	<i>Sida acuta*</i>						1	1
	<i>Sida rhombifolia*</i>						1	1
	<i>Thespesia populnea</i>		1					1
	<i>Thespesia populneoides</i>	3	4					7
	<i>Urena lobata*</i>						1	1
Meliaceae	<i>Xylocarpus rumphii</i>		2					2
Mimosaceae	<i>Acacia auriculiformis</i>				1			1
	<i>Adenanthera pavonina</i>	5	1					6
	<i>Leucaena leucocephala*</i>	1						1
Molluginaceae	<i>Mollugo pentaphylla*</i>			1				1
Moraceae	<i>Antiaris toxicaria var. macrophylla</i>	1						1
	<i>Artocarpus atilis*</i>						1	1
	<i>Fatoua villosa (Near-threatened)</i>				1			1
	<i>Ficus fraseri</i>					1		1
	<i>Ficus microcarpa</i>	1						1
	<i>Ficus opposita</i>		1	1	2			4
	<i>Ficus sp.</i>	1						1
	<i>Ficus tinctoria</i>	2						2
	<i>Ficus virens var. sublanceolata</i>				1			1
	<i>Ficus virens var. virens</i>	1						1

Family	Species	BVG						
		2	15	17	21	22	CI/B	Total
	<i>Trophis scandens subsp. scandens</i>	7	2		3	2		14
Musaceae	<i>Musa sp.*</i>	1						1
Myristicaceae	<i>Myristica insipida var. cimicifera</i>	1						1
	<i>Myristica insipida var. insipida</i>	4	2		2	4		12
Myrtaceae	<i>Syzygium branderhorstii</i>	1				2		3
	<i>Syzygium bungadinnia</i>					2		2
	<i>Syzygium puberulum</i>					3		3
	<i>Syzygium suborbiculare</i>					1		1
	<i>Welchiodendron longivalve</i>		1					1
Nyctaginaceae	<i>Boerhavia mutabilis</i>			1				1
	<i>Pisonia grandis</i>		1					1
Olacaceae	<i>Ximenia americana</i>		1					1
Pandanaceae	<i>Pandanus sp.</i>	3	5			1		9
	<i>Pandanus sp. (DGF8803+)</i>		1					1
Passifloraceae	<i>Passiflora foetida*</i>	1	2	2				5
	<i>Passiflora suberosa*</i>	1		2				3
Pedaliaceae	<i>Josephinia imperatricis*</i>						1	1
Phyllanthaceae	<i>Breynia cernua</i>	1			1			2
	<i>Bridelia tomentosa</i>				1			1
	<i>Dimorphocalyx australiensis</i>	1						1
	<i>Flueggea virosa subsp. melanthesoides</i>			4				4
	<i>Phyllanthus novae-hollandiae</i>				1			1
Pittosporaceae	<i>Pittosporum sp. (DGF8795+)</i>	1						1
Poaceae	<i>Apluda mutica (Near Thraetned)</i>			1				1
	<i>Bambusa sp. (DGF8819+)*</i>	1						1
	<i>Bambusa sp.*</i>	2			1	3		6

Family	Species	BVG					CI/B	Total
		2	15	17	21	22		
	<i>Bothriochloa bladhii</i> subsp. <i>bladhii</i>			1				1
	<i>Cenchrus brownii</i> *						1	1
	<i>Cenchrus ciliaris</i> *						1	1
	<i>Cenchrus echinatus</i> *						1	1
	<i>Cenchrus setigerus</i> *						1	1
	<i>Chionachne cyathopoda</i>			1				1
	<i>Chloris inflata</i> *						1	1
	<i>Dactyloctenium aegyptium</i> *						1	1
	<i>Digitaria bicornis</i>						1	1
	<i>Digitaria ciliaris</i> *						1	1
	<i>Digitaria ctenantha</i>			1				1
	<i>Echinochloa colona</i> *						1	1
	<i>Eleusine indica</i> *						1	1
	<i>Eragrostis tenellula</i>			1				1
	<i>Heteropogon contortus</i>			1				1
	<i>Imperata cylindrica</i>			2				2
	<i>Megathyrsus maximus</i> var. <i>maximus</i> *						1	1
	<i>Melinis repens</i> *			1				1
	<i>Mnesithea rottboellioides</i>			2				2
	<i>Neololeba atra</i> (Near-threatened)					1		1
	<i>Oplismenus aemulus</i>				1			1
	<i>Oplismenus burmannii</i>		1		1			2
	<i>Panicum trichoides</i>						1	1
	<i>Rottboellia cochinchinensis</i> *			1				1
	<i>Saccharum</i> sp.*						1	1

Family	Species	BVG						
		2	15	17	21	22	CI/B	Total
	<i>Sehima nervosum</i>			1				1
	<i>Setaria surgens</i>			1				1
	<i>Sporobolus virginicus</i>		1					1
	<i>Themeda triandra</i>			3				3
	<i>Thuarea involuta</i>			1				1
	<i>Urochloa pubigera</i>						1	1
	<i>Urochloa subquadripara*</i>			1				1
	<i>Vacoparis laxiflorum</i>			1				1
Portulacaceae	<i>Portulaca oleracea*</i>			1				1
Ptaeroxylaceae	<i>Harrisonia brownii</i>	1						1
Rhamnaceae	<i>Colubrina asiatica</i>		1					1
Rubiaceae	<i>Guettarda speciosa</i>		2					2
	<i>Morinda citrifolia</i>	6	4		1	2		13
	<i>Oldenlandia corymbosa var. corymbosa*</i>			1				1
	<i>Psychotria coelospermum</i>		2					2
	<i>Psychotria sp. (DGF8814+)</i>			1				1
Rutaceae	<i>Glycosmis trifoliata</i>	1						1
	<i>Micromelum minutum</i>	3	2		1	1		7
	<i>Murraya paniculata</i>	2				3		5
Sapindaceae	<i>Alectryon repandodentatus (Endangered)</i>	13	1		2	1		17
	<i>Alectryon tomentosus</i>				1			1
	<i>Arytera pseudofoveolata</i>					1		1
	<i>Lepidopetalum fructoglabrum</i>					4		4
Sapotaceae	<i>Chrysophyllum roxburghii</i>	1						1
	<i>Manilkara kauki</i>	2	2			1		5
	<i>Pouteria obovata</i>	1	2		3			6

Family	Species	BVG						
		2	15	17	21	22	CI/B	Total
Smilacaceae	<i>Smilax blumei</i>	1	1		1			3
	<i>Smilax calophylla</i>	1						1
Solanaceae	<i>Capsicum annuum</i> var. <i>glabriusculum</i> *						1	1
	<i>Capsicum frutescens</i> *						1	1
	<i>Physalis angulata</i> *				1			1
	<i>Solanum seaforthianum</i> *				1			1
Sparmanniaceae	<i>Corchorus aestuans</i>			1				1
	<i>Triumfetta rhomboidea</i> *						1	1
Thymelaeaceae	<i>Phaleria octandra</i>	4	1		2	3		10
Urticaceae	<i>Pipturus argenteus</i>	1			3			4
Verbenaceae	<i>Lantana camara</i> *			2				2
Vitaceae	<i>Cayratia acris</i>	1						1
	<i>Cayratia trifolia</i>	1						1
	<i>Cissus maritima</i>			1				1
Zingiberaceae	<i>Alpinia caerulea</i>					1		1
	<i>Curcuma australasica</i>				1			1
	<i>Globba marantina</i> (Vulnerable)					1		1
	<i>Kaempferia</i> sp. (Murray Island M.Lawrie 5)					1		1
	<i>Zingiber officinale</i> *					1		1
	<i>Zingiber zerumbet</i> *					1		1
Zygophyllaceae	<i>Tribulus cistoides</i>		1					1
Total Species records in habitat		263	123	84	98	95	52	715

Appendix E. Fauna of Mer Island, Torres Strait, Qld.

Compiled by Terry Reis.

Family	Scientific Name ³	Common Name	Status ⁴			Mer Island
			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		WildNet, published & unpublished records.
Hylidae	<i>Litoria gracilentata</i>	Dainty Green Tree Frog		LC		
Hylidae	<i>Litoria infrafrenata</i>	White-lipped Tree Frog		LC		
Hylidae	<i>Litoria nasuta</i>	Rocket Frog		LC		WildNet & published records.
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.					
Ranidae	<i>Rana daemeli</i>	Wood Frog		LC		WildNet record.
Bufonidae	<i>Rhinella marina</i>	Cane Toad		I		
REPTILES						
Crocodylidae	<i>Crocodylus porosus</i>	Salt-water Crocodile	M	V		
Chelidae	<i>Emydura subglobosa</i>	Jardine River Turtle		NT		
Cheluidae	<i>Macrochelodina rugosa</i>	Northern Long-necked Turtle		LC		
Gekkonidae	<i>Cyrtodactylus louisianensis</i>	Ring-tailed Gecko		LC		
Gekkonidae	<i>Gehyra baliola</i>	Short-tailed Dtella		LC		WildNet, published & unpublished records.
Gekkonidae	<i>Gehyra dubia</i>	Dubious Dtella		LC		Unpublished record.
Gekkonidae	<i>Gehyra variegata</i>	Tree Dtella		LC		
Gekkonidae	<i>Hemidactylus frenatus</i>	House Gecko		I		Australian Museum, WildNet & unpublished records.
Gekkonidae	<i>Heteronotia binoei</i>	Bynoe's Gecko		LC		
Gekkonidae	<i>Lepidodactylus lugubris</i>	Mourning Gecko		LC		WildNet & unpublished records.
Gekkonidae	<i>Lepidodactylus pumilis</i>	Slender Chained Gecko		NT		WildNet & published records.
Gekkonidae	<i>Nactus eboracensis</i>	no common name		LC		WildNet record.
Gekkonidae	<i>Nactus 'pelagicus'</i>	Pelagic Gecko		LC		Unpublished record.
Gekkonidae	<i>Oedura rhombifer</i>	Zigzag Velvet Gecko		LC		

Family	Scientific Name ³	Common Name	Status ⁴			Mer Island
			EPBC Act	NC Act	BoT	
Gekkonidae	<i>Pseudothecadactylus australis</i>	Giant Tree Gecko		LC		
Pygopodidae	<i>Lialis burtonis</i>	Burton's Snake-lizard		LC		WildNet record.
Scincidae	<i>Bellatorias frerei</i>	Major Skink		LC		Australian Museum, WildNet & unpublished records.
Scincidae	<i>Carlia coensis</i>	Coen Rainbow-skink		LC		Australian Museum record. This species is restricted to the McIlwraith and Table Ranges on Cape York Peninsula and the record is considered erroneous.
Scincidae	<i>Carlia longipes</i>	Closed-litter Rainbow-skink		LC		Australian Museum record. Animals from Torres Strait now known as <i>C. sexdentata</i> .
Scincidae	<i>Carlia quinquecarinata</i>	no common name		LC		Previously included within <i>C. fusca</i> .
Scincidae	<i>Carlia cf quinquecarinata</i>					Unpublished record.
Scincidae	<i>Carlia sexdentata</i>	no common name		LC		Australian Museum, WildNet & unpublished records. Previously included within <i>C. longipes</i> .
Scincidae	<i>Carlia storri</i>	Brown Bicarinate Rainbow-skink		LC		WildNet & unpublished records.
Scincidae	<i>Cryptoblepharus litoralis litoralis</i>	Supralittoral Shinning-skink		LC		WildNet & unpublished records.
Scincidae	<i>Cryptoblepharus virgatus</i>	Cream-striped Shinning-skink		LC		Australian Museum & WildNet records.
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		WildNet record.
Scincidae	<i>Emoia atrocostata</i>	Littoral Whiptail-skink		NT		
Scincidae	<i>Emoia longicauda</i>	Shrub Whiptail-skink		LC		Australian Museum, WildNet & unpublished records.
Scincidae	<i>Eremiascin cus pardalis</i>	Lowlands Bar-lipped Skink		LC		WildNet record.
Scincidae	<i>Eugongylus rufescens</i>	Bar-lipped Sheen-skink		LC		Australian Museum, WildNet & unpublished records.
Scincidae	<i>Glaphyromorphus crassicaudus</i>	Cape York Mulch-skink		LC		WildNet & unpublished records.
Scincidae	<i>Glaphyromorphus nigricaudis</i>	Black-tailed Bar-lipped Skink		LC		WildNet record.
Scincidae	<i>Glaphyromorphus pumilis</i>	Dwarf Mulch-skink		LC		
Scincidae	<i>Lygisaurus foliorum</i>	Tree-base Litter-skink		LC		
Scincidae	<i>Lygisaurus macfarlani</i>	Translucent Litter-skink		LC		Australian Museum, WildNet & unpublished records.
Agamidae	<i>Chlamydosaurus kingii</i>	Friiled 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		Australian Museum, WildNet & unpublished records.
Varanidae	<i>Varanus mertensi</i>	Mertens' Water Monitor		LC		
Varanidae	<i>Varanus panoptes</i>	Yellow-spotted Monitor		LC		
Varanidae	<i>Varanus prasinus</i>	Emerald Monitor		NT		WildNet record.
Varanidae	<i>Varanus scalaris</i>	Spotted Tree Monitor		LC		WildNet record.

Family	Scientific Name ³	Common Name	Status ⁴			Mer Island
			EPBC Act	NC Act	BoT	
Varanidae	<i>Varanus tristis</i>	Black-tailed Monitor		LC		WildNet record.
Typhlopidae	<i>Ramphotyphlops braminus</i>	Flowerpot Blind Snake		I		
Typhlopidae	<i>Ramphotyphlops leucoproctus</i>	Cape York Blind Snake		LC		WildNet record.
Typhlopidae	<i>Ramphotyphlops polygrammicus</i>	North-eastern Blind Snake		LC		WildNet record.
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		WildNet record.
Boidae	<i>Morelia kinghorni</i>	Scrub Python		LC		
Colubridae	<i>Boiga irregularis</i>	Brown Tree Snake		LC		WildNet & unpublished records.
Colubridae	<i>Cerberus australis</i>	Bockadam		LC		
Colubridae	<i>Dendrelaphis calligastra</i>	Northern Tree Snake		LC		Australian Museum & WildNet records.
Colubridae	<i>Dendrelaphis punctulatus</i>	Common Tree Snake		LC		Australian Museum & unpublished records.
Colubridae	<i>Stegonotus cucullatus</i>	Slaty-grey Snake		LC		Published record (Ehmann 1992).
Colubridae	<i>Stegonotus parvus</i>	Slate-brown Snake		LC		WildNet & published records.
Colubridae	<i>Tropidonophis mairii</i>	Freshwater 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		WildNet record.
Elapidae	<i>Oxyuranus scutellatus</i>	Taipan		LC		
Elapidae	<i>Pseudechis papuanus</i>	Papuan Black Snake		LC		
BIRDS						
Megapodiidae	<i>Alectura lathami</i>	Australian Brush-turkey		LC		
Megapodiidae	<i>Megapodius reinwardt</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		
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		WildNet & published records.

Family	Scientific Name ³	Common Name	Status ⁴			Mer Island
			EPBC Act	NC Act	BoT	
Podicipedidae	<i>Tachybaptus novaehollandiae</i>	Australasian Grebe		LC		
Columbidae	<i>Columba livia</i>	Rock Dove		I		WildNet & published records.
Columbidae	<i>Geopelia striata papua</i>	Emerald Dove		LC		WildNet, published & unpublished records.
Columbidae	<i>Geopelia striata</i>	Peaceful Dove		LC		
Columbidae	<i>Geopelia humeralis</i>	Bar-shouldered Dove		LC		WildNet, published & unpublished records.
Columbidae	<i>Ptilinopus magnificus</i>	Wompoo Fruit-Dove		LC		
Columbidae	<i>Ptilinopus superbus</i>	Superb Fruit-Dove		LC		
Columbidae	<i>Ptilinopus regina</i>	Rose-crowned Fruit-Dove		LC		WildNet, published & unpublished records.
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		Published record.
Columbidae	<i>Lopholaimus antarcticus</i>	Topknot Pigeon		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		Published record.
Apodidae	<i>Apus affinis</i>	House Swift		LC		
Anhingidae	<i>Anhinga novaehollandiae</i>	Australasian Darter		LC		
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		Published record.
Phalacrocoracidae	<i>Phalacrocorax varius</i>	Pied Cormorant		LC		
Pelecanidae	<i>Pelecanus conspicillatus</i>	Australian Pelican		LC		Published record.
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		WildNet & published records.
Ardeidae	<i>Ardea pacifica</i>	White-necked Heron		LC		
Ardeidae	<i>Ardea modesta</i> ⁶	Eastern Great Egret	M	LC		WildNet record.

Family	Scientific Name ³	Common Name	Status ⁴			Mer Island
			EPBC Act	NC Act	BoT	
Ardeidae	<i>Ardea intermedia</i>	Intermediate Egret		LC		
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		Unpublished record.
Ardeidae	<i>Egretta picata</i>	Pied Heron		LC		WildNet & published records.
Ardeidae	<i>Egretta novaehollandiae</i>	White-faced Heron		LC		
Ardeidae	<i>Egretta garzetta</i>	Little Egret		LC		WildNet & published records.
Ardeidae	<i>Egretta sacra</i>	Eastern Reef Egret	M	LC		WildNet, published & unpublished records.
Ardeidae	<i>Nycticorax caledonicus</i>	Nankeen Night-Heron		LC		WildNet, published & unpublished records.
Threskiornithidae	<i>Plegadis falcinellus</i>	Glossy Ibis	M	LC		
Threskiornithidae	<i>Threskiornis molucca</i>	Australian White Ibis		LC		Published record.
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		Unpublished record.
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		WildNet record.
Accipitridae	<i>Haliastur sphenurus</i>	Whistling Kite		LC		
Accipitridae	<i>Haliastur indus</i>	Brahminy Kite		LC		
Accipitridae	<i>Milvus migrans</i>	Black Kite		LC		
Accipitridae	<i>Accipiter fasciatus</i>	Brown Goshawk		LC		Unpublished record.
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		
Gruidae	<i>Grus rubicunda</i>	Brolga		LC		
Rallidae	<i>Porphyrio porphyrio</i>	Purple Swamphen		LC		WildNet & published records.
Rallidae	<i>Eulabeornis castaneiventris</i>	Chestnut Rail		LC		

Family	Scientific Name ³	Common Name	Status ⁴			Mer Island
			EPBC Act	NC Act	BoT	
Rallidae	<i>Rallina tricolor</i>	Red-necked Crake		LC		WildNet & published records.
Rallidae	<i>Gallirallus philippensis</i>	Buff-banded Rail		LC		
Rallidae	<i>Porzana pusilla</i>	Baillon's Crake		LC		
Rallidae	<i>Porzana fluminea</i>	Australian Spotted Crake		LC		
Rallidae	<i>Porzana tabuensis</i>	Spotless Crake		LC		
Rallidae	<i>Amauromis cinerea</i>	White-browed Crake		LC		
Rallidae	<i>Amauromis moluccana</i>	Pale-vented Bush-hen		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	
Haematopodidae	<i>Haematopus longirostris</i>	Australian Pied Oystercatcher		LC		
Haematopodidae	<i>Haematopus fuliginosus</i>	Sooty Oystercatcher		NT		
Recurvirostridae	<i>Himantopus himantopus</i>	Black-winged Stilt		LC		
Charadriidae	<i>Pluvialis fulva</i>	Pacific Golden Plover	M	LC		WildNet record.
Charadriidae	<i>Pluvialis squatarola</i>	Grey Plover	M	LC		Published record.
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 record.
Charadriidae	<i>Charadrius leschenaultii</i>	Greater Sand Plover	M	LC		
Charadriidae	<i>Erythrogonys cinctus</i>	Red-kneed Dotterel		LC		
Charadriidae	<i>Vanellus miles</i>	Masked Lapwing		LC		Published record.
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		
Scolopacidae	<i>Numenius minutus</i>	Little Curlew	M	LC		
Scolopacidae	<i>Numenius phaeopus</i>	Whimbrel	M	LC		WildNet, published & unpublished records.
Scolopacidae	<i>Numenius madagascariensis</i>	Eastern Curlew	M	NT		WildNet & published records.
Scolopacidae	<i>Xenus cinereus</i>	Terek Sandpiper	M	LC		
Scolopacidae	<i>Actitis hypoleucos</i> ⁹	Common Sandpiper	M	LC		
Scolopacidae	<i>Tringa brevipes</i> ¹⁰	Grey-tailed Tattler	M	LC		WildNet, published & unpublished records.
Scolopacidae	<i>Tringa incana</i> ¹¹	Wandering Tattler	M	LC		WildNet & published records.
Scolopacidae	<i>Tringa nebularia</i>	Common Greenshank	M	LC		Published record.
Scolopacidae	<i>Tringa stagnatilis</i>	Marsh Sandpiper	M	LC		
Scolopacidae	<i>Tringa glareola</i>	Wood Sandpiper	M	LC		

Family	Scientific Name ³	Common Name	Status ⁴			Mer Island
			EPBC Act	NC Act	BoT	
Scolopacidae	<i>Arenaria interpres</i>	Ruddy Turnstone	M	LC		WildNet record.
Scolopacidae	<i>Calidris tenuirostris</i>	Great Knot	M	LC		
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		
Scolopacidae	<i>Calidris melanotos</i>	Pectoral Sandpiper	M	LC		
Scolopacidae	<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	M	LC		WildNet record.
Scolopacidae	<i>Calidris ferruginea</i>	Curlew Sandpiper	M	LC		
Turnicidae	<i>Turnix maculosus</i>	Red-backed Button-quail		LC		WildNet & published records.
Turnicidae	<i>Turnix pyrrhothorax</i>	Red-chested Button-quail		LC		
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		WildNet & published records.
Laridae	<i>Anous minutus</i>	Black Noddy		LC		WildNet & published records.
Laridae	<i>Onychoprion anaethetus</i> ¹³	Bridled Tern	M	LC		WildNet record.
Laridae	<i>Onychoprion fuscata</i>	Sooty Tern		LC		WildNet record.
Laridae	<i>Sternula albifrons</i> ¹⁴	Little Tern	M	E	high	WildNet, published & unpublished records.
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		Published record.
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		WildNet & published records.
Laridae	<i>Sterna hirundo</i>	Common Tern	M	LC		WildNet & published records.
Laridae	<i>Thalasseus bengalensis</i> ¹⁵	Lesser Crested Tern	M	LC		WildNet & published records.
Laridae	<i>Thalasseus bergii</i>	Crested Tern		LC		WildNet, published & unpublished records.
Laridae	<i>Chroicocephalus novaehollandiae</i>	Silver Gull		LC		WildNet & published records.
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</i>	Rainbow Lorikeet		LC		Published record.
Psittacidae	<i>Cyclopsitta</i> species	fig-parrot species				
Psittacidae	<i>Eclectus roratus polychloros</i>	Eclectus Parrot		LC		
Psittacidae	<i>Geoffroyus geoffroyi</i>	Red-cheeked Parrot		LC		

Family	Scientific Name ³	Common Name	Status ⁴			Mer Island
			EPBC Act	NC Act	BoT	
Cuculidae	<i>Centropus phasianinus</i>	Pheasant Coucal		LC		Published record.
Cuculidae	<i>Eudynamys orientalis</i>	Eastern Koel		LC		WildNet & published records.
Cuculidae	<i>Urodynamys taitensis</i>	Long-tailed Cuckoo				
Cuculidae	<i>Scythrops novaehollandiae</i>	Channel-billed Cuckoo		LC		WildNet & published records.
Cuculidae	<i>Chalcites basalis</i>	Horsfield's Bronze-Cuckoo		LC		
Cuculidae	<i>Chalcites osculans</i>	Black-eared Cuckoo		LC		
Cuculidae	<i>Chalcites lucidus</i>	Shining Bronze-Cuckoo		LC		Published record.
Cuculidae	<i>Chalcites minutillus</i>	Little Bronze-Cuckoo		LC		
Cuculidae	<i>Cacomantis pallidus</i>	Pallid Cuckoo		LC		Published record.
Cuculidae	<i>Cacomantis castaneiventris</i>	Chestnut-breasted Cuckoo		LC		
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</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		WildNet & published records.
Halcyonidae	<i>Todiramphus sanctus</i>	Sacred Kingfisher		LC		WildNet, published & unpublished records.
Halcyonidae	<i>Todiramphus chloris</i>	Collared Kingfisher		LC		
Meropidae	<i>Merops ornatus</i>	Rainbow Bee-eater	M	LC		WildNet & published records.
Coraciidae	<i>Eurystomus orientalis</i>	Dollarbird		LC		WildNet & published records.
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</i>	Large-billed Gerygone		LC		
Acanthizidae	<i>Gerygone palpebrosa</i>	Fairy Gerygone		LC		

Family	Scientific Name ³	Common Name	Status ⁴			Mer Island
			EPBC Act	NC Act	BoT	
Meliphagidae	<i>Meliphaga notata</i>	Yellow-spotted Honeyeater		LC		
Meliphagidae	<i>Meliphaga gracilis</i>	Graceful Honeyeater		LC		
Meliphagidae	<i>Lichenostomus versicolor</i>	Varied Honeyeater		LC		
Meliphagidae	<i>Manorina melanocephala</i>	Noisy Miner		LC		
Meliphagidae	<i>Ramsayornis modestus</i>	Brown-backed Honeyeater		LC		
Meliphagidae	<i>Conopophila albogularis</i>	Rufous-banded Honeyeater		LC		
Meliphagidae	<i>Myzomela obscura</i>	Dusky Honeyeater		LC		WildNet record.
Meliphagidae	<i>Myzomela erythrocephala</i>	Red-headed Honeyeater		LC		
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</i>	Tawny-breasted Honeyeater		LC		
Pomatostomidae	<i>Pomatostomus temporalis</i>	Grey-crowned Babbler		LC		
Campephagidae	<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike		LC		Published & unpublished records.
Campephagidae	<i>Coracina papuensis</i>	White-bellied Cuckoo-shrike		LC		Unpublished record.
Campephagidae	<i>Coracina lineata</i>	Barred Cuckoo-shrike		LC		
Campephagidae	<i>Coracina tenuirostris melvillensis</i>	(Melville) Cicadabird	M	LC		Published record.
Campephagidae	<i>Lalage tricolor</i>	White-winged Triller		LC		
Campephagidae	<i>Lalage leucomela</i>	Varied Triller		LC		Unpublished record.
Pachycephalidae	<i>Pachycephala melanura</i>	Mangrove Golden Whistler		LC		WildNet record.
Pachycephalidae	<i>Pachycephala rufiventris</i>	Rufous Whistler		LC		
Pachycephalidae	<i>Colluricincla megarhyncha</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		WildNet & published records.
Artamidae	<i>Artamus leucorhynchus</i>	White-breasted Woodswallow		LC		
Artamidae	<i>Artamus cinereus</i>	Black-faced Woodswallow		LC		
Artamidae	<i>Artamus minor</i>	Little Woodswallow		LC		
Artamidae	<i>Cracticus quoyi</i>	Black Butcherbird		LC		
Dicruridae	<i>Dicrurus bracteatus</i>	Spangled Drongo		LC		Published record.
Rhipiduridae	<i>Rhipidura rufifrons</i>	Rufous Fantail	M	LC		
Rhipiduridae	<i>Rhipidura phasiana</i>	Mangrove Grey Fantail		LC		

Family	Scientific Name ³	Common Name	Status ⁴			Mer Island
			EPBC Act	NC Act	BoT	
Rhipiduridae	<i>Rhipidura rufiventris</i>	Northern Fantail		LC		
Rhipiduridae	<i>Rhipidura leucophrys</i>	Willie Wagtail		LC		
Corvidae	<i>Corvus orru</i>	Torresian Crow		LC		
Monarchidae	<i>Myiagra ruficollis</i>	Broad-billed Flycatcher		LC		
Monarchidae	<i>Myiagra rubecula</i>	Leaden Flycatcher		LC		WildNet & published records.
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		WildNet, published & unpublished records.
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 supercilialis</i>	Northern Scrub-robin		LC		
Cisticolidae	<i>Cisticola exilis</i>	Golden-headed Cisticola		LC		WildNet & published records.
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, published & unpublished records.
Timaliidae	<i>Zosterops lateralis</i>	Silvereye		LC		WildNet record.
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>Zoothera</i> sp.	thrush species		LC		
Sturnidae	<i>Aplornis cantoroides</i>	Singing Starling		LC		
Sturnidae	<i>Aplornis metallica</i>	Metallic Starling		LC		WildNet & unpublished records.
Sturnidae	<i>Sturnus tristis</i>	Common Myna		I		
Nectariniidae	<i>Dicaeum geelvinkianum</i>	Red-capped Flowerpecker		LC		
Nectariniidae	<i>Dicaeum hirundinaceum</i>	Mistletoebird		LC		

Family	Scientific Name ³	Common Name	Status ⁴			Mer Island
			EPBC Act	NC Act	BoT	
Nectariniidae	<i>Nectarinia jugularis</i>	Olive-backed Sunbird		LC		WildNet, published & unpublished records.
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		
Passeridae	<i>Passer domesticus</i>	House Sparrow		I		WildNet & unpublished records.
Motacillidae	<i>Motacilla</i> sp.	Yellow Wagtail species	M	LC		
MAMMALS						
Tachyglossidae	<i>Tachyglossus aculeatus</i>	Short-beaked Echidna		LC		
Peramelidae	<i>Isoodon macrourus</i>	Northern Brown Bandicoot		LC		
Peramelidae	<i>Isoodon obesulus</i>	Southern Brown Bandicoot		LC		
Macropodidae	<i>Macropus agilis</i>	Agile Wallaby		LC		
Macropodidae	macropod species	wallaby species				One reported present in 1974 (Ingram 2008).
Pteropodidae	<i>Dobsonia magna</i>	Bare-backed Fruit-bat		NT		
Pteropodidae	<i>Macroglossus minimus</i>	Northern Blossom-bat		LC		WildNet record.
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		
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 nudicluniatus</i>	Bare-rumped Sheath-tail-bat	CE	E	high	
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		

Family	Scientific Name ³	Common Name	Status ⁴			Mer Island
			EPBC Act	NC Act	BoT	
Vespertilionidae	<i>Pipistrellus</i> sp.	Pipistrelle species		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		WildNet & unpublished records.
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		WildNet record. Historical, apparently extirpated.
Muridae	<i>Rattus norvegicus</i>	Brown Rat		I		
Muridae	<i>Rattus rattus</i>	Black Rat		I		
Muridae	<i>Xeromys myoides</i>	Water Mouse	V	V	high	
Canidae	<i>Canis lupus</i>	Dingo, Domestic Dog		I		Unpublished record.
Felidae	<i>Felis catus</i>	Cat		I		Unpublished record.
Equidae	<i>Equus caballus</i>	Horse, Brumby		I		Unpublished record.
Suidae	<i>Sus scrofa</i>	Pig		I		
Bovidae	<i>Capra hircus</i>	Goat		I		
Cervidae	<i>Cervus timorensis</i>	Rusa Deer		I		

1. Known from Museum records, published literature (eg Tyler 1972; Storr 1973; 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; Conics 2008a, b, c; 2009a, b, c, d; 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, Dauan, Bramble Cay, Darnley (Erub), Mer (Murray), Mabuig, Iama (Yam), Mua, Badu, Possession, Thursday, Wednesday, Friday, Horn, Hammond and Prince of Wales Islands.
2. 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.
3. Nomenclature follows the Australian Faunal Directory maintained by DSEWPC. <http://www.environment.gov.au/biodiversity/abrs/online-resources/fauna/afd/index.html>
4. 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.
5. Also listed under the EPBC Act (ROKAMBA) as *Chaetura caudacuta*.
6. 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).
7. Listed under CAMBA as *Ardeola ibis*, listed under JAMBA as *Bubulcus ibis*.
8. 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).

9. Also listed under CAMBA and ROKAMBA as *Tringa hypoleucos*.
10. Also listed under the Bonn Convention and JAMBA as *Heteroscelus brevipes*.
11. Also listed under the Bonn Convention and JAMBA as *Heteroscelus incanus*.
12. Also listed under ROKAMBA as *Crocethia alba*.
13. Listed under the EPBC Act (CAMBA, JAMBA) as *Sterna anaethetus*.
14. Listed under the EPBC Act (Bonn Convention, CAMBA, JAMBA, ROKAMBA) as *Sterna albifrons*.
15. Listed under the EPBC Act (CAMBA) as *Sterna bengalensis*.
16. Listed under the EPBC Act (CAMBA, JAMBA, ROKAMBA) as *Cuculus saturatus*. Australian birds elevated to full species level as *A. optatus* (Christidis & Boles 2008).
17. Listed under the EPBC Act (Bonn Convention) as *Monarcha trivirgatus*.
18. Listed under the EPBC Act (Bonn Convention) as Clamorous Reed-warbler *Acrocephalus stentoreus*. Australian birds elevated to full species level as *A. australis* (Higgins *et al.* 2006b).
19. Listed under the EPBC Act (ROKAMBA) as *Hirundo daurica*.

Appendix F. Information on Migratory Fauna Species Potentially occurring on Mer 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 *Glareola maldivarum*. 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 *Tringa glareola*. 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, 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).

Ten of the 28 species of Migratory wader known for the Torres Strait have been recorded from Mer Island. This may reflect a comparative lack of survey effort but is probably also indicative of a lack of variety of foraging habitats and a lack of substantial areas of habitat on the island.

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). On Mer Island, threats to waders appear limited to disturbance on beaches and rocky shores. This will be most relevant prior to return passage in autumn.

Terns

Life history

Terns, with gulls, belong to the family Laridae. The terns include the noddies, a group of largely tropical pelagic species. Seven Migratory tern species have been recorded from Mer Island, reflecting its oceanic nature

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 breeding by terns on Mer 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).

Eastern great and cattle egrets are not likely to breed on Mer Island and threats appear minor. 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 Mer 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 Mer Island.

Oriental Cuckoo *Cuculus optatus*

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). Oriental cuckoo is possibly an annual visitor to Mer Island, and could occur 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). Rainbow bee-eater could occur in, or over, all habitats on Mer 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 *Myiagra cyanoleuca*, spectacled, black-faced and black-winged monarchs *Monarcha frater*, 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 may occur on Mer Island and would use a majority of the wooded habitats present. Breeding by any species would be limited, if any breeding occurs. Black rat is not known to occur on Mer Island but pacific rat *Rattus exulans* has been recorded. However, these bird species are more threatened by habitat loss should land use practices change and by the spread of cats into natural habitats.

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 s. 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, possibly including Mer Island.

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.

None of these species is known from Mer Island. The major threat to Australian reed-warbler is loss of habitat due to coastal development in natural habitat areas (Higgins *et al.* 2006b). On Mer Island the species is only likely to occur on passage in areas of rank vegetation and is unlikely to be subject to any threats. 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.

