



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

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



Australian Government



**TSRA**  
[www.tsra.gov.au](http://www.tsra.gov.au)

**3D Environmental**  
vegetation analysis and mapping specialists

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## EXECUTIVE SUMMARY

The granite rock pile that forms Dauan, along with nearby Saibai and Boigu Islands, form the Northern Island Group of Torres Strait, located approximately 150 km north of Thursday Island (see **Figure 1**). Whilst Saibai and Boigu Island are extensions of the alluvial Fly Platform, geologically part of the Papua New Guinea mainland, Dauan is formed on continental basement rock which extends northward from Cape York Peninsula to Mabadauan Hill on the south-west coast of Papua New Guinea.

A total of 14 vegetation communities, within ten broad vegetation groups and 14 regional ecosystems are recognised on the island. The total known flora of comprises 402 species (14 ferns, 388 angiosperms), with 317 native and 85 naturalised species. Nine plant species are considered threatened at the commonwealth and state levels and a further 25 species considered to have significance at a regional level.

As for the majority of Torres Strait Islands there is a lack of systematic survey of fauna habitats on the island. A desktop review identified 135 fauna species that are reported to occur on Dauan. This can be compared with the 384 terrestrial fauna species that have been reported for the broader Torres Strait Island group. The Dauan fauna comprises 20 reptiles, 100 birds, 3 frogs and 12 mammals. Of these, one reptile, one bird and four mammal species are introduced. Three bird species, two bats and two reptile species reported to occur on the island are listed as threatened under either state or federal legislation. There are also an additional 32 migratory bird species considered to have significance at federal level that are reported to occur on the island.

Although recent reports have added significant information to what is known of the fauna on Dauan Island there undoubtedly remains much to learn. The rocky, inaccessible nature of the islands interior means that opportunistic recording of fauna species has previously been limited to the more easily accessible, and often disturbed, parts of the island. Well-planned and systematic survey work is required to adequately assess the island's fauna in its entirety. The proximity of the New Guinea mainland means that bird and bat species are likely to be added to the island's species list each time any substantial survey effort is undertaken.

Within the ten 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 are:

- Maintenance of traditional burning regimes within native grassland habitats.
- Monitoring of landscapes threatened by changing burning regimes.
- Monitoring for the introduction and spread of a number of exotic species, both fauna and flora, throughout the island landscape.
- A requirement for further survey work to document the poorly known faunal assemblage on the island.

- Continued collection of floristic information, specifically those plants with cultural and biodiversity significance.
- Further survey and documentation of the complex and diverse cultural landscape on the island.

It is important that any future surveys on Dauan Island are undertaken in collaboration with the Dauan people and include study of Dauan traditional ecological knowledge and ethnotaxonomy. Furthermore all mapping and assessment work must comply with Dauan research protocols (to be finalised), must be approved by the Dauan Island PBC, and involve and be guided by the island rangers.

## **ACKNOWLEDGEMENTS**

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Initial fauna information and text was provided by Terry Reis and was adapted for the purpose of this report. It should be noted that Terry was not involved in the compilation of this document other than provision of raw data and preparation of species profiles. Information on fire ecology was provided by Peter Stanton. Staff of the Queensland Herbarium assisted with identification of plant specimens and provided advice on the ecology and distribution of significant species. Barbara Waterhouse and Stephen McKenna of the Australian Quarantine Inspection Service provided valuable information on the occurrence and distribution of weeds.

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## **1.0 Introduction**

Dauan Island represents one of six islands selected for a supplementary stage of funding for development of a biodiversity management profile. The document aims to identify the biodiversity features, landscape processes, and cultural values (from both a landscape and site specific perspective) that are intrinsic to the island. It also aims to identify management issues and recommends actions to ensure future conservation of the islands natural values.

### **1.1 Cultural Setting**

The population of Dauan Island consists of 163 people (2011 census). Land tenure is DOGIT (Deed of Grant in Trust) and the Registered Native Title Body Corporate<sup>1</sup> (RNTBC or PBC in shortened form) is the Dauanalga (Torres Strait Islanders) Corporation who hold the title of the land on behalf of the traditional owners. The local dialect is Kalaw Kawaw Ya. Native title was granted on July 6, 2000.

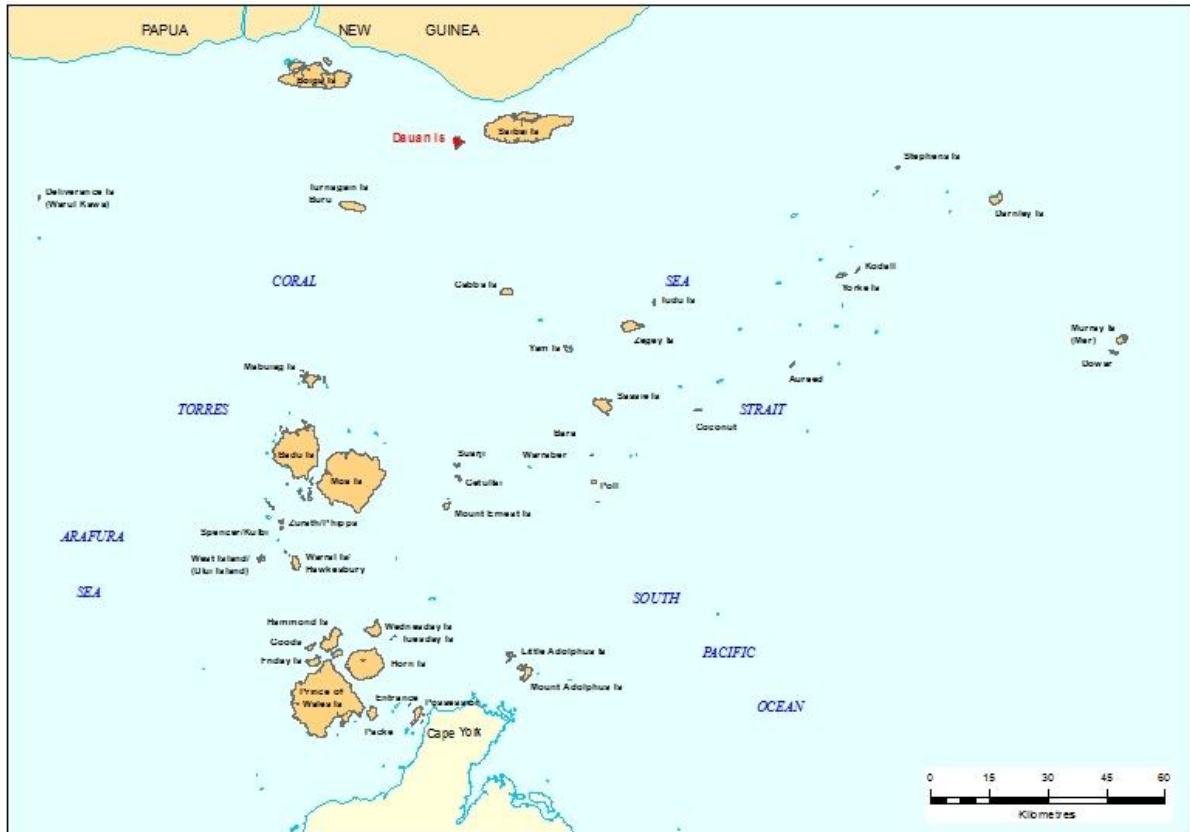
### **1.2 Geographic Setting**

The granite rock pile that forms Dauan, along with nearby Saibai and Boigu Islands form the Northern Island Group, located approximately 150 km north of Thursday Island (see **Figure 1**). Whilst Saibai and Boigu Island are extensions of the alluvial Fly Platform, geologically part of the Papua New Guinea mainland, Dauan is formed on continental basement rock which extends northward from Cape York Peninsula to Mabadauan Hill on the south-west coast of Papua New Guinea. Dauan, with an area of 364 ha, rises dramatically from the ocean to a height of 295m on Mt Cornwallis, the highest point on the island and the second highest mountain peak in the Torres Strait Island group after Banks Peak (Mua Island) at 399m.

The village is located on the northern side of the island, facing the Papua New Guinea mainland which is clearly visible to the north. The mean annual rainfall of 1 082 mm (BOM 2008a) makes Dauan the driest recording station in the Torres Strait with approximately half the rainfall of Badu which at 1 983mm is the wettest recording station in the Torres Strait Islands (BOM 2008b). A number of minor soaks and streams emerge from the base of the islands rocky interior. Being spring fed, these watercourses generally remain moist throughout the year

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<sup>1</sup> Registered Native Title Body Corporate – the organisation that is recognized 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 Dauan Island.

### **1.3 Geological Context**

The continental basement rock that forms the Australian landmass extends northward from Cape York Peninsula to Madabuan on the south coast of the Papua New Guinea mainland. Dauan Island represents the second northern most outcrop of the Australian landmass after Madabuan. Whilst Dauan rises from the water, Madabuan, 27km to the north-east rises from the Fly Platform, the largest tract of low-lying country in Papua New Guinea (Loffler 1977).

Dauan is formed on relatively coarse grained pink granite, part of the Badu suite of intrusive rocks that are of Permo-Carboniferous (290 million years) age (Von Gnielinski *et al.* 1998). The granite rocks form a massive pile of rounded granite boulders which give the impression of being precariously perched atop each-other. Extensive bare boulder talus and scree slopes provide an indication of the relative instability of the boulder mass. The boulders also pile to form deep crevasses and ravines which make traverse of the slope both difficult and dangerous.

The island is fringed by a number of coralline beach ridges with a relatively broad system of beach ridges accreted on the islands north-west, the site of the island dump. A number of restricted alluvial fans are also found on the islands footslopes, the most extensive of these forms the substrate to the island settlement.



**Photograph 1.** Granite boulders forming the south-west face of Mt Cornwallis, Dauan.

## **2.0 Methods**

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

- Vegetation Communities and Regional Ecosystems of the Torres Strait Islands (Stanton *et al.* 2009).
- Queensland Herbarium's Herbrecks Database.
- Queensland Museum fauna record extracts.
- Birds Australia database extract.
- WildNet database extracts.
- Natural Solutions Habitat and Fauna Assessment for Dauan Island (Natural Solutions 2008, Conics 2009).
- Various technical papers relating to both flora and fauna (see references section).

## **3.0 Aims and Objectives**

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

1. The extent, values and condition of island habitats and the plants and animals which occur on them.
2. Island-scale ecological processes, that is, the environmental and human factors which are influencing habitats, plants and animals.
3. The cultural interactions with these processes, that is, the ways that Dauan people interact with the natural environment including identification of values.

4. The establishment of a prescribed list of management actions intended to be used by island rangers and managers to assist in updating Land and Sea Ranger Work Plans increasing the effectiveness of island's ecological and cultural value management.

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

## **4.0 Legislative and Policy Considerations**

Biodiversity (plants, animals and their habitats) is regulated at state and national levels by a range of legislative mechanisms which classify animal species, plant species and habitats according to their rarity, population size, distribution and threats. The legislative classification is generally used as a way to assign significance to a particular species or ecological value. If an animal, plant or vegetation type is listed on any Australian or Queensland government legislation, it is subject to rules which protect it from being destroyed or harmed. For example, if a certain orchid species is listed on the legislation it would mean that the orchid could not be collected from the bush and sold at a nursery without the necessary authorisation and permits. Similarly, if an animal such as a bat species or bat colony, which was listed as threatened under legislation, lived in a rock shelter where a housing development was proposed, then detailed studies would be required to determine how the bats would be affected by the development. A description of relevant components of the major legislation mechanisms requiring consideration is provided briefly below.

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

**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 subordinate to the NC Act and defines five classes that are:

- Extinct in the wild.
- Endangered.
- Vulnerable.
- Near-Threatened.
- Least concern.

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

**Vegetation Management Act:** *The Vegetation Management Act 1999 (VMA)* is a state regulated planning initiative that underpins the regional management of vegetation in Queensland. Under the VMA, conservation significance to particular vegetation groups termed regional ecosystems (REs) is assigned on a consistent state-wide basis. The classification of regional ecosystems is based on a hierarchical system with a three-part code defining bioregion, followed by land zone, and then vegetation. Thirteen bioregions are classified in Queensland with the Torres Strait Islands being a sub-province of the 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 RE Description Database maintained by the 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 Dauan (e.g. evergreen vine forest habitat RE3.12.35) 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 Dauan provides accurate information on the legislative significance of vegetation on the island offering an information planning resource for the Dauan community, the TSRIC and the TSRA. For example, if a sewerage plant was proposed in an area which supported a regional ecosystem (vegetation type) that was considered 'Of Concern', then clearing of this vegetation without authorisation is in breach of the VMA. Liaison with regulators must be undertaken to determine the conditions that must be met for clearing to be authorised. DERM 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 species of plant and animal considered not native to Queensland (exotic or invasive) and which degrade natural resources, threaten conservation of biodiversity, threaten remnant vegetation, reduce rural production and interfere with human health and recreational activities. Exotic species that pose a threat are declared under one of the following three categories:

- **Class 1 Pest:** a pest that has potential to become a very serious pest in Queensland in the future.
- **Class 2 Pest:** a pest that has already spread over substantial areas of Queensland, but its impact is considered sufficiently serious to warrant control.
- **Class 3 Pest:** a pest that is commonly established in parts of Queensland but its control by landholders is not warranted unless the plant is impacting, or has potential to impact on a nearby environmentally sensitive area.

For example, if a Class 3 weed such as lantana (*Lantana camara*) was found on Dauan, there is a requirement under the Act for landowners to take reasonable steps to control and manage the weed. Weeds of National Significance (WONS) identify the top 20 weed in terms of impact to productivity and landscape at a national level on a non-statutory basis.

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

## **5.0 Vegetation**

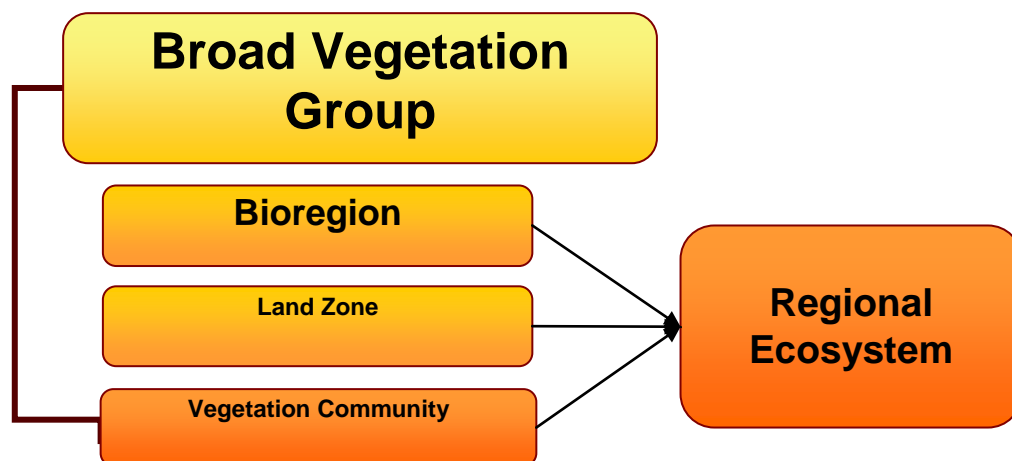
As described in the following sections, the classification of vegetation includes both nomenclature of individual species and the classification of groups of plants, the latter often forming unique assemblages that can be consistently recognised across islands (e.g. Dauan), island groups (Northern Torres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

### **5.1 Vegetation Groups and Mapping**

The hierarchy of vegetation classification used in the Torres Strait Islands is described below with relationships illustrated in **Figure 2**. At the highest level, the classification of plant assemblages is based on vegetation structure considering the dominant life form (tree or grass), height of the tallest strata, and canopy closure. 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 the classification. REs must be considered due to their legislative implications although in this document, for specific management habitat management purposes, BVGs provide a more readily usable management grouping and have been used to define habitat management units.

**Vegetation Classification on Dauan Island:** For management purposes, the islands vegetation is classified into broad vegetation groups (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**,

descriptions of component vegetation communities and associated regional ecosystems provided in **Table 2**. Further characterisation of habitat types is provided in the following text.



**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).

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

Broad Vegetation Group/ Habitat**	Component Vegetation Communities**	Area (ha)	Contribution (%)
Evergreen/ semi-evergreen vine forest and thicket	1a, 1b	14.2	3.1
Deciduous / Semi deciduous vine forest and vine thicket	2a, 2d, 2s	157.8	43.7
Melaleuca dominant woodland and open forest	7a	1.2	0.5
Pandanus dominant woodland and shrubland	11b	1.7	0.7
Palm dominant forest and woodland	12a	1.7	0.7
Shrublands and shrubland complexes	14g	7.7	2.1
Grasslands and grassland complexes	17c	76.1	21.1
Boulder slope vineland/ shrubland complexes	19a, 11a	29.1	7.2
Rock	RG	9.5	2.7
Mangrove forest, woodland and shrubland complexes	24a, 24c	29.4	8.3
Regrowth	RE (Pre disturbance 24a)	0.6	0.2
Cleared Areas	CI	32.7	9.0



Broad Vegetation Group/ Habitat**	Component Vegetation Communities**	Area (ha)	Contribution (%)
Exotic Species	EX	1.9	0.7
<b>Total</b>		<b>363.9</b>	<b>100</b>

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

Vegetation Community	Description	Geological Association	Regional Ecosystem	VMS	BDS
1a	Evergreen notophyll vine forest + <i>Acmenospermum claviformum</i> + <i>Syzygium puberulum</i> + <i>Ganophyllum falcatum</i> + <i>Arytera divaricata</i> + <i>Ficus microcarpa</i> + <i>Mangifera indica</i> *	Granite boulder slopes	3.12.36a	Of Concern	Of Concern
1b	Evergreen notophyll vine thicket (wind-sheared) + <i>Manilkara kauki</i> + <i>Intsia bijuga</i> + <i>Pouteria sericea</i> + <i>Aglaia eleagnoidea</i> + <i>Garcinia warrenii</i> + <i>Pandanus</i> sp.	Granite boulder slopes	3.12.36b	Of Concern	Of Concern
2a	Deciduous/Semi-deciduous vine forest + <i>Erythrina variegata</i> + <i>Manilkara kauki</i> + <i>Terminalia subacroptera</i> + <i>Mimusops elengi</i> + <i>Cordia subcordata</i> .	Calcareous Beach Ridges - Cheniers	3.2.2b	LC	OC
2b	Semi deciduous vine forest/thicket + <i>Canarium australianum</i> + <i>Terminalia subacroptera</i> + <i>Bombax ceiba</i> var. <i>leiocarpum</i> + <i>Cochlospermum gillivraei</i> + <i>Cleistanthus peninsularis</i> + <i>Ficus virens</i> var. <i>sublanceolata</i> .	Granite boulder slopes	3.12.21a	LC	NCAP
2d	Semi deciduous vine forest + <i>Tetrameles nudiflora</i> + <i>Canarium australianum</i> + <i>Ficus</i> spp. + <i>Bombax ceiba</i> var. <i>leiocarpum</i> +/- <i>Alstonia spectabilis</i> .	Granite boulder slopes	3.12.35b	LC	NCAP
2s	Semi-deciduous notophyll vine thicket (wind sheared) + <i>Pouteria sericea</i> + <i>Ficus virens</i> var. <i>Sub-lanceolata</i> + <i>Schefflera actinophylla</i> + <i>Garcinia warrenii</i> + <i>Syzygium puberulum</i>	Granite boulder slopes	3.12.21a	LC	NCAP
7a	Low <i>Melaleuca cajaputi</i> subsp. <i>platyphylla</i> open forest	Alluvial Plains	3.3.70	OC	OC
11b	<i>Pandanus</i> sp. +/- <i>Melaleuca viridiflora</i> open forest, woodland and shrubland.	Alluvial Plains Granite boulder slopes	3.3.42a 3.12.33b	LC OC	NCAP OC
12a	<i>Livistona meulleri</i> woodland.	Granite footslopes	3.12.29	OC	OC
14g	Low <i>Alyxia spicata</i> + <i>Manilkara kauki</i> +/-	Granite footslopes	3.12.31x1a	OC	OC

Vegetation Community	Description	Geological Association	Regional Ecosystem	VMS	BDS
	<i>Buchanania arborescens</i> +/- <i>Canarium australianum</i> +/- <i>Diospyros</i> spp. +/- <i>Pandanus</i> sp. low closed shrubland/rock pavement complex.				
17c	Open to closed tussock grassland with emergent shrubs.	Granite footslopes	3.12.29	OC	OC
19a	Open vineland/deciduous shrubland/boulder slope complex	Alluvial Plains	3.12.33b	OC	OC
24a/24c	Mangrove closed and open forest, woodland and shrubland complexes (24d/24c – 80/20).	Estuarine muds (periodically inundated)	3.1.1/ 3.1.2	LC	OC Sub-dominant
RG	Rock boulders on shoreline	Granite footslopes	3.12.34c	OC	OC

## 5.2 Flora Species

The composition of the Dauan flora has been compiled from analysis of Queensland Herbarium data (Herbrechts 2011), unpublished data from Barbara Waterhouse and Stephen McKenna of the Australian Quarantine Inspection Service (DAFF 2012), and field surveys carried out by 3D Environmental in November 2007 and May 2012 (refer **Appendix B**).

The total known flora of comprises 402 species (14 ferns, 388 angiosperms), with 317 native and 85 naturalised species. Nine plant species are considered threatened at the commonwealth and state levels and a further 27 species considered to have significance at a regional level. There are 98 families of which five are wholly exotic. Dominant families are: Poaceae (28 native species); Fabaceae (22 species); Apocynaceae (21 species); Rubiaceae (18 species); Moraceae (10 species); Convolvulaceae and Lamiaceae (9 species); Cyperaceae, Myrtaceae, Rhizophoraceae and Sapindaceae (8 species); Phyllanthaceae (7 species); Vitaceae, Lamiaceae, Meliaceae, and Lauraceae (6 species); and Mimosaceae and Polypodiaceae (5 species).

An indication of the integrity of remnant habitats on the island is indicated by a relatively low number of introduced species contained within them. Additional systematic surveys in rainforest, vine thickets, grasslands, and mangroves, are likely to increase the species list.

### 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 flora and habitats which should be considered a priority and focus for management actions. Additional and complementary species management criteria have been assessed 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.

Species have been broadly categorised into significance categories (i.e. national, state, regional and cultural) based on criteria which include legislative status, keystone/focal, threatened or sensitive, restricted, otherwise noteworthy or of cultural interest value. Culturally significant species are assessed separately. The species identified as having significance at the national, state, and regional level are summarised in **Table 3** below.

**Table 3.** Summary of Flora with National and State Significance on Dauan Island.

Species	National EPBC	State NC ACT	BVG	VC	RE	Comments
<i>Alectryon repandodentatus</i>	E	E	Evergreen notophyll vine forest on granite peak	1a	3.12.36a	New population previously known in Australian territory from Lockerbie Scrub, Mer and Erub.
<i>Costus poteriae</i>	-	E	Non remnant habitat associated with drainage soak / swamp on the islands NW.	Non-remnant	Non-remnant	
<i>Arenga australasica</i>	V	V	Semi deciduous microphyll/notophyll vine thicket on granite footslope; Evergreen notophyll vine forest on granite peak	1a, 2b	3.12.36a 3.12.21a	-
<i>Cissus aristata</i>	-	V	Semi deciduous microphyll/notophyll vine thicket on granite footslope; Evergreen notophyll vine forest on granite peak	1a, 2b	3.12.36a 3.12.21a	-
<i>Dischidia littoralis</i>	V	V	Semi deciduous microphyll/notophyll vine thicket on granite footslope; Evergreen notophyll vine forest on granite peak.	1a, 2b, 2d	3.12.36a 3.12.21a 3.12.35b	Disjunct; Limit of range
<i>Psydrax reticulata</i>	-	V	Semi deciduous microphyll/notophyll vine thicket on granite footslopes.	2b	3.12.21a	-
<i>Operculina brownii</i>	-	NT	Semi deciduous microphyll/notophyll vine thicket on granite footslopes.	2b	3.12.21a	-
<i>Neolebra atra</i>	-	NT	Evergreen notophyll vine forest on granite peak; Semi deciduous microphyll/notophyll vine thicket on granite footslopes.	1a, 2b	3.12.36a 3.12.21a	-
<i>Apluda mutica</i>	-	NT	Disturbed grassy roadside	CI	Non-R	Disjunct

### **National Significance**

Three species listed on the EPBC Act are known to occur.

#### **Plants that are Endangered**

***Alectryon repandodentatus* (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 from semi-deciduous mesophyll vine forest. It also occurs in Papua New Guinea, in the Morobe district (Fell and Stanton pers. obs.). It is a rare species on Dauan restricted to the rainforest in the summit of Mt Cornwallis. The habitat is remote and not known to be affected by any threatening processes. Information on phenology, dispersal mechanisms and reproduction ecology is not known.

#### **Plants that are Vulnerable**

***Arenga palm (Arenga australasica):*** Arenga is a multi-stemmed palm up to 20 m tall with a sometimes-clumping habit comprising numerous basal suckers. The pinnate leaflets are glossy dark green on the upper surface and pale greyish below. It occurs in a series of highly disjunct populations in north-eastern Queensland and the Northern Territory in rainforest and coastal thickets protected from fire. In Queensland it is known from the Torres Strait to south of Innisfail with scattered populations on Cape York Peninsula and within the Wet Tropics Bioregion. In Torres Strait it is also known from Mua and Iama Islands. The distribution and population size of the palm on the island is not known. It occurs in vine forest habitat on steep granite hills.

***Dischidia littoralis* (Apocynaceae):** This epiphytic, succulent vine with white latex has small elliptic to ovate leaves which are 18–30 mm long, 8–17 mm wide. It is known from Mt Cornwallis on Dauan Island where it inhabits closed forest on granite boulders. This species has also been recorded on Mua Island in similar rainforest habitat and these two records are the only occurrences in Australian territory. It also occurs on the islands of Indonesia, Irian Jaya and is common and widespread in Papua New Guinea (Forster & Liddle, 1993). The population size and extent of occurrence of this species are currently unknown. Individuals and habitat may have been previously impacted by construction of radio telecommunications towers. Threatening processes include tower maintenance activities and potential proliferation of weeds.

### **State Significance**

Six species are listed on the Amended Regulations of the *Queensland Nature Conservation Act (NC Act) 1992*.

## Plants that are Endangered

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

***Costus potierae* (Costaceae):** A multi-stemmed shrub with multiple cane-like stems arising from a ginger like underground rhizome, and red cone like flowers. Endemic to Queensland being known from small populations in the Wet Tropics and Torres Strait. Known elsewhere in the Torres Strait from populations on Badu and on Mua where it is common in its habitat of grassy *Eucalyptus platyphylla* woodland and Melaleuca open forest on alluvial flats adjacent to riparian and swamp forests. On Dauan it has been recorded as common in permanently moist gully situations on the northwest side of island (DERM 2011, Fell pers. obs.). The extent and size of the populations and the condition of the habitat requires further assessment.



**Photograph 2.** *Costus potierae* growing on Dauan.

## Plants that are Vulnerable

***Arenga australasica* (Arecaceae):** see above

***Psydrax reticulata* (Rubiaceae):** A shrub to small tree to 6m, *Psydrax reticulata* is common throughout vine thickets, shrublands and rock pavements on the majority of continental islands of Torres Strait and near the tip of Cape York Peninsula. A bioregional endemic reaching its northern limits of distribution on Torres Strait continental islands with records from Mabuiag, Mua, Badu, Dauan, Zuna, Warral, Prince of Wales, Wednesday, Gebber and Nakhir. On Dauan, it is a common component of vine thickets of exposed granite hills and rock pavements. Despite the need for a reassessment of its conservation status toward de-listing, it should be considered a regionally significant taxon given that it is endemic to the bioregion and at the limit of geographical range.



**Photograph 3.** Distinctive reticulated venation of *Psyrdrax reticulata*.

***Dischidia littoralis* (Apocynaceae):** see above

***Cissus aristata* (Vitaceae):** A slender trailing vine known on Dauan from a single collection on Mt Cornwallis in rainforest on steep granite boulder slopes. The Dauan occurrence is the only place in Torres Strait where the vine has been recorded. It also occurs from a few scattered locations in Cape York. No information on population size or extent is currently known.

#### **Species that are Near-Threatened**

**Native Bamboo, *Neolebra atra* (Poaceae):** A native bamboo known from Torres Strait, Cape York and North Eastern Queensland in the understorey of rainforest habitats. Also occurs in New Guinea, the Moluccas, northern Sulawesi and the Philippines. On Dauan is typically associated with vine forests (VC7a) on granite boulder slopes. Known also in the Torres Strait from Mua (1i, 2o, 3d), Badu (4a), Mer (2j), Iama, Erub and Naghir. Populations on Dauan are considered restricted but robust with no apparent threatening processes.

***Operculina brownii* (Convolvulaceae):** A scrambling or twining annual or perennial climber with white tubular flowers. On Dauan it has been recorded from vine thickets and vine thicket margins. Additional surveys to determine the extent of the population are required.



**Photograph 4.** The native bamboo *Neolebra atra*

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

### Species of 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 27 species known from Dauan Island are listed in **Table 4** below.

**Table 4.** Summary of Flora with Regional Biodiversity Significance on Dauan Island.

Species	Regionally Significant	BVG	VC	RE
<i>Acmenosperma claviflorum</i>	Disjunct; locally rare and restricted	Evergreen notophyll vine forest on granite peak; Wind sheared semi-deciduous notophyll vine thicket	1a, 2s	3.12.36a 3.12.21a
<i>Aristolochia acuminata</i>	Disjunct; regionally restricted habitat; Butterfly food plant	Notophyll/mesophyll secondary vine forest on alluvial outwash.	2xx	3.3.1
<i>Arytera pseudofoveolata</i>	Disjunct; regionally and locally rare and restricted	Evergreen notophyll vine forest on granite peak; Wind sheared semi-deciduous notophyll vine thicket	1a, 2s	3.12.36a 3.12.21a
<i>Asplenium capitis-york</i>	Disjunct; regionally and locally rare and restricted	Evergreen notophyll vine forest on granite peak	1a	3.12.36a
<i>Atalaya australiana</i>	Disjunct; locally rare and restricted	Deciduous microphyll/notophyll vine forest	2d	3.12.35b
<i>Cryptocarya densiflora</i>	Disjunct	Evergreen notophyll vine forest on granite peak	1a	3.12.36a
<i>Cupaniopsis flagelliformis</i> var. <i>flagelliformis</i>	Disjunct	Evergreen notophyll vine forest on granite peak	1a	3.12.36a
<i>Dioscorea pentaphylla</i> var. <i>papuana</i>	Southern limit of distribution.	Deciduous microphyll/notophyll vine forest	2d	3.12.35b
<i>Dysoxylum klanderii</i>	Disjunct	Evergreen notophyll vine forest on granite peak	1a	3.12.36a
<i>Endiandra impressicosta</i>	Disjunct; regionally and locally rare and restricted	Evergreen notophyll vine forest on granite peak.	1a	3.12.36a

Species	Regionally Significant	BVG	VC	RE
<i>Epipremum amplissimum</i>	Disjunct; regionally and locally rare and restricted	Evergreen notophyll vine forest on granite peak.	1a	3.12.36a
<i>Garcinia</i> sp. (Claudie River LJ Brass)	Disjunct; regionally and locally rare and restricted	Evergreen notophyll vine forest on granite peak	1a	3.12.36a
<i>Halpostichanthus fruticosus</i>	Disjunct; regionally restricted habitat; Butterfly food plant	Evergreen notophyll vine forest on granite peak	1a	3.12.36a
<i>Intsia bijuga</i>	Disjunct; Restricted habitat	Simple evergreen notophyll vine thicket on granitic footslopes.	1b	3.12.36b
<i>Lycianthes shanesii</i>	Disjunct	Deciduous microphyll/notophyll vine forest	2d	3.12.35b
<i>Metroxylon sagu</i>	Disjunct	Closed forest (secondary) on alluvial outwash.	A2xx(e)	Non-remnant
<i>Nothocnide repanda</i>	Disjunct	Deciduous microphyll/notophyll vine forest	2d	3.12.35b
<i>Psilanthus brassii</i>	Disjunct	Deciduous microphyll/notophyll vine forest	2d	3.12.35b
<i>Scindapsis altissimus</i>	Disjunct; regionally and locally rare and restricted	Evergreen notophyll vine forest on granite peak; Deciduous microphyll/notophyll vine forest	1a, 2d	3.12.36a 3.12.35b
<i>Spermacocce</i> sp. (Lorim Point A. Morton AM 1237)	Disjunct	Deciduous/Semi-deciduous vine forest.	2a	3.2.2b
<i>Syzygium bungadinnia</i>	Disjunct population, limit of range.	Evergreen notophyll vine forest on granite peak; Wind sheared semi-deciduous notophyll vine thicket.	1a, 2s	3.12.36a 3.12.21a
<i>Syzygium puberulum</i>	Disjunct population, limit of range.	Evergreen notophyll vine forest on granite peak; Wind sheared semi-deciduous notophyll vine thicket.	1a, 2s	3.12.36a 3.12.21a
<i>Tetrameles nudiflora</i>	Disjunct	Evergreen notophyll vine forest on granite peak; Deciduous microphyll/notophyll vine forest	1a, 2d	3.12.36a 3.12.35b
<i>Tetrastigma psiscarpum</i>	Disjunct; regionally and locally rare and restricted	Evergreen notophyll vine forest on granite peak; Deciduous microphyll/notophyll vine forest	1a, 2d	3.12.36a 3.12.35b
<i>Triflorensia australis</i>	Disjunct; regionally and locally rare and restricted	Evergreen notophyll vine forest on granite peak; Deciduous microphyll/notophyll vine forest	1a, 2d	3.12.36a 3.12.35b
<i>Uvaria rufa</i>	Disjunct; regionally restricted habitat; Butterfly food plant	Evergreen notophyll vine forest on granite peak; Deciduous microphyll/notophyll vine forest	1a, 2d	3.12.36a 3.12.35b
<i>Voacanga grandiflora</i>	Disjunct	Evergreen notophyll vine	1a, 2d	3.12.36a



Species	Regionally Significant	BVG	VC	RE
		forest on granite peak; Deciduous microphyll/notophyll vine forest		3.12.35b

### 5.2.2 Flora with Cultural Significance

Information on useful plants of Dauan is currently held within the island community. More detailed ethnobotanical studies are required to derive baseline information of useful plants and the local language names. This should include information on uses, seasonality, habitat, distribution, abundance, phenology, and most importantly the relationships to story and culture.

Based on information recorded on other islands there are a number of plants that are likely to have recorded usage (refer **Appendix C**). These include naturalised species such as stinking passionflower (*Passiflora foetida*), bamboo (*Bambusa spp.*), mango (*Mangifera indica*), coconut (*Cocos nucifera*) which may occur within and on the margins of remnant vegetation, often in vicinity of old settlement and garden sites. Others such as cassava (*Manihot esculenta*), tree cashew (*Anacardium occidentale*), ringworm shrub (*Senna alata*), and tridax daisy (*Tridax procumbens*) may be abundant in community areas. Uzu (*Syzygium branderhorstii*) and bell fruit (*Syzygium aqeum*) are favoured bush fruit trees which are often planted in house gardens. Other species likely to be used for material purposes include products made from timber (e.g. *Acacia auriculiformis*, *Manilkara kauki*), decoration (*Erythrina insularis* and *E. variegata*, *Entada phaselioides*), rope or binding (*Hibiscus tiliaceus*, and *Flagellaria indica*).

### 5.2.3 Introduced Plants

A number of plants which are not native to Dauan are present on the island. These introduced plants are referred to as 'environmental weeds' or 'naturalised plants'. Most have been brought to the island as garden plants, and others may have been imported by natural means for example by birds, wind and tides. Others may have been brought in by people, boats and barges within freight items, and in soil, gravel and machinery. While many of them pose no real problem to the natural environment, others can spread into bush areas and have serious impacts if not controlled. A number of these plants are however valued by local people on the basis of their various uses. For example these plants include the food plants yams (*Dioscorea spp.*), coconut (*Cocos nucifera*), cassava (*Manihot esculenta*) and wild passionfruit (*Passiflora foetida*), together with useful plants such as Manilla rope (*Agave sisalana*), six o'clock (*Senna alata*), tropical kudzu (*Pueraria montana var. lobata*) and tridax daisy (*Tridax procumbens*). As for the majority of the inhabited islands in the Torres Straits, the developed and disturbed areas are a major dispersal point for weeds.

Information on weeds has been sourced from Queensland Herbarium voucher data (DERM 2011c), the land use planning report of Conics (2009), field data of Barbara Waterhouse and Stephen McKenna from AQIS, and field surveys by 3D Environmental in October 2007 and May 2012.

With reference to the flora list (**Appendix B**), there are 85 naturalised species currently known to occur on the island (21% of the total island flora). Those species considered a current threat to biodiversity on the island and requiring management action are summarized below. Further surveys are required to determine the extent of impact and threats of individual weeds to the islands ecology.

### **Declared Weeds**

Three species declared on the LP Act are known to occur on Dauan Island.

**Singapore Daisy - *Sphagneticola trilobata* (Class 3):** Singapore daisy is a vigorous creeping ground cover that has become established on islands such as Badu in a number of locations in and around the community. The plant will out-compete natural habit and is a significant threat to riparian and swampy habitats across the island. Currently the plant is known from the village areas and on disturbed roadsides. Identification of the location of existing populations and control is a priority management action.

**Prickly pear - *Opuntia stricta* (Class 3):** An exotic cactus currently known from the village areas and on disturbed roadsides. Identification of the location of existing populations and control is a priority management action.

**Yellow Bells – *Tecoma stans* var. *stans* (Class 3):** Yellow bells is a medium to tall shrub with attractive yellow flowers with a papery wind-blown seed which readily germinates in disturbed areas and native bushland. The shrub is likely an escaped ornamental tree from local domestic gardens. It is currently occurring throughout the village in house gardens and community areas where it is valued as an attractive ornamental. Populations occur in disturbed vegetation fringing village areas. It poses a potential threat to native vegetation. Ongoing monitoring and prompt control of any infestations is recommended.

### **Environmental Weeds**

The distribution of introduced plants on the island is concentrated on disturbed areas. Remnant vegetation is however increasingly susceptible to impacts from a number of invasive weeds. Weeds which are not currently declared under state legislation are categorized in **Table 5** below according to their invasiveness, dispersibility and potential threat under the following criteria:

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

**Moderate:** These plants are considered to be of secondary importance at present, although some could become a problem in the future. They are not considered as invaders yet, but are known to be invasive elsewhere in the region and/or are showing signs of extension (species which are in an early

stage of invasion), or may be present on the island in disturbed areas. These plants have a moderate potential to spread and establish in new areas, both within native bush and disturbed areas.

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

A number of exotic species additional to those listed in **Table 5** are also recorded on Dauan and these are listed in **Appendix B**.

**Table 5.** Environmental weeds on Dauan Island.

Species	Life Form	Comments
<b>HIGH</b>		
Leucaena ( <i>Leucaena leucocephala</i> )	Shrub	Leucaena is the most pressing weed threat to island with the potential to severely impact and transform the remaining natural ecosystems. It is a small tree up to about six metres tall with fine bipinnate leaflets, spherical creamy yellow flower heads, dense clusters of flattened pods up to 15 cm long with 20 glossy brown, and flat seeds that scatter when ripe ( Biosecurity Queensland 2007). Its origins on Dauan are not known although it is likely to have been brought in from other islands as an ornamental. The occurrence and infestation level on Dauan requires investigation. On Boigu, Leucaena has rapidly become established in and around the margins of the community and poses a significant threat to the islands cultural and natural values.
Rubber bush ( <i>Manihot glaziovii</i> )	Shrub	A tall succulent shrub to 2m. Grows in the cleared area on top of Mt Cornwallis and on road margins on the edge of the village and dump. A highly invasive species which is difficult to control. Has the potential to invade vine thickets and forests as well as woodlands.
Giant panic ( <i>Megathyrsus maximus</i> var. <i>maximus</i> )	Grass	A robust tussock grass growing on the margins of the village and access tracks towards the dump, and around the dump area. Has a high potential to invade native grasslands and woodlands particularly on the western side of the island.
Scarlet flower ( <i>Ipomoea hederifolia</i> )	Vine	A slender vine originally from tropical America, now naturalised in Cape York Peninsula (CYP), North East Queensland and southwards to north-eastern New South Wales. Recorded on disturbed margins of the community invading shrublands and vine thicket margins. There is a high potential for its further proliferation.
Sisal, Manilla rope ( <i>Agave sisilana</i> )	Succulent shrub	A robust succulent plant that is widely cultivated as a garden ornamental. The species has had traditional usage on the Torres Strait Islands providing a natural source of fibre. It generally occurs in coastal areas where it may form dense impenetrable thickets covering dune swales and riparian areas. It is also listed as one of the 35 most troublesome weed species in the state, occurring on sandy beaches and dunes along Queensland (Queensland Government 2012). Its occurrence on the margins of disturbed littoral dune vine thicket near the dump site were confirmed during the May 2012 field survey. Infestations are of major consequence.
Butterfly pea ( <i>Clitoria ternatea</i> )	Vine	A vigorous, herbaceous perennial leguminous vine. Leaves are pinnate with 5-7 leaflets. Flowers are axillary, single or paired ranging in colour from white, mauve through to light and dark blue. Occurs in and around disturbed community areas on a number of Torres Strait Islands.
Tropical kudzu ( <i>Pueraria phaseoloides</i> var. <i>phaseoloides</i> )	Vine	Tropical Kudzu is a robust and aggressive tropical legume with large hairy trifoliolate 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

Species	Life Form	Comments
		as a forage crop, a food resource, and for medicinal purposes. It is now naturalised in CYP, north east 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 IUCN 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, Mer, Erub and Hammond Islands (Herbrechs Data 2011). Torres Strait Islanders consider it to be native and there is 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). Evidence from field observations on Mer, and Ugar and Dauan, indicates that Kudzu impacts native vegetation by climbing and smothering forest edges. It has also been observed to Dauan to form dense sprawling mats which smother native grassland vegetation (D. Stanton pers. obs. March 2011, Oct 2012). Further observations are required to determine the extent of kudzu on Dauan and its impact on native vegetation.
<b>MODERATE</b>		
Painted spurge ( <i>Euphorbia heterophylla</i> )	Herb	An introduced weed originally from tropical America naturalised in Queensland and NSW. Widespread throughout Torres Strait in particular on sand dunes and coral cays. Invades native grassland and herblands.
Mossman River grass ( <i>Cenchrus echinatus</i> )	Grass	Mossman River grass is a prostrate spreading grass with a spiny seed head that adheres to clothing and can penetrate the skin. The species has potential to become a troublesome dominant cover on grassy dune systems.
Siratro ( <i>Macroptileum atropurpureum</i> )	Vine	Siratro is widespread throughout Torres Strait occurring in community areas and on the margins of tracks and roads. It is a vigorous sprawling leguminous climber that establishes rapidly and is considered capable of invading the groundcover of shrublands.
Snake weed ( <i>Stachytarpheta jamaicensis</i> )	Herb	This low erect perennial herb is common on Masig. Its leaves are opposite with toothed margins and blue flowers borne on stiff spikes. They are also naturalised throughout Queensland where they invade roadsides, creek lines and vine forests where soil has been disturbed.
Brazilian joyweed ( <i>Alternanthera brasiliana</i> )	Herb	A perennial herb able to grow in full sun and low light conditions. Large infestations occur on the margins of the village. Has the potential to proliferate into rocky vine thicket habitats.
Mother in laws tongue ( <i>Sansevieria trifasciata</i> )	Herb	A widely cultivated strap like ornamental that has potential to invade ground cover on the margins and underneath the canopy of intact vine forest.
Calotropis ( <i>Calotropis gigantean</i> )	Shrub	The plant has milky sap which exudes from broken leaves and stems. Its occurrence on the island has been identified from a single collection in the Queensland Herbarium. The location and extent of infestation is not known. Another species <i>Calotropis procera</i> is a recognised environmental weed in northern Queensland and the Northern Territory with an ability to form dense thickets on alluvial flats. It is possible that the species has been present for some years with no noticeable spread. Given its toxicity and potential for spread, any calotropis plants should be located and controlled.
Minnieroot ( <i>Ruellia tuberosa</i> )	Herb	A herb to 60 cm tall with underground swollen tuberous taproot. The species has been recorded by DAFF (2012) in cleared/ disturbed land. The plant has ability to invade margins of vine forest and is difficult to eradicate.
Rangoon creeper ( <i>Quisqualis indica</i> )	Shrub	A widely cultivated ornamental vine with pink to red flower clusters. The plant has considerable potential to smother native vegetation.

Species	Life Form	Comments
Indian calapo ( <i>Calopogonium mucunoides</i> )	Vine	A slender creeping leguminous vine that forms dense mats, mostly in disturbed areas. The species has potential to smother native grassland habitats and degrade the margins of vine thicket habitats.
Centro ( <i>Centrosema molle</i> )	Vine	A vigorous sprawling vine that forms dense mats to smother native vegetation. Native grasslands are particularly susceptible, particularly where disturbance has been introduced.
Grader grass ( <i>Themeda quadrivalvis</i> )	Grass	A dense, tufted grass that rapidly colonises disturbed areas. It burns intensely, increasing the impact of fire on fire sensitive communities and displaces native grasses. The species is known from a single herbarium record, indicating its potential presence on the island, although was not recorded on the during recent field surveys.
<b>LOW</b>		
Indian couch ( <i>Bothriochloa pertusa</i> )	Grass	A stoloniferous and/or tufted perennial, commonly with pink to red stolons. Widespread throughout the tropics and in urban lawns, parks and roadsides. Occurs in disturbed areas and along tracks and roads. Has potential to invade native dune grassland and herbland ecosystems in the long term.
Townsville stylo / secca ( <i>Stylosanthes humilis</i> )	Erect herb	A perennial herb to 1 m high which was introduced as a pasture species in northern Australia and now widely naturalised. Leaves have three small leaflets which are narrow elliptic. Seedpods are 3–11 mm long and 1.5–2 mm wide, with 1–2 red-brown seeds. Common on throughout disturbed areas.
Asthma plant ( <i>Euphorbia hirta</i> )	Herb	Prostrate herb to 10cm with milky sap from stems and leaves. Widespread in the tropics and throughout Torres Strait in particular on sand dunes and coral cays. Invades native grassland and herblands.
Button grass ( <i>Dactyloctenium aegyptium</i> )	Grass	A low perennial grass widespread throughout Queensland and Torres Strait. Common on coral cay islands.
Cinderella weed ( <i>Synedrella nodiflora</i> )	Herb	An annual herb which occurs throughout a number of Torres Strait Islands including sand cays and continental islands. Occurs in disturbed areas and on margins of native vegetation.
Crowsfoot ( <i>Eleusine indica</i> )	Grass	Tufted erect perennial grass found throughout village area and along tracks and roads.
Pink periwinkle ( <i>Catharanthus roseus</i> )	Herb	An upright herbaceous perennial with dark green, lance-shaped leaves and abundant pale pink flowers. Seeds are dispersed by ants, wind and water. It was first recorded as naturalised in South-east Queensland in 1909 and is widely spread from North Queensland south to the New South Wales border. Common throughout Torres Strait.
Poinciana ( <i>Delonix regia</i> )	Tree	A large spreading deciduous tree with fine deciduous leaves and attractive red flowers. Known to be invasive throughout the Pacific Islands and is a particular problem on the basalt islands of Mer and Erub.
Red Natal grass ( <i>Melinis repens</i> )	Grass	A widespread perennial grassy weed common in the northern and eastern parts of Australia including Torres Strait. Occurs along disturbed areas with ability to invade margins of native vegetation and disturbed areas. On Dauan it is found primarily on disturbed sites with ability to spread into natural habitats.
Stinking passionflower ( <i>Passiflora foetida</i> )	Vine	A climbing or scrambling vine with leaves that are mostly 3-lobed and glandular hairy 4–12 cm long. Fruit are 2–4 cm wide, hairy, yellow-orange when ripe. Flowers are solitary, 3–5 cm wide, white to pale purple with a foetid smell. Small black seeds are spread by birds and mammals. Occurs throughout northern and subtropical Australia often in good condition vegetation. Ripe fruits have a pleasant flavour but green fruits and leafy material are toxic.
Tridax daisy ( <i>Tridax procumbens</i> )	Herb	An annual herb which is widespread on Dauan and other Torres Strait Islands. Occurs in disturbed areas and as a groundcover on foredune grassland and herbland communities.
Ogiera ( <i>Eleutheranthera ruderalis</i> )	Herb	A weed of disturbed areas and gardens.
Summer grass ( <i>Digitaria ciliaris</i> )	Grass	This grass is commonly found in lawns, gardens and disturbed areas.

Species	Life Form	Comments
Sweet broom ( <i>Scoparia dulcis</i> )	Herb	This herb is commonly found in lawns, gardens and disturbed areas.
Mint weed ( <i>Hyptis suaveolens</i> )	Herb	A robust annual herb forming a multi stemmed shrub to 2m. Native of tropical America but now widespread throughout the tropics and subtropics. Naturalised in Western Australia, Northern Territory, CYP, north east Queensland and southwards as far as south-eastern Queensland. It is widespread in and around a number of island communities with seeds dispersed by wind, water and birds.
Streaked rattlepod ( <i>Crotalaria pallida</i> var. <i>obovata</i> )	Low shrub	Originally from tropical America, and now widespread in northern Queensland and north-eastern New South Wales. Occurs as scattered individuals in disturbed areas but capable of infesting disturbed areas and the margins of native vegetation.




**Photograph 5.** Tropical kudzu spreading into native grassland on Dauan.

### Weed Threats




Those weeds currently not recorded on Dauan yet which are capable of causing long-term changes to the island's vegetation are listed in **Table 6**.

**Table 6.** Major weed threats

Species	Comments	
<b>Gamba grass</b> ( <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).	

Gamba grass near Injinoo (April 09).



Species	Comments	
<b>Annual mission grass</b> <b>(<i>Pennisetum pedicellatum</i> subsp. <i>unispiculum</i>)</b>	Annual mission grass is considered a serious potential threat and is listed as a Key Threatening Processes under the EPBC Act. It occurs on Mua and Mabuia Islands.	 <p>(source NT Govt.)  <a href="http://www.nt.gov.au/nreta/natres/weeds/find/missiongrass.html">http://www.nt.gov.au/nreta/natres/weeds/find/missiongrass.html</a></p>
<b>Lantana</b> <b>(<i>Lantana camara</i>)</b>	Lantana is a Class 3 declared weed and listed as a Weed of National Significance (WONS) species. It is currently widespread on a number of Torres Strait Islands including Erub, Mer and Ugar. The species poses a potential threat to deciduous vine thickets on the island	 <p><i>Lantana camara</i> growing at Erub airstrip.</p>
<b>Praxelis</b> <b>(<i>Praxelis clematidea</i>)</b>	A highly invasive erect, branched, unpleasant smelling herb with hairy stems and foliage. This species has been observed in native grassland habitats on Erub as well as rock pavement habitats on Mabuia. The species is known also from Badu, Mua, and Mabuia.	 <p>Praxelis recorded on Erub</p>
<b>Barliera</b> <b>(<i>Barliera prionitis</i>)</b>	This plant is considered an emerging environmental weed, which has the potential to seriously degrade habitats on coral cay islands, particularly in vine thickets and shrublands on sand dunes where there are canopy openings or disturbance. It is recognized as one of 28 weeds on the <i>Alert List for Environmental Weeds</i> (NHT 2003). The plant is currently known from Boigu Island.	
<b>Pond Apple</b> <b>(<i>Annona glabra</i>)</b>	A deciduous shrub that infests swamplands and the brackish margins of mangrove habitats. The species is spread by dispersal of fruit and seeds which are ingested by animal or float on tidal currents. Severe infestations occur on Queensland's wet tropical coast. The species, which has been recorded on Horn Island, is a WONS species.	

## 6.0 Fauna (Animals)

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

As for the majority of Torres Strait Islands there is a lack of systematic survey of fauna habitats on the island. A desktop review of the DERM WildNet (Wildlife Online) database, Online Zoological Collections of Australian Museums (OZCAM 2011), the EPBC Online Protected Matters Search Tool maintained by the DSEWPC (2011g), was supported by analysis of the survey results of Natural Solutions (2008). Other records are incidental, or part of broader regional survey are targeted towards particular life forms (e.g. Draffan *et al.* 1983; Clarke 2004; Garnet *et al.* 2000; Hall 2008, Helgen 2004) of which studies of avifauna (birds) have been most comprehensive.

The desktop review identified 135 fauna species that have been reported for Dauan Island (**Appendix D**). This includes 3 frog, 20 reptile, 100 bird and 12 mammal species. This can be compared with the 384 terrestrial fauna species that have been reported for the broader Torres Strait island group. Of these, one reptile, one bird and four mammal species are introduced. An additional two species have been identified by the Protected Matters Search Tool as possibly occurring.

### 6.1 Culturally Important Fauna Species

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

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

The region's birds, mammals and reptiles also have cultural significance for Torres Strait Islanders. Many feature in local myths and legends, and some are also clan totems (*augadh*). On Dauan Island, clan totems include snake, crocodile and cassowary

The calls of some birds are recognized as omens, foretelling events such as weather, the arrival of a ship or the death of a relative (e.g. Haddon 1908:260-261), others are 'calendar species' which alert people to the fact that a particular food resource is now available. Feathers from birds such as herons



(*Egretta sacra* and *Ardea* spp.) and the cassowary (*Casuarius casuarius* – obtained from Papua New Guinea traders) continue to be used for traditional headdresses.

## **6.2 Fauna Habitat Values**

There has been little systematic fauna survey work on Dauan to date with the only habitats subject to any form of systematic survey being lowland areas in proximity of the settlement. Much of the islands rugged and heavily forest interior remains essentially unsurveyed for fauna value. Systematic sampling of forested interior, including well developed upland rainforest and associated exposed boulder fields is likely to increase the known fauna composition of Dauan and possibly the broader Torres Strait region. The forest provides an extensive repository of foraging resources for frugiverous birds. The prominence of mango within rainforest habitats provides an abundant seasonal food resource for megabat species and deep crevasses in the rocky substrate providing high quality roosting sites for microbats.

The reptile assemblage of 18 species is likely to be a significant under-representation with the likelihood that further species will be added with survey of rainforest habitats. Similarly, the known mammal assemblage of 11, is likely to be increased significantly with further systematic survey, particularly targeted bat survey within appropriate habitats. Due to the proximity to the Papua New Guinea mainland, there is likely to be considerable interchange between mainland and island bird populations. Hence there is some potential that further bird species will be added to the island list although it is highly likely that these will be transient in nature rather than permanent inhabitants.

## **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 including those listed as Migratory.
- Species listed under Endangered, Vulnerable or Near-Threatened under Queensland's NC Act.
- Species considered of 'critical' or 'high' priority under the Back on Track framework (DERM 2011a).

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

### **6.3.1 Endangered, Vulnerable and Near-Threatened Species**

A total of seven species of conservation significance (threatened species) at either state or federal level have been reported on the island, with an additional species predicted to occur (see **Table 7**). There are also an additional 32 migratory species considered to have significance at federal level that

are reported to occur on the island (**Appendix G**). Those EVNT species reported to occur on Dauan Island are also listed in **Table 7**.

It should also be noted that Natural Solutions (2008) reports eclectus parrot *Eclectus roratus macgillivrayi*, listed as Vulnerable under the NC Act, as occurring on Dauan Island. However, the subspecies present is *E. r. polychloros* (Garnett & Crowley 2000; Clarke 2004b), which is listed as “Least Concern”. The listing of *Eclectus roratus macgillivrayi* in the WildNet database search for the island should be considered erroneous.

**Table 7.** Endangered, Vulnerable and Near-Threatened fauna species<sup>1</sup> reported or predicted<sup>2</sup> to occur on Dauan Island.

Scientific Name <sup>3</sup>	Common Name	Status <sup>4</sup>			Source <sup>6</sup>
		EPBC Act	NC Act	BoT <sup>5</sup>	
<b>SPECIES REPORTED</b>					
<i>Emoia atrocostata</i>	Littoral whiptail skink	-	NT	-	Unpublished record (BAAM 2004 cited in Natural Solutions 2008)
<i>Numenius madagascariensis</i>	Eastern curlew	M	NT	-	Unpublished record (BAAM 2004 cited in Natural Solutions 2008)
<i>Sterna albifrons</i>	Little tern	M	NT	High	WildNet, Reported in Natural Solutions 2008.
<i>Esacus magnirostris</i>	Beach stone curlew	-	V	Critic	WildNet
<i>Varanus prasinus</i>	Emerald monitor	-	V	-	WildNet, Unpublished record ((BAAM 2004 cited in Natural Solutions 2008)
<i>Taphozous australis</i>	Coastal sheathtail bat	-	V	-	Reported in Natural Solutions 2008.
<i>Saccolaimus mixtus</i>	Papuan sheathtail bat	-	NT	-	Reported in Natural Solutions 2008.
<b>SPECIES PREDICTED<sup>2</sup></b>					
<i>Pteropus conspicillatus</i>	Spectacled flying fox	V	-	-	Predicted by the EPBC Protected Matters database

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

### **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 Dauan Island the littoral whiptail-skink would be threatened by cats, and loss of mangroves due to clearing or storm damage.



**Photograph 6.** Littoral whiptail skink on Ugar (Photograph by D. Stanton).

### **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 Boigu, Mua, Badu, Mer and Erub. There is a single WildNet record from Mabuiag (DERM 2010e), 4 wildnet records from Dauan and an unpublished record from Iama (Natural Solutions 2008b). The species is likely, at least on passage, on any island that has suitable foraging habitat.

The Australian eastern curlew population is estimated at 19 000 and numbers have fallen significantly in some southern areas. In Tasmania populations have declined by 65% (Reid & Park 2003). It is unknown as to whether these declines are a result of overall population decline or a change in non-breeding range. Eastern curlews are easily disturbed by people at foraging and roosting sites (Higgins & Davies 1996; Taylor & Bester 1999) and are often the first species in a high-tide roost to take to flight if disturbed, relocating to alternative roosts often some considerable distance away (Lane 1987). Eastern curlews will take off when humans approach to within 30-100 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). The species is most likely to be threatened by disturbance when foraging and such a threat is likely to be significant only during passage to northern hemisphere breeding grounds.

### **Little Tern (*Sternula albifrons*)**

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

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

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

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

The species occurs in Europe, Asia and Australasia and within Australia occurs along the coastal regions of eastern Australia, south to Tasmania, and across northern Australia, west to northern parts of Western Australia (Higgins & Davies 1996). The little tern is mainly a summer visitor to northern Australia, including Torres Strait, though there is a winter-breeding population in the Gulf of Carpentaria (Blakers *et al.* 1984). In the Torres Strait Draffan *et al.* (1983) reports the species from 13

islands, including Badu, Murray and Erub. It is also known from Boigu (Clarke 2004b; DERM 2010a), Mua (Ingram 2008) and Iama (Natural Solutions 2008b). A single WildNet record is reported from Dauan. Draffan *et al.* (1983) described it as an uncommon summer visitor throughout the Torres Strait. In summer of 2002, Clarke (2004b) recorded 151 individuals on Boigu Island, approximately one third of which were in, or near, full breeding plumage, suggesting that the northern Torres Strait islands may be more important for the species than previously thought.

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

### **Beach Stone-curlew (*Esacus magnirostris*)**

**NC Act:** Vulnerable

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

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

Beach stone-curlews are found around eastern and northern Australia from Nambucca Heads in New South Wales (and occasionally south to Victoria) to Port Cloates in Western Australia and extend into New Guinea, the Solomon Islands and Indonesia (Marchant & Higgins 1993). Draffan *et al.* (1983) report the species from 33 Torres Strait Islands in total, in every area except the north-west. A single WildNet record is reported for Dauan.

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

ones is increased (Garnett & Crowley 2000). On Dauan Island the species may be threatened by feral species 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 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 2009e) and Mer Islands (DERM 2010d; OZCAM 2011). Two WildNet records of the species are reported for Dauan, and an unpublished record is cited by Natural Solutions (2008) from BAAM (2004).

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 Dauan Island the species is probably most at threat to loss and degradation of vine thicket and mangrove habitats.

### **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 2011a).

The coastal sheathtail bat 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 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 a Queensland Museum specimen (reported in Conics 2009b) from Mua, and observations and Anabat recordings from Pulu (Hitchcock *et al.* 2009, Watson 2009). There are possible Anabat recordings for Mabuiag (Conics 2009a). Natural Solutions (2008) reports sighting the coastal sheathtail bat on Dauan, although this record has not been confirmed with a vouchered (nor captured) specimen and no specimens are held in museum collections.

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 Dauan Island the coastal sheathtail bat would be threatened by disturbance to any roosts and maternity sites and by loss of foraging habitat including mangroves, forest, woodland and shrubland. Given the general inaccessibility and difficulty of the terrain on Dauan, coupled with an abundance of roosting sites, these threats appear minimal.



**Photograph 7.** Coastal sheathtail bat roosting in the St Pauls Church on Mua Island (photograph by T. Reis).

### **Papuan Sheathtail Bat (*Saccoleimus mixtus*)**

**NC Act:** Near-Threatened

The Papuan sheathtail bat has not been recorded previously in the Torres Strait. Australian specimens are known from northern Cape York Peninsula near Brown's Creek (Pascoe River), 10

specimens collected from near Weipa in 1980–1982, and a single specimen from Heathlands National Park. The full extent of the species range has not been determined (Environmental Australia, 1999). Five specimens are known from southern New Guinea (Tate 1941).

Australian specimens have been collected from open eucalypt forest and woodland (*Eucalyptus tetradonta*), clearings around buildings and flying above heath communities. Papua New Guinea specimens have been collected from monsoonal woodland with a single specimen collected from within a limestone cave. The species forages in the open above the canopy and is thought to roost in tree hollows (Environment Australia, 1999).

Natural Solutions (2008) reports siting the species on Dauan within a range of habitats although there has been no confirmation with vouchered (nor captured) specimens and no specimens from Dauan are held in museum collections.

Current threats to the species are not known although clearing of vegetation on Dauan would be *problematic if the species is roosting in tree hollows*.

### 6.3.2 Additional possible EVNT species

**Table 8** lists the 3 Vulnerable and Near-Threatened species that are predicted to occur on Dauan Island based on known distribution and habitat preferences. The island has been inadequately surveyed for fauna so predictions from throughout the Torres Straits are included to aid in the identification of additional likely species for Dauan Island. Species profiles for the EVNT species possibly occurring are provided in **Appendix E**.

**Table 8.** Critically Endangered, Endangered, Vulnerable and Near-Threatened fauna species<sup>1</sup> predicted<sup>2</sup> to occur on Dauan Island.

Scientific Name	Common Name	Status <sup>3</sup>			Known Distribution in Torres Strait <sup>5</sup>
		EPBC Act	NC Act	BoT <sup>4</sup>	
<b>MAMMALS</b>					
<i>Dobsonia magna</i> <sup>6</sup>	Bare-backed fruit-bat		NT		Mua Island.
<i>Nyctimene cephalotes</i>	Torresian tube-nosed bat		NT		Mua Island.
<i>Hipposideros cervinus</i>	Fawn leaf-nosed bat		V	high	Mua and Thursday islands.

1. Listed under listed as Critically Endangered, Endangered, Vulnerable and/or Near-Threatened (EVNT) under the Commonwealth's Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and/or Queensland's Nature Conservation Act 1992 (NC Act).
2. Predicted by the EPBC Protected Matters Search Tool maintained by DSEWPC (2011g).
3. Status: CE = Critically Endangered, E = Endangered, V = Vulnerable, NT = Near-Threatened, M = Migratory, LC = Least Concern (Common).
4. Back on Track (BoT) species considered of 'critical' or 'high' priority under the Back on Track framework (DERM 2011a).
5. May include records that require verification.
6. Listed under the NC Act as *Dobsonia moluccensis*.

## Mammals



The bare-backed fruit-bat (*Dobsonia magna*<sup>2</sup>) is abundant in most habitats in New Guinea and is known from coastal areas near Boigu Island (Flannery 1995), hence may possibly occur on Dauan. The Torresian tube-nosed bat (*Nyctimene cephalotes*) is widespread in New Guinea and specimens are known from the coast immediately adjacent to Torres Strait (Duncan *et al.* 1999). Fawn leaf-nosed bat (*Hipposideros cervinus*) and spectacled flying-fox (*Pteropus conspicillatus*) also occur in New Guinea, though there are few records of spectacled flying-fox in Papua New Guinea. A number of sources, including Duncan *et al.* (1999) and Churchill (2008), state that the spectacled flying-fox occurs in the Torres Strait but no location details are provided. The four species may be present on Dauan Island, or at least occur as sporadic or seasonal visitors from the nearby New Guinea mainland. Spectacled flying-fox is an obvious and easily identified species and its occurrence is the least likely.

### 6.3.3 Migratory species

Fifty-seven bird species listed as Migratory under the EPBC Act are known to occur in Torres Strait (**Appendix F**). The Vulnerable (NC Act) salt-water crocodile is also listed as Migratory under the EPBC Act and is known from Saibai Island and is expected to occur on Dauan. A number of other species also migrate into or through the Torres Strait but are not listed under the EPBC Act. Unless otherwise stated it should be assumed that reference to Migratory species in this report refers only to those species listed as such under the EPBC Act. **Table 9** lists the 32 Migratory birds reported to occur on Dauan Island, with an additional 16 birds (and one reptile) that are likely to occur based on records on adjacent islands and suitable habitat. All species are listed as Least Concern under the NC Act unless otherwise noted.

**Table 9.** Migratory species reported or predicted to occur on Dauan Island.

Scientific Name	Common name	Comments
<b>Species reported</b>		
<i>Apus pacificus</i>	Fork-tailed swift	WildNet record
<i>Ardea modesta</i> <sup>1</sup>	Eastern great egret	WildNet & published records.
<i>Plegadis falcinellus</i>	Glossy ibis	WildNet & published record
<i>Pandion cristatus</i> <sup>2</sup>	Eastern osprey	WildNet & published records.
<i>Haliaeetus leucogaster</i>	White-bellied sea-eagle	WildNet & published records.
<i>Charadrius mongolus</i>	Lesser sand plover	WildNet & published records.
<i>Charadrius leschenaultii</i>	Greater sand plover	WildNet & published records.
<i>Numenius minutus</i>	Little curlew	Published record (Natural Solutions 2008)
<i>Numenius phaeopus</i>	Whimbrel	WildNet & published records.
<i>Numenius madagascariensis</i>	Eastern curlew	WildNet
<i>Xenus cinereus</i>	Terek sandpiper	WildNet & published records.
<i>Actitis hypoleucos</i> <sup>3</sup>	Common sandpiper	WildNet & published records.
<i>Tringa brevipes</i> <sup>4</sup>	Grey-tailed tattler	WildNet & published records.
<i>Tringa incana</i> <sup>5</sup>	Wandering tattler	WildNet record
<i>Tringa nebularia</i>	Common greenshank	WildNet & published records.
<i>Calidris ruficollis</i>	Red-necked stint	WildNet & published record
<i>Calidris acuminata</i>	Sharp-tailed sandpiper	WildNet & published records.

<sup>2</sup> Listed under the NC Act as *Dobsonia moluccensis*

Scientific Name	Common name	Comments
<i>Calidris ferruginea</i>	Curlew sandpiper	WildNet
<i>Anous stolidus</i>	Common noddy	WildNet
<i>Sternula albifrons</i> <sup>6</sup>	Little tern	WildNet record
<i>Hydroprogne caspia</i>	Caspian tern	WildNet & published records.
<i>Cuculus optatus</i> <sup>7</sup>	Oriental cuckoo	WildNet record
<i>Merops ornatus</i>	Rainbow bee-eater	WildNet & published records.
<i>Coracina tenuirostris melvillensis</i>	(Melville) cicadabird	WildNet & published records.
<i>Rhipidura rufifrons</i>	Rufous fantail	Published record (Natural Solutions 2008)
<i>Myiagra cyanoleuca</i>	Satin flycatcher	Published record (Natural Solutions 2008)
<i>Monarcha melanopsis</i>	Black-faced monarch	WildNet & published records.
<i>Symposiachrus trivirgatus</i> <sup>8</sup>	Spectacled monarch	WildNet & Published record.
<i>Hirundo rustica</i>	Barn swallow	WildNet record
<i>Apus pacificus</i>	Fork-tailed swift	WildNet record
<i>Ardea modesta</i> <sup>9</sup>	Eastern great egret	WildNet & published records.
<i>Plegadis falcinellus</i>	Glossy ibis	WildNet & published record
<b>Additional possible migratory species</b>		
<i>Crocodylus porosus</i>	Salt water crocodile	No Records
<i>Gallinago megala</i>	Swinhoe's snipe	No Records
<i>Limosa limosa</i>	Black-tailed godwit	No Records
<i>Xenus cinereus</i>	Terek sandpiper	No Records
<i>Tringa nebularia</i>	Common greenshank	No Records
<i>Tringa stagnatilis</i>	Marsh sandpiper	No Records
<i>Tringa glareola</i>	Wood sandpiper	No Records
<i>Calidris melanotos</i>	Pectoral sandpiper	No Records
<i>Onychoprion anaethetus</i>	Bridled tern	No Records
<i>Hydroprogne caspia</i>	Caspian tern	No Records
<i>Chlidonias leucopterus</i>	White-winged black tern	No Records
<i>Sterna sumatrana</i>	Black-naped tern	No Records
<i>Limosa lapponica</i>	Bar-tailed godwit	No Records
<i>Calidris tenuirostris</i>	Great knot	No Records
<i>Calidris canutus</i>	Red knot	No Records
<i>Pluvialis fulva</i>	Pacific golden plover	No Records
<i>Pluvialis squatarola</i>	Grey plover	No Records

1. Listed as Near-Threatened under the NC Act.
2. 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).
3. Also listed under CAMBA and ROKAMBA as *Tringa hypoleucos*
4. Also listed under the Bonn Convention and JAMBA as *Heteroscelus brevipes*.
5. Also listed under the Bonn Convention and JAMBA as *Heteroscelus incanus*.
6. Listed under the EPBC Act (Bonn Convention, CAMBA, JAMBA, ROKAMBA) as *Sterna albifrons*. Listed under the NC Act as Endangered.
7. Listed under the EPBC Act (CAMBA, JAMBA, ROKAMBA) as *Cuculus saturatus*. Australian birds elevated to full species level as *A. optatus* (Christidis & Boles 2008).
8. Listed under the EPBC Act (Bonn Convention) as *Monarcha trivirgatus*.
9. 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).

### 6.3.4 Species of Regional Significance

The *Action Plan for Australian Birds 2000* lists 13 bird species or subspecies that occur on Dauan Island and meet the criteria for listing as Vulnerable under the EPBC Act (**Table 10**). However, due to likely genetic exchange with Papua New Guinea these birds are regarded as Near-Threatened and are not listed under the EPBC Act (Garnett & Crowley 2000). This EPBC category of Near-Threatened is not the same as the Near-Threatened status under the NC Act.

**Table 10.** Species considered Near-Threatened<sup>1</sup> known or expected to occur on Dauan Island.

Scientific Name	Common name	Comments <sup>2</sup>
<i>Eclectus roratus polychloros</i>	Eclectus parrot	Published record.
<i>Gerygone magnirostris brunneipectus</i>	Large-billed gerygone	Published record.
<i>Myzomela obscura fumata</i>	Dusky honeyeater	Database & published records.
<i>Myzomela erythrocephala infuscata</i>	Red-headed honeyeater	Published record.
<i>Xanthotis flaviventer saturator</i>	Tawny-breasted honeyeater	Database & published records.
<i>Cracticus quoyi alecto</i>	Black butcherbird	Database & published records.
<i>Dicrurus bracteatus carbonarius</i>	Spangled drongo	Database & published records.
<i>Rhipidura rufiventris gularis</i>	Northern fantail	Database & published records.
<i>Rhipidura leucophrys melaleuca</i>	Willie wagtail	Database & published records.
<i>Corvus orru orru</i>	Torresian crow	Database & published records.
<i>Myiagra rubecula papuana</i>	Leaden flycatcher	Database record. Subspecies not provided.
<i>Arses telescopthalmus harterti</i>	Frilled monarch	Unconfirmed record (Clarke 2004b).
<i>Phonygammus keraudrenii jamesii</i>	Trumpet manucode	Published record. Subspecies not provided.

1. Listed under the *Coordinated Conservation Plan for Torres Strait* (Garnett & Crowley 2000).

2. Known from Museum records, published literature (Draffan *et al.* 1983; Clarke 2004a, b; Wilson 2005), WildNet database and/or reports and other grey literature (e.g. Schaffer 2010). These sources are not necessarily mutually exclusive and many records are unconfirmed.

All of these species are listed as Least Concern under the NC Act and none of these species is considered threatened in Torres Strait except perhaps by the effects of climate change (Garnett & Crowley 2000). Natural Solutions (2008) reports eclectus parrot *Eclectus roratus macgillivrayi*, listed as Vulnerable under the NC Act, as occurring on Dauan Island. However, the subspecies present is *Eclectus roratus polychloros* (Garnett & Crowley 2000; Clarke 2004b), which is listed as “Least Concern”. The listing of *Eclectus roratus macgillivrayi* in the WildNet database search for the island should be considered erroneous.

## 6.4 Pest Fauna Species

Exotic (introduced) fauna species reported for Dauan Island are house gecko, house sparrow (*Passer domesticus*), dog and cat.

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 geckoes on Dauan Island i.e. the dubious dtella (*Gehrya dubia*). Mourning gecko is superficially similar in appearance to Asian house gecko and also inhabits buildings. Local information on geckoes is therefore unlikely to be reliable in regards to species and an assessment of the level of threat posed by house gecko requires survey effort. This could be combined with higher priority reptile surveys.

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

Dogs are reportedly present in on the island and are a threat to ground nesting birds, particularly eastern and beach stone curlew as well as a disturbance factor for waders, terns and black-necked stork.

Cats are reported for the island (Natural Solutions 2008). 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).

## **6.5 Threats**

The major threats to fauna in any location are loss, degradation and fragmentation of habitat. These processes may be due to deliberate clearing or may be the result of inappropriate fire regimes, damage by feral and domestic herbivores, storm damage and weed invasion. The threat posed to many species by clearing is minimal when the lack of suitable land for development is considered. As mentioned above, exotic predators, such as dogs and cats, pose a threat to native fauna, either directly through predation or by disturbance. Hunting may pose a threat to some species. Species likely to be targeted include varanids (goannas), eclectus parrot, amethyst python (*Morelia amethystina*), waterfowl, pigeons and black flying-fox (*Pteropus alecto*).

## **6.6 Future Priorities**

It is important that the fauna values of Dauan 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**

A targeted trapping and Anabat survey to provide greater level of certainty in respect to the resident bat population, particularly in regard to the Papuan sheath-tail bat which has not previously been recorded in the Torres Strait. The *Recovery Outline for the Papuan sheath-tail bat* (Environment Australia (1999) included the following key recovery actions for the Papuan sheath-tail:

- Undertake targeted surveys to clarify distribution and conservation status. Surveys should utilise ultrasonic bat detection techniques.
- Carry out ecological research to determine
  - habitat requirements
  - roost and maternity site selection
  - foraging strategy
  - population dynamics, and
  - threatening processes.
- Review status based on knowledge gained through the above actions.

These measures are equally adaptable to the full suite of bats reported to occur on the island. Also considered high priority is the location of any breeding sites for the beach stone curlew so that these sites can be monitored and afforded protection from destructive activities.

### **Medium Priority**

- General fauna survey of vine forest habitats, particularly less accessible areas as these have not been subject to any intensive fauna survey activity.
- Formal survey of populations of threatened reptile species including littoral whiptail skink and emerald monitor.

The rugged and generally inaccessible terrain that characterises Dauan Island has meant that the most extensive island habitats, notably vine forests and caves within boulder fields have escaped any attempt at structured fauna survey. Well-planned and systematic survey work is required to adequately assess the island's fauna assemblage in its entirety. The proximity of the New Guinea mainland means that bird and bat species are likely to be added to the island's species list each time any substantial survey effort is undertaken. Other than around human habitation, vine forest and cave habitats appear the most likely to support previously undiscovered species.

The 13 reptiles recorded is undoubtedly an under-representation of the actual assemblage. It is likely that more species will be recorded should further survey be undertaken, particularly nocturnal species. Reptile survey work requires a greater level of expertise than for frogs, birds and many mammals, given the difficulty in identification for many species. Some New Guinea species, not yet recorded in Australian territory, may be present.

## ***7.0 The Role of Fire in Savanna Landscapes***

Most 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 Torres Strait and Cape York Peninsula when Europeans arrived was the product of traditional burning practices 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. In many areas 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 regimes<sup>3</sup>. 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 the Torres Strait Islands and Cape York Peninsula, there were dramatic changes in plant communities as the climate shifted under a rapid succession of

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<sup>3</sup> Fire regimes are defined by the frequency of fires and their season of occurrence, both of which have relationship to their relative severity

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 those changes that occurred in 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 past and present use of fire in the Torres Strait Islands is evident on the majority of islands and there is no doubt that its ongoing use 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 forms 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 and Carter 2003).

The reasons people used fire are well documented (Russell Smith *et al.* 2009) and include 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.

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 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 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 Profiles for Dauan Island Habitats

This section presents a summary of current knowledge, management issues and recommended management actions for the habitats that occur on Dauan Island. The information presented has been derived from prior and recent field survey efforts, review of previous reports, input from experts at technical workshops, and consultation with island rangers and indigenous community members.

### 8.1 Evergreen Vine Forest and Thicket

#### 8.1.1 Status of Ecological Knowledge

Evergreen vine forest and thicket is a highly restricted habitat type in the Torres Strait Islands. The most extensive formations are associated with mountain top locations on Banks Peak (Mua), Mt Adolphus (Muri) Island and also Mt Cornwallis on Dauan. The Dauan occurrences are represented by the following two variations:

1. Vegetation community 1a, which forms a notophyll vine forest on and surrounding the high peak of Mt Cornwallis, and
2. Vegetation community 1b, a low vine thicket on the exposed south-east facing coast of the island.

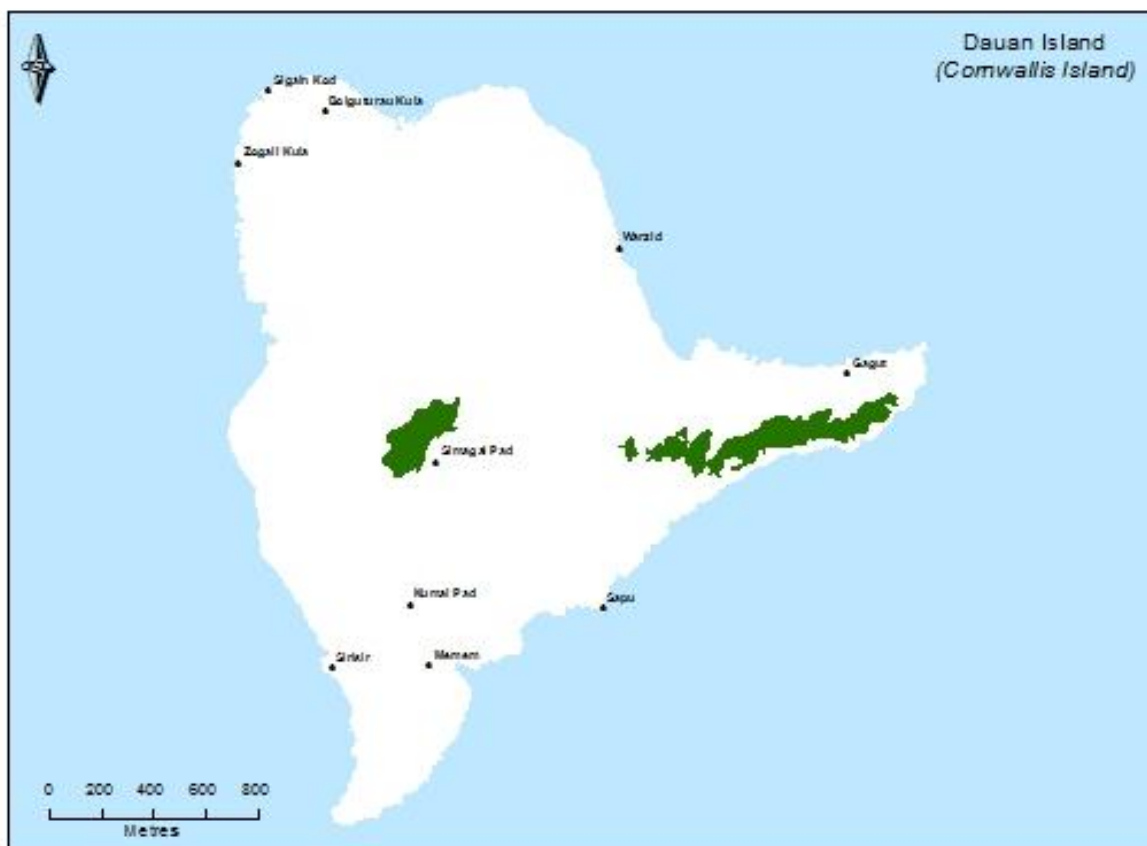
Vegetation Community 1a forms an evergreen notophyll vine forest with a relatively low canopy that ranges from 15 to 25m and features a windswept canopy in exposed locations. The taller canopy trees are typically nestled amongst massive boulders which gives them some protection from the constant south-east trade winds. The canopy comprises *Ganophyllum falcatum*, *Arytera divaricata*, *Mangifera indica*, *Ficus microcarpa*, *Alstonia spectabilis*, *Celtis paniculata*, *Syzygium puberulum*, *Calophyllum sil*, *Buchanania arborescens*, *Dysoxylum oppositifolium*, *Acmenospermum claviflorum*, *Schefflera actinophylla*, *Endiandra impressicosta*, *Cryptocarya cunninghamii* and *Ficus destruens*. Amongst the sub-canopy species, *Garcinia warrenii*, *Endiandra impressicosta*, *Garcinia dulcis*, *Cupaniopsis anacardioides*, *Aglaiia elaeagnoidea* and *Ficus virens* var. *sublanceolata* are frequent.

The shrub and ground covers are structurally and floristically complex and associated species include *Pleomele angustifolia*, *Capparis lucida*, *Haplostichanthus fruticosus*, *Zanthoxylum rhetsa*, *Macaranga tanarius*, *Litsea glutinosa*, *Leea indica*, *Memecylon pauciflorum* var. *pauciflorum*, *Archidendron grandiflorum*, *Ptychosperma macarthurii*, *Trophis scandens*, *Chionanthus ramiflora*, *Glycosmis trifoliata*, *Alectryon repandodentatus*, and *Smilax australis*. Epiphytes, climbing epiphytes and ferns are particularly abundant, influenced by the permanently moist upland environment with ferns such as *Nephrolepis biserrata*, *Drynaria quercifolia*, *Drynaria sparsisora* and *Pyrrosia longifolia*. Epiphytic orchids are a feature together with abundant *Hoya* and *Dischidia*.

The RE provides the only known 'Australian' habitat of *Dischidia littoralis* (Vulnerable NC Act) (Forster and Liddle 1993) which was recorded on the survey, and hosts a disjunct (although sparse) population of *Alectryon repandodentatus* (Endangered NC Act and EPBC Act) the latter representing

an extension of range and habitat for a species otherwise known in Australian territory only from the basaltic Eastern Islands and Lockerbie (Cape York Peninsula) (Landsberg and Clarkson 2002), although it is widespread in Papua New Guinea (see Conn *et al.* 2006+). The prominence of mango (*Mangifera indica*) in the upper stratum of this forest also requires mention, as the species appears to be long established. Information from traditional owners on Dauan Island suggests that the species may have been established as a potential food source during periods when the island population was forced to take shelter on the hillslopes to escape attack from Papua New Guinea Raiders.

Vegetation community 1b is a depauperate variation of evergreen vine thicket that has been shaped and pruned by south-easterly trade winds. The canopy height is variable depending on position in relation to rock boulders. Taller communities typically form in sheltered crevasses where the canopy may reach 12m. In exposed locations, the canopy may be significantly lower. Dominant canopy species include *Manilkara kauki*, *Intsia bijuga*, *Sarlisia sericea*, *Garcinia warrenii*, *Aglaia elaeagnoidea*, *Chionanthus ramiflora*, *Diospyros* sp. (Mt White P.I.Forster PIF14415), *Drypetes deplanchei*, *Ptychosperma macarthurii*, *Buchanania arborescens*, *Pandanus* sp., *Ficus microcarpa*, and *Pouteria obovoidea*. A shrub layer ranging in height from 0.5 m to 3 m is the dominant sub-canopy stratum. Typical species of this shrub layer include *Trophis scandens* subsp. *scandens*, *Alyxia spicata*, *Cleistanthus peninsularis*, *Tabernaemontana orientalis*, *Glycosmis trifoliata*, *Cupaniopsis anacardioides*, *Aglaia elaeagnoidea*, *Flagellaria indica* and *Smilax australis*.



**Figure 3.** Distribution of evergreen vine forest and thicket Dauan Island (place names after Lawrie, 1970).





**Photograph 8.** Notophyll evergreen vine forest (VC1a) on Mt Cornwallis, and **Photograph 9.** Windsheared evergreen vine thicket (VC1b) on south-east facing coast of Dauan.

### 8.1.2 Ecological / Cultural Considerations

**Habitat Condition:** The cultural influence imposed on this habitat is noted in following sections (see *Cultural Perspectives*) although the habitat has been largely unimpacted by mans activities. The confinement of this habitat, both forest and thicket, to inaccessible rocky locations means that it is not subject to impact from future land developments. Infrastructure maintenance for the telecommunications towers and a service helipad on Mt Cornwallis provide opportunities for introduction of exotic species transported in construction equipment. Significant populations of the invasive rubber bush (*Manilhot glavioli*) were recorded on the margins of rainforest on the 2012 survey.

**Fauna:** The fauna assemblage associated with this habitat is poorly sampled and virtually unknown. This habitat lacks any previous structured fauna sampling effort, and considering the extent of this habitat, represents a major gap in faunal knowledge. It is also considered that the mountain top forests are those most likely to present the possibility of new fauna species or species records. The bat assemblage within this vine forest, due to the large number of potential roosting sites, presents the greatest possibility for new discovery. Vine forest provides potential habitat for the bare-backed fruit bat, the cave dwelling 'fawn leaf-nosed bat', Torresian tube nosed bat, reptiles including the emerald monitor, and birds including grey and red goshawks.

**Flora:** The habitat supports high species diversity and is host to numerous significant species (see **Section 5.2.1**). These include a disjunct population of the Endangered *Alectryon repandodentatus*, populations of the Vulnerable *Dischidia littoralis*, and many regionally significant species which are either disjunct or at the limit of geographical range. The habitat also supports a rich orchid and fern flora together with the Vulnerable (NC Act) vine *Cissus aristata*.

**Cultural Perspectives:** Evergreen vine forest on Mt Cornwallis presents an unusual case, being undisturbed structurally yet comprising a significant canopy component of mango (*Mangifera indica*), regarded an exotic species in Queensland. This suggests that this forest has been subject to long

term anthropogenic influence, possibly in the form of gardening in the rich granite soils, even if the forest has never been structurally impacted.

### **8.1.3 Ecological / Cultural Considerations**

This habitat is robust, buffered from the impacts of footslope fires and as such, requires little action in terms of active management. Informal observation of habitat condition including health of canopy (monitoring for dieback) should be undertaken on a regular annual to bi-annual basis whenever the summit is accessed (usually by helicopter).

The mountain top rainforest is possibly the least known and sampled habitat on the island in terms of flora and faunal assemblage. The habitat should be subject to targeted fauna survey and trapping, particularly to gain greater insight into the habitats mammal assemblage. It will however be a difficult habitat to survey due to limited accessibility and will require concerted effort. Documentation of all animals observed (including invasive/exotic species) should be undertaken with photographs and collections (preserved in freezer) where possible for future formal identification by authorities or agencies. The habitat supports numerous threatened, cultural and regionally significant flora species some of which are poorly known, or possibly not known to science.

Systematic data collection of plant species within this habitat should also be carried out. It will also be important to identify plants which have cultural significance to the local community, and the specimen collection program should include plants of cultural/resource significance and local plant names compiled in an appropriately stored reference collection. Scientific names for plant species can be applied when the opportunity arises.

### **8.1.4 Summary of Recommended Management Actions**

The information provided in **Table 11** below aims to summarise the key issues, actions and priorities so as to aid the transfer of information into the Dauan 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 to 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 11.** Summary of Management Actions for Evergreen and Vine Forests

Management Category	Context/Issue	Actions	Priority
<b>Fauna Surveys</b>	Fauna composition within this habitat is poorly known and documented.	The design and implementation of a structured fauna survey and trapping program is considered a high priority requirement for action. The survey needs to utilise collaborative research and should initially target bat and other mammal species which are poorly documented.	High
<b>Plant Surveys</b>	Flora composition is documented although limited to rapid surveys. There is considerable potential for new records and a range of significant species to be recorded from within this habitat.	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 prepare plant pressings. Update island species list as new information becomes available.	Moderate
<b>Traditional Ecological Knowledge</b>	TEK within this habitat is poorly known. Plant and animal lists provided in the appendices provide a good foundation for increasing TEK and ethno-taxonomy.	Collect and collate TEK knowledge within this habitat gained through fauna and flora survey actions on an ongoing basis.	High
<b>Fire Management</b>	No major issues identified. The habitat is mostly protected in rocky gullies and hillsides.	No specific management actions required.	No Action Required.
<b>Threatened Species Management</b>	<b>Flora:</b> A number of conservation significant species are known to occur within this habitat. The ecology of these species is poorly documented. Edge effects associated with helipad have the potential to impact on individuals and habitat of a number of threatened flora species. Outside of this area the habitat is robust with no immediate threats recognized.	<b>Flora:</b> Carry out surveys to determine populations of threatened flora on the margins of the clearing around infrastructure.  Utilise this information to develop a set of management guidelines for the telecommunications tower site.	Moderate
	<b>Fauna:</b> Composition of fauna within this habitat is poorly known.	<b>Fauna:</b> Further baseline information required (see fauna surveys) before discrete management actions can be defined.	High
<b>Invasive Species Management</b>	<b>Flora:</b> Significant infestations of the invasive rubber bush occur in the clearing atop Mt Cornwallis.	<b>Flora:</b> Control of existing infestations is required.  Monitoring for new weed infestations particularly on habitat edges and along access tracks should be undertaken on an annual or bi annual basis.	Immediate
	<b>Fauna:</b> Composition of invasive fauna within this habitat is poorly known. Potential for impacts on fauna by feral cats.	<b>Fauna:</b> Composition of invasive fauna to be derived from fauna survey results. The degree to which cats utilise this habitat requires further investigation.	Moderate
<b>Monitoring</b>	Observations relating to any changes to habitat condition should be documented so that the risk these changes pose to long-term habitat stability can be assessed and appropriate management responses formulated.	Carry out informal observation of habitat condition including health of canopy (monitoring for dieback) and presence of invasive weed species, on a regular annual to bi-annual basis. Observations should be made at major points of access (helipad and tower) in	Moderate

Management Category	Context/Issue	Actions	Priority
		<p>respect to canopy health. There is some potential for the introduction of <i>Phytophthora cinnamomi</i> (a root fungi) on workers boots and equipment. Hence any areas of dieback in habitat should be marked with a GPS and subject to ground investigation. Specific management actions undertaken will be dependent on results of ground investigations.</p>	

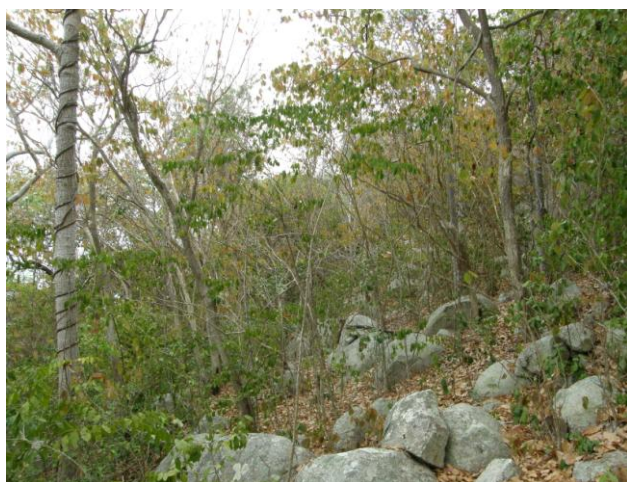




*Asplenium nidus* and *Drynaria quercifolia* are prominent. The community is notable for the diversity of epiphytic plants including *Dischidia littoralis*, listed as Vulnerable (NC ACT and EPBC Act). The occurrence of *Tetrameles nudiflora* is a disjunct occurrence representing its northern limit of distribution in Australian territory. Its presence on Dauan on steep granitic boulder slopes is considered unusual, as it is more commonly associated with seasonally flooded lowland alluvial terraces.

This windsheared south and east facing slopes of Mt Cornwallis are flanked with a low, windsheared vine thicket represented as VC2s. Limited floristic information was gathered for this community due to its occurrence on a precipitous rocky slope and description relates largely to canopy observation from above. The canopy is relatively even with strong wind shearing and typical height estimated at 8m. Dominant canopy species comprised *Ficus virens* var. *sublanceolata*, *Sarsilsea sericea*, *Schefflera actinophylla*, *Pouteria obovata*, *Garcinia warrenii*, *Syzygium puberulum*, *Ficus microcarpa*, *Acmenosperma claviflorum*, *Terminalia subacroptera*, *Myristica insipida*, *Canarium australicum*, *Arytera pseudofoveolata*, *Aglaia elaeagnoidea* and *Drypetes deplanchei*.

Vegetation community 2b represents by far the most extensive vine thicket habitat on the island, typically associated with lower slopes, and floristically uniform throughout much of its occupancy. Dominant canopy species include *Canarium australicum*, *Cochlospermum gillivraei*, *Bombax ceiba* var. *leiocarpum*, *Cleistanthus peninsularis*, *Cupaniopsis anacardioides*, *Sarsilsea sericea*, *Ficus virens* var. *sublanceolata*, *Terminalia subacroptera*, *Elaeocarpus arnhemicus* and *Manilkara kauki*. The understorey is relatively open although hosts a relatively diverse array of shrubs and thin wiry lianes such as *Gymnosporia inermis*, *Trophis scandens* subsp. *scandens*, *Cissus* spp., *Flagellaria indica*, *Cansjera leptostachya*, *Hoya australe* subsp. *sanae* and *Jasminum elongata* are numerous.



**Photograph 10 (left).** Sparse nature of the sub-canopy and shrub layer within VC2b and; **Photograph 11.** *Alstonia spectabilis* forming a tall canopy tree in VC2d.

### **Vine Thicket and Forest on Coastal Dunes**

Littoral vine forest on beach dunes is a restricted vegetation type on Dauan with the only occurrence of the habitat located at the site of the town dump. This occurrence has been largely cleared for

expansion of the dump and only thin fragments of the habitat remain. *Erythrina variegata* characterised the uneven canopy with a mix of other deciduous species such as *Terminalia subacroptera*, *Cordia subcordata*, and *Milletia pinnata* and with evergreen species such as *Manilkara kauki*, *Mimusops elengi* and *Aglaia elaeagnoidea* are also common.

### **8.2.2 Ecological / Cultural Considerations**

**Habitat Condition:** The rocky substrates on which large areas of this habitat occur offer protection from fire. The margins of vine thickets have retreated upslope, under the influence of fire, to a position where fire no longer has a significant impact on habitat boundaries. The position of these vine thicket margins is hence in a metastable state, and removal of fire from the landscape will result in expansion of the vine forest margins. On granite substrates these habitats universally demonstrate excellent condition. The seasonal loss of leaf cover however, facilitating light penetration to the forest floor, provides opportunities for the establishment of exotic species. The most imminent weed threat to this habitat is posed by lantana (*Lantana camara*), a class 3 exotic species that is well adapted to establishing in forest canopy gaps. Lantana has yet to be recorded on the island, however infestation would significantly alter the vine thicket ecology. The littoral vine thicket habitats in the vicinity of the dump have been subject to fragmentation and clearing, considerably reducing their habitat value and long term viability. The disturbed margins are infested with weeds such as Manilla rope (*Agave sisalana*), Brazilian joyweed (*Alternanthera brasiliana*), centro (*Centrosema molle*), giant panic (*Megathyrsus maximus* var. *maximus*), hyptis (*Hyptis suaveolens*) and rubber bush.

**Fauna:** The fauna assemblage associated with this habitat is poorly sampled and further structured survey effort and opportunistic sampling/observation would greatly improve the current knowledge of baseline fauna assemblage. Vine thicket provides potential habitat for the bare-backed fruit bat, the cave dwelling fawn leaf-nosed bat, the coastal sheath-tail bat and emerald monitor. Littoral thickets also provide important nesting habitat for the beach-stone curlew.

**Flora:** The habitat supports high species diversity and habitat for a number of significant species including *Psydrax reticulata* (Vulnerable NC Act) and *Tetrameles nudiflora*.

**Cultural Perspectives:** The habitat, particularly littoral dune forest, provides an extensive repository of cultural resources, including a number of important food trees such as wongai (*Manilkara kauki*), cedar bay cherry (*Eugenia reinwardtiana*), mipa (*Terminalia subacroptera*), yam (*Dioscorea transversa*) and peanut tree (*Sterculia quadrifida*)

### **8.2.3 Management Implications**

Vine thicket on rocky slopes is relatively robust although, it remains at threat via introduction of exotic species, particularly lantana, and the aforementioned Brazilian joyweed, centro, rubber bush, giant panic and hyptis. Minimal active management is required at present although the passive management situation may change rapidly with introduction of invasive exotic species. Regular patrols focusing on disturbed roadside and track margins are required to continuously monitor for

introduction of exotic plant species. Plants not previously known to the rangers should be collected, pressed, and retained for identification purposes whilst monitoring species spread and location.

Littoral thickets on dunes are restricted in occurrence and in their present condition, lack significant habitat value. What remains however represents the only occurrence of the ecosystem on the island and is heavily infested with invasive weeds. The degree to which threatened bird species such as the beach stone curlew utilise this habitat requires further investigation.

#### 8.2.4 Summary of Recommended Management Actions

**Table 12.** Summary of Management Actions for Deciduous and Semi-deciduous Vine Thickets

Management Category	Context/Issue	Actions	Priority
<b>Fauna Surveys</b>	Fauna composition within this habitat is poorly known.	Design and implement a structured fauna survey and trapping program utilising collaborative research. Focus on mammals, bats in particular, should be considered high priority.  Maintain focus on ethno-taxonomy to feed into TEK.	High
<b>Plant Surveys</b>	Flora composition is poorly documented and limited to rapid surveys. There is potential for new records for the island of significant species particularly during the wet season when canopy trees are in full foliage and when vines and herbs are robust.	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 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
<b>Traditional Ecological Knowledge</b>	TEK within this habitat is poorly known and/ or documented. Plant and animal lists provided in the Appendices provide a good foundation for increasing TEK and ethno-taxonomy.	Collect and collate TEK knowledge within this habitat gained through fauna and flora survey actions on an ongoing basis.	High
<b>Fire Management</b>	The incursion of exotic species, particularly giant panic may considerably alter the flammability of deciduous vegetation rendering it susceptible to incursion by hot fires burnt upslope.	Management of grassland habitats on lower slopes through a mosaic of early season burns may enable vine thicket margins to expand.	Immediate
<b>Threatened Species Management</b>	<u>Flora</u> : The ecology of this habitat, where it occurs on granite, is poorly documented, however the habitat is presently robust and self-maintaining. Threats to significant flora species related largely to introduction of weeds.  In littoral forests, populations of significant species may be subject to impacts by late season fires and weed invasions.	<u>Flora</u> : Carry out ongoing surveys as identified above. Monitor habitats for weed incursions (see monitoring). Carry out actions relating to fire management to maintain threatened species populations in littoral thickets.	High

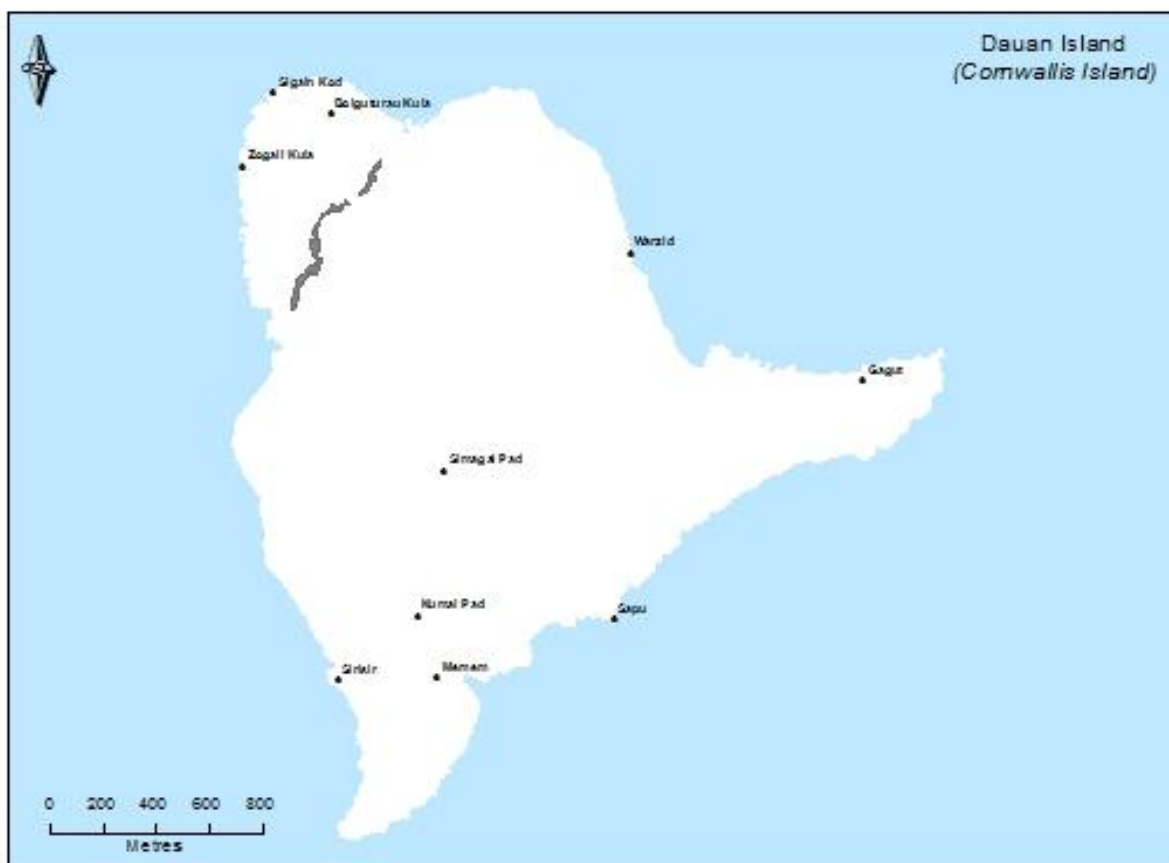


Management Category	Context/Issue	Actions	Priority
	<u>Fauna</u> : Composition of fauna within this habitat is poorly known.	<u>Fauna</u> : Further baseline information required (see fauna surveys) before discrete management actions can be fully defined. The confirmation of occurrence of significant bat species, in particular the Papuan sheathtail bat should be given priority.  Nesting sites for eastern and beach stone curlew should be identified within the littoral vine thicket remnants.	High
<b>Invasive Species Management</b>	<u>Flora</u> : There are few existing weed infestations within granite habitats although there is a risk of introduction of a number of weed species which occur on lower slopes. These include rubber bush, giant panic, centro, and Brazilian joyweed. Parts of the remaining littoral forests are heavily infested with Manila rope.	<u>Flora</u> : No active weed control is currently required for granite vine thickets. Carry out monitoring for new weed infestations particularly on habitat edges on an annual or bi-annual basis. The focus should be maintained on littoral vine thicket remnants weed incursion is particularly high. Weed management requires development of a weed management plan.	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> : Composition of invasive fauna to be derived from fauna survey results. The identification of large populations of feral cat or dog may require a structured control program to be implemented.	Immediate
<b>Monitoring</b>	Observations relating to any changes to habitat condition should be documented so that the risk these changes pose to long-term habitat stability can be assessed and appropriate management responses formulated.	Carry out informal monitoring of selected locations for infestation of weed species on a six monthly basis including observations taken late in the wet season at maximum growing season.  Weeds such as rubber bush, giant panic, centro, Brazilian joyweed and mintweed should be a focus for monitoring efforts.	High

## 8.3 *Melaleuca* Dominant Woodland and Open Forest

### 8.3.1 Status of Ecological Knowledge

A single occurrence of melaleuca dominant open forest is located within a swale on the landward fringe of mangroves on the islands north-west. The habitat is formed by *Melaleuca cajuputi*, reaching canopy heights of 18m with a dense understorey comprising a range of shrubs, vines and ferns which include *Macaranga involucreta* subsp. *mallotoides*, *Acacia auriculiformis* and scrambling vines and ground covers of *Blechnum indicum*, *Flagellaria indica*, *Canavalia papuana*, *Leptocarpus* sp., and *Ischaemum australe*. The swampy nature of the woodland provides likely habitat for *Costus poteriae* (Endangered NC Act) which has previously been recorded on the island. The location of melaleuca dominant open forests is provided in **Figure 5**.



**Figure 5.** Distribution of *Melaleuca* dominant open forest (place names after Lawrie, 1970).



**Photograph 12.** Dense sub-canopy and shrub layers within *Melaleuca cajuputi* dominant open forest on Dauan Island.

### **8.3.2 Ecological / Cultural Considerations**

**Habitat Condition and Threats:** The habitat has been fragmented by clearing although it is unlikely to have formed an extensive component of the islands pre-European vegetation mosaic. Habitat fragmentation has resulted in changes to habitat structure, most obviously a dense thickening of the shrub and understory layers due to a long term absence of fire. This habitat is threatened by weed invasion, and the margins are currently choked with a range of exotic weed species including siratro (*Macroptilium atropurpureum*), streaked rattlepod (*Crotalaria pallida*), mint weed (*Hyptis suaveolens*), and tridax daisy (*Tridax procumbens*). These weeds, through incursion into the forest margins, are likely to present a major factor contributing to continued habitat degradation.

**Fauna:** The fauna assemblage associated with this habitat is poorly known, and sampling within it has been extremely limited. Seasonal sampling of this habitat is likely to expand the known fauna representation for the island. Given the limited size of the habitat, it is unlikely that species not recorded from other Torres Strait Island will be found in the assemblage.

**Flora:** The 'Vulnerable' ginger species *Costus poteriae* may occur on the margins of this habitat and further searches for the species are warranted.

**Cultural Perspectives:** The cultural significance and utilization of this habitat is unknown.

### **8.3.3 Management Implications**

The habitat requires careful management to prevent further habitat degradation. This relates particularly to management of weeds on the habitat margins. The habitat would also benefit from re-introduction of fire although in its current state of shrubby congestion, would likely require extremely hot and dry conditions for ignition, upon which it would likely burn with great intensity. Hence, any prescription for re-introduction of fire should focus on burning small patches in the earliest part of the season possible with a specific aim of reducing fuel loads.

### 8.3.4 Summary of Recommended Management Actions

**Table 13.** Summary recommendations for management of Melaleuca dominant swamp and open forest habitats.

Management Category	Context/Issue	Actions	Priority
<b>Fauna Surveys</b>	Fauna composition within this habitat is poorly known.	Design and implement a structured fauna survey and trapping program which considers seasonal habitat variations. The survey needs to utilise collaborative research and maintain focus on ethno-taxonomy to feed into TEK.	High
<b>Plant Surveys</b>	Flora composition is poorly documented and limited to rapid surveys in dry season. Ground covers, sedges and aquatic plants have been poorly documented.	Carry out additional floristic surveys concentrating on aquatic plants, ground and sedge covers, and epiphytes across a range of seasonal conditions. Focus on collection of new records for the island and important cultural resource species.  Collect leaf specimens and photograph plants with known uses/values and that may have been used in the past, and catalogue.  Update island species list as new information becomes available.	Moderate
<b>Traditional Ecological Knowledge</b>	TEK within this habitat is poorly known and/ or documented. Plant and animal lists provided in the appendices provide a good foundation for increasing TEK and ethno-taxonomy.	Collect and collate TEK knowledge within this habitat gained through fauna and flora survey actions on an ongoing basis.  It is important to ensure traditional land management knowledge is available in a form that can be passed on to future generations as well as to provide a knowledge base to inform future management actions.	Moderate
<b>Fire Management</b>	Melaleuca dominant swamp forests have evolved with fire although they require careful management as fires under extreme conditions may result in ignition of peat soil profiles and destruction of canopy trees.	This habitat should be subject to patch burns in the early dry season as soon as ignition is possible.	High
<b>Threatened Species Management</b>	<u>Flora</u> : Populations of the threatened flora species <i>Costus poteriae</i> may be associated with the habitat margins.  <u>Fauna</u> : Composition of fauna within this habitat is poorly known.	<u>Flora</u> : Carry out ongoing surveys to identify populations of significant species, particularly epiphytes including orchids and <i>Costus poteriae</i> .  <u>Fauna</u> : Further baseline information required (see fauna surveys) before discrete management actions can be defined.	High  High
<b>Invasive Species Management</b>	<u>Flora</u> : A range of environmental weeds will invade the margins of these wetland habitats, particularly where disturbance has occurred.	<u>Flora</u> : Active weed control is required around the habitat margins. Carry out monitoring for new weed infestations particularly on habitat edges and along access tracks on an annual or bi-annual basis.	High

Management Category	Context/Issue	Actions	Priority
	<u>Fauna</u> : General observation relating to feral animal damage should be undertaken during routine ranger patrols.	<u>Fauna</u> : Undertake spotlighting surveys and sand pads around the dump for the presence and populations of feral cats. Using survey results determine the need for a control program and develop accordingly.	High
<b>Monitoring</b>	No specific monitoring action required although general observations during rangers activities will be required to identify problematic weed infestation early.	Undertake informal surveys of vegetation condition in swampland habitats to detect early infestations of exotic species.	Moderate

## **8.4 Grassland and Grassland Complexes / Palm Dominant Forest and Woodland / Pandanus dominant woodland and shrubland**

### **8.4.1 Status of Ecological Knowledge**

Grassland and palm dominant woodlands are linked through a common ecological process and are thus dealt with as an individual management unit. Similarly, pandanus dominant woodlands, where they occur on alluvium (VC11b) are also ecologically similar to grassland habitats and are included in this unit.

Vegetation community 17c provides a broad apron around the colluvial footslopes of Mt Cornwallis. The constituent grass species are variable dependent on soil type and exposure although on Dauan, grassland habitats comprise dominantly of *Heteropogon triticeus*, *Ophiuros exaltatus*, *H. contortus* and *Cymbopogon globosus*. A range of shrub cover species may form an emergent layer including *Cochlospermum gillivraei*, *Syzygium suborbiculare*, *Canarium australianum* and *Parinari nonda*. These communities are fire controlled, derived from repetitive burning of colluvial footslopes which has caused an upslope retreat of the vine forest margins.

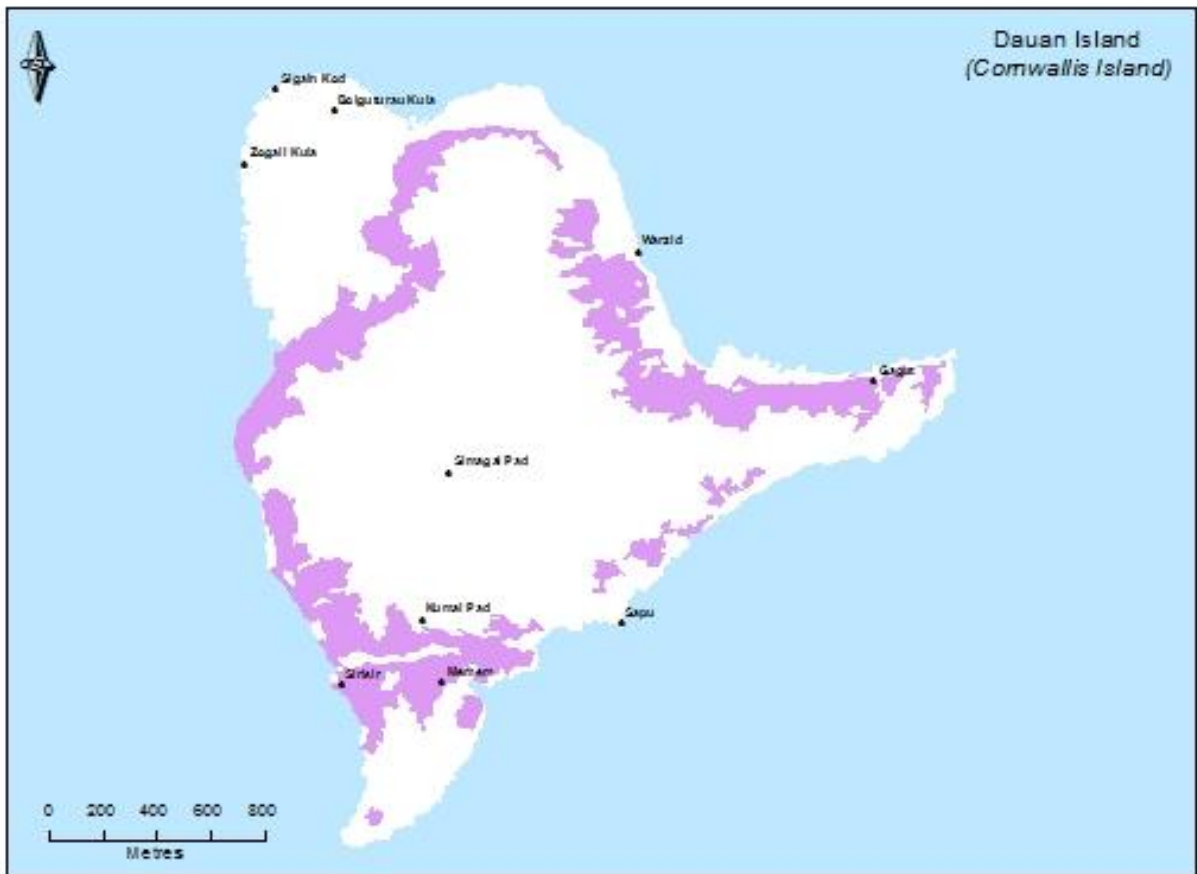
The palm dominant woodland is formed by *Livistona muelleri* which reaches heights of up to 16m. The habitat occurs on the footslopes of Mt Cornwallis in mosaic with broader grassland habitats. Similar to VC17c, repetitive burning of the footslopes has resulted in an upslope retreat of the vine forest margins, although in this community, the fire tolerance of *Livistona muelleri* has resulted in the persistence of this species. It should be noted that the palm also forms a scattered emergent in a limited number of vine thicket communities examined on the island which provides some clues to the derivation of this unique woodland. Typical shrubs include *Cochlospermum gillivraei*, *Dalbergia densa* var. *australis*, *Syzygium suborbiculare*, *Tabernaemontana orientalis* and *Glochidion apodogynum*.

Pandanus dominant shrublands and low woodlands on alluvium are highly restricted on Dauan, found in association with areas of groundwater seepage on the southern coast of the island. Due to the moist nature of the substrate, this habitat has developed a dense ground cover of the swamp grass *Ischaemum australe*.

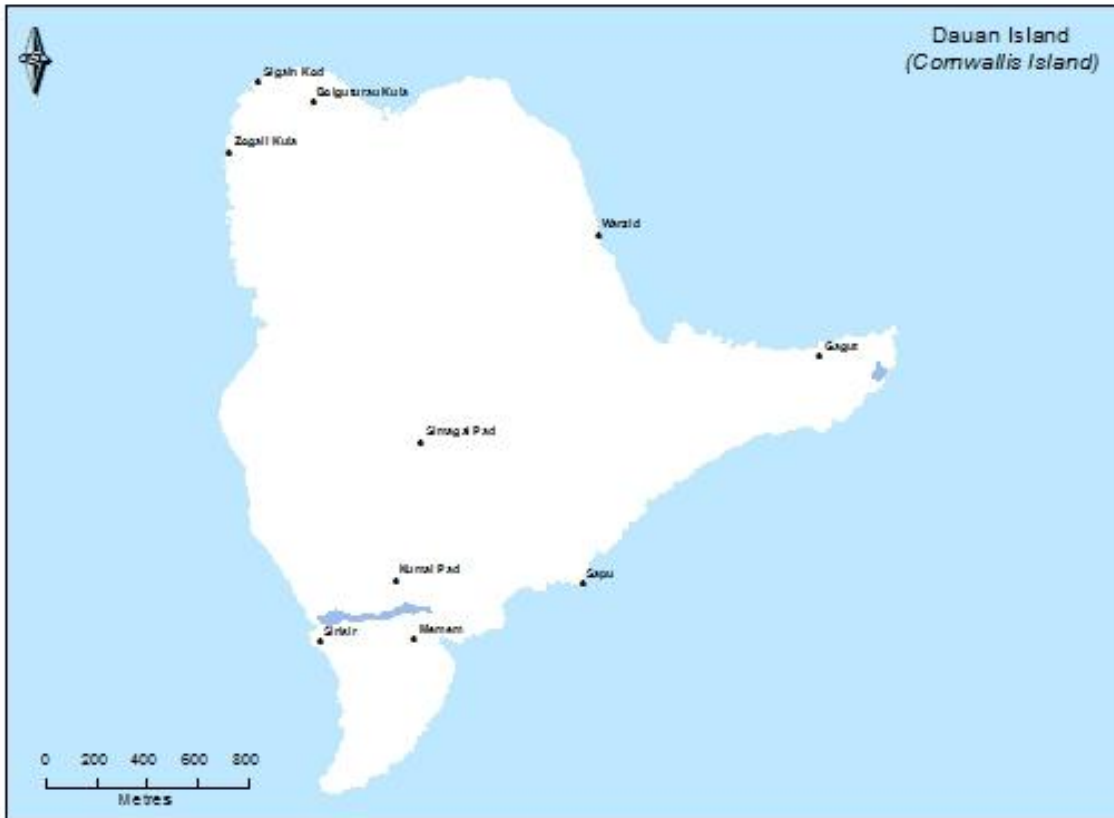




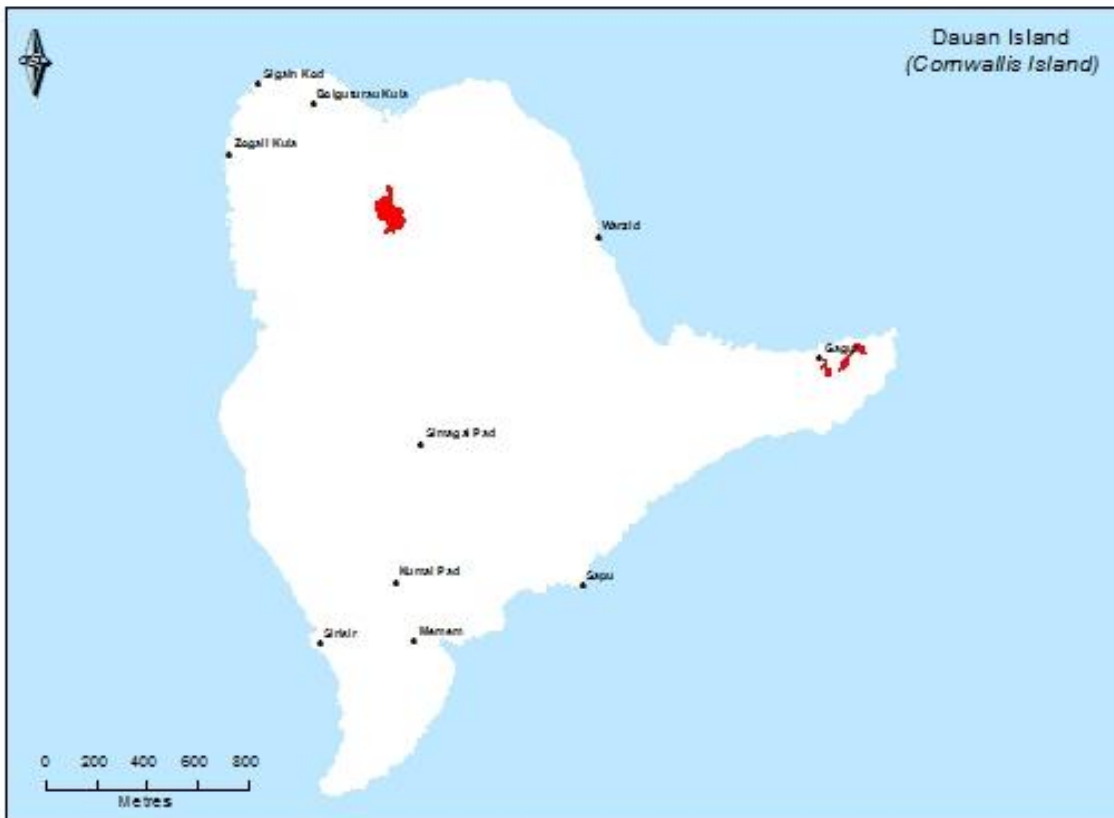
**Photograph 13.** *Livistona muelleri* grassy woodland (VC12b) on granite colluvial footslopes. **Photograph 14.** Grassland habitats on footslopes of Mt Cornwallis with pandanus dominant woodland located amongst broader grassland habitats on a swampy drainage zone.



**Figure 6.** Distribution of grassland habitats on Dauan Island (place names after Lawrie 1970).



**Figure 7.** Location of pandanus dominant woodlands and shrublands on Dauan Island



**Figure 8.** Distribution of palm dominant woodland habitats on Dauan Island (place names after Lawrie, 1970).

#### **8.4.2 Ecological / Cultural Considerations**

**Habitat Condition:** This habitat is largely free from exotic species and appears in excellent condition throughout most of its range. Tropical kudzu is however spreading throughout this habitat, most prominently in the vicinity of settled areas where it is forming dense mats that are smothering native grassland.

**Fauna:** The fauna assemblage of this habitat is poorly known and has not been subject to systematic survey. It is likely to provide habitat to a limited faunal assemblage including the grassland melomys (*Melomys burtonii*)

**Flora:** The 26 species recorded for this habitat are all native, indicating its high integrity. Additional season surveys during active growing periods are required to fully document the habitats floristic diversity. Grasslands are habitat for the Near-Threatened grass *Apluda mutica*.

**Cultural Perspectives:** Further information is required to determine the cultural significance of these grassland areas. Without doubt, they have been induced by anthropogenic burning practices, and it is likely former gardens were located within this habitat. It is likely that grasslands were a component of the Dauan Island landscape prior to European influence.

#### **8.4.3 Management Implications**

Management actions should aim to maintain the current landscape function which is considered important from both ecological and cultural perspectives. Recommendations for landscape maintenance are provided below although ultimately, management direction will be guided by the desires of the local community and representative rangers.

1. Selected grassland habitats should be assessed for signs of degradation on an annual basis with particular note towards evidence of invasive species or shrubby thickening. Monitoring for invasive pest species, most urgently tropical kudzu, should be undertaken vigilantly on major access points and tracks. Any nucleation points should be subject to immediate eradication and plants that cannot be identified in the field collected for formal identification. .
2. General burning regimes for grasslands should promote patchiness, with burning conducted across a range of seasonal conditions from early to late dry season. Maintaining patchiness in burnt and unburnt features is important for conservation management (Russell-Smith *et al.* 2003) and stratifying fires across a range of seasonal condition will promote patchiness. The inherent rockiness of the substrate in many of the islands grassland habitats will also promote patchiness in fire distribution.
3. A mosaic of low intensity fires burnt from early in the season over a period of several years is likely to see gradual expansion of vine thickets on the grassland/ vine thicket interface. This should not be discouraged and it is unlikely that there will be any broad scale displacement of grassland on the island by vine thicket in the short term.



4. Timing and frequency of fires should be recorded for future reference. This will allow practice to be adjusted and refined to improve management outcomes.
5. Monitoring for invasive pest species should be undertaken vigilantly on major access points and tracks. Any nucleation points should be subject to immediate eradication and plants that cannot be identified retained in the field collected for formal identification.

#### 8.4.4 Summary of Recommended Management Actions

**Table 14.** Summary of Management Actions for grasslands and grassland complexes.

Management Category	Context/Issue	Actions	Priority
<b>Fauna Surveys</b>	These habitats have been subject to limited fauna survey and fauna assemblage has been poorly documented.	The implementation of a structured fauna survey and trapping program will provide additional detail in regard to the islands fauna assemblage. It may however be of secondary importance to survey of the more extensive vine forest and thicket habitats.	Moderate
<b>Plant Surveys</b>	Information on flora composition is incomplete and limited to rapid surveys in dry season.	Carry out additional flora field surveys across seasons with focus on herbs and grasses.  Collect leaf specimens and photograph plants with known uses/values and that may have been used in the past, and catalogue.	Moderate
<b>Threatened Species Management</b>	<b>Flora:</b> The floristic composition of this habitat is not fully documented and requires additional seasonal survey for comprehensive description. Additional populations of <i>Apluda mutica</i> are likely to occur in grasslands.	<b>Flora:</b> Conduct targeted flora surveys within grassland habitats, particularly during the active growing season.	Moderate
	<b>Fauna:</b> The extent to which this habitat is utilised by threatened species is not known.	<b>Fauna:</b> Further baseline information required (see fauna surveys) before discrete management actions can be defined.	Moderate
<b>Traditional Ecological Knowledge</b>	TEK within this habitat is poorly known or documented. Plant and animal lists provided in the Appendices provide a good foundation for increasing TEK and ethno-taxonomy.	Collect and collate TEK through fauna and flora survey actions, and from interviews with elders on an ongoing basis.  Ongoing mapping of cultural sites within this habitat should be undertaken.	Moderate
<b>Fire Management</b>	The habitat requires burning to retain open structure although at present, grassland habitats are generally free from shrubland encroachment.	Implement a seasonal burning regime that seeks to mosaic burn all grassland habitats starting in cooler months where fire intensity is unlikely to be severe.  As a general aim burning of grassland habitats should be completed over a three-year interval.  Record the timing and frequency of burning events for future reference	Immediate

Management Category	Context/Issue	Actions	Priority
		so as to allow practice to be adjusted and refined to improve management outcomes.  Identify areas where it is desirable to allow expansion of vine thicket habitats and target the burning regime to achieve these objectives	
<b>Invasive Species Management</b>	<u>Flora</u> : Grasslands are generally free from major invasive species although tropical kudzu shows evidence of significant expansion in some locations.	<u>Flora</u> : Monitoring for invasive pest species, particularly exotic herbs and grasses, should be undertaken within selected habitats every 6 months on major access points and tracks. Collect, record location using GPS, and photograph weeds that cannot be identified in the field so formal identification can be achieved. Any nucleation points should be subject to immediate eradication.	High
	<u>Fauna</u> : Composition of invasive fauna within this habitat is poorly known. Potential for impacts on fauna by feral cats and dogs.	Any localised patches of tropical kudzu should be subject to immediate eradication.  <u>Fauna</u> : Composition of invasive fauna needs to be derived from fauna survey results. Assess cat and dog activity levels by nocturnal spotlighting and observation. Implement control where appropriate.	High
<b>Monitoring</b>	There is a requirement to observe any changes to habitat structure so that management actions can be implemented if the changes are having a negative impact on biodiversity values.	Establish permanent photographic monitoring points within any habitat subject to change or conversion particularly areas where grassland conversion by exotic species (e.g. tropical kudzu) is being promoted. Where problem areas are identified, carry out monitoring on a six monthly basis including observations taken late in the wet season at maximum growing season.	Moderate

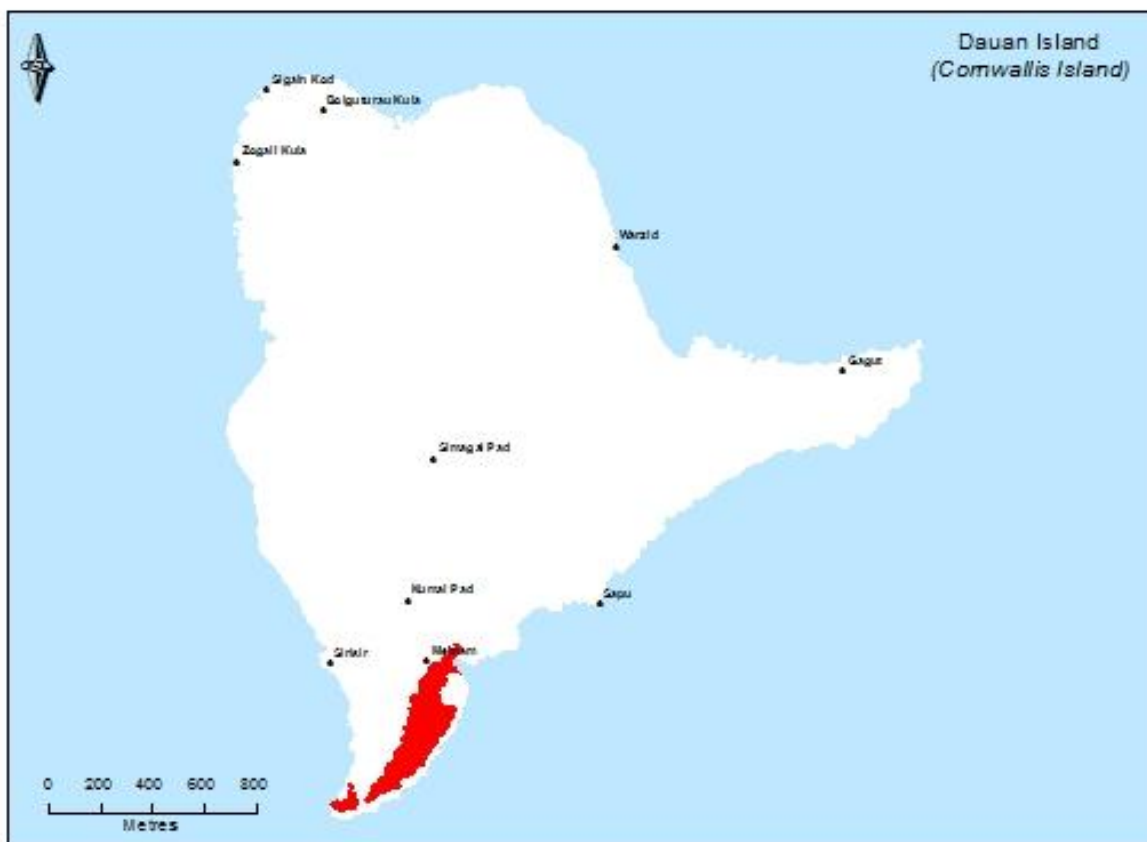
## 8.5 Shrubland and Shrubland Complexes

### 8.5.1 Status of Ecological Knowledge

The habitat is identified within vegetation community 14g, forming an area of 7.5 ha, and representing an extension of vine thicket which has been pruned by prevailing trade winds. The habitat is essentially a low, dense and largely impenetrable thicket that rarely exceeds 1m in height. It has formed in response to skeletal soils and extreme wind exposure. Species representative of the dominant upper shrub stratum include *Buchanania arborescens*, *Manilkara kauki*, *Alyxia spicata* and *Sersalisia sericea*. Emergent *Pandanus* sp. is also scattered within the habitat.



**Photograph 15.** Shrubland community 14g on the southern coast of Dauan Island showing characteristic wind shearing



**Figure 9.** Distribution of shrubland habitats (place names after Lawrie, 1970).

### 8.5.2 Ecological / Cultural considerations

**Habitat Condition and Threats:** Shrubland habitat 14g is largely impervious to most forms of disturbance due to the density of the predominant shrub layer and harsh environmental conditions which limit proliferation of all but the hardiest weed species.

**Fauna:** The fauna values associated with this habitat are unknown and are expected to be limited due to the restricted nature of the habitat and simple floristic composition.

**Flora:** Twenty-six species have been recorded from this habitat, all of which are native. It is not expected to host any significant flora species.

**Cultural Perspectives:** The cultural usage and values of this habitat type are unknown although it is likely to have provided a low level food resource for species such as *Eugenia reinwardtiana* and *Buchanania arborescens*.

### 8.5.3 Management Implications

Limited active management is required in this habitat although the following actions described within **Table 15** should be undertaken routinely.

### 8.5.4 Summary of Recommended Management Actions

**Table 15.** Summary management recommendations for shrubland and shrubland complexes.

Management Category	Context/Issue	Actions	Priority
<b>Fauna Surveys</b>	The fauna composition within this habitat is poorly known.	Ongoing collection and documentation of observed wildlife is critical to providing greater insight into the habitats fauna. The limited extent of these habitats means that targeting them specifically for structured fauna survey (trapping) is not necessary.  Focus on ethnotaxonomy should be maintained throughout the process to feed into TEK.	Moderate
<b>Plant Surveys</b>	The floristic composition has been subject to limited survey work.	Future surveys should those species which are important as a cultural resource species. This habitat possesses a simple floristic assemblage.	Moderate
<b>Traditional Ecological Knowledge</b>	The distribution of cultural sites within this habitat is unknown.	Undertake further survey to confirm the location of cultural sites and record these by GPS for incorporation into a GIS database for future reference.	High
<b>Fire Management</b>	Fire will not carry into shrubland habitat 14g.	No active fire management is required	Low
<b>Threatened Species Management</b>	<b>Flora:</b> No threatened flora species are known to occur within this habitat.	<b>Flora:</b> No actions required at present.	Low
	<b>Fauna:</b> The composition of this habitat in regard to threatened fauna species is poorly known.	<b>Fauna:</b> Further baseline information is required before discrete management actions can be defined.	Moderate
<b>Invasive Species Management</b>	<b>Flora:</b> There are no existing weed issues identified in these habitats.	<b>Flora:</b> No active weed control or management is currently required although shrubland habitats should be regularly inspected for invasive weeds where they occur in the vicinity of access tracks.	Moderate
	<b>Fauna:</b> The extent to which feral animals utilise this habitat is unknown.	<b>Fauna:</b> The extent of usage by other exotic pests will need to be informed by results of fauna survey. Management actions can	Moderate

Management Category	Context/Issue	Actions	Priority
		be formulated once major threats are identified.	

## 8.6 ***Boulder Slope Vineland / Shrubland Complexes***

### 8.6.1 ***Status of Ecological Knowledge***

This habitat is extensive on Dauan and similar communities are known from only a few locations in the Torres Strait Island group such as Hammond Island and Prince of Wales Island. The community is best described as an open granite boulder field with scattered vine forest shrubs, low trees and occasional vine thicket. Woody cover is typically less than 5% comprising *Canarium australianum*, *Ficus microcarpa*, *Cochlospermum gillivraei* and *Tetrameles nudiflora*. Sprawling mats and low towers of the vine *Aristolochia acuminata* are locally prominent and ground cover of *Drynaria quercifolia*, *Asplenium* sp. and *Sarcostemma viminalis* subsp. *brunonianus* are occasionally present in sheltered pockets. This community represents a significant geographical departure from mainland Cape York Peninsula examples at Black Mountain near Cooktown, Cape Melville and the southern parts of the McIlwraith Range. Small areas of Pandanus woodland associated with rocky headlands on the north coast of Dauan are also recognised within this habitat

### 8.6.2 ***Ecological and Cultural Perspectives***

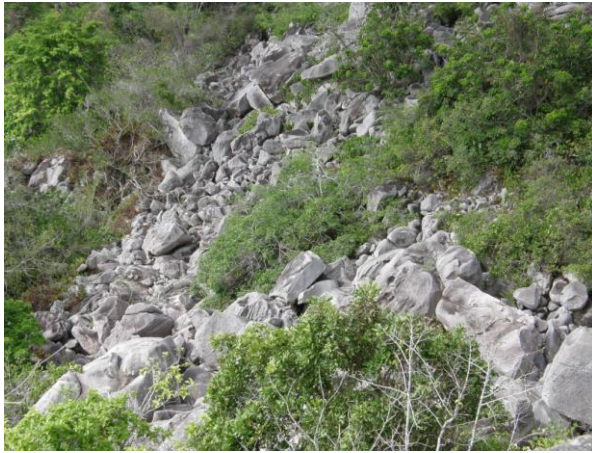
**Habitat Condition and Threats:** Rock boulder fields, due to their inherent infertility and exposure, have been unaffected by ecological changes that occur due to human influence. There are few threats to this habitat although there is potential for weeds to establish on pavement areas where there has been some degree of soil accumulation. Such weeds may include (*Melinis repens*), molasses grass (*Melinis minutiflora*) as well as invasive shrubs such as belly-ache bush (*Jatropha gossypifolia*)

**Fauna:** No structured or specific fauna survey has been undertaken within this habitat. It is likely to provide roosting sites for a range of bat species as well as be particularly suitable for a range of skink and gecko species. The vine *Aristolochia acuminata* provides a significant breeding resource for butterflies.

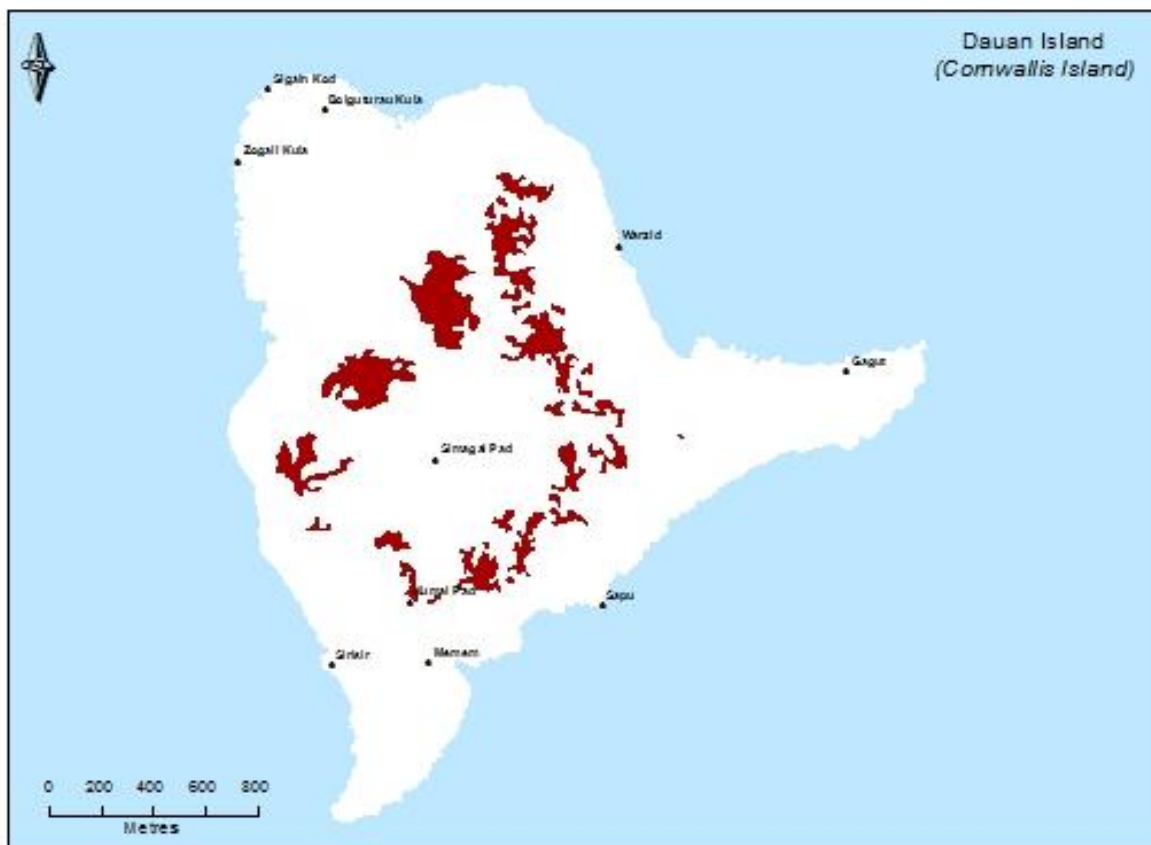
**Flora:** This habitat is floristically simple, generally dominated by a limited number of widely separated vine thicket trees, shrubs, vines and ferns. The regionally significant tree *Tetrameles nudiflora* is prominent as an emergent within this habitat.



**Cultural Perspectives:** The extent to which this habitat is utilised as a traditional resource is unknown. It is expected that such areas were avoided due to their inaccessible nature



**Photograph 16.** A typical granite boulder field on Dauan Island; **Photograph 17.** Pandanus dominant woodland is included within this habitat.



**Figure 10.** Distribution of boulder slope vinelands on Dauan (place names after Lawrie, 1970).

### 8.6.3 Management Implications

The relatively stable nature of this habitat type means that little management intervention is required. The majority of habitats are buffered from fire incursion by surrounding pyrophobic vegetation as well as their rocky nature which acts as a natural buffer to fire incursion.

#### 8.6.4 Summary of Recommended Management Actions

Limited active management is required in this habitat although the following actions described within **Table 16** should be undertaken routinely.

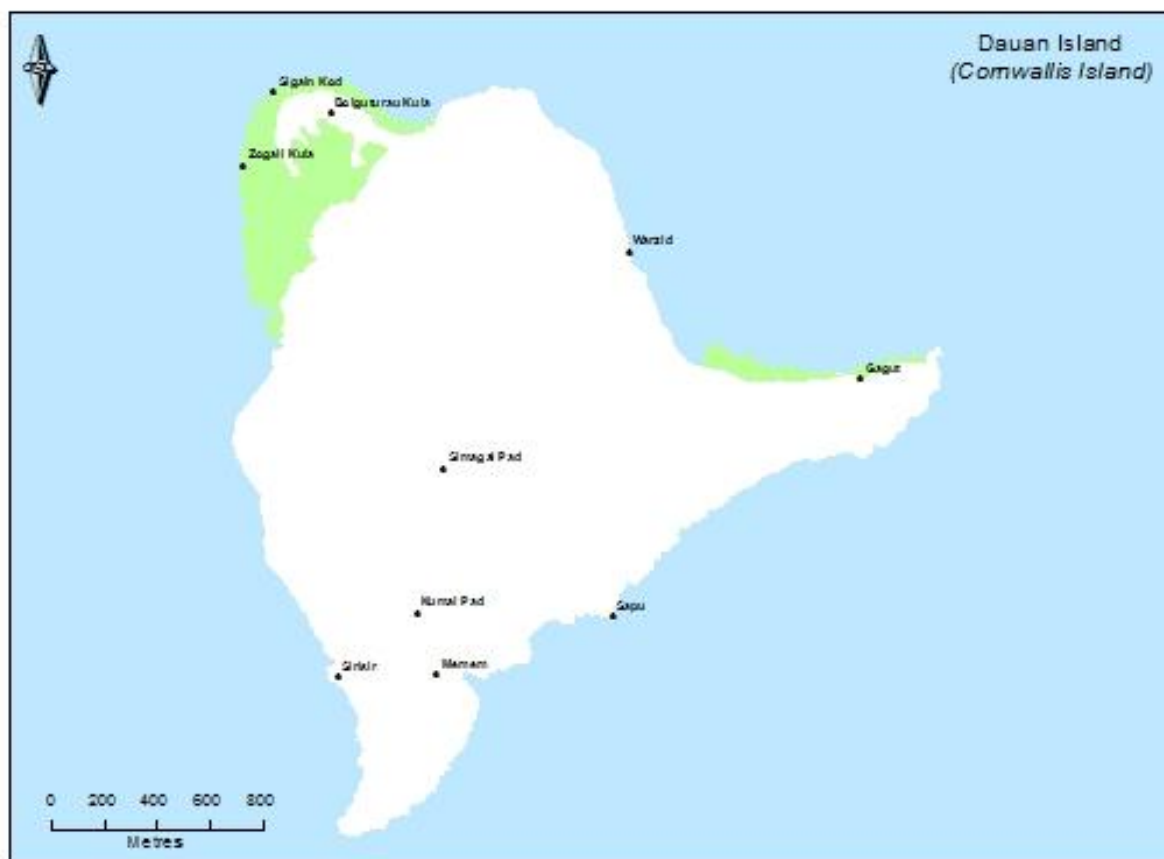
**Table 16.** Summary of management actions for rock pavement habitats.

Management Category	Context/Issue	Actions	Priority
<b>Fauna Surveys</b>	Previous survey efforts have been limited.	Design and implement a structured fauna survey and trapping program supported by specialists. Particular focus should be applied to bat and reptile surveys.	High
<b>Plant Surveys</b>	Information in regard to flora composition is incomplete and limited to rapid surveys in dry season.	Carry out detailed flora surveys and photograph and catalogue plants with known uses/values and that may have previously been used.	Moderate
<b>Threatened Species Management</b>	<p><u>Flora</u>: The habitat is not known to host populations of threatened flora.</p> <p><u>Fauna</u>: Composition of significant fauna within this habitat is poorly known.</p>	<p><u>Flora</u>: Detailed flora surveys are required to identify threatened flora.</p> <p><u>Fauna</u>: Further baseline information required (see fauna surveys) before discrete management actions can be defined.</p>	<p>Moderate</p> <p>High</p>
<b>Traditional Ecological Knowledge</b>	Composition of TEK within this habitat is poorly known. Plant and animal lists provided in the Appendices provide a good foundation for increasing TEK and ethno-taxonomy.	Collect and collate TEK through fauna and flora survey actions, and from interviews with elders on an ongoing basis.	High
<b>Fire Management</b>	The habitat by its physical nature excludes fire	No management required	Not required
<b>Invasive Species Management</b>	<p><u>Flora</u>: A number of weed with potential to invade this habitat are known from both Dauan and the broader Torres Strait Island group. This includes species such as praxelis and lantana.</p> <p><u>Fauna</u>: The composition of invasive fauna within this habitat is poorly known. Potential for impacts on fauna by feral cats and dogs.</p>	<p><u>Flora</u>: Undertake monitoring for invasive species in accessible locations.</p> <p><u>Fauna</u>: The composition of invasive fauna to be derived from fauna survey results. It is not expected that invasive fauna will utilise this habitat to any significant degree.</p>	<p>Moderate</p> <p>Moderate</p>
<b>Monitoring</b>	These are stable habitats controlled by infertile substrates and limited soil development.	Undertake informal monitoring of accessible habitats as required for monitoring of invasive species.	Moderate
<b>Cultural Heritage</b>	Sites of specific cultural heritage are known to occur within this habitat.	In consultation with the community, incorporate survey data of cultural heritage sites in this habitat zone within the GIS database and consider appropriate protection/management of sites.	High

## 8.7 Mangrove Forest, Woodland and Shrubland Complexes (thag)

### 8.7.1 Status of Ecological Knowledge

A broad belt of mangrove vegetation occupies a broad shelf on the islands north-western coastline with a number of minor fringing habitats scattered around the islands coastline. The habitat has not been subject to detailed floristic survey.



**Figure 11.** Distribution of mangrove forest habitats (place names after Lawrie 1970).



**Photograph 18.** A broad fringe of mangroves on the north-east coast of Dauan.



### **8.7.2 Ecological / Cultural Considerations**

**Habitat Condition:** The habitat exhibits high integrity although harvesting of specific mangrove species for firewood is occurring in accessible locations. The presence of cats and dogs around the community may be impacting on mangrove fauna.

**Fauna:** Mangrove ecosystems provide habitat and foraging values for a range of avifauna, reptiles and mammals including the saltwater crocodile (*Crocodylus porosus*), emerald monitor and coastal sheath-tail bat and a number of culturally significant species (Bani 2004). A number of the significant Migratory bird species listed in **Table 9** are associated with estuarine habitats. Knowledge of the terrestrial fauna of mangrove communities in Torres Strait is extremely limited and surveys are currently being carried out by James Cook University researchers.

**Flora:** The limited survey effort of mangrove habitats is reflected in that only 23 species are recorded to date comprising 14 trees, five shrubs, three vines and one sedge. Further surveys are likely to increase the floristic diversity. The occurrence of the mangrove trumpet tree (*Dolichandrone spathacea*) (Near-Threatened - NC Act) is possible on the margins of this habitat.

**Cultural Perspectives:** Mangrove communities provide an important cultural resource for the Dauan people, both as hunting grounds and material resources such as timber firewood and construction. Further information is required in regard to the cultural usage of this habitat.

### **8.7.3 Management Implications**

These habitats are largely self-maintaining although excessive timber extraction may be altering the ecology of the habitat in accessible locations near the community. Disturbance associated with the refuse site and nearby access tracks in the form of vegetation removal, sand extraction, and plastic bag dispersal and invasion of Manilla rope (*Agave sisalana*) is creating local impacts, particularly on the habitat margin. The extent of impact of feral cats (and possibly rats) in the habitat is unknown. Active management required for this habitat should focus on an assessment of areas harvested for mangrove timber and development of a harvesting plan which will prevent over-utilisation and subsequent degradation of the resource. Extensive recommendations for management and monitoring of mangrove ecosystems within the Mangrove Watch program are identified by Duke (2010) in Burrows (2010). The highly invasive weed pond apple (*Annona glabra*) has been recorded from Horn Island and is considered a potential threat to mangrove habitat.

### 8.7.4 Summary of Recommended Management Actions

Table 17. Summary of management actions for mangrove habitats.

Management Category	Context/Issue	Actions	Priority
<b>Fauna Surveys</b>	Not subject to previous fauna survey.	Design and implement a structured fauna survey and trapping program supported by specialists. Maintain focus on culturally significant species and ethnotaxonomy to feed into TEK.	High
<b>Plant Surveys</b>	Information on flora composition is incomplete and limited to rapid surveys in dry season.	Carry out additional flora field surveys. Collect leaf specimens and photograph plants with known uses/values and that may have been used in the past, and catalogue. Incorporate data from JCU wetland and mangrove surveys.	Moderate
<b>Threatened Species Management</b>	<u>Flora</u> : The mangrove trumpet tree ( <i>Dolichandrone spathacea</i> ) is a Near-Threatened species with potential to occur.	<u>Flora</u> : Field surveys required to determine the presence of mangrove trumpet tree.	Moderate
	<u>Fauna</u> : Numerous migratory birds and a number of potential EVNT fauna species are known to utilise this habitat.	<u>Fauna</u> : Further baseline information required (see fauna surveys) before discrete management actions can be defined.	High
<b>Traditional Ecological Knowledge</b>	Composition of 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 through fauna and flora survey actions, and from interviews with elders on an ongoing basis.	High
<b>Fire Management</b>	No issues evident.	No actions.	Not required
<b>Invasive Species Management</b>	<u>Flora</u> : A number of weeds are known from the disturbed margins of mangroves areas within and on the vicinity of the community. Extensive populations of Agave occur on the margins of mangroves near the dump area. The highly invasive weed pond apple ( <i>Annona glabra</i> ) has been recorded from Horn Island and is considered a potential threat.	<u>Flora</u> : Undertake monitoring for invasive species on mangrove margins near the community and refuse site. Develop a weed management plan. Train rangers on identification of pond apple.	High
	<u>Fauna</u> : Composition of invasive fauna within this habitat is poorly known. Potential for impacts on fauna by feral cats, dogs and rats.	<u>Fauna</u> : Composition of invasive fauna to be derived from fauna survey results. Assess cat and dog activity levels by installation and monitoring of sand pads on nearby tracks, nocturnal spotlighting, and consultation with community members. Implement control where appropriate.	Immediate
<b>Monitoring</b>	Observations relating to any changes to habitat condition should be documented so that the risk these changes pose to long-term habitat stability can be assessed and appropriate management responses formulated.  Small areas of saltwater incursion, indicated by death of vine forest	Adopt recommendations for management and monitoring of mangrove ecosystems within the Mangrove Watch program are identified by Duke (2010) in Burrows (2010).  Monitor areas of saltwater incursion with permanent photographic sites to determine if	Moderate

Management Category	Context/Issue	Actions	Priority
	species and replacement of groundcovers by saltwater couch ( <i>Sporobolus virginicus</i> ), are noted in the vicinity of the rubbish tip.	saltwater incursion is indicative of longer term trends in habitat conversion.	
<b>Cultural Heritage</b>	Cultural heritage values may occur throughout the habitat.	In consultation with the community, incorporate cultural survey data into the GIS database and consider protection/management of sites.	Immediate
<b>Other</b>	Plastic bags originating from the dump blow are into adjoining mangroves.  Mangroves are being over harvested in some locations, particularly near settlement areas.	Limit impacts of plastic bags by fencing along margins of mangroves.  Implement a mangrove harvesting management program which designates specific harvesting areas for rotation.	Immediate

## 8.8 Cleared / Degraded Areas

Areas where native habitat has been disturbed through development for housing and infrastructure purposes are restricted to the northern part of the island and account for 32 ha or 9% of the islands area. The proliferation of exotic weed species presents by far the most serious threat to the integrity of natural habitats across the island. Naturalised species which account for 21% of the islands flora are concentrated around the settlement. Whilst the majority are widespread species not considered overly threatening to natural habitats, others are highly invasive as observed and documented from nearby islands and throughout the broader region. The highest threats are from the rubber bush (*Manihot glaziovii*), leucaena (*Leucaena leucacephala*), giant panic (*Megathyrsus maximus* var. *maximus*), Brazilian joyweed (*Alternanthera brasiliensis*) and legume species such as centro (*Centrosema molle*), butterfly pea (*Clitoria ternatea*), siratro (*Macroptileum atropurpurea*), Indian calopo (*Calopogonium mucunoides*) and tropical kudzu (*Pueraria phaselioides*). The latter locally called 'weskapu' is not declared in the Torres Strait on account of its traditional food value however was observed to be showing signs of invasiveness over grasslands and vine thicket margins. A number of other weeds which have not yet been recorded on the island represent potential threats and these include Gamba grass, lantana, bellyache bush, pond apple, praxelis, annual mission grass and Gamba grass.

### 8.8.1 Management Implications

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

A structured program of asset protection burning within and on the margins of the community is a starting point to limit habitat conversion of the adjoining habitats. This will involve responsibilities and protocols for asset protection burning to be developed in coordination between the council and rangers.

### 8.8.2 Summary of Recommended Management Actions

**Table 18.** Summary of management actions for cleared and disturbed areas.

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

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

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

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

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

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

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

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

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

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

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

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

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

## **11.0 Appendices**

## Appendix A. Queensland Govt. vegetation structural classification

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

<b>Projective Foliage Cover</b>	<b>70-100%</b>	<b>30-70%</b>	<b>10-30%</b>	<b>&lt;10%</b>
<b>Approximate Crown Cover %</b>	<b>80 - 100%</b>	<b>50 - 80%</b>	<b>20 - 50%</b>	<b>&lt; 20%</b>
<b>Crown separation</b>	<b>closed or dense</b>	<b>mid-dense</b>	<b>sparse</b>	<b>very sparse</b>
<b>Growth Form<sup>4</sup></b>	<b>Structural Formation Classes (qualified by height)</b>			
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)	-

<sup>4</sup> Growth form of the predominant layer (the ecologically dominant layer).



## **Appendix B. Flora Species List – Dauan Island, Torres Strait, Queensland.**

### **DG Fell 3D Environmental**

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

### **SUMMARY**

- 402 species (14 ferns, 388 angiosperms);
- 317 native (79%);
- 85 naturalised (21%);
- 98 families (5 wholly naturalised);
- 298 genera (59 wholly naturalised);
- 9 threatened at the commonwealth and state levels;
- 27 species regionally significant;
- Dominant families (native species): Poaceae (28 species); Fabaceae (22 species); Apocynaceae (21 species); Rubiaceae (18 species); Moraceae (10 species); Convolvulaceae and Lamiaceae (9 species); Cyperaceae, Myrtaceae, Rhizophoraceae and Sapindaceae (8 species); Phyllanthaceae (7 species); Vitaceae, Lamiaceae, Meliaceae, and Lauraceae (6 species); and Mimosaceae and Polypodiaceae (5 species);

- Local/cultural significance 77 (19%).

Family Name	Botanical Name	Status	Evergreen Vine forest	Vine thickets & boulder field	Dune vine thicket & shrublands	Melaleuca dominant Swamp forest	Palm woodland	Mangrove complex	Grassland	Cleared, Disturbed, Regrowth	Qld Herb 2011	ATH 2012	DAFF 2012	3D 2007, 2012	DF Photo	Phenology June 12
<b>Pteridophytes (Ferns &amp; fern allies)</b>																
Aspleniaceae	<i>Asplenium capitis-york</i>	#	1	1							1					
	<i>Asplenium nidus</i>		1											1	1	
Blechnaceae	<i>Scleroleana palustris</i>					1								1		
Davalliaceae	<i>Davallia denticulata</i> var. <i>denticulata</i>		1	1								1		1	1	
Nephrolepidaceae	<i>Nephrolepis bisserata</i>		1											1	1	
	<i>Nephrolepis obliterated</i>		1								1			1		
Polypodiaceae	<i>Drynaria quercifolia</i>		1	1	1							1		1		
	<i>Drynaria sparsisora</i>		1	1										1		
	<i>Microsorium punctatum</i>		1								1			1		
	<i>Pyrosia longifolia</i>		1	1										1		
	<i>Pyrosia lanceolata</i>		1								1			1		spore
Schizaeaceae	<i>Lygodium flexuosum</i>					1					1			1		
Thelypteridaceae	<i>Cyclosorus interruptus</i>					1					1	1				
Vittariaceae	<i>Vittaria elongata</i>		1	1							1			1		
<b>Angiosperms (Flowering Plants)</b>																
Acanthaceae	<i>Acanthus ilicifolius</i>	^						1			1			1		
	<i>Asystasia australasica</i>		1	1	1						1	1		1		
	<i>Asystasia gangetica</i> subsp. <i>gangetica</i>	*								1	1		1	1		
	<i>Gomphrena celesiodides</i>	*								1			1	1		
	<i>Pseuderanthemum variabile</i>		1								1			1		flw
	<i>Ruellia tuberosa</i>	*								1			1	1		
Agavaceae	<i>Agave sisalana</i>	*^			1					1		1	1	1	1	
	<i>Pleomele angustifolia</i>	^	1	1						1				1	1	
Aizoaceae	<i>Sesuvium portulacastrum</i>	^			1					1		1		1		flw
Amaranthaceae	<i>Alternanthera brasiliana</i>	*								1			1	1		
	<i>Amaranthus interruptus</i>									1	1					
	<i>Celosia argentea</i>	*								1	1	1	1	1		
Anacardiaceae	<i>Buchanania arborescens</i>	^	1	1										1		
	<i>Mangifera indica</i> *	*^	1							1			1	1		
	<i>Semecarpus australiensis</i>	^	1							1				1		
Annonaceae	<i>Haplostichanthus fruticosus</i>	#	1											1	1	ft
Apocynaceae	<i>Uvaria rufa</i>	#	1	1										1		

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	<i>Alstonia spectabilis</i>		1	1						1				1		
	<i>Alyxia spicata</i>		1	1								1		1		
	<i>Calotropis gigantea</i>	*								1	1			1		
	<i>Catharanthus roseus</i>	*^			1					1	1		1	1		flw
	<i>Cerbera manghas</i>					1				1	1	1		1		
	<i>Cynanchum carnosum</i>					1		1				1				
	<i>Dischidia littoralis</i>	V	1											1		
	<i>Dischidia major</i>											1		1		
	<i>Dischidia ovata</i>		1											1		
	<i>Gymnanthera oblonga</i>		1			1						1		1		
	<i>Hoya australe</i> subsp. <i>sanae</i>		1	1										1		
	<i>Ichnocarpus frutescens</i>		1	1							1	1		1		
	<i>Marsdenia tricholepis</i>		1									1				
	<i>Melodinus australis</i>		1	1										1		
	<i>Sarcostemma viminalis</i> subsp. <i>brunonianum</i>		1	1							1	1		1		
	<i>Secomone elliptica</i>		1	1	1									1		
	<i>Secamone lineata</i>		1									1				
	<i>Tabernaemontana orientalis</i>		1	1							1	1		1	1	ft
	<i>Voacanga grandifolia</i>	#	1	1								1				
Araceae	<i>Epipremum amplissimum</i>	#	1											1	1	
	<i>Scindapsis altissimus</i>	#	1	1										1	1	
Araliaceae	<i>Polyscias elegans</i>		1	1								1				
	<i>Schefflera actinophylla</i>		1								1			1	1	
Arecaceae	<i>Arenga australasica</i>	V	1								1					
	<i>Cocos nucifera</i>	*^								1				1	1	
	<i>Livistona muelleri</i>	^					1							1	1	
	<i>Livistona</i> sp. (DGF)						1							1		
	<i>Metroxylon sagu</i>	*^								1				1	1	
	<i>Ptychosperma macarthurii</i>		1											1		
Aristolochiaceae	<i>Aristolochia acuminata</i>	#	1	1							1			1	1	flw
Asparagaceae	<i>Sansevieria trifasciata</i>	*											1			
Asteraceae	<i>Ageratum conyzoides</i> subsp. <i>conyzoides</i>	*								1	1		1	1	1	
	<i>Bidens pilosa</i>	*			1		1			1		1		1		
	<i>Cyanthillium cinereum</i>						1			1	1		1	1		
	<i>Eleutheranthera ruderalis</i>	*								1			1	1		
	<i>Emilia sonchifolia</i> var. <i>sonchifolia</i>	*								1	1		1	1		
	<i>Wollastonia biflora</i>				1						1	1				

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	<i>Pluchea indica</i>					1		1			1					
	<i>Sphagneticola trilobata</i>	*Class 2								1	1		1	1		
	<i>Synedrella nodiflora</i>	*								1	1		1	1		
	<i>Tridax procumbens</i>	*^			1		1			1	1	1	1	1		
Avicenniaceae	<i>Avicennia marina</i> subsp. <i>eucalyptifolia</i>	^						1			1	1				
Bignoniaceae	<i>Pandora pandorana</i>			1										1		
	<i>Tabebuia heterophylla</i>	*											1			
	<i>Tecoma stans</i> var. <i>stans</i>	*Class 3								1			1			
Bombacaceae	<i>Bombax ceiba</i> var. <i>leiocarpa</i>	^	1	1										1		
	<i>Camptostemon schultzii</i>							1			1					
Boraginaceae	<i>Cordia dichotoma</i>			1							1					
	<i>Cordia subcordata</i>	^			1					1	1	1		1		
Burseraceae	<i>Canarium australicum</i> var. <i>australianum</i>		1	1	1					1	1	1		1		
Cactaceae	<i>Opuntia stricta</i>	*Class 3								1			1			
Caesalpiniaceae	<i>Caesalpinia bonduc</i>	^			1						1			1		
	<i>Chamaecrista rotundifolia</i> var. <i>rotundifolia</i>	*								1			1			
	<i>Delonix regia</i>	*								1			1			
	<i>Intsia bijuga</i>	^	1									1		1		
	<i>Senna alata</i>	*^								1	1		1	1		
	<i>Senna surattensis</i>						1				1					
Capparaceae	<i>Capparis lucida</i>			1	1						1	1		1		
	<i>Capparis quiniflora</i>		1	1	1							1		1		
	<i>Capparis sepiaria</i>		1	1	1							1				
Caricaceae	<i>Carica papaya</i> *	*^			1					1				1		
Casuarinaceae	<i>Casuarina equisetifolia</i>	^								1				1	1	
Celastraceae	<i>Gymnosporia inermis</i>				1						1	1				
	<i>Salacia chinensis</i>	^	1	1	1									1		
Chrysobalanaceae	<i>Parinari nonda</i>	^					1				1	1		1	1	
Cleomaceae	<i>Cleome viscosa</i>									1	1					
	<i>Cleome tetrandra</i>				1									1	1	
Clusiaceae	<i>Calophyllum sil</i>		1											1		
	<i>Garcinia</i> sp. (Claudie River L.J. Brass)	#	1											1	1	
	<i>Garcinia warrenii</i>		1									1		1	1	
Cochlospermaceae	<i>Cochlospermum gillivraei</i>	^		1			1			1	1	1		1	1	
Combretaceae	<i>Lumnitzera littorea</i>							1			1					

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	<i>Lumnitzera racemosa</i>							1			1	1				
	<i>Quisqualis indica</i>	*								1			1			
	<i>Terminalia catappa</i>	^								1		1		1		
	<i>Terminalia subacroptera</i>	^		1	1						1			1		
Commelinaceae	<i>Commelina bengalensis</i>	*								1			1			
	<i>Commelina diffusa</i>						1			1	1			1		
	<i>Cyanotis axillaris</i>										1			1		
Convolvulaceae	<i>Evolvulus alsinoides</i> var. <i>decumbens</i>						1				1			1		
	<i>Ipomoea hederifolia</i>									1			1			
	<i>Ipomoea macrantha</i>			1		1						1				
	<i>Ipomoea mauritiana</i>		1								1			1	1	
	<i>Ipomoea nil</i>	*								1	1					
	<i>Ipomoea pes-caprae</i> subsp. <i>brasiliensis</i>	^			1					1	1	1		1		
	<i>Ipomoea polymorpha</i>										1					
	<i>Merremia quinata</i>						1				1	1		1		flw
	<i>Operculina brownii</i>	NT									1					
	<i>Operculina turpethum</i>										1					
	<i>Xenostegia tridentata</i>						1				1	1				
Costaceae	<i>Costus potierae</i>	E				1				1	1			1	1	flw
Cucurbitaceae	<i>Muellerargia timorensis</i>			1							1			1		ft
	<i>Neoalsomitra capricornica</i>		1								1					
	<i>Zehneria mucronata</i>		1	1			1				1					
Cyperaceae	<i>Bulbostylis barbata</i>				1		1			1	1	1		1		
	<i>Cyperus javanicus</i>										1					
	<i>Cyperus pedunculatus</i>				1	1				1	1	1		1		
	<i>Cyperus sphacelatus</i>	*								1			1			
	<i>Cyperus zollingeri</i>										1					
	<i>Fimbristylis dichotoma</i>				1		1			1	1					
	<i>Fimbristylis ferruginea</i>					1		1						1		
	<i>Scleria sphacelata</i>			1			1							1		
	<i>Scleria</i> sp. (DGF)			1										1		
Datiaceae	<i>Tetrameles nudiflora</i>	#		1										1	1	
Dilleniaceae	<i>Dillenia alata</i>					1					1					
Dioscoreaceae	<i>Dioscorea esculenta</i>	*^		1						1				1	1	
	<i>Dioscorea pentaphylla</i> var. <i>papuana</i>	#^		1						1				1		
	<i>Dioscorea transversa</i>	^	1	1	1									1		
Ebenaceae	<i>Diospyros calycantha</i>		1	1	1							1				
	<i>Diospyros hebecarpa</i>		1								1			1		

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	<i>Diospyros maritima</i>		1	1	1							1		1		
	<i>Diospyros</i> sp. Mt White (P.I.Forster 14415)		1	1	1							1				
Elaeocarpaceae	<i>Elaeocarpus arnhemicus</i>		1									1		1	1	
Euphorbiaceae	<i>Dimorphocalyx australiensis</i>		1	1								1		1		
	<i>Euphorbia hirta</i>	*								1	1		1	1		
	<i>Euphorbia heterophylla</i>	*			1					1			1	1		
	<i>Excoecaria agallocha</i>							1			1	1		1		
	<i>Macaranga tanarius</i>	^		1	1					1	1	1		1		
	<i>Mallotus</i> sp. (DGF)		1											1		
	<i>Manihot esculenta</i>	*^				1				1				1		
	<i>Manihot glaziovii</i>	*								1			1	1	1	flw, ft
Fabaceae	<i>Abrus precatorius</i>	^	1	1	1							1		1		
	<i>Adenanthera pavonina</i>						1									
	<i>Alysicarpus vaginalis</i>	*								1			1			
	<i>Austrosteenisia mollotricha</i>		1											1	1	
	<i>Calopogonium mucunoides</i>	*								1			1			
	<i>Canavalia papuana</i>				1									1	1	
	<i>Canavalia rosea</i>				1						1			1		
	<i>Centrosema molle</i>	*								1	1		1	1		
	<i>Clitoria ternatea</i>	*								1	1		1	1		
	<i>Crotalaria goorensis</i>	*								1			1	1	1	
	<i>Crotalaria linifolia</i>						1					1				
	<i>Crotalaria pallida</i> var. <i>obovata</i>	*								1	1		1			
	<i>Dalbergia densa</i> var. <i>australis</i>			1							1			1		
	<i>Dendrolobium umbellatum</i> var. <i>umbellatum</i>			1	1						1	1		1		
	<i>Derris trifoliata</i>				1	1						1		1		
	<i>Desmodium scorpius</i>	*								1			1			
	<i>Desmodium triflorum</i>	*								1			1			
	<i>Entada phaseloides</i>	^	1	1										1		
	<i>Entada rheedii</i>	^	1	1										1		
	<i>Erythrina variegata</i>	^			1						1	1				
	<i>Galactia tenuiflora</i>						1				1					
	<i>Indigofera hirsuta</i>	*								1			1			
	<i>Macroptileum atropurpureum</i>	*								1			1	1		
	<i>Macroptileum lathryoides</i>	*								1			1	1		
	<i>Millettia pinnata</i>		1		1						1	1		1		
	<i>Mucuna gigantea</i>		1								1			1	1	flw

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	<i>Pueraria montana</i> var. <i>lobata</i>	*^				1	1			1	1		1	1	1	
	<i>Pueraria phaseoloides</i> var. <i>phaseoloides</i>	*^								1	1		1	1		
	<i>Pycnospora lutescens</i>						1				1	1				
	<i>Sesbania cannabina</i>									1				1		
	<i>Stylosanthes hamata</i>	*								1			1			
	<i>Stylosanthes humilis</i>	*								1				1		
	<i>Stylosanthes scabra</i>	*								1			1	1		
	<i>Tephrosia juncea</i>				1		1							1		
	<i>Tephrosia maculata</i>						1									
	<i>Vandasina retusa</i>				1		1				1			1		
	<i>Vigna radiata</i> var. <i>sublobata</i>						1				1			1		
Flagellariaceae	<i>Flagellaria indica</i>	^	1	1							1	1		1		
Lamiaceae	<i>Anisomeles malabarica</i>						1				1			1		
	<i>Basilicum polystachyon</i>						1			1						
	<i>Clerodendrum inerme</i>					1					1	1		1		
	<i>Clerodendrum longiflorum</i> var. <i>glabrum</i>			1	1	1								1		
	<i>Hyptis suaveolens</i>	*					1			1	1			1		
	<i>Ocimum basilicum</i>	*^					1			1						
	<i>Plectranthus scutellaroides</i>						1			1				1		
	<i>Premna acuminata</i>			1										1		
	<i>Premna dallachiana</i>			1												
	<i>Premna serratifolia</i>	^			1						1	1		1		
	<i>Vitex rotundifolia</i>				1						1					
Lauraceae	<i>Cassytha filiformis</i>	^		1	1	1	1			1	1	1		1		ft
	<i>Cryptocarya cunninghamii</i>		1											1		
	<i>Cryptocarya densiflora</i>	#	1											1		
	<i>Cryptocarya exfoliata</i>		1	1							1	1		1		
	<i>Endiandra impressicosta</i>	#	1											1		
	<i>Litsea glutinosa</i>		1	1							1	1		1		
Lecythidaceae	<i>Barringtonia calyptata</i>			1			1				1			1		
	<i>Barringtonia racemosa</i>					1										
Lythraceae	<i>Pemphis acidula</i>										1					
	<i>Sonneratia alba</i>							1			1	1				
Leeaceae	<i>Leea indica</i>		1	1		1								1		
Malvaceae	<i>Abelmoschus manihot</i>	*								1			1			
	<i>Hibiscus tiliaceus</i>	^			1	1		1			1	1		1		
	<i>Sida cordifolia</i>	*								1	1			1		



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	<i>Sida rhombifolia</i>	*								1			1			
	<i>Thespesia populnea</i>	^			1			1			1	1		1		
	<i>Thespesia populneoides</i>	^			1			1								
Melastomataceae	<i>Melastoma affine</i>	^				1										
	<i>Memecylon pauciflorum</i> var. <i>pauciflorum</i>		1	1							1			1		
Meliaceae	<i>Aglaiia elaeagnoides</i>	^	1	1	1						1	1		1		
	<i>Dysoxylum klanderii</i>	#	1											1		
	<i>Dysoxylum oppositifolium</i>		1											1		
	<i>Turraea pubescens</i>			1								1		1		
	<i>Vavaea amicorum</i>		1											1		
	<i>Xylocarpus moluccensis</i>	^						1			1	1				
Menispermaceae	<i>Hypserpa laurina</i>		1									1		1		ft
	<i>Tinospora smilacina</i>			1							1			1		
Mimosaceae	<i>Acacia auriculiformis</i>	^	1								1			1		
	<i>Acacia leptocarpa</i>						1				1					
	<i>Acacia polystachya</i>	^	1							1				1		
	<i>Archidendron grandiflorum</i>		1											1	1	
	<i>Leuceana leucocephala</i>	*								1				1		
	<i>Mimosa pudica</i>	*								1			1			
	<i>Paraserianthes toona</i>			1										1		
Molluginaceae	<i>Mollugo pentaphylla</i>	*								1	1					
Moraceae	<i>Antiaris toxicaria</i> var. <i>macrophylla</i>			1							1			1		
	<i>Ficus benjamina</i>		1									1		1		
	<i>Ficus congesta</i>		1									1				
	<i>Ficus drupacea</i>		1	1								1		1		
	<i>Ficus microcarpa</i> var. <i>hillii</i>		1								1			1		
	<i>Ficus obliqua</i> var. <i>obliqua</i>		1	1												
	<i>Ficus opposita</i>	^		1			1					1		1		
	<i>Ficus virens</i> var. <i>sublanceolata</i>	^	1	1						1				1		
	<i>Streblus brunonianus</i>		1											1		
	<i>Trophis scandens</i> subsp. <i>scandens</i>		1	1										1		
Musaceae	<i>Musa</i> sp.	*^								1				1		
Myristicaceae	<i>Myristica insipida</i> var. <i>insipida</i>		1								1			1		
	<i>Myristica insipida</i> var. <i>cimicifera</i>		1									1		1	1	
Myrsinaceae	<i>Aegicercus corniculatum</i>							1			1	1		1		
Myrtaceae	<i>Acmenosperma claviflorum</i>	#	1											1	1	
	<i>Eugenia reinwardtiana</i>	^		1	1							1		1		
	<i>Gossia floribunda</i>		1											1		

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	<i>Melaleuca cajuputi</i>					1								1		
	<i>Melaleuca dealbata</i>					1								1		
	<i>Syzygium bungadinnia</i>	^#	1											1	1	
	<i>Syzygium puberulum</i>	#	1								1			1		
	<i>Syzygium suborbiculare</i>	^					1					1		1		
Nyctaginaceae	<i>Boerhavia albiflora</i> var. <i>albiflora</i>	^			1						1			1		
Olacaceae	<i>Ximena americana</i>	^			1						1					
Oleaceae	<i>Chionanthus ramiflorus</i>		1	1								1		1		ft
	<i>Jasminum elongatum</i>		1	1	1							1		1		
Onagraceae	<i>Ludwigia octovalvis</i>					1								1		
Opliliaceae	<i>Cansjera leptostachya</i>		1	1										1		
	<i>Opilia amentacea</i>		1	1	1						1			1		
Orchidaceae	<i>Dendrobium litorale</i>		1								1			1		
	<i>Dendrobium</i> sp.		1											1		
	<i>Grastidium insigne</i>		1								1					
Pandanaceae	<i>Pandanus spiralis</i>	^												1		
	<i>Pandanus tectorius</i>	^				1								1		
Passifloraceae	<i>Passiflora foetida</i>	*^		1	1	1	1			1	1		1	1		flw
Philesiaceae	<i>Eustrephus latifolius</i>			1			1					1				
Phyllanthaceae	<i>Antidesma erostre</i>	^		1										1		
	<i>Antidesma parvifolium</i>	^		1			1				1	1				
	<i>Breynia cernua</i>			1								1		1		
	<i>Bridelia tomentosa</i>			1										1		
	<i>Cleistanthus peninsularis</i>			1							1	1		1		
	<i>Glochidion apodogynum</i>			1										1		
	<i>Phyllanthus amarus</i>	*								1			1	1		
	<i>Phyllanthus novae-hollandaei</i>				1									1		
	<i>Phyllanthus tenellus</i>	*														
Plumbaginaceae	<i>Aegialitis annulata</i>							1				1		1		
Poaceae	<i>Apluda mutica</i>	NT					1			1				1		
	<i>Axonopus compressus</i>	*								1			1			
	<i>Bambusa</i> sp. (DGF8681+)*	*^	1											1		
	<i>Bothriochloa bladhii</i> var. <i>bladhii</i>									1				1		
	<i>Bothriochloa pertusa</i> *	*								1				1		
	<i>Cenchrus brevisetosus</i>						1				1			1		
	<i>Cenchrus echinatus</i>	*								1			1	1		
	<i>Chloris inflata</i>	*								1	1		1	1		
	<i>Chrysopogon aciculatus</i>	*								1			1			
	<i>Chrysopogon fallax</i>						1							1		

Family Name	Botanical Name	Status	Evergreen Vine forest	Vine thickets & boulder field	Dune vine thicket & shrublands	Melaleuca dominant Swamp forest	Palm woodland	Mangrove complex	Grassland	Cleared, Disturbed, Regrowth	Qld Herb 2011	ATH 2012	DAFF 2012	3D 2007, 2012	DF Photo	Phenology June 12
	<i>Cymbopogon ambiguus</i>						1				1			1v		
	<i>Cymbopogon globosus</i>						1				1			1		
	<i>Dactyloctenium aegyptum</i>	*								1			1	1		
	<i>Digitaria bicornis</i>									1	1					
	<i>Digitaria ciliaris</i>	*								1	1	1		1		
	<i>Echinochloa colona</i>	*								1			1	1		
	<i>Eleusine indica</i>	*								1			1	1		
	<i>Eragrostis tenuella</i>									1			1	1		
	<i>Eragrostis sp.</i>													1		
	<i>Heteropogon contortus</i>						1							1		
	<i>Heteropogon triticeus</i>	^					1			1	1			1		
	<i>Imperata cylindrica</i>	^					1			1				1		
	<i>Ischaemum muticum</i>						1				1					
	<i>Ischaemum polystachyum</i>										1					
	<i>Megathyrsus maximus var. maximus</i>	*								1	1		1	1		
	<i>Melinis repens</i>	*								1			1			
	<i>Mnesithea rottboellioides</i>	^					1				1			1		
	<i>Neolebra atra</i>	NT^	1											1		
	<i>Ophiuros exaltatus</i>	^					1				1			1	1	
	<i>Oplismenus burmannii</i>		1	1							1			1		
	<i>Oplismenus compositus</i>		1	1							1			1		
	<i>Panicum trichoides</i>			1						1				1		
	<i>Paspalum scrobiculatum</i>									1	1					
	<i>Phragmites australis</i>	^				1				1	1					
	<i>Phragmites karka</i>	^				1				1				1		
	<i>Rottboellia cochinchinensis</i>	*								1	1		1			
	<i>Setaria apiculata</i>						1		1		1					
	<i>Setaria australiensis</i>						1				1					
	<i>Setaria surgens</i>								1	1	1					
	<i>Sorghum nitidum forma nitidum</i>						1		1		1			1		
	<i>Sporobolus virginicus</i>													1		
	<i>Themeda arguens</i>						1				1					
	<i>Themeda quadrivalvis</i>	*									1					
	<i>Themeda triandra</i>						1				1	1		1		
Portulacaceae	<i>Portulaca australis</i>								1		1			1		
	<i>Portulaca pilosa</i>	*			1						1	1	1	1		
Ptaeroxylaceae	<i>Harrisonia brownii</i>			1	1						1	1		1		
Putranjivaceae	<i>Drypetes deplanchei</i>	^	1	1							1	1		1		
Rhamnaceae	<i>Colubrina asiatica</i>				1						1	1		1		

Family Name	Botanical Name	Status	Evergreen Vine forest	Vine thickets & boulder field	Dune vine thicket & shrublands	Melaleuca dominant Swamp forest	Palm woodland	Mangrove complex	Grassland	Cleared, Disturbed, Regrowth	Qld Herb 2011	ATH 2012	DAFF 2012	3D 2007, 2012	DF Photo	Phenology June 12
	<i>Ziziphus oenopolia</i>			1	1							1				
Rhizophoraceae	<i>Bruguiera cylindrica</i>							1			1			1		
	<i>Bruguiera exaristata</i>							1			1			1		
	<i>Bruguiera gymnorrhiza</i>							1			1	1		1		
	<i>Carallia brachiata</i>					1								1		
	<i>Ceriops decandra</i>							1				1		1		
	<i>Ceriops tagal</i>							1			1	1		1		
	<i>Rhizophora apiculata</i>							1			1	1		1		
	<i>Rhizophora stylosa</i>							1			1			1		
Rubiaceae	<i>Aidia racemosa</i>		1											1		
	<i>Cyclophyllum brevipes</i>		1									1		1		
	<i>Cyclophyllum maritimum</i>		1											1		
	<i>Guettarda speciosa</i>	^									1					
	<i>Ixora timorensis</i>		1									1				
	<i>Kailarsenia ochreatea</i>		1									1				
	<i>Morinda citrifolia</i>	^	1			1					1			1		
	<i>Morinda reticulata</i>		1											1		
	<i>Oldenlandia biflora</i>										1					
	<i>Oldenlandia corymbosa</i>	*								1			1			
	<i>Pavetta brownii</i> var. <i>glabrata</i>		1								1			1		
	<i>Psilanthus brassii</i>	#	1								1	1				
	<i>Psychotria nesophila</i>		1								1			1		
	<i>Psydrax reticulata</i>	V	1											1		
	<i>Scyphiphora hydrophyllacea</i>										1					
	<i>Spermacoce brachystema</i>						1			1		1		1		
	<i>Spermacoce</i> sp. (Lorim Point A.Morton AM1237)	#			1						1					
	<i>Triflorensia australis</i>	#	1								1	1				
Rutaceae	<i>Glycosmis trifoliata</i>		1								1	1		1		
	<i>Micromelum minutum</i>		1		1						1	1		1		
	<i>Murraya paniculata</i>		1								1	1		1		
	<i>Zanthoxylum rhetsa</i>		1									1		1		
Santalaceae	<i>Exocarpos latifolius</i>		1		1						1	1		1		
Sapindaceae	<i>Alectryon repandodentatus</i>	E	1											1		
	<i>Arytera bifoliolata</i>		1											1		
	<i>Arytera pseudofoveolata</i>	#	1											1	1	
	<i>Atalaya australiana</i>	#	1											1	1	
	<i>Cupaniopsis anacardioides</i>		1		1							1		1		
	<i>Cupaniopsis flagelliformis</i> var.	#	1											1		

Family Name	Botanical Name	Status	Evergreen Vine forest	Vine thickets & boulder field	Dune vine thicket & shrublands	Melaleuca dominant Swamp forest	Palm woodland	Mangrove complex	Grassland	Cleared, Disturbed, Regrowth	Qld Herb 2011	ATH 2012	DAFF 2012	3D 2007, 2012	DF Photo	Phenology June 12
	<i>flagelliformis</i>															
	<i>Dodonaea viscosa</i> subsp. <i>viscosa</i>				1						1					
	<i>Ganophyllum falcatum</i>		1											1		
Sapotaceae	<i>Manilkara kauki</i>	^			1					1	1	1		1		
	<i>Planchonella obovata</i>		1		1						1			1		
	<i>Planchonella obovoidea</i>		1													
	<i>Sersalisia sericea</i>		1		1						1	1		1		
Scrophulariaceae	<i>Lindernia crustacea</i>										1					
	<i>Scoparia dulcis</i>	*								1	1		1	1		
Simaroubiaceae	<i>Brucea javanica</i>		1											1		
Smilacaceae	<i>Smilax australis</i>		1								1			1		
	<i>Smilax blumei</i>		1									1		1		
Solanaceae	<i>Capsicum annuum</i> var. <i>glabriusculum</i>	*								1			1			
	<i>Datura wrightii</i>	*								1	1					
	<i>Lycianthes shanesii</i>	#	1	1							1					
	<i>Physalis angulata</i>	*^								1			1	1		
Sparrmanniaceae	<i>Grewia papuana</i>		1	1								1		1		
	<i>Corchorus aestuans</i>						1		1	1	1					
Sterculiaceae	<i>Sterculia quadrifida</i>	^	1		1									1		
	<i>Sterculia</i> sp. (Annan River L.J.Brass 20319)	^	1		1						1					
Thymelaeaceae	<i>Phaleria octandra</i>		1									1				
Ulmaceae	<i>Celtis australiensis</i>		1									1				
	<i>Celtis paniculata</i>		1		1											
	<i>Celtis phillipensis</i>		1		1									1		
Urticaceae	<i>Laportea interrupta</i>		1								1					
	<i>Nothocnide repanda</i>	#	1	1							1	1		1		
Vitaceae	<i>Ampelocissus acetosa</i>	^	1		1		1			1	1			1		
	<i>Cayratia cardiophylla</i>		1	1										1		
	<i>Cayratia maritima</i>		1		1						1	1		1		
	<i>Cayratia trifolia</i>		1								1			1		
	<i>Cissus aristata</i>	V	1								1					
	<i>Tetrastigma piscarpum</i>	#	1	1										1	1	ft
Zingiberaceae	<i>Curcuma australasica</i>		1											1		
Verbenaceae	<i>Stachytarpheta jamaicensis</i>	*								1			1	1		

**Appendix C. Preliminary List of Useful Plants which occur on Dauan that are known to be utilised on other Torres Strait Islands**

Scientific Name	Common name	Life Form	Broad Use	Part Used	Broad Habitat	Source
<i>Abrus precatorius</i>	Gidee gidee	Vine	Material	Black and red seeds used for decorative purposes i.e. necklaces and bracelets.	Vine forest & thickets, & shrublands.	TBD
<i>Aglaia eleagnoidea</i>	Coastal boodyara	Tree	Material	Timber for building purposes.	Vine forests and thickets.	Nelson Gibuma pers. com. Nov. 2010.
<i>Anacardium occidentale*</i>	Cashew	Shrub	Food	Fruit eaten.	Disturbed areas.	TBD
<i>Antidesma parviflora</i>	Black currant bush	Shrub	Food	Small purplish-black fruit eaten staining hands and mouth)	Vine forest & thickets, Welchiodendron forests, woodlands & shrublands.	Nelson Gibuma pers. com. Nov. 2010.
<i>Avicennia marina var. australasica</i>	Grey mangrove	Shrub/Tree	Material	Timber	Mangroves	Nelson Gibuma pers. com. Nov. 2010.
<i>Bambusa sp.</i>	Bamboo	Grass	Material	Stems	Groves within disturbed vine forests on dunes.	Nelson Gibuma pers. com. Nov. 2010.
<i>Bruguiera exaristata</i>	Rib-fruited orange mangrove	Tree	Material	Timber.	Mangroves	Duke (2010) through N.Gibuma
<i>Bruguiera gymnorhiza</i>	Large-leafed orange mangrove	Tree	Material	Timber.	Mangroves	Duke (2010) through N.Gibuma
<i>Bruguiera parviflora</i>	Small-leafed orange mangrove	Tree	Material	Timber.	Mangroves	Duke (2010) through N.Gibuma
<i>Buchanania arborescens</i>	Little gooseberry tree	Tree	Food	Small black fruits eaten as a snack when ripe.	Vine forests & thickets.	TBD
<i>Caesalpinia bonduc</i>	Nicker nut	Shrub/Vine	Material	Seeds for playing marbles.	Margins of vine forests near coast.	Nelson Gibuma pers. com. Nov. 2010.
<i>Camptostemon schultzei</i>	Kapok mangrove	Tree	Material	Timber for housing construction.	Mangroves	Duke (2010) through N.Gibuma
<i>Capparis lucida</i>	Coast caper	Vine	Food	Fruit ripening blackish.	Vine forests and thickets.	Nelson Gibuma pers. com. Nov. 2010.
<i>Cassytha filiformis</i>	Dodder laurel Devils twine	Vine	Food	Small fruit eaten as a snack when ripe.	Vine forest & thickets, & shrublands.	TBD

<i>Ceriops australis</i>	Smooth-fruited yellow mangrove (locally called White Mangrove)	Tree	Material	Timber.	Mangroves	Duke (2010) through N.Gibuma
<i>Ceriops decandra</i>	Clumped yellow mangrove	Tree	Material	Timber.	Mangroves	Duke (2010) through N.Gibuma
<i>Ceriops tagal</i>	Rib-fruited yellow mangrove	Tree	Material	Timber for fencing and construction.	Mangroves	Duke (2010) through N.Gibuma
<i>Cocos nucifera</i>	Coconut	Palm	Food Material	Kernel	Planted locations.	Duke (2010) through N.Gibuma
<i>Colubrina asiatica</i>	Colubrina or Beach Berry Bush	Shrub	Material	Leaves in water to wash hands.	Margins of vine forests near coast.	Nelson Gibuma pers. com. Nov. 2010.
<i>Cordia subcordata</i>	Golden trumpet tree	Tree	Material	Timber for drums.	Vine forests and thickets.	Nelson Gibuma pers. com. Nov. 2010.
<i>Costus poteriae</i>	Costus	Herb	Symbolic	Tied around neck during ceremony	Swamps	Tenny Elisala pers. Comm. May 2012.
<i>Derris trifoliata</i>	Derris	Vine	Material	Stems used for rope. Fish poison?	Mangrove margins and shrublands.	Nelson Gibuma pers. com. Nov. 2010.
<i>Entada phaselioides</i>	Matchbox bean	Vine	Material	Large flat glossy brown seeds used for dancing decorations and instruments in music.	Vine forests & thickets, mangroves edges.	TBD
<i>Erythrina variegata</i>	Coral tree	Tree	Material	Glossy red seeds used for decorative purposes i.e. necklaces and bracelets.	Vine forests and thickets.	Nelson Gibuma pers. com. Nov. 2010.
<i>Excoecaria agallocha</i>	Milky mangrove	Shrub/Tree	Medicinal	Sap is remedy for sting from fish spines.	Mangroves and mangrove margins of wetlands.	Nelson Gibuma pers. com. Nov. 2010.
<i>Exocarpos latifolia</i>	Broad leaved Ballart	Shrub	Food	Small fruit eaten when ripe.	Vine forest & thickets, & shrublands.	TBD
<i>Ficus drupacea</i> var. <i>drupacea</i>	Fig	Tree	Food	Orange fruit eaten.	Town areas, vine forests.	M. Lawrie (HerbreCs specimen data)
<i>Flagellaria indica</i>	Whip vine	Vine	Material	Stems for tying and binding.	Vine forests and thickets, shrublands.	Nelson Gibuma pers. com. Nov. 2010.
<i>Hibiscus tiliaceus</i>	Cottonwood hibiscus	Tree	Material	Light wood for making	Coastal grasslands &	Nelson Gibuma



				small racing canoes. Fibrous bark possibly used for fibre.	mangrove edges.	pers. com. Nov. 2010.
<i>Ipomoea pes capre</i> var. <i>brasiliensis</i>	Goats foot convolvulus	Herb/Vine	Material	Stems	Coastal sites.	Duke (2010) through N.Gibuma
<i>Mangifera indica</i> *	Mango	Tree	Food	Fruit eaten.	Disturbed areas.	TBD
<i>Manihot esculenta</i> *	Cassava	Shrub	Food	Tuber used for food.	Disturbed areas.	TBD
<i>Manilkara kauki</i>	Wongai	Tree	Food Material	Fruit are eaten. Strong timber favoured for dugong spears and carving.	Vine forests & thickets.	Nelson Gibuma pers. com. Nov. 2010.
<i>Milletia pinnata</i>	Pongamia	Tree	Material	Seed pods for children toy things. Leaves for Kup Muri.	Vine forests and thickets	Nelson Gibuma pers. com. Nov. 2010.
<i>Mimusops elengii</i>	Mimusops	Tree	Material	Timber for light dugong spear.	Vine forests and thickets	Nelson Gibuma pers. com. Nov. 2010.
<i>Pandanus spirilis</i>	Pandanus	Pandanus Palm	Food Material	Kernel of individual fruit segments hammered out when dry and eaten. Leaves used for fibre making baskets etc.	Pandanus grasslands.	Nelson Gibuma pers. com. Nov. 2010.
<i>Pandanus tectorius</i>	Screw palm	Pandanus Palm	Food Material	Base of ripe fruit eaten fresh in small amounts. Fruits treated in water to make paste? Leaves sued for making mats.	Vine forests on dunes.	Nelson Gibuma pers. com. Nov. 2010.
<i>Passiflora foetida</i> *	Wild passionfruit	Vine	Food	Small fruit eaten as a snack when ripe.	Vine forest & thickets, & shrublands, disturbed areas.	TBD
<i>Pemphis acidula</i>	Pemphis	Shrub	Material	Timber used for firewood.	Mangrove margins.	Nelson Gibuma pers. com. Nov. 2010.
<i>Rhizophora apiculata</i>	Corky stilt mangrove	Tree	Not known	Not known	Mangroves	Duke (2010) through N.Gibuma
<i>Rhizophora mucronata</i>	Upriver stilt mangrove	Tree	Not known	Not known	Mangroves	Duke (2010) through N.Gibuma
<i>Rhizophora stylosa</i>	Long-style stilt mangrove	Tree	Material	Gum scraped from underbark for glueing drum skins.	Mangroves	Duke (2010) through N.Gibuma
<i>Senna alata</i> *	Ringworm shrub, 6 o'clock	Shrub	Medicinal	Decoction from leaves used for treatment of	Disturbed areas.	TBD

				ringworms.		
<i>Sonneratia alba</i>	White-flowered apple mangrove	Tree	Not known	Not known	Mangroves	Duke (2010) through N.Gibuma
<i>Syzygium branderhorstii</i>	Lockerbie satin ash	Shrub/Tree	Food	Fruit eaten. This plant grows in the wild on Mua and Erub, Dauan however is planted in domestic gardens.	Town gardens.	Nelson Gibuma pers. com. Nov. 2010.
<i>Terminalia catappa</i>	Sea almond	Tree	Food	Outer skin of fruit eaten when ripe. Inner nut eaten when dry.	Community areas.	Nelson Gibuma pers. com. Nov. 2010.
<i>Terminalia subacoptera</i>	No common name	Shrub or small tree	Food	Fleshy skin of small purplish-black fruit eaten when ripe.	Vine forest & thickets, & shrublands.	Nelson Gibuma pers. com. Nov. 2010.
<i>Thespesia populneoides</i>	Pacific rosewood	Shrub/Tree	Material	Round fruit used for toys.	Mangrove margins.	Nelson Gibuma pers. com. Nov. 2010.
<i>Tridax procumbens*</i>	Tridax	Annual herb	Medicinal	Decoction of leaves used for treating cuts and sores.	Disturbed areas.	TBD
<i>Ximения americana</i>	Yellow plum	Shrub	Food	Fruit with yellowish flesh is eaten.	Edge of Mangroves	Nelson Gibuma pers. com. Nov. 2010.
<i>Xylocarpus granatum</i>	Cannonball mangrove	Tree	Material	Fruit parts for play, timber for construction.	Mangroves	Duke (2010) through N.Gibuma
<i>Xylocarpus mollucensis</i>	Cedar mangrove	Tree	Material	Fruit parts for play, timber for construction.	Mangroves	Duke (2010) through N.Gibuma

**Appendix D. Terrestrial vertebrates known<sup>1</sup> or predicted<sup>2</sup> to occur on the islands of Torres Strait and their occurrence on Dauan Island.**

Family	Scientific Name <sup>3</sup>	Common name	Status <sup>4</sup>			Dauan
			EPBC Act	NC Act	BoT	
<b>AMPHIBIANS</b>						
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 & Unpublished record
Hylidae	<i>Litoria gracilentia</i>	Dainty green tree frog		LC		
Hylidae	<i>Litoria infrafrenata</i>	White-lipped Tree Frog		LC		WildNet & published record
Hylidae	<i>Litoria nasuta</i>	Rocket frog		LC		
Hylidae	<i>Litoria nigrofrenata</i>	Bridle frog		LC		
Hylidae	<i>Litoria rubella</i>	Red tree frog		LC		
Microhylidae	<i>Austrochaperina gracilipes</i>	Slender frog		LC		WildNet
Microhylidae	<i>Cophixalus</i> sp.	No common name				
Ranidae	<i>Rana daemeli</i>	Wood frog		LC		
Bufonidae	<i>Rhinella marina</i>	Cane toad		I		
<b>REPTILES</b>						
Crocodylidae	<i>Crocodylus porosus</i>	Salt-water Crocodile	M	V		
Gekkonidae	<i>Cyrtodactylus louisianensis</i>	Ring-tailed Gecko		LC		
Gekkonidae	<i>Gehyra baliola</i>	Short-tailed Dtella		LC		
Gekkonidae	<i>Gehyra dubia</i>	Dubious dtella		LC		WildNet record (Natural Solutions 2008)
Gekkonidae	<i>Gehyra variegata</i>	Tree dtella		LC		
Gekkonidae	<i>Hemidactylus frenatus</i>	House gecko		I		WildNet record
Gekkonidae	<i>Heteronotia binoei</i>	Bynoe's gecko		LC		
Gekkonidae	<i>Lepidodactylus lugubris</i>	Mourning gecko		LC		WildNet record
Gekkonidae	<i>Lepidodactylus pumilus</i>	Slender chained gecko		NT		
Gekkonidae	<i>Nactus eboracensis</i>	No common name		LC		

Family	Scientific Name <sup>3</sup>	Common name	Status <sup>4</sup>			Dauan
			EPBC Act	NC Act	BoT	
Gekkonidae	<i>Nactus 'pelagicus'</i>	Pelagic gecko		LC		
Gekkonidae	<i>Oedura rhombifer</i>	Zigzag velvet gecko		LC		
Gekkonidae	<i>Pseudothecadactylus australis</i>	Giant tree gecko		LC		
Pygopodidae	<i>Lialis burtonis</i>	Burton's Snake-lizard		LC		WildNet and published record
Scincidae	<i>Bellatorias frerei</i>	Major skink		LC		WildNet and published record
Scincidae	<i>Carlia coensis</i>	Coen Rainbow-skink		LC		
Scincidae	<i>Carlia longipes</i>	Closed-litter Rainbow-skink		LC		Published record (Natural Solutions 2008)
Scincidae	<i>Carlia Macfarlani</i>	Closed-litter Rainbow-skink		LC		
Scincidae	<i>Carlia quinquecarinata</i>	No common name		LC		
Scincidae	<i>Carlia sexdentata</i>	No common name		LC		WildNet record
Scincidae	<i>Carlia storri</i>	Brown Bicarinate Rainbow-skink		LC		
Scincidae	<i>Cryptoblepharus litoralis litoralis</i>	Supralittoral Shinning-skink		LC		WildNet record
Scincidae	<i>Cryptoblepharus virgatus</i>	Cream-striped Shinning-skink		LC		
Scincidae	<i>Ctenotus inornatus</i>	Bar-shouldered Ctenotus		LC		
Scincidae	<i>Ctenotus robustus</i>	Robust ctenotus		LC		
Scincidae	<i>Ctenotus spaldingi</i>	Straight-browed Ctenotus		LC		
Scincidae	<i>Emoia atrocostata</i>	Littoral Whiptail-skink		NT		WildNet record
Scincidae	<i>Emoia longicauda</i>	Shrub Whiptail-skink		LC		Published record (Natural Solutions 2008)
Scincidae	<i>Eremiascincus pardalis</i>	Lowlands Bar-lipped Skink		LC		
Scincidae	<i>Eugongylus rufescens</i>	Bar-lipped Sheen-skink		LC		WildNet & published record (Natural Solutions 2008a)
Scincidae	<i>Glaphyromorphus crassicaudus</i>	Cape York Mulch-skink		LC		WildNet record
Scincidae	<i>Glaphyromorphus nigricaudis</i>	Black-tailed Bar-lipped Skink		LC		
Scincidae	<i>Glaphyromorphus pumilus</i>	Dwarf Mulch-skink		LC		
Scincidae	<i>Lygisaurus macfarlani</i>	Translucent Litter-skink		LC		WildNet
Agamidae	<i>Chlamydosaurus kingii</i>	Frilled lizard		LC		
Agamidae	<i>Diporiphora bilineata</i>	Two-lined Dragon		LC		
Agamidae	<i>Lophognathus temporalis</i>	Swamplands lashtail		LC		
Varanidae	<i>Varanus gouldii</i>	Gould's goanna		LC		
Varanidae	<i>Varanus indicus</i>	Mangrove monitor		LC		WildNet record.

Family	Scientific Name <sup>3</sup>	Common name	Status <sup>4</sup>			Dauan
			EPBC Act	NC Act	BoT	
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 & Unpublished record. Borsboom 2007
Varanidae	<i>Varanus scalaris</i>	Spotted tree monitor		LC		
Varanidae	<i>Varanus tristis</i>	Black-tailed Monitor		LC		
Typhlopidae	<i>Ramphotyphlops braminus</i>	Flowerpot blind snake		I		
Typhlopidae	<i>Ramphotyphlops leucoproctus</i>	Cape york blind snake		LC		
Typhlopidae	<i>Ramphotyphlops polygrammicus</i>	North-eastern Blind Snake		LC		
Boidae	<i>Antaresia cf childreni</i>	Children's python		LC		
Boidae	<i>Antaresia maculosa</i>	Spotted python		LC		
Boidae	<i>Liasis fuscus</i>	Water python		LC		WildNet
Boidae	<i>Morelia amethystina</i>	Amethyst python		LC		Published record (Natural Solutions 2008)
Boidae	<i>Morelia kinghorni</i>	Scrub python		LC		
Colubridae	<i>Boiga irregularis</i>	Brown tree snake		LC		WildNet & published record
Colubridae	<i>Cerberus australis</i>	Bockadam		LC		
Colubridae	<i>Dendrelaphis calligastra</i>	Northern tree snake		LC		
Colubridae	<i>Dendrelaphis punctulatus</i>	Common tree snake		LC		
Colubridae	<i>Stegonotus cucullatus</i>	Slaty-grey Snake		LC		
Colubridae	<i>Stegonotus parvus</i>	Slate-brown Snake		LC		
Elapidae	<i>Acanthophis praelongus</i>	Northern death adder		LC		
Elapidae	<i>Demansia papuensis</i>	Papuan whipsnake		LC		
Elapidae	<i>Demansia vestigiata</i>	Black whipsnake		LC		
Elapidae	<i>Furina tristis</i>	Brown-headed Snake		LC		
Elapidae	<i>Pseudechis papuanus</i>	Papuan black snake		LC		Published record.
Elapidae	<i>Oxyuranus scutellatus</i>	Papuan taipan		LC		Published record.
<b>BIRDS</b>						
Megapodiidae	<i>Alectura lathami</i>	Australian Brush-turkey		LC		
Megapodiidae	<i>Megapodius reinwardt duperryii</i>	Orange-footed scrubfowl		LC		WildNet, published & unpublished records.
Phasianidae	<i>Coturnix ypsilophora</i>	Brown quail		LC		
Anseranatidae	<i>Anseranas semipalmata</i>	Magpie goose		LC		

Family	Scientific Name <sup>3</sup>	Common name	Status <sup>4</sup>			Dauan
			EPBC Act	NC Act	BoT	
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
Podicipedidae	<i>Tachybaptus novaehollandiae</i>	Australasian grebe		LC		
Columbidae	<i>Columba livia</i>	Rock dove		I		
Columbidae	<i>Geopelia striata papua</i>	Emerald dove		LC		WildNet record
Columbidae	<i>Geopelia striata</i>	Peaceful dove		LC		
Columbidae	<i>Geopelia humeralis</i>	Bar-shouldered Dove		LC		WildNet & published 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 records.
Columbidae	<i>Ptilinopus iozonus</i>	Orange-bellied fruit-dove		LC		
Columbidae	<i>Ducula mullerii</i>	Collared imperial-pigeon		LC		WildNet & published records.
Columbidae	<i>Ducula bicolor</i>	Pied imperial-pigeon		LC		WildNet & published records.
Columbidae	<i>Lopholaimus antarcticus</i>	Topknot pigeon		LC		
Podargidae	<i>Podargus strigoides</i>	Tawny frogmouth		LC		
Podargidae	<i>Podargus papuensis</i>	Papuan frogmouth		LC		
Eurostropodidae	<i>Eurostropodus mystacalis</i>	White-throated Nightjar		LC		
Eurostropodidae	<i>Eurostropodus 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> <sup>5</sup>	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		WildNet record
Apodidae	<i>Apus affinis</i>	House swift		LC		

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			EPBC Act	NC Act	BoT	
Anhingidae	<i>Anhinga novaehollandiae</i>	Australasian darter		LC		WildNet & published records.
Phalacrocoracidae	<i>Microcarbo melanoleucos</i>	Little pied cormorant		LC		WildNet & published records.
Phalacrocoracidae	<i>Phalacrocorax carbo</i>	Great cormorant		LC		
Phalacrocoracidae	<i>Phalacrocorax sulcirostris</i>	Little black cormorant		LC		
Phalacrocoracidae	<i>Phalacrocorax varius</i>	Pied cormorant		LC		
Pelecanidae	<i>Pelecanus conspicillatus</i>	Australian pelican		LC		WildNet & published records.
Ciconiidae	<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork		NT		
Ardeidae	<i>Ixobrychus dubius</i>	Australian little bittern		LC		
Ardeidae	<i>Ixobrychus flavicollis</i>	Black bittern		LC		
Ardeidae	<i>Ardea pacifica</i>	White-necked Heron		LC		
Ardeidae	<i>Ardea modesta</i> <sup>6</sup>	Eastern great egret	M	LC		WildNet & published records.
Ardeidae	<i>Ardea intermedia</i>	Intermediate egret		LC		
Ardeidae	<i>Ardea sumatrana</i>	Great-billed Heron		LC		
Ardeidae	<i>Ardea ibis</i> <sup>7</sup>	Cattle egret	M	LC		
Ardeidae	<i>Butorides striata</i>	Striated heron		LC		
Ardeidae	<i>Egretta picata</i>	Pied heron		LC		
Ardeidae	<i>Egretta novaehollandiae</i>	White-faced Heron		LC		
Ardeidae	<i>Egretta garzetta</i>	Little egret		LC		
Ardeidae	<i>Egretta sacra</i>	Eastern reef egret	M	LC		
Ardeidae	<i>Nycticorax caledonicus</i>	Nankeen night-heron		LC		
Threskiornithidae	<i>Plegadis falcinellus</i>	Glossy ibis	M	LC		WildNet & published record
Threskiornithidae	<i>Threskiornis molucca</i>	Australian white ibis		LC		
Threskiornithidae	<i>Threskiornis spinicollis</i>	Straw-necked Ibis		LC		WildNet & published records.
Threskiornithidae	<i>Platalea regia</i>	Royal spoonbill		LC		
Accipitridae	<i>Pandion cristatus</i> <sup>8</sup>	Eastern osprey	M	LC		WildNet & published records.
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 & published records.
Accipitridae	<i>Haliastur sphenurus</i>	Whistling kite		LC		WildNet & published records.
Accipitridae	<i>Haliastur indus</i>	Brahminy kite		LC		WildNet & published records.
Accipitridae	<i>Milvus migrans</i>	Black kite		LC		

Family	Scientific Name <sup>3</sup>	Common name	Status <sup>4</sup>			Dauan
			EPBC Act	NC Act	BoT	
Accipitridae	<i>Accipiter fasciatus</i>	Brown goshawk		LC		
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		WildNet & published records.
Falconidae	<i>Falco berigora</i>	Brown falcon		LC		
Falconidae	<i>Falco longipennis</i>	Australian hobby		LC		WildNet & published records.
Falconidae	<i>Falco peregrinus</i>	Peregrine falcon		LC		
Fregatidae	<i>Fregata ariel</i>	Lesser frigatebird		LC		WildNet record
Gruidae	<i>Grus rubicunda</i>	Brolga		LC		WildNet & published records.
Rallidae	<i>Porphyrio porphyrio</i>	Purple swamphen		LC		
Rallidae	<i>Eulabeornis castaneoventris</i>	Chestnut rail		LC		
Rallidae	<i>Rallina tricolor</i>	Red-necked Crake		LC		
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>Amauornis cinerea</i>	White-browed Crake		LC		
Rallidae	<i>Amauornis 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	WildNet record
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		WildNet & published records.
Charadriidae	<i>Pluvialis fulva</i>	Pacific golden plover	M	LC		
Charadriidae	<i>Pluvialis squatarola</i>	Grey plover	M	LC		
Charadriidae	<i>Charadrius ruficapillus</i>	Red-capped Plover		LC		
Charadriidae	<i>Charadrius bicinctus</i>	Double-banded Plover	M	LC		



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Charadriidae	<i>Charadrius mongolus</i>	Lesser sand plover	M	LC		WildNet & published records.
Charadriidae	<i>Charadrius leschenaultii</i>	Greater sand plover	M	LC		WildNet & published records.
Charadriidae	<i>Erythrogonys cinctus</i>	Red-kneed Dotterel		LC		Published record.
Charadriidae	<i>Vanellus miles</i>	Masked lapwing		LC		WildNet & published records.
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		Published record (Natural Solutions 2008)
Scolopacidae	<i>Numenius phaeopus</i>	Whimbrel	M	LC		WildNet & published records.
Scolopacidae	<i>Numenius madagascariensis</i>	Eastern curlew	M	NT		WildNet
Scolopacidae	<i>Xenus cinereus</i>	Terek sandpiper	M	LC		WildNet & published records.
Scolopacidae	<i>Actitis hypoleucos</i> <sup>9</sup>	Common sandpiper	M	LC		WildNet & published records.
Scolopacidae	<i>Tringa brevipes</i> <sup>10</sup>	Grey-tailed Tattler	M	LC		WildNet & published records.
Scolopacidae	<i>Tringa incana</i> <sup>11</sup>	Wandering tattler	M	LC		WildNet record
Scolopacidae	<i>Tringa nebularia</i>	Common greenshank	M	LC		WildNet & published records.
Scolopacidae	<i>Tringa stagnatilis</i>	Marsh sandpiper	M	LC		
Scolopacidae	<i>Tringa glareola</i>	Wood sandpiper	M	LC		
Scolopacidae	<i>Arenaria interpres</i>	Ruddy turnstone	M	LC		
Scolopacidae	<i>Calidris tenuirostris</i>	Great knot	M	LC		
Scolopacidae	<i>Calidris canutus</i>	Red knot	M	LC		
Scolopacidae	<i>Calidris alba</i> <sup>12</sup>	Sanderling	M	LC		
Scolopacidae	<i>Calidris ruficollis</i>	Red-necked Stint	M	LC		WildNet & published record
Scolopacidae	<i>Calidris melanotos</i>	Pectoral sandpiper	M	LC		
Scolopacidae	<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	M	LC		WildNet & published records.
Scolopacidae	<i>Calidris ferruginea</i>	Curlew sandpiper	M	LC		WildNet
Turnicidae	<i>Turnix maculosus</i>	Red-backed Button-quail		LC		WildNet & published record
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		WildNet
Laridae	<i>Anous stolidus</i>	Common noddy	M	LC		WildNet
Laridae	<i>Anous minutus</i>	Black noddy		LC		

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Laridae	<i>Onychoprion anaethetus</i> <sup>13</sup>	Bridled tern	M	LC		
Laridae	<i>Onychoprion fuscata</i>	Sooty tern		LC		
Laridae	<i>Sternula albifrons</i> <sup>14</sup>	Little tern	M	E	high	WildNet record
Laridae	<i>Gelochelidon nilotica</i>	Gull-billed Tern		LC		WildNet & published records.
Laridae	<i>Hydroprogne caspia</i>	Caspian tern	M	LC		WildNet & published records.
Laridae	<i>Chlidonias hybrida</i>	Whiskered tern		LC		WildNet & published records.
Laridae	<i>Chlidonias leucopterus</i>	White-winged Black Tern	M	LC		
Laridae	<i>Sterna dougallii</i>	Roseate tern	M	LC		
Laridae	<i>Sterna striata</i>	White-fronted Tern		LC		
Laridae	<i>Sterna sumatrana</i>	Black-naped Tern	M	LC		
Laridae	<i>Sterna hirundo</i>	Common tern	M	LC		
Laridae	<i>Thalasseus bengalensis</i> <sup>15</sup>	Lesser crested tern	M	LC		
Laridae	<i>Thalasseus bergii</i>	Crested tern		LC		WildNet & published 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 caeruleiceps</i>	Rainbow lorikeet		LC		WildNet & published records.
Psittacidae	<i>Cyclopsitta</i> species	Fig-parrot species				
Psittacidae	<i>Eclectus roratus polychloros</i>	Eclectus parrot		LC		WildNet & published records (incorrectly identified as <i>Eclectus roratus macgillivrayi</i> in WildNet)
Psittacidae	<i>Geoffroyus geoffroyi aruenesis</i>	Red-cheeked Parrot		LC		
Cuculidae	<i>Centropus phasianinus</i>	Pheasant coucal		LC		WildNet & published records.
Cuculidae	<i>Eudynamys orientalis</i>	Eastern koel		LC		WildNet & published records.
Cuculidae	<i>Eudynamus scolopacea</i>	Common koel		LC		Published record (Natural Solutions 2008)
Cuculidae	<i>Urodynamys taitensis</i>	Long-tailed Cuckoo		LC		
Cuculidae	<i>Scythrops novaehollandiae</i>	Channel-billed Cuckoo		LC		WildNet record.
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		

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Cuculidae	<i>Chalcites minutillus</i>	Little bronze-cuckoo		LC		WildNet & published records.
Cuculidae	<i>Cacomantis pallidus</i>	Pallid cuckoo		LC		
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		Published record
Cuculidae	<i>Cuculus optatus</i> <sup>16</sup>	Oriental cuckoo	M	LC		WildNet record
Strigidae	<i>Ninox connivens</i>	Barking owl		LC		WildNet & published records.
Strigidae	<i>Ninox novaeseelandiae</i>	Southern boobook		LC		
Tytonidae	<i>Tyto longimembris</i>	Eastern grass owl		LC		
Alcedinidae	<i>Ceyx azureus</i>	Azure kingfisher		LC		
Alcedinidae	<i>Ceyx pusilla pusilla</i>	Little kingfisher		LC		
Halcyonidae	<i>Tanysiptera sylvia</i>	Buff-breasted Paradise-Kingfisher		LC		
Halcyonidae	<i>Tanysiptera galatea</i>	Common paradise-kingfisher		LC		
Halcyonidae	<i>Tanysiptera hydrocharis</i>	Little paradise-kingfisher				
Halcyonidae	<i>Dacelo leachii</i>	Blue-winged Kookaburra		LC		
Halcyonidae	<i>Syma torotoro</i>	Yellow-billed Kingfisher		LC		
Halcyonidae	<i>Todiramphus macleayii</i>	Forest kingfisher		LC		WildNet & published records.
Halcyonidae	<i>Todiramphus sanctus</i>	Sacred kingfisher		LC		WildNet & published records.
Halcyonidae	<i>Todiramphus chloris</i>	Collared kingfisher		LC		WildNet & published records.
Meropidae	<i>Merops ornatus</i>	Rainbow Bee-eater	M	LC		WildNet & published records.
Coraciidae	<i>Eurystomus orientalis</i>	Dollarbird		LC		
Pittidae	<i>Pitta erythrogaster</i>	Red-bellied Pitta		LC		
Pittidae	<i>Pitta versicolor</i>	Noisy pitta		LC		WildNet
Ptilonorhynchidae	<i>Ptilonorhynchus nuchalis</i>	Great bowerbird		LC		
Acanthizidae	<i>Sericornis beccarii</i>	Tropical scrubwren		LC		
Acanthizidae	<i>Gerygone levigaster</i>	Mangrove gerygone		LC		WildNet & published records.
Acanthizidae	<i>Gerygone magnirostris brunneipectus</i>	Large-billed Gerygone		LC		WildNet & published records.
Acanthizidae	<i>Gerygone palpebrosa</i>	Fairy gerygone		LC		
Meliphagidae	<i>Meliphaga notata</i>	Yellow-spotted Honeyeater		LC		
Meliphagidae	<i>Meliphaga gracilis</i>	Graceful honeyeater		LC		

Family	Scientific Name <sup>3</sup>	Common name	Status <sup>4</sup>			Dauan
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Meliphagidae	<i>Lichenostomus versicolor</i>	Varied honeyeater		LC		WildNet & published records.
Meliphagidae	<i>Manorina melanocephala</i>	Noisy miner		LC		
Meliphagidae	<i>Ramsayornis modestus</i>	Brown-backed Honeyeater		LC		WildNet & published records.
Meliphagidae	<i>Conopophila albogularis</i>	Rufous-banded Honeyeater		LC		WildNet & published records.
Meliphagidae	<i>Myzomela obscura fumata</i>	Dusky honeyeater		LC		WildNet & published records.
Meliphagidae	<i>Myzomela erythrocephala infuscata</i>	Red-headed Honeyeater		LC		WildNet & published records.
Meliphagidae	<i>Cissomela pectoralis</i>	Banded honeyeater		LC		
Meliphagidae	<i>Lichmera indistincta</i>	Brown honeyeater		LC		WildNet & published records.
Meliphagidae	<i>Philemon buceroides</i>	Helmeted friarbird		LC		
Meliphagidae	<i>Philemon argenteiceps</i>	Silver-crowned Friarbird		LC		
Meliphagidae	<i>Philemon comiculatus</i>	Noisy friarbird		LC		
Meliphagidae	<i>Philemon citreogularis</i>	Little friarbird		LC		
Meliphagidae	<i>Xanthotis flaviventer saturator</i>	Tawny-breasted Honeyeater		LC		WildNet & published records.
Pomatostomidae	<i>Pomatostomus temporalis</i>	Grey-crowned Babbler		LC		
Campephagidae	<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike		LC		WildNet & published records.
Campephagidae	<i>Coracina papuensis</i>	White-bellied Cuckoo-shrike		LC		WildNet & published records.
Campephagidae	<i>Coracina lineata</i>	Barred Cuckoo-shrike		LC		
Campephagidae	<i>Coracina tenuirostris melvillensis</i>	(Melville) cicadabird	M	LC		WildNet & published records.
Campephagidae	<i>Lalage tricolor</i>	White-winged Triller		LC		
Campephagidae	<i>Lalage leucomela</i>	Varied triller		LC		WildNet & published records.
Pachycephalidae	<i>Pachycephala melanura</i>	Mangrove golden whistler		LC		WildNet & published records.
Pachycephalidae	<i>Pachycephala rufiventris</i>	Rufous whistler		LC		
Pachycephalidae	<i>Colluricincla megarrhyncha</i>	Little Shrike-thrush		LC		
Oriolidae	<i>Sphecotheres vieilloti</i>	Australasian figbird		LC		
Oriolidae	<i>Oriolus flavocinctus</i>	Yellow oriole		LC		
Oriolidae	<i>Oriolus sagittatus</i>	Olive-backed Oriole		LC		WildNet record.
Artamidae	<i>Artamus leucorhynchus</i>	White-breasted Woodswallow		LC		WildNet & published records.
Artamidae	<i>Artamus cinereus</i>	Black-faced Woodswallow		LC		
Artamidae	<i>Artamus minor</i>	Little woodswallow		LC		
Artamidae	<i>Cracticus quoyi alecto</i>	Black butcherbird		LC		WildNet & published records.

Family	Scientific Name <sup>3</sup>	Common name	Status <sup>4</sup>			Dauan
			EPBC Act	NC Act	BoT	
Dicruridae	<i>Dicrurus bracteatus carbonarius</i>	Spangled drongo		LC		WildNet & published records.
Rhipiduridae	<i>Rhipidura rufifrons</i>	Rufous fantail	M	LC		Published record (Natural Solutions 2008)
Rhipiduridae	<i>Rhipidura phasiana</i>	Mangrove grey fantail		LC		
Rhipiduridae	<i>Rhipidura rufiventris gularis</i>	Northern fantail		LC		WildNet & published records.
Rhipiduridae	<i>Rhipidura leucophrys melaleuca</i>	Willie wagtail		LC		WildNet & published records.
Corvidae	<i>Corvus orru orru</i>	Torresian crow		LC		WildNet & published records.
Monarchidae	<i>Myiagra ruficollis</i>	Broad-billed Flycatcher		LC		WildNet & published records.
Monarchidae	<i>Myiagra rubecula</i>	Leaden flycatcher		LC		WildNet record
Monarchidae	<i>Myiagra cyanoleuca</i>	Satin flycatcher	M	LC		Published record (Natural Solutions 2008)
Monarchidae	<i>Myiagra alecto</i>	Shining flycatcher		LC		WildNet record
Monarchidae	<i>Myiagra inquieta</i>	Restless flycatcher		LC		
Monarchidae	<i>Monarcha melanopsis</i>	Black-faced Monarch	M	LC		WildNet & published records.
Monarchidae	<i>Monarcha frater</i>	Black-winged Monarch	M	LC		Predicted by the EPBC Protected Matters Search Tool
Monarchidae	<i>Symposiarchus trivirgatus</i> <sup>17</sup>	Spectacled monarch	M	LC		WildNet & Published record.
Monarchidae	<i>Grallina cyanoleuca</i>	Magpie-lark		LC		
Monarchidae	<i>Arses telescopthalmus</i>	Frilled monarch		LC		
Paradisaeidae	<i>Phonygamus keraudrenii</i>	Trumpet manucode		LC		
Paradisaeidae	<i>Ptiloris magnificus</i>	Magnificent riflebird		LC		
Petroicidae	<i>Microeca flavigaster</i>	Lemon-bellied Flycatcher		LC		
Petroicidae	<i>Peneoenanthe pulverulenta</i>	Mangrove robin		LC		
Petroicidae	<i>Drymodes superciliaris</i>	Northern Scrub-robin		LC		
Cisticolidae	<i>Cisticola exilis</i>	Golden-headed Cisticola		LC		WildNet & published records.
Acrocephalidae	<i>Acrocephalus australis</i> <sup>18</sup>	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 record
Timaliidae	<i>Zosterops lateralis</i>	Silvereye		LC		
Hirundinidae	<i>Hirundo rustica</i>	Barn swallow	M	LC		WildNet record
Hirundinidae	<i>Hirundo neoxena</i>	Welcome swallow		LC		
Hirundinidae	<i>Petrochelidon ariel</i>	Fairy martin		LC		WildNet record.

Family	Scientific Name <sup>3</sup>	Common name	Status <sup>4</sup>			Dauan
			EPBC Act	NC Act	BoT	
Hirundinidae	<i>Petrochelidon nigricans</i>	Tree martin		LC		
Hirundinidae	<i>Cecropis daurica</i> <sup>19</sup>	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 & published 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		
Nectariniidae	<i>Nectarinia jugularis</i>	Olive-backed Sunbird		LC		WildNet & published 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		WildNet & published records.
Passeridae	<i>Passer domesticus</i>	House sparrow		I		WildNet & published records.
Motacillidae	<i>Motacilla</i> sp.	Yellow Wagtail species	M	LC		
<b>MAMMALS</b>						
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		
Pteropodidae	<i>Dobsonia magna</i>	Bare-backed Fruit-bat		NT		
Pteropodidae	<i>Macroglossus minimus</i>	Northern Blossom-bat		LC		
Pteropodidae	<i>Syconycteris australis</i>	Common Blossom-bat		LC		
Pteropodidae	<i>Nyctimene cephalotes</i>	Torresian Tube-nosed Bat		NT		
Pteropodidae	<i>Nyctimene robinsoni</i>	Eastern Tube-nosed Bat		LC		
Pteropodidae	<i>Pteropus alecto</i>	Black Flying-fox		LC		
Pteropodidae	<i>Pteropus conspicillatus</i>	Spectacled Flying-fox	V	LC	high	Predicted by the EPBC Protected Matters Search Tool
Pteropodidae	<i>Pteropus macrotis</i>	Large-eared Flying-fox		LC		
Pteropodidae	<i>Pteropus scapulatus</i>	Little Red Flying-fox		LC		
Pteropodidae	<i>Pteropus banakrisi</i>	Torresian Flying-fox		LC		Published record (Natural Solutions 2008)
Rhinolophidae	<i>Rhinolophus philippinensis</i> (large form)	Greater Large-eared Horseshoe Bat	E	E	high	

Family	Scientific Name <sup>3</sup>	Common name	Status <sup>4</sup>			Dauan
			EPBC Act	NC Act	BoT	
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>Saccolaimus mixtus</i>	Papuan sheath-tail bat		NT		Published record (Natural Solutions 2008) -Unconfirmed
Emballonuridae	<i>Taphozous australis</i>	Coastal sheath-tail bat		V	high	Published record (Natural Solutions 2008)- Unconfirmed
Molossidae	<i>Chaerephon jobensis</i>	Northern Freetail-bat		LC		
Molossidae	<i>Mormopterus beccarii</i>	Beccari's Freetail-bat		LC		Published record
Vespertilionidae	<i>Chalinolobus nigrogriseus</i>	Hoary wattled bat		LC		Published record (Natural Solutions 2008)
Vespertilionidae	<i>Miniopterus australis</i>	Little Bent-wing Bat		LC		
Vespertilionidae	<i>Miniopterus schreibersii</i>	Eastern Bent-wing Bat		LC		Published record (Natural Solutions 2008)
Vespertilionidae	<i>Myotis macropus</i>	Large-footed Myotis		LC		
Vespertilionidae	<i>Nyctophilus bifax</i>	Eastern Long-eared Bat		LC		
Vespertilionidae	<i>Pipistrellus</i> sp.	Pipistrelle species		LC		
Vespertilionidae	<i>Pipistrellus adamsii</i>	Forest Pipistrelle bat		LC		Published record (Natural Solutions 2008)
Vespertilionidae	<i>Pipistrellus weastraalis</i>	Northern Pipistrelle bat		LC		Published record (Natural Solutions 2008)
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		Published record (Natural Solutions (2008) refers to <i>Melomys</i> sp.
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		WildNet
Muridae	<i>Pseudomys delicatulus</i>	Delicate mouse		LC		
Muridae	<i>Rattus exulans</i>	Pacific rat		I		
Muridae	<i>Rattus norvegicus</i>	Brown rat		I		
Muridae	<i>Rattus rattus</i>	Black rat		I		
Muridae	<i>Xeromys myoides</i>	Water mouse	V	V	high	
Canidae	<i>Canis familiaris</i>	Domestic dog		I		WildNet & published record
Felidae	<i>Felis catus</i>	Cat		I		

Family	Scientific Name <sup>3</sup>	Common name	Status <sup>4</sup>			Dauan
			EPBC Act	NC Act	BoT	
Equidae	<i>Equus caballus</i>	Horse, brumby		I		
Suidae	<i>Sus scrofa</i>	Pig		I		
Bovidae	<i>Capra hircus</i>	Goat		I		
Cervidae	<i>Cervus timorensis</i>	Rusa deer		I		

7. Known from Museum records, published literature (eg Tyler 1972; Draffan *et al.* 1983; Whittier & Moeller 1993; Clarke 2004a, b; 2005, 2006; Wilson 2005; Ingram 2008), WildNet database and/or reports and other grey literature (eg Smith & Smith 2006; Borsboom 2007; Natural Solutions 2008, b, c; Conics 2009a, b, c, d, e ; Schaffer 2010). These sources are not necessarily mutually exclusive and many records are un-confirmed. Some appear unreliable. WildNet database searches were conducted for Boigu, Saibai, Bramble Cay, Erub (Darnley), Murray (Mer), Mabuiag, Iama (Yam), Mua, Badu, Possession, Thursday, Wednesday, Horn, Hammond and Prince of Wales Islands.
8. 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.
9. Nomenclature follows the Australian Faunal Directory maintained by DSEWPC. <http://www.environment.gov.au/biodiversity/abrs/online-resources/fauna/afd/index.html>
10. 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](http://www.derm.qld.gov.au/wildlife-ecosystems/wildlife/back_on_track_species_prioritisation_framework/index.html).
11. Also listed under the EPBC Act as *Chaetura caudacuta* (ROKAMBA).
12. Listed under the EPBC Act as Great Egret *Ardea alba* (CAMBA, JAMBA). Australian birds elevated to full species level as *A. modesta* (Kushlan & Hancock 2005; Christidis & Boles 2008).
13. Listed under CAMBA as *Ardeola ibis*, listed under JAMBA as *Bubulcus ibis*.
14. 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).
15. Also listed under CAMBA and ROKAMBA as *Tringa hypoleucos*.
16. Also listed under the Bonn Convention and JAMBA as *Heteroscelus brevipes*.
17. Also listed under the Bonn Convention and JAMBA as *Heteroscelus incanus*.
18. Also listed under ROKAMBA as *Crocethia alba*.
19. Listed under the EPBC Act as *Sterna anaethetus* (CAMBA, JAMBA).
20. Listed under the EPBC Act as *Sterna albifrons* (Bonn Convention, CAMBA, JAMBA, ROKAMBA).
21. Listed under the EPBC Act as *Sterna bengalensis* (CAMBA).
22. Listed under the EPBC Act as *Cuculus saturatus* (CAMBA, JAMBA, ROKAMBA). Australian birds elevated to full species level as *A. optatus* (Christidis & Boles 2008).
23. Listed under the EPBC Act as *Monarcha trivirgatus* (Bonn Convention).
24. Listed under the EPBC Act as Clamorous Reed-warbler *Acrocephalus stentoreus* (Bonn Convention). Australian birds elevated to full species level as *A. australis* (Higgins *et al.* 2006b).
25. Listed under the EPBC Act as *Hirundo daurica* (ROKAMBA).



## ***Appendix E. Species profiles for Endangered, Vulnerable and Near-Threatened Animals Predicted to Occur on Dauan Island***

### **Fawn Leaf-nosed Bat (*Hipposideros cervinus*)**

**NC Act:** Vulnerable

Fawn leaf-nosed bat is also considered of 'High' priority under the Back on Track species prioritisation framework (DERM 2011a).

Fawn leaf-nosed bats occur in rainforest, gallery forest and open eucalypt forest. The species roosts in caves and mines in colonies mostly of 20 to 100 individuals and occasionally of up 900 individuals. Individuals are occasionally found roosting in buildings. Foraging occurs below the canopy and the species also forages around buildings and in open areas. Fawn leaf-nosed bats eat a variety of insects and move along well-established pathways, often creeks and gullies (Churchill 2008; Pavey & Burwell 2008).

A single young is born in November or December but otherwise the breeding biology is little known. The maternity colony is the same cave as the roost site. Fawn leaf-nosed bat are widespread in Malaysia, Indonesia, the Philippines, New Guinea and the western Pacific. In Australia it is restricted to Cape York Peninsula, north of Coen (Churchill 2008; Pavey & Burwell 2008). In the Torres Strait the fawn leaf-nosed bat is known from Thursday Island (WildNet database record) and there is a Queensland Museum record (reported in Conics 2009b) and four WildNet records (DERM 2010f) for Mua Island. The species is not known from Dauan Island and availability of roost sites would limit its occurrence. However, it may occur in woodlands, either as a visitor for the Papua New Guinea mainland or through the use of buildings on Dauan Island as roost sites.

Fawn leaf-nosed bats are threatened by roost destruction. It is believed that roost disturbance; habitat alteration and predation by cats also threaten this species (DERM 2011b).

### **Bare-backed Fruit-bat (*Dobsonia magna*)**

**NC Act:** Near-Threatened (listed as *D. moluccensis*)

The Bare-backed Fruit-bat is found in rainforest, gallery forest and woodlands and occurs in New Guinea and associated islands and south to Cooktown on Cape York Peninsula (Churchill 2008; Hall 2008). Churchill (2008) states that the species is found in the Torres Strait, without location details. Duncan *et al.* (1999) reports the species for Mua Island.

The bare-backed fruit-bat is the only species of mega-bat in Australia known to regularly roost in caves (Hall 2008). The species also roosts in boulder piles, disused mines, abandoned buildings, dark rainforest thickets and large tree hollows. Colonies are usually 100 individuals or less. The species feeds on fruits and blossom. A single young is born between September and November (Churchill 2008; Hall 2008).

The species is eaten by humans in New Guinea but this is not reported for Australia (Hall 2008). Duncan *et al.* (1999) state that no large-scale decline has been observed in Australia, although shooting has caused small losses of numbers and the species has been regularly killed on barbed wire. There has been some loss of habitat through clearing and the species may be threatened by changes to vegetation through historical changes to fire regime. There is abundant cave habitat for the species on Dauan Island, particularly in rocky roosts on the flanks of Mt Cornwallis.

### **Torresian Tube-nosed Bat (*Nyctimene cephalotes*)**

**NC Act:** Near-Threatened

In Australia the Torresian tube-nosed bat is known only from three specimens from Mua Island. Another tube-nosed bat of uncertain identification, possibly *N. cephalotes*, has been collected from central eastern Cape York (Duncan *et al.* 1999). Churchill (2008) considers these records from Torres Strait and Cape York dubious and questions both the taxonomy and identification of species within the genus. The Torresian tube-nosed bat is widespread in New Guinea and specimens are known from the coast immediately adjacent to Torres Strait (Duncan *et al.* 1999).

The specimens from Mua were caught on the edge of rainforest and open grassy woodland, and the species is found in lowland rainforest in Papua New Guinea (Bonaccorso 1999). It may also inhabit mangroves as there are records from south coastal New Guinea (Duncan *et al.* 1999).

No threat is known at present, but removal of rainforest or mangrove habitat would pose a serious threat if the Australian distribution of this species is limited to Torres Strait and Cape York Peninsula (Duncan *et al.* 1999).

## **Appendix F. Profiles of Migratory Fauna Species Potentially occurring on Dauan Island and Surrounding Islets**

### **Waders**

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

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

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

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

### **Terns**

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

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

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

### **Hérons and egrets**

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

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

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

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

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

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

### **Swifts**

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

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

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

### **Oriental Cuckoo (*Cuculus optatus*)**

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

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

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

### **Rainbow Bee-eater (*Merops ornatus*)**

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

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

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

### **Passerines**

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

#### **Wooded habitat species**

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

**Threats:** Threats include the loss and fragmentation of habitat, especially along the migratory routes, and predation of eggs and young by the black rat (*Rattus rattus*) (Higgins *et al.* 2006a). All six species do or could occur on Dauan Island and would use any wooded areas, including mangroves. Breeding by any species would be limited, if any breeding occurs, and black rat has not been reported. Threats would appear to be limited to habitat loss.

#### **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.

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

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

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



