



# Browse LNG Development Assessment of the Usage of Vine Thickets at James Price Point by Frugivorous and other birds: May and November 2011

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**Assessment of the Usage of Vine Thickets  
at James Price Point by Frugivorous and other Birds  
May and November 2011**

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## Executive Summary

Woodside Energy Ltd (Woodside), as operator of the proposed Browse Liquefied Natural Gas (BLNG) Development, plans to commercialise the Browse Joint Venture's three gas and condensate fields, Brecknock, Calliance and Torosa, located 425 km north of Broome, off the Kimberley coast. Subject to government approvals, gas and liquids from these fields will be extracted using offshore facilities, then brought to an onshore LNG plant for processing at the Western Australian Government's planned Browse LNG Precinct near James Price Point, about 60 km north of Broome. The Department of State Development, as the Precinct proponent, is progressing a Strategic Assessment of the area.

As the development is planned to be in proximity to an area of vine thicket and has the potential to affect this, Woodside has initiated a programme of terrestrial environmental studies. The purpose of this programme was to comply with a request from the Department of Environment and Conservation (DEC) for assessment of the value of these vine thickets for frugivorous fauna. This request related to potential indirect impacts under the Native Vegetation Clearing Permit (NVCP) CPS 3771/1 approved by the DEC for Onshore Site Investigations by Woodside.

The investigations consisted of two surveys to determine if frugivorous fauna were present in sufficient numbers to justify a continued monitoring programme. Surveys for fruit bats (*Pteropus* spp.) and Agile Wallabies (*Macropus agilis*) were also conducted. This report outlines the findings of the May and November 2011 surveys.

A total of 10 sites was identified throughout the study area. These sites covered the three dominant vegetation types:

- Monsoon Vine Thicket - Evergreen;
- Monsoon Vine Thicket - Deciduous; and
- Eucalypt Woodland.

Each vegetation type was represented by at least two sites, one within 1 km of the potential disturbance (i.e. project area) and one at least 5 km from potential disturbance. Each site consisted of three 2 ha quadrats, with all quadrats systematically surveyed twice during each field survey period (for a period of 20 minutes per survey). All birds were recorded during these systematic surveys; other vertebrate fauna of interest were recorded opportunistically.

A total of 54 bird species was recorded during the systematic surveys, including 22 species that are considered frugivorous. This included:

- three obligate frugivorous bird species (species that are exclusively or almost exclusively dependent on fruit for food): Channel-billed Cuckoo, Olive-backed Oriole and Mistletoebird. The Channel-billed Cuckoo is of particular interest as it was recorded only in Vine Thicket and is at the southern limit of its range in the area;
- four facultative frugivorous bird species (discretionary or elective fruit-eaters): Rainbow Lorikeet, White-gaped Honeyeater, Great Bowerbird and Yellow White-eye;

- 15 occasional frugivorous bird species (will occasionally take fruit as part of the diet but are not reliant on it); and
- the remaining 32 bird species were considered non-frugivorous (generally do not consume fruit).

Of greatest interest were the obligate frugivores and, to a lesser extent, the facultative frugivores. These are the species considered most susceptible to changes in the Vine Thicket environment as they are likely to be dependent upon it. None of the obligate or facultative frugivores is of listed conservation significance, but they are of local conservation interest because they are reliant upon the Vine Thicket that is at the southern extent of its distribution in the region.

Levels of abundance of obligate and facultative frugivores were low, and a number of frugivorous species present elsewhere in the Kimberley were not observed. Given the present and previous fauna investigations in the area, it seems unlikely that any other frugivorous species are present.

The James Price Point Vine Thicket does support a greater proportion of facultative and obligate frugivores compared with the Eucalypt Woodland, which supports a greater proportion of non-frugivores. It also supports a distinctive assemblage of bird species including species that are not frugivorous. Any deleterious impact to an isolated habitat such as the James Price Point Vine Thicket will likely have ramifications for specialist fauna it may support (e.g. obligate frugivores), but while the bird assemblage is locally significant, compared with the birds recorded in Vine Thickets elsewhere in the Kimberley, the assemblage in the James Price Point Vine Thicket is depauperate. Only one obligate frugivore also considered a Vine Thicket specialist, the Channel-billed Cuckoo, was recorded regularly, and it seems unlikely that any other frugivorous, Vine Thicket specialists use the area regularly.

Regarding fruit-bats and Agile Wallabies, current data suggested both taxa are poorly represented within the study area.

It is considered that the current sampling methodology (sampling quadrats at stratified distances from the proposed project area) provides statistically valid data suitable for monitoring frugivorous birds in the vine thickets at the James Price Point coastal area.

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# 1 Introduction

## 1.1 Introduction

Woodside Energy Ltd (Woodside), as operator of the proposed Browse Liquefied Natural Gas (BLNG) Development, plans to commercialise the Browse Joint Venture's three gas and condensate fields, Brecknock, Calliance and Torosa, located 425 km north of Broome, off the Kimberley coast. Subject to government approvals, gas and liquids from these fields will be extracted using offshore facilities, then brought to an onshore LNG plant for processing at the Western Australian Government's planned Browse LNG Precinct near James Price Point, about 60 km north of Broome. The Department of State Development, as the Precinct proponent, is progressing a Strategic Assessment of the area.

As the planned development is in close proximity to large area of vine thicket, Woodside has initiated a programme of environmental studies. This programme has been conducted in response to a request from the Department of Environment and Conservation (DEC) for assessment of the value of these vine thickets for frugivorous fauna. This request related to potential indirect impacts under the Native Vegetation Clearing Permit (NVCP) CPS 3771/1 approved by the DEC for Onshore Site Investigations by Woodside. Bamford Consulting Ecologists (BCE) was commissioned by Sinclair Knight Merz (SKM) on behalf of Woodside to undertake an assessment of birds in the proposed development area and its surrounds and make recommendations to aid with minimisation of any potential impacts. Surveys for Agile Wallabies (*Macropus agilis*) and fruit-bats (*Pteropus* spp.) were also undertaken. The aims of these initial investigations were to gather baseline data from two types of this vegetation community: Monsoon Vine Thicket – Evergreen and Monsoon Vine Thicket – Deciduous, plus adjacent Eucalypt Woodland, to determine if frugivorous species were sufficiently abundant to justify a continued monitoring programme.

This report details the results from two survey periods; May 2011 (late wet season) and November 2011 (late dry season).

## 1.2 Study Objectives

The objectives of the bird assessment were to:

- determine the value of vine thickets in the area for frugivorous birds;
- establish a sampling protocol that could become the basis for a future monitoring programme; and
- produce baseline data such as measures of abundance of species that can be used to determine if a statistically robust monitoring programme is feasible.

Additional surveys were carried out for Agile Wallabies and fruit bats as requested by DEC, and observations of other fauna species were made opportunistically.



### 1.3 Frugivorous Avifauna in the Kimberley

Frugivorous birds are of conservation interest because they are largely reliant on vine thickets for food, and vine thickets are a rare, patchily-distributed environment across the Kimberley. In the James Price Point coastal area, vine thickets are close to the southern limit of their distribution in the Kimberley, with the vine thickets between James Price and Quondong Point being one of the largest patches on the Dampier Peninsula.

Johnstone and Burbidge (1991) provide a review of the avifauna of Kimberley vine thickets, primarily on the Mitchell Plateau north-east of Derby, and note that vine thickets have a distinctive avian assemblage with frugivores well-represented. The vine thicket at the James Price Point coastal area was not included in their survey. Of 22 vine thicket bird specialists they recognised, almost half are at least facultative frugivores, including three pigeon species, the Yellow Oriole (*Oriolus flavocinctus*), Australasian Figbird (*Sphecotheres vieiloti*), Spangled Drongo (*Dicrurus bracteatus*) and several cuckoo species. They found assemblage richness to be related to vine thicket patch size, with large patches supporting more species, but also found that richness was greatest in areas of high rainfall. Distance to the next vine thicket patch was also thought to be important. They also found that vine thickets in the Kimberley are depauperate in species overall when compared with similar vegetation types in the Northern Territory, Queensland and New Guinea, with this being a function of the small area and fragmented distribution of Kimberley vine thickets.

The vine thicket at James Price Point coastal area is large (ca. 572 ha), whereas many of those patches surveyed by Johnstone and Burbidge (1991) were <5ha. However, the vine thicket at the James Price Point coastal area is isolated and in a region of low rainfall compared with sites on the Mitchell Plateau that receive >900mm per annum. Vine thickets on the Mitchell Plateau are part of a mosaic that presumably facilitates movement of birds between patches. Many of the vine thicket specialists were reported by Johnstone and Burbidge (1991) to be absent or only vagrants on Dampierland, but were consistently recorded in vine thicket patches <5ha in area to the north and east of Derby.

Density of birds in vine thickets was not reported by Johnstone and Burbidge (1991), although they did report a minimum of 15 Rainbow Pitta *Pitta iris* in a 4.5 ha vine thicket patch. Bamford (unpubl. data) surveyed west Kimberley Islands supporting extensive vine thickets and did determine maximum densities. These included for a number of frugivorous birds: Emerald Dove (*Chalcophaps indica*; 7.21/ha), Rose-crowned Fruit-Dove (*Ptilinopus reginae*; 6.49/ha) and Yellow Oriole (6.67/ha). Densities on islands appear to be exceptional, and Coates (2006) reported a flock of 20 Rose-crowned Fruit-Doves on North Maret Island. The largest flock of this species reported by Johnstone and Burbidge (1991) in mainland vine thicket was six birds. Higgins and Davies (1996) reported maximum densities for the Emerald Dove and Rose-crowned Fruit-Dove on the mainland of 1.2/ha each.

On the basis of the isolated location and low rainfall experienced by vine thicket at the James Price Point coastal area, the expectation is that the habitat will be depauperate in vine thicket specialists, including frugivores, but records would represent range extensions or species right on the edge of their range, which are of conservation importance. Bird

species of Dampierland, based on database reviews, and records at the James Price Point coastal area from other recent fauna surveys undertaken for Woodside, are summarised in Appendix 8. Only one of these species, the Pied Imperial Pigeon, is listed as a vine thicket specialist by Johnstone and Burbidge (1991). However, there are historical records of at least one frugivorous vine thicket specialists on Dampierland, the Rose-crowned Fruit-Dove.

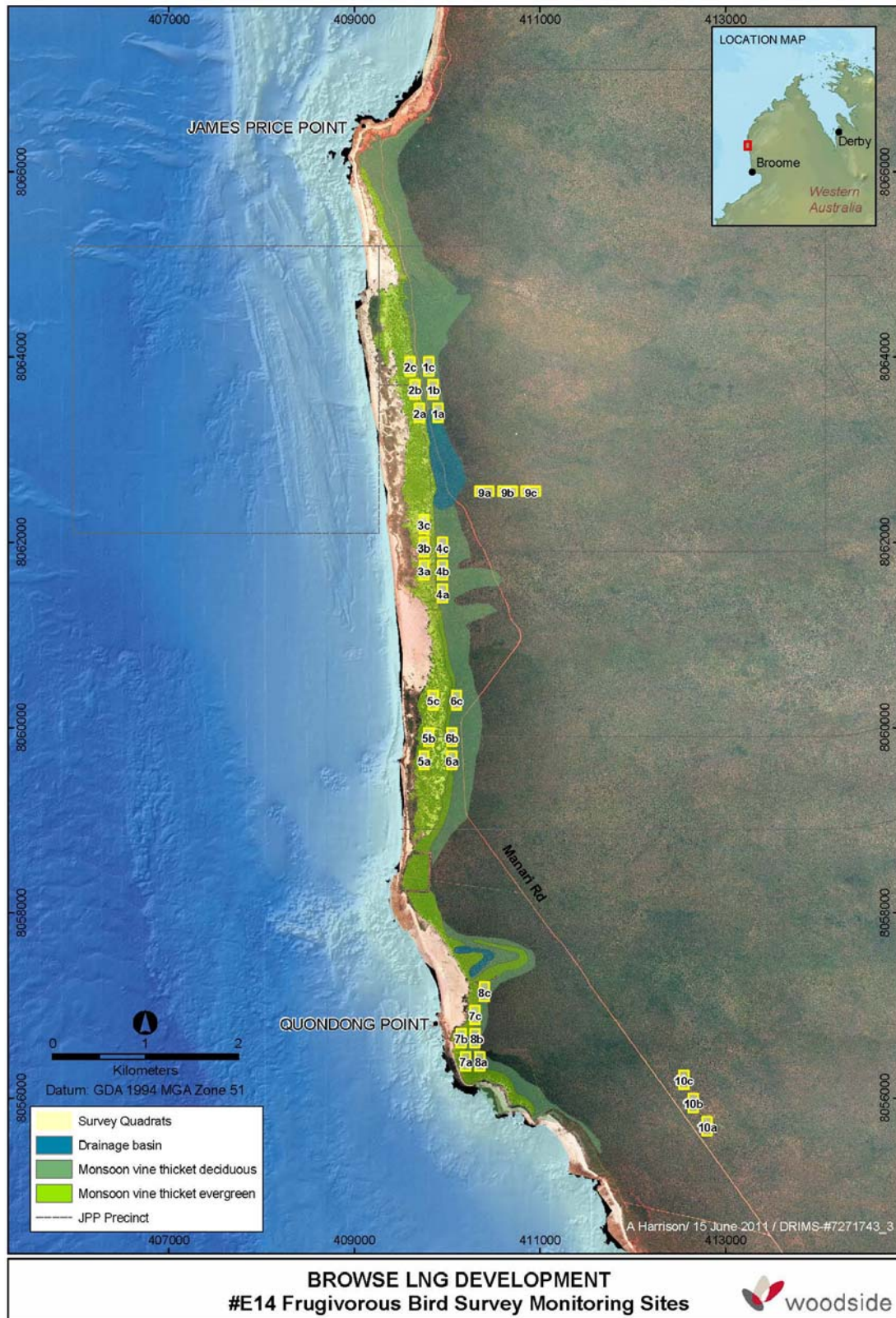


Figure 1-1. Location of James Price Point and the bird survey area.

## 2 Methods

### 2.1 Field Surveys

#### 2.1.1 Frugivorous Birds

Two field surveys were conducted during 2011:

- 3<sup>rd</sup> - 6<sup>th</sup> May 2011. Conditions were hot (daily maxima around 28-34°C) and humid.
- 22<sup>nd</sup> -25<sup>th</sup> November 2011. Conditions were hot (daily maxima around 36-39°C) and humid, with some thunderstorms.

The two surveys covered different seasons and took place when Wet season migrants, including some frugivorous species, could be expected.

##### 2.1.1.1 Survey Methodology

The census method used was the area search technique, covering 2 ha (i.e. one site) over a period of 20 minutes, as used by the Birds Australia Bird Atlas II (Barrett *et al.* 2003). Bird species in vine thickets can be quiet and difficult to see, therefore a technique that allows the observer to move around a known area was considered to be more effective than a static point census approach.

##### 2.1.1.2 Personnel

Staff involved in the field surveys included:

	May 2011	November 2011
• Dr Michael Bamford (B.Sc. Hons. Ph.D.)	✓	✓
• Mr Brenden Metcalf (B.Sc. Hons.)	✓	✓
• Mr Jeff Turpin (B.Sc.)		✓
• Mr Simon Cherriman (B.Sc.)	✓	
• Ms Gill Basnett (B.Sc.)	✓	

Report production was undertaken by:

- Dr Wes Bancroft (B.Sc. Hons. Ph.D.) – statistical analysis
- Dr Michael Bamford (B.Sc. Hons. Ph.D.) – report production
- Mr Brenden Metcalf (B.Sc. Hons.) – report production
- Ms Gill Basnett (B.Sc. Hons.) – report production

Dr Mike Calver (Murdoch University) assisted with the statistical analysis.

##### 2.1.1.3 Survey Area/Sites

Ten survey sites were established (see Table 2-1 for descriptions, Figure 1-1 for locations and Appendix 1 for coordinates) in the three different vegetation types focused on during this survey:

- Monsoon Vine Thicket – Deciduous,
- Monsoon Vine Thicket – Evergreen
- Eucalypt Woodland (open woodland dominated by eucalypts and *Corymbia* spp. with pindan shrubland understorey)

Examples of each vegetation type are presented in Figure 2-, Figure 2- and Figure 2-. Each site contained three 2 ha quadrats (a, b and c), which gave a total of 30 survey quadrats. Each 2 ha quadrat was traversed by foot for 20 minutes during each survey, with all bird species within the quadrat being recorded. Each quadrat was visited twice during each of the field survey periods, preferably once in the early morning and once in the late morning or afternoon. Bird activity is generally at its highest during early morning, with a second peak in the late afternoon.

Each site had an overall survey area of 6 ha and 120 minutes of census time, which resulted in a total of 60 ha surveyed and 1200 minutes of survey time during each survey period (i.e. May and November 2011). During the 20 minute survey period, researchers traversed the 2 ha area on foot in order to access as much of the site as possible. Within each seasonal survey period, each site was surveyed by two different researchers.

Sites were established in the project area, adjacent to the project area and outside of the potential impact area (control sites) to provide data from a range of sites and to detect changes between sites. Two sites were also established in adjacent woodland to provide context, and also because some vine thicket bird species may utilise transitional habitat. Twelve search areas were in the project area, six adjacent to the project area and there were six controls. There were also six search areas in adjacent woodland, three close to the project area and three > 5 km away. Site 9a (Eucalypt Woodland, adjacent to the impact area) was impacted between the May 2011 and November 2011 field surveys, with the construction of the laydown area clearing the north-western corner of one quadrat.

#### *2.1.1.4 Frugivore Categories*

All bird species were categorised according to their dependency on fruit as a portion of their diet. This categorisation was based on a review of the literature, particularly Higgins and Davies (1996) and other volumes in that series. Categories were:

- Obligate frugivores: exclusively or almost exclusively dependent on fruit for food;
- Facultative frugivores: discretionary or elective fruit-eaters;
- Occasional frugivores: will occasionally take fruit as part of the diet but are not reliant on it; and
- Non-frugivores: generally do not consume fruit.

While the focus was on frugivorous birds, all birds were recorded during censussing.

**Table 2-1. Descriptions of bird census areas.**

Impact zone relates to the position of the census area in relation to the proposed development.

- Zone 1:** within 1 km of areas of potential impact;  
**Zone 2:** 1 to 5 km from areas of potential impact; and  
**Zone 3:** greater than 5 km from areas of potential impact.

Census areas	Vegetation type	Impact Zone
Site 1 (a, b & c)	Monsoon Vine Thicket – Deciduous	1
Site 2 (a, b & c)	Monsoon Vine Thicket – Evergreen	1
Site 3 (a, b & c)	Monsoon Vine Thicket – Evergreen	1
Site 4 (a, b & c)	Monsoon Vine Thicket – Deciduous	1
Site 5 (a, b & c)	Monsoon Vine Thicket – Evergreen	2
Site 6 (a, b & c)	Monsoon Vine Thicket – Deciduous	2
Site 7 (a, b & c)	Monsoon Vine Thicket – Evergreen	3
Site 8 (a, b & c)	Monsoon Vine Thicket – Deciduous	3
Site 9 (a, b & c)	Eucalypt Woodland	1
Site 10 (a, b & c)	Eucalypt Woodland	3





**Figure 2-1. Monsoon Vine Thicket – Evergreen (Site 1).**



**Figure 2-2. Monsoon Vine Thicket – Deciduous (Site 2).**



**Figure 2-3. Eucalypt Woodland (Site 10).**

### **2.1.2 Fruit-bats.**

Evening fly-out surveys were conducted during each of the two survey periods to assess the level of fruit-bat activity within the James Price Point coastal area vine thicket areas. Surveys consisted of personnel sitting on a high point between the ocean and the vine thickets and watching for Fruit Bat activity along the coastline and within the nearby vine thicket. Of particular interest were animals flying from roost sites in areas such as the Mangroves at Barred Creek to forage in the vine thicket. Where fruit-bats were present, numbers, direction of travel and activity were recorded. Surveys commenced ca. 15 minutes before sunset and were ca. 1 hour in length.

#### *2.1.2.1 May 2011*

Surveys took place on the evening of 3<sup>rd</sup> May 2011 near Quondong Point at 490710 mE, 8082637 mN (UTM Zone 51K, Datum WGS84), and at a point on the coast 500 m north of James Price Point on the evening of 5<sup>th</sup> May 2011.

#### *2.1.2.2 November 2011*

Surveys took place on the evenings of the 22<sup>nd</sup> and the 24<sup>th</sup> November 2011; both surveys took place from Quondong Point (490710 mE, 8082637 mN).

### **2.1.3 Opportunistic Observations.**

Opportunistic observations on fauna were made at all times during the site survey. Particular focus was on Agile Wallabies but other fauna were also recorded.

## **2.2 Data analysis**

Bird community data were investigated using ordination and associated tests, and potential monitoring methodology was examined using power analysis. These are described below.

### **2.2.1 Non-metric Multidimensional Scaling (nMDS)**

Non-metric multidimensional scaling (nMDS) is a form of statistical 'ordination' that attempts to visually (i.e. on a graphical plot) group objects (that are characterised by values on multiple variables) so that similar objects are near to one other and dissimilar objects are further from each other. For the James Price Point study, study sites or quadrats (objects) were assessed using abundance data (values) for bird taxa (variables). nMDS attempts to find a non-parametric (i.e. not bound to a probability distribution) monotonic (order-preserving) relationship between the dissimilarities of data pairs. It is particularly advantageous for ecological data because it has very few assumptions about the nature of the data (i.e. it does not necessarily assume a particular relationship between data points), it allows the use of a variety of resemblance measures (mathematical formulae used to compute dissimilarity, distance, similarity and 'nearness' coefficients, Clarke *et al.* 2006), and it is better at preserving the 'true' distance (i.e. dissimilarity) between objects than other methods of ordination. Clarke and Warwick (2001) noted that nMDS was considered the best of the ordination techniques (particularly for ecological data).

The nMDS process attempts to simplify a complex dataset into a two or three dimensional figure. In this process, there is almost always a degree of distortion between the original dissimilarity rankings (between objects) and the plotted distance rankings. This distortion is referred to as 'stress' and can



be evaluated using a mathematical formula (see Clarke and Warwick 2001). The stress value provides a gauge as to how realistically the nMDS plot portrays the original data. Stress values for the James Price Point analyses are reported in the results. To understand their context, Clarke and Warwick (2001) provided an approximate guide for interpreting stress values:

- < 0.05 – an excellent representation with no prospect of misinterpretation;
- < 0.1 – a good ordination with no real prospect of misinterpretation;
- < 0.2 – a potentially useful representation provided that interpretation is made with caution;
- > 0.3 – a poor representation in which points are placed near-arbitrarily; and
- c. 0.45 – random.

The ideal situation is one in that a nMDS plot is in two dimensions and has a low stress value. Where this is not achieved, stress can be reduced by (mathematically) transforming the data (e.g. through the use of square- or fourth-roots) or by increasing the dimension of the plot (to three dimensions). Where these steps were required for the James Price Point analyses it has been noted in the Results.

The nMDS computation also provides the coefficient of determination ( $R^2$ ) for each of the plot axes as a measure of the variation in the data ‘explained’ by that axis. Theoretical values range from 0 (no variation explained) to 1 (100% of variation explained).

As per the recommendations of Clarke and Warwick (2001) and Clarke *et al.* (2006), the Bray-Curtis coefficient was the resemblance measure used in all multivariate analyses conducted (including ANOSIM and SIMPER).

## **2.2.2 Analysis of Similarities (ANOSIM)**

Analysis of similarities (ANOSIM) is a non-parametric test of significant difference between two or more groups, based on any resemblance measure (Clarke 1993). The resemblance measures are converted to ranks and these ranks compared using a mathematical algorithm to compute a test statistic ‘ $R$ ’ (ranging from -1 to 1), and to assess the statistical significance of the  $R$  value (thus generating probability value,  $P$ ). In a simplified sense, the test is based on comparing differences between groups with differences within groups. Clarke and Warwick (2001) provided a guide for interpreting the  $R$  values:

- 1: groups are mutually exclusive and dissimilar. All replicates within a group are more similar to each other than any replicates from different groups;
- 0: groups are similar. Replicates within a group are as similar to each other as they are to replicates from different groups; and
- 1: groups are confused. All replicates within a group are more similar to replicates from different groups than they are to one another. Generally a very low negative  $R$  value indicates an error in study design or data management.

With respect to interpretation of ANOSIM results,  $R$  values are probably more important and informative than  $P$  values (the traditional focus of statistical interpretation, Clarke and Warwick 2001).

## **2.2.3 Similarity Percentage (SIMPER)**

Similarity percentage (SIMPER) is a simple method for assessing which variables (taxa, in the James Price Point analysis) are primarily responsible for an observed difference between groups of samples

(Clarke 1993). SIMPER calculates the average resemblance measure between all pairs of inter-group samples and then returns this in terms of the average contribution from each of the variables (e.g. taxa). These are ranked, and the variables (e.g. taxa) that contribute most to the differences between two groups can be determined.

#### 2.2.4 Power Analysis

The power of a statistical test is the probability that the test will correctly reject the null hypothesis when it is, indeed, false (Zar 1999). That is, power is a measure of how confidently we can conclude that there is an 'effect' when that is the true case. With increasing power comes a decrease in the chance of committing a Type II statistical error (a false negative; concluding that no effect has occurred when there actually was an effect). The probability of committing a type II error is denoted by the value beta,  $\beta$ . Power is equal to  $1 - \beta$  (one minus  $\beta$ ). Thus, at a level of  $\beta = 0.2$  (an accepted level of reasonable power; Krebs 1999; Zar 1999; McDonald 2009), power is equal to 0.8 and that means that we correctly conclude that there is an effect in 80% of cases.

Power is related to several other factors (see McDonald 2009), including:

- The effect size (i.e. the size of the effect, or difference, that is desired to be statistically detected);
- The probability of committing a Type I statistical error (a false positive; concluding that an effect has occurred when there is actually no effect), denoted by the value alpha,  $\alpha$ ;
- The variation within the measured data (for example, as measured by standard deviation); and
- Sample size.

Mathematical formulae can be used to calculate any one of these parameters, given estimates of the others and an understanding of the statistical tests required; a method termed 'power analysis'. In this manner, sampling design can be optimised to balance logistic and operational constraints, with the collection of sufficient data to enable robust conclusions. Power analyses generally require baseline/pilot study data to be collected.

In general, methods to increase statistical power include (Faul *et al.* 2007; McDonald 2009):

- Increasing the effect size that is required to be detected. Effects of greater magnitude are able to be detected with higher power;
- Increasing the acceptability of committing a Type I statistical error (i.e. increasing  $\alpha$ ). By convention,  $\alpha$  is usually set at 0.05; to ensure that 95% of the time a Type I error is not committed. In some contexts there may be room to adjust this value, provided that results are interpreted cautiously and that the response to such results are not overtly reactive; and
- Increasing the number of samples.

For the James Price Point coastal area study, power analyses were conducted using the pilot data collected in 2011. The statistical software program G\*Power (Faul *et al.* 2007) was used to compute power values.

## 3 Results and Discussion

### 3.1 Frugivorous Bird Surveys

#### 3.1.1 Overview

A total of 54 bird species was recorded during the systematic surveys, with an additional 22 species recorded from the broader region (including Broome; see annotated species list in Appendix 3). Of those recorded during systematic surveys, 22 species were considered to be frugivores (see Appendix 3), including three obligate frugivores, four facultative frugivores and 15 occasional frugivorous species (see Section 2.1.1.4 for categories of frugivory). Raw census data are presented in Appendix 2 and total numbers of records of each species in each vegetation type are presented in Table 3-1. The 2011 surveys recorded only three bird species not observed in previous investigations: an unidentified swiftlet, the Red-backed Button-quail and the Eastern Reef Egret (see Appendix 8). This suggests that the bird assemblage has been comprehensively identified although vagrants may still be recorded and the assemblage of fauna in an area can change over time.

The most common terrestrial bird species of the James Price Point area, as based on all systematic bird surveys undertaken during the 2011 frugivorous bird study, are listed in Table 3-2. The most abundant bird species recorded during systematic surveys were Fork-tailed Swifts, with flocks of up to ca. 250 recorded. However, data for both Fork-tailed Swifts and the unidentified swiftlet (the latter recorded only in May 2011) were excluded from further analysis; both taxa are considered to be fast-moving aerial insectivores that operate largely independent of terrestrial habitats. If included, their high abundance would likely skew the dataset and consequently the results. Excluding the swifts and swiftlets, the most abundant and regularly recorded bird species included Singing Honeyeater, Bar-shouldered Dove and Grey Shrike-thrush.

In order of decreasing species richness (Table 3-3) the habitats were Monsoon Vine Thicket – Deciduous (42 spp., including 20 frugivorous spp., based on all surveys across this habitat throughout the year), Monsoon Vine Thicket – Evergreen (39 spp., including 18 frugivorous spp.) and eucalypt woodland (34 spp., including 15 frugivorous spp.).

Of greatest interest for the current study was the abundance and distribution of obligate and facultative frugivores across the different habitat types. Although they were a small proportion of the total birds recorded for each site, in most cases they were more abundant in the two Vine Thicket types compared with Eucalypt Woodland (see Table 3-1 and Figure 3-1).

The obligate frugivores were Channel-billed Cuckoo (recorded in small numbers in Vine Thicket), Olive-backed Oriole (recorded in very small numbers in all vegetation types) and Mistletoebird (common and recorded mostly in Vine Thicket). The cuckoo and oriole are Vine Thicket specialists; the cuckoo was recorded only in Vine Thicket and is at the southern limit of its range in the area. In contrast, the Mistletoebird occurs in a range of vegetation types across Australia but at James Price Point was recorded almost entirely in Vine Thicket. A number of Vine Thicket specialist species known from elsewhere in the Kimberley were not observed. These include three species of pigeon/fruit-dove, Yellow Oriole, Australian Figbird and Spangled Drongo, all at least facultative frugivores. They have also not been recorded in previous studies in the area (see Appendix 8), suggesting they are not present or may occur only very rarely.

The facultative frugivores were the Rainbow Lorikeet, Great Bowerbird, White-gaped Honeyeater and Yellow White-eye. None of these is recognised as a Vine Thicket specialist by Johnstone and Burbidge (1991), but all were observed more in Vine Thicket than Eucalypt Woodland in the present study. The occasional frugivores and non-frugivorous species varied in abundance between vegetation types (Table 3-1), probably not due to the availability of fruit but for other reasons, such as structure or presence/absence of nectar.

**Table 3-1. Bird species recorded in the James Price Point Coastal Area.**

Note: Occasional: Occasional frugivore; Facultative: Facultative frugivore; Obligate: Obligate frugivore; and Not: Not considered frugivorous.

X = species recorded in systematic surveys.

Common Name	Foraging Guild	Systematic surveys	Number of individuals recorded pooled		
			Vine Thicket Evergreen	Vine Thicket Deciduous	Eucalypt Woodland
<b>Phasianidae (Pheasants and allies)</b>					
Brown Quail	Occasional	X	-	2	-
<b>Anatidae (ducks and swans)</b>					
Plumed Whistling-Duck	Not				
<b>Columbidae (Pigeons and doves)</b>					
Crested Pigeon	Occasional	X	-	-	6
Diamond Dove	Occasional	X	3	1	5
Peaceful Dove	Occasional	X	19	32	12
Bar-shouldered Dove	Occasional	X	136	93	7
<b>Podargidae (Australian frogmouths)</b>					
Tawny Frogmouth	Not	X	2	7	1
<b>Aegothelidae (Owlet-nightjars)</b>					
Australian Owlet-nightjar	Not	X	1	1	-
<b>Fregatidae (Frigatebirds)</b>					
Lesser Frigatebird	Not				
<b>Apodidae (Typical swifts)</b>					
Fork-tailed Swift	Not	X	517	207	980
Unidentified swiftlet	Not	X	-	4	-
<b>Ardeidae (herons and allies)</b>					
White-faced Heron	Not				
Eastern Reef Egret	Not				
<b>Accipitridae (Osprey, hawks and eagles)</b>					
Eastern Osprey	Not	X	1	-	-
Black-shouldered Kite	Not				
White-bellied Sea-Eagle	Not	X	-	-	2
Whistling Kite	Not				
Brahminy Kite	Not	X	3	-	-
Brown Goshawk	Not	X	4	8	3
Collared Sparrowhawk	Not	X	1	1	-
<b>Falconidae (Falcons)</b>					
Nankeen Kestrel	Not				
Brown Falcon	Not	X	3	1	-
<b>Charadriidae (plovers and lapwings)</b>					
Masked Lapwing	Not				
<b>Laridae (Gulls, terns and allies)</b>					
Silver Gull	Not				
<b>Turnicidae (Button-quails)</b>					
Red-backed Button-quail	Occasional				
Chestnut-backed Button-quail	Occasional	X	-	1	1
Unidentified button-quail	Occasional	X	-	2	-
<b>Cacatuidae (cockatoos)</b>					
Red-tailed Black-Cockatoo	Occasional				
Cockatiel	Occasional				

Common Name	Foraging Guild	Systematic surveys	Number of individuals recorded pooled		
			Vine Thicket Evergreen	Vine Thicket Deciduous	Eucalypt Woodland
<b>Psittacidae (Parrots)</b>					
Rainbow Lorikeet	Facultative	X	2	1	6
Red-winged Parrot	Occasional	X	6	21	83
<b>Cuculidae (Old world cuckoos)</b>					
Pheasant Coucal	Occasional	X	-	7	2
Channel-billed Cuckoo	Obligate	X	9	15	-
Horsfield's Bronze-Cuckoo	Occasional	X	1	-	-
Brush Cuckoo	Occasional	X	3	5	-
<b>Strigidae (Hawk owls)</b>					
Barking Owl	Not				
Southern Boobook	Not				
<b>Halcyonidae (Tree kingfishers)</b>					
Blue-winged Kookaburra	Not	X	1	-	3
Sacred Kingfisher	Not	X	-	1	-
<b>Meropidae (Bee-eaters)</b>					
Rainbow Bee-eater	Not	X	4	17	5
<b>Coraciidae (Rollers)</b>					
Dollarbird	Not	X			1
<b>Ptilonorhynchidae (Bowerbirds)</b>					
Great Bowerbird	Facultative	X	40	47	8
<b>Maluridae (Fairy-wrens)</b>					
Red-backed Fairy-wren	Not	X	-	2	-
Variegated Fairy-wren	Not	X	7	43	13
<b>Acanthizidae (Australasian warblers)</b>					
White-throated Gerygone	Not	X	1	1	-
<b>Pardalotidae (Pardalotes)</b>					
Striated Pardalote	Not	X	-	2	9
<b>Meliphagidae (Honeyeaters)</b>					
Singing Honeyeater	Occasional	X	280	302	74
White-gaped Honeyeater	Facultative	X	65	36	-
Rufous-throated Honeyeater	Occasional				
Red-headed Honeyeater	Facultative				
Brown Honeyeater	Occasional	X	16	10	31
Black-chinned Honeyeater	Occasional	X	9	5	-
Little Friarbird	Occasional	X	3	7	25
<b>Pomatostomidae (Babblers)</b>					
Grey-crowned Babbler	Not	X	31	57	35
<b>Campephagidae (Cuckoo-shrikes)</b>					
Black-faced Cuckoo-shrike	Occasional	X	8	18	19
White-winged Triller	Not	X	-	2	1
<b>Pachycephalidae (Whistlers)</b>					
Rufous Whistler	Not	X	19	40	-
Grey Shrike-thrush	Not	X	66	73	9
<b>Oriolidae (Orioles and figbirds)</b>					
Olive-backed Oriole	Obligate	X	3	3	1
<b>Artamidae (Woodswallows and allies)</b>					
White-breasted Woodswallow	Not	X	10	7	11
Masked Woodswallow	Not	X	1	-	-

Common Name	Foraging Guild	Systematic surveys	Number of individuals recorded pooled		
			Vine Thicket Evergreen	Vine Thicket Deciduous	Eucalypt Woodland
Black-faced Woodswallow	Not	X	-	-	1
Little Woodswallow	Not	X	10	24	7
Pied Butcherbird	Not	X	-	2	18
<b>Rhipiduridae (Fantails)</b>					
Northern Fantail	Not	X	-	3	-
Grey Fantail					
Willie Wagtail	Not	X	-	-	1
<b>Corvidae (Crows and allies)</b>					
Torresian Crow	Not	X	1	9	3
<b>Monarchidae (Flycatchers and allies)</b>					
Restless Flycatcher	Not	X	1	6	-
Magpie-lark	Not				
<b>Megaluridae (Grassbirds)</b>					
Rufous Songlark	Not	X	-	-	1
Brown Songlark	Not				
<b>Timaliidae (White-eyes)</b>					
Yellow White-eye	Facultative	X	2	-	-
<b>Hirundinidae (Swallows and martins)</b>					
Tree Martin	Not	X	16	7	-
<b>Nectariniidae (Sunbirds and allies)</b>					
Mistletoebird	Obligate	X	23	17	1
<b>Estrildidae (Finches)</b>					
Zebra Finch	Not	X	2	9	2
Long-tailed Finch	Not				

**Table 3-2. Most commonly recorded species from the James Price Point systematic surveys.**

Occ: Occasional frugivore; Fac: Facultative frugivore; Obl: Obligate frugivore; and Not: Not considered frugivorous.

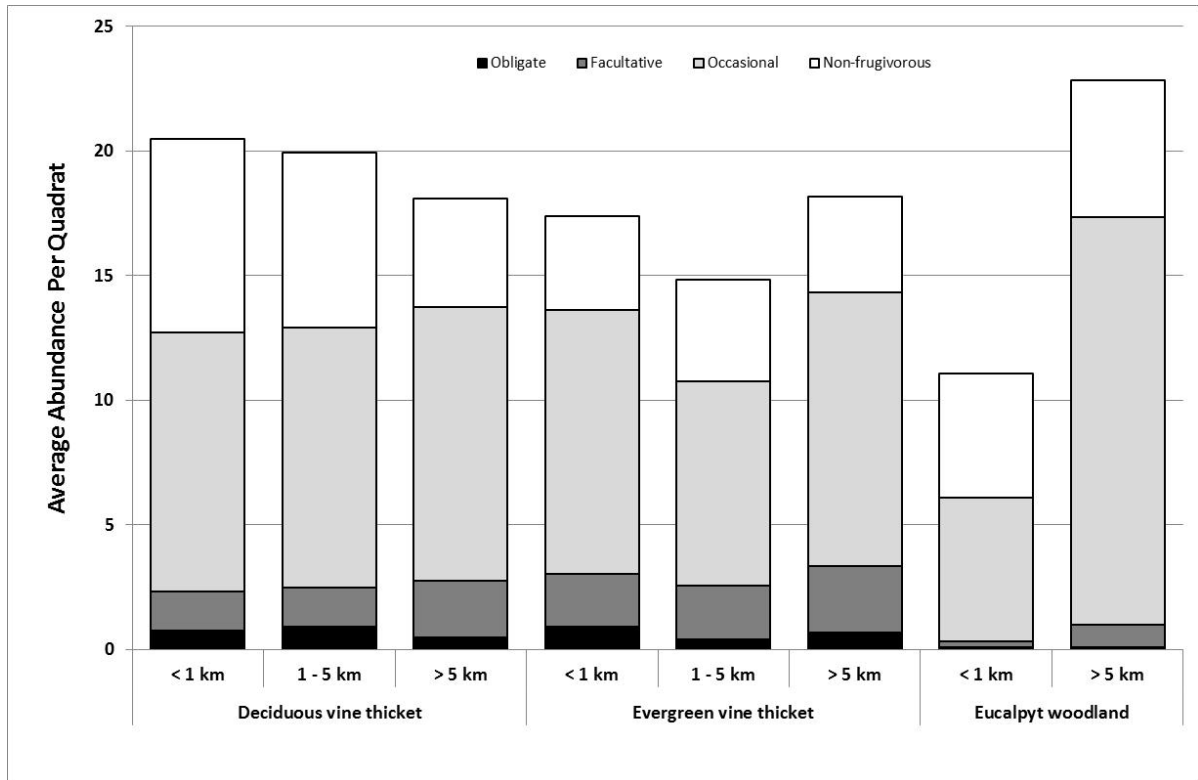
Most abundant species (based on overall number of records across all systematic surveys)	Foraging guild	Average records per survey ( $\pm$ s.d.)	Most regularly recorded species (based on presence/absence within systematic surveys)	Foraging guild	% of surveys in which species was recorded
1. Singing Honeyeater	Occ	5.5 ( $\pm$ 3.4)	1. Singing Honeyeater	Occ	97%
2. Bar-shouldered Dove	Occ	2.0 ( $\pm$ 2.6)	2. Grey Shrike-thrush	Not	62%
3. Grey Shrike-thrush	Not	1.2 ( $\pm$ 1.0)	3. Bar-shouldered Dove	Occ	61%
4. Grey-crowned Babbler	Not	1.0 ( $\pm$ 1.2)	4. Great Bowerbird	Fac	44%
5. Red-winged Parrot	Occ	0.9 ( $\pm$ 9.8)	5. White-gaped Honeyeater	Fac	42%
6. White-gaped Honeyeater	Fac	0.8 ( $\pm$ 1.0)	6. Grey-crowned Babbler	Not	33%
7. Great Bowerbird	Fac	0.8 ( $\pm$ 0.9)	7. Rufous Whistler	Not	28%
8. Peaceful Dove	Occ	0.5 ( $\pm$ 1.4)	8. Peaceful Dove	Occ	25%
9. Variegated Fairy-wren	Not	0.5 ( $\pm$ 1.7)	9. Mistletoebird	Obl	25%
10. Rufous Whistler	Not	0.5 ( $\pm$ 1.1)	10. Black-faced Cuckoo-shrike	Occ	22%



**Table 3-3. Seasonal and annual species richness for each site (excluding swift and swiftlet records).**

Figures in brackets are the number of frugivorous bird species (including occasional frugivores) and the number of obligate and facultative frugivores only.

Site Number	Site Description	Impact Zone	Bird Species Richness		
			May 2011	Nov 2011	2011 Total
1	Monsoon Vine Thicket – Deciduous	1	19	17	26
4		1	18	22	26
6		2	22	19	29
8		3	15	15	23
All Monsoon Vine Thicket – Deciduous Sites					42 (20; 6)
2	Monsoon Vine Thicket – Evergreen	1	18	14	23
3		1	13	17	23
5		2	19	12	24
7		3	9	17	19
All Monsoon Vine Thicket – Evergreen Sites					39 (18; 7)
9	Eucalypt Woodland	1	16	14	23
10		3	17	16	23
All Eucalypt Woodland Sites					34 (15; 4)



**Figure 3-1. Comparison of abundance (i.e. number of individuals) of frugivore groups across all vegetation types and zones.**

### 3.1.2 Do the bird communities of Monsoon Vine Thicket – Evergreen, Monsoon Vine Thicket – Deciduous and Eucalypt Woodland differ, and does distance from James Price Point affect bird communities?

For each quadrat, abundance data for each species (birds per quadrat) from the four repeat surveys were averaged<sup>1</sup>. These averages were then used to conduct a broad-scale examination of the bird communities of the three vegetation (Monsoon Vine Thicket – Evergreen, Monsoon Vine Thicket – Deciduous and Eucalypt Woodland) and three distance (< 1 km, 1 – 5 km, > 5 km from project area; Zones 1, 2 and 3, respectively, as described in

Table 2-1) treatments using nMDS and ANOSIM.

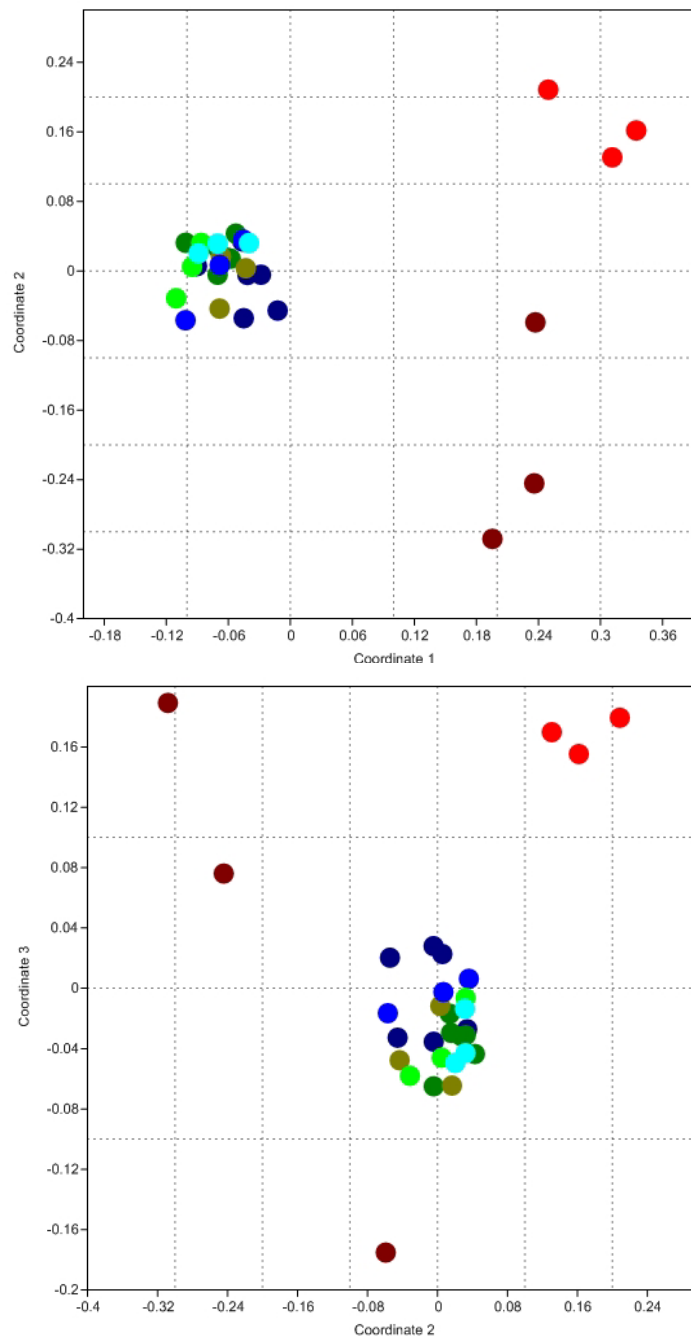
The nMDS plot is presented in Figure 3-2. A three-dimensional solution was required to reduce the plot stress to an acceptable level (stress = 0.162). The vine thicket data points (both evergreen and deciduous) clustered together and separated from the eucalypt woodland data points. This indicates that the bird communities of the vine thicket sites (both types) were similar, and that these differed considerably from the eucalypt woodland sites. The visual results were confirmed with ANOSIM (see Appendix 5): Eucalypt Woodland versus Vine Thicket (both types) comparisons typically had very high to maximum *R* values (ranging from 0.63 to 1; indicating a high level of dissimilarity).

Distance from the proposed development in the James Price Point coastal area had no discernible effect on bird communities (i.e. within each of the three vegetation types; see Figure 3-2 and Appendix 5).

In summary, when all bird data were used to compare all sites, there was a distinct difference between Eucalypt Woodland and Vine Thicket bird assemblages but no effect of distance from the project area during pre-development conditions.

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<sup>1</sup>For the purposes of this investigation, 'time' or 'season' (i.e. each of the four repeat surveys of the 30 quadrats) was not of particular interest, hence the data were averaged to provide a more robust 'snapshot' of the bird communities. Future monitoring may require the retention of time/season as a factor within the analysis; either investigations of seasonal changes in communities, or the response of communities to an imposed event (e.g. 'before' and 'after' development commences).



**Figure 3-2. nMDS plot (showing three dimensions on two plots) of bird community data from each habitat type.**

Monsoon Vine Thicket – Evergreen (● dark green, Zone 1; ● khaki, Zone 2 and; ● light green, Zone 3) quadrats  
 Monsoon Vine Thicket – Deciduous (● dark, Zone 1; ● mid blue, Zone 2 and; ● light blue, Zone 3) quadrats  
 Eucalypt woodland (● maroon, Zone 1 and; ● red, Zone 2) quadrats.  
 Distance from the James Price Point project area is indicated by colour shade: within 1 km of project area  
 ('Zone 1': sites < 1km from project area;  
 ('Zone 2': sites 1 – 5 km from project area;  
 ('Zone 3': sites > 5 km from project area; .  
 Plot stress = 0.162. R<sup>2</sup> = 0.733 (axis 1), 0.653 (axis 2), 0.702 (axis 3).

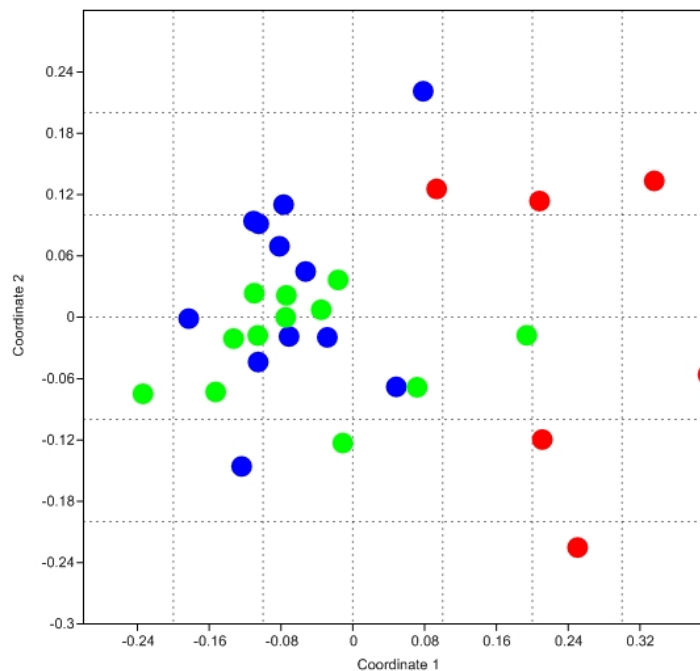
### **3.1.3 Do frugivorous birds contribute to the difference between Vine Thicket and Eucalypt Woodland sites?**

Given the results above, and in order to simplify the investigation, distance from the project area was removed as a factor from subsequent analysis. For each quadrat, average bird abundances (birds per quadrat) were calculated for the four foraging guilds recognised (as described in Section 2.1.1) and these data were standardised (as a proportion, 0 to 1, of the maximum abundance) to account for the disproportionate number of species in each group.

Bird communities of the three vegetation types (Monsoon Vine Thicket – Evergreen, Monsoon Vine Thicket – Deciduous and eucalypt woodland) were compared using nMDS. The nMDS plot is presented in Figure 3-2. A two-dimensional solution had an acceptable stress level of 0.149. As was the case on a species by species basis (above), when foraging guilds were considered the vine thicket sites clustered together and were generally separate (i.e. dissimilar) from the eucalypt woodland (Figure 3-3). ANOSIM confirmed that this trend was strong, with pairwise comparisons between each vine thicket type and the eucalypt woodland having high  $R$  values ( $>0.74$ ; very highly dissimilar) and strongly significant  $P$  values ( $< 0.001$ ; see Appendix 6 for results). The comparison between the two vine thicket types indicated that bird communities (when examined by foraging guild) of these sites were very similar ( $R = 0.04$ ,  $P = 0.210$ ).

The contribution of each of the foraging guilds to the dissimilarity between the vine thicket (both types) and eucalypt woodland was explored using SIMPER. The results are presented in Appendix 7. Non-frugivores and facultative frugivores contributed most to the differences between vine thicket (both types) and eucalypt woodland. Non-frugivores were three to four times more abundant in the eucalypt woodland and the facultative frugivores were three to four times more abundant in the vine thicket. While not the greatest (statistical) contributor to the overall differences between the vine thicket and eucalypt sites, obligate frugivores were nine times more abundant in the vine thicket.

In summary, the bird assemblages of Vine Thickets were considerably different to the surrounding eucalypt woodland, and this difference can be partly attributed to the fruit-eating strategies of the birds. There were more obligate and facultative frugivores in the vine thicket, and more non-frugivores in the eucalypt woodland.



**Figure 3-3. nMDS plot of bird community data from each habitat type.**

Monsoon Vine Thicket – Evergreen (● green) quadrats

Monsoon Vine Thicket – Deciduous (● blue) quadrats

Eucalypt woodland (● red) quadrats.

Plot stress = 0.149.  $R^2 = 0.784$  (axis 1), 0.198 (axis 2).

### 3.1.4 What level of effect (i.e. change) could be detected in Vine Thicket bird communities if the current sampling protocol is maintained?

#### 3.1.4.1 Choice of Analysis

One of the greatest challenges in environmental monitoring, where an understanding of the effect of an imposed ‘impact’ (in this case construction and operation of a gas development) is sought, is accounting for the natural levels of variation (e.g. spatial, temporal) in the system. These ‘nuisance differences’ (*sensu* Faith *et al.* 1991) are often confounding, in the statistical sense, and make the confident determination of cause and effect difficult. A monitoring approach that is favoured in these circumstances is the Before-After Control-Impact (BACI) design, as advocated in the context of resource developments by The Department of Resources, Energy and Tourism (DRET 2010). BACI designs have been used widely in environmental studies, and Ellis and Schneider (1997) and Smith (2002) provide excellent summaries of the evolution of this method. In essence, the design is simple: at least one site within the area of planned impact (‘Impact’) and an area where no impact is planned (‘Control’) are chosen, and these sites are monitored (at several time points) prior (‘Before’) and subsequent to (‘After’) an impact. In most cases where a BACI design is employed, data analysis is directed towards detecting whether there is a statistically significant change in the mean

difference (of the measured variable) between the Control and Impact sites, before and after an impact (Underwood 1994).

It is proposed that any potential impact of the proposed James Price Point development on vine thicket bird communities could be assessed using the survey methodology used in 2011 (sampling quadrats at stratified distances from the proposed project area) in a BACI design. Data could be analysed using a repeated measures analysis of variance (RM-ANOVA; Underwood 1994; Zar 1999) on species richness or abundance data.

The 2011 data can be used to assess the appropriateness and expected 'power' (see Methods) of such an analysis. For simplicity of the discussion here, we shall assume that we have two groups:

- Impact – quadrats in or adjacent to the proposed project area (Zone 1) and
- Control – quadrats well outside of the proposed project area (Zones 2 and 3)

and that these are sampled at several times before and after development. The complexity of the design can be increased at a later stage if desired (e.g. including vine thicket type and distance from project area as factors in the analysis).

#### 3.1.4.2 ANOVA Assumptions

An assumption (i.e. requirement) of ANOVA is that the data are distributed 'normally' (for elaboration see Zar 1999). For multivariate or repeated measures designs, as is the case here, normality can be tested using the Doornik-Hansen test (Hammer 2011; Grajales 2012). There was no significant deviation from normality for the 2011 bird species richness data ( $P = 0.117$ ).

A second assumption of ANOVA is that the groups of data have equal variances (termed homoscedasticity); that is, the variation in the measured variable (e.g. species richness) is the same for all groups (e.g. control and impact sites). For a RM-ANOVA this can be assessed using a Box's M test (Hammer 2011). There was no significant difference in the variances of the 2011 species richness data ( $P = 0.115$ ). Thus, the use of RM-ANOVA is an acceptable method for analysis of these data (and no mathematical transformation of data, or alternative test is required).

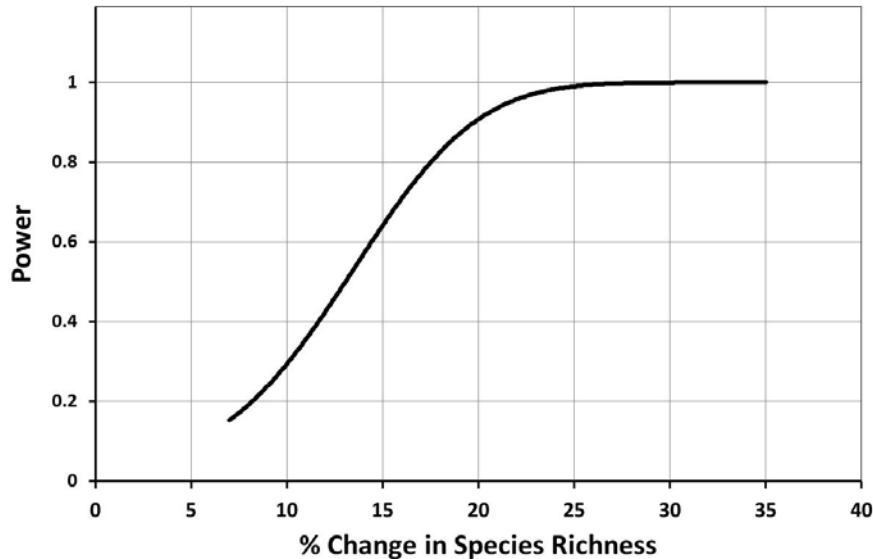
#### 3.1.4.3 Power

If the current bird monitoring survey methodology and design is continued<sup>2</sup>, the expected power (i.e. correctly concluding that a significant change has occurred) of the analysis, for species richness, is shown in Figure 3-4. A change in species richness of c. 17.5% (i.e. increase or decrease in mean quadrat species richness) could be detected with an expected power of c. 80%; and a change in species richness of c. 21.6% could be detected with an expected power of c. 95%. That is, if the proposed development changes vine thicket bird species richness in the vicinity of c. 20% then the current methodology could confidently detect this impact. This is probably a very reasonable,

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<sup>2</sup> A RM-ANOVA analysis of a BACI design vine thicket bird study, with 12 quadrats within the potential 'impact' area and 12 quadrats in 'control' areas; and with each quadrat surveyed at four time points before and after development.

achievable and useful outcome. A smaller change in species richness could be confidently detected (if desired) if the number of quadrats and/or surveys is increased.



**Figure 3-4. Plot of expected power (correctly concluding that a significant change has occurred) for a range of percentage changes in species richness.**

#### 3.1.4.4 *Alternative Analyses*

The RM-ANOVA analysis is not the only option for the current BACI design. At least two other avenues of data analysis could be considered:

- (1) Conducting a two factor (time, control/impact) ANOSIM on bird community data; and
- (2) Using a non-parametric test for trends (e.g. Mann-Kendall Trend Test) on ANOSIM-generated *R* values (if there is an impact of the proposed development on birds then *R* values between control and impact sites should increase with time).



## **3.2 Fruit-bats**

Two bat censuses were undertaken during both the May and November 2011 surveys (i.e. four surveys in total). No bats were seen during any survey, although they were visible around Broome township during both survey periods.

## **3.3 Opportunistic Observations**

### **3.3.1 Agile Wallabies**

Throughout each of the survey periods, Agile Wallabies were a focus for opportunistic surveys. Several definite tracks (based on previous experience) of this species were seen during both surveys, with one individual seen near Site 6a during the November 2011 field survey. The species appears to be very uncommon in the project area when compared with, for example, around the Broome area, where it is observed frequently (M. Bamford pers. obs.).

## 4 Conclusions

The habitats of the study area have been shown to support a diverse assemblage of bird species, including frugivorous bird species with a range of dependence upon fruit. Vine Thickets of the James Price Point coastal area do support a greater proportion of facultative and obligate frugivores compared with the Eucalypt Woodland, which supports a greater proportion of non-frugivores. It also supports a distinctive assemblage of bird species including species that are not frugivorous. While the bird assemblage is locally significant, compared with the birds recorded in Vine Thickets elsewhere in the Kimberley, the assemblage in the James Price Point Vine Thicket is depauperate. Obligate and facultative frugivorous bird species were more common in Vine Thicket and non-frugivorous bird species were more common in eucalypt woodland. Locally, the Vine Thickets at the James Price Point coastal therefore make an important contribution to biodiversity.

Despite this local importance and as predicted on the basis of the literature (see Section 1.3), the frugivorous bird assemblage, and the assemblage of Vine Thicket specialist species, was poor compared with vine thickets further north and east in the Kimberley as reported by Johnstone and Burbidge (1991). Only one obligate frugivore also considered a Vine Thicket specialist, the Channel-billed Cuckoo, was recorded regularly. It seems unlikely that any other frugivorous, Vine Thicket specialist species use the area regularly.

Regarding fruit-bats and Agile Wallabies, current data suggest both taxa are poorly represented within the study area.

It is considered that the current sampling methodology (sampling quadrats at stratified distances from the proposed project area) provides statistically valid data suitable for monitoring frugivorous birds in the vine thickets at the James Price Point coastal area.

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## 6 Appendices

### Appendix 1. Handheld GPS Coordinates of the 10 Sites surveyed at James Price Point, Broome, WA. (Zone 51K, datum WGS84).

Site Name	NW Corner		SE Corner	
	Easting	Northing	Easting	Northing
1a	409849	8063500	409951	8063300
1b	409800	8063750	409900	8063550
1c	409751	8064000	409849	8063800
2a	409650	8063500	409751	8063300
2b	409600	8063750	409700	8063550
2c	409550	8064000	409649	8063800
3a	409700	8061800	409800	8061600
3b	409700	8062050	409800	8061850
3c	409700	8062300	409800	8062100
4a	409900	8061550	410000	8061350
4b	409900	8061800	410000	8061600
4c	409900	8062050	409999	8061850
5a	409700	8059750	409800	8059550
5b	409750	8059999	409850	8059800
5c	409800	8060400	409900	8060200
6a	410000	8059749	410100	8059550
6b	410000	8059999	410100	8059800
6c	410051	8060400	410150	8060200
7a	410150	8056500	410250	8056300
7b	410100	8056750	410200	8056550
7c	410251	8057000	410350	8056800
8a	410300	8056500	410400	8056300
8b	410250	8056750	410350	8056550
8c	410351	8057250	410450	8057050
9a	410300	8062600	410500	8062500
9b	410550	8062600	410750	8062500
9c	410801	8062600	411000	8062500
10a	412750	8055800	412850	8055600
10b	412600	8056050	412700	8055850
10c	412500	8056300	412600	8056100

## Appendix 2. Bird Census Results from May and November 2011.

Data are numbers of birds per quadrat in each survey. Note Latin names for all bird species are given in Appendix 8.

Monsoon Vine Thicket – Evergreen (MVT-E); Monsoon Vine Thicket – Deciduous (MVT-D); and Eucalypt Woodland (EW).

Sites 1 and 2	1a	1b	1c	1a	1b	1c	2a	2b	2c	2a	2b	2c
Vegetation type	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E
Date (May 2011)	5/5/2011	5/5/2011	5/5/2011	3/5/2011	3/5/2011	3/5/2011	5/5/2011	5/5/2011	5/5/2011	3/5/2011	3/5/2011	3/5/2011
Start	6:09	7:15	6:39	8:38	8:05	8:37	6:10	6:35	7:04	8:09	8:32	8:08
End	6:29	7:35	6:59	8:58	8:25	8:57	6:30	6:55	7:24	8:29	8:52	8:28
Brown Quail												
Chestnut-backed Button-quail					1							
White-bellied Sea-Eagle												
Brown Goshawk			2							1		
Brahminy Kite												
Brown Falcon			1					1				1
Bar-shouldered Dove	1		2	2	3	3		1		4	2	
Peaceful Dove		1	1		5			2				
Diamond Dove									1			1
Crested Pigeon												
Rainbow Lorikeet												
Red-winged Parrot			1									
Tawny Frogmouth							1					
Australian Owlet-nightjar												
Pheasant Coucal												
Sacred Kingfisher												
Rainbow Bee-eater												
Fork-tailed Swift			2		8							2
Unidentified swiftlet												
Variegated Fairy-wren				2	4							
Striated Pardalote												
White-throated Gerygone												

Sites 1 and 2	1a	1b	1c	1a	1b	1c	2a	2b	2c	2a	2b	2c
Vegetation type	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E
Date (May 2011)	5/5/2011	5/5/2011	5/5/2011	3/5/2011	3/5/2011	3/5/2011	5/5/2011	5/5/2011	5/5/2011	3/5/2011	3/5/2011	3/5/2011
Little Friarbird												
Brown Honeyeater	1										1	
Singing Honeyeater		4	1	4	7	4	4	4	3	4	7	5
White-gaped Honeyeater	3	2						1	3			
Black-chinned Honeyeater		2						2				
Grey-crowned Babbler	3					3						
Rufous Whistler			1	3			1					
Grey Shrike-thrush	3	1		3		1		1		3		1
Restless Flycatcher												
Northern Fantail	2			1								
Black-faced Cuckoo-shrike	1				1		1					
White-winged Triller												
Masked Woodswallow												
Black-faced Woodswallow												
Little Woodswallow									7			
White-breasted Woodswallow												
Pied Butcherbird												
Torresian Crow				2	2							
Great Bowerbird			2		2		1	1	3	3		
Zebra Finch												
Rufous Songlark												
Mistletoebird								2	1	1		1
Tree Martin					7					2		2
Yellow White-eye											2	

Sites 3 and 4	3a	3b	3c	3a	3b	3c	4a	4b	4c	4a	4b	4c
Vegetation type	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D
Date (May 2011)	4/5/2011	4/5/2011	4/5/2011	3/5/2011	3/5/2011	3/5/2011	4/5/2011	4/5/2011	4/5/2011	3/5/2011	3/5/2011	3/5/2011
Start	7:00	6:56	7:25	16:40	16:23	16:20	6:35	7:25	6:29	16:15	16:53	16:45
End	7:20	7:16	7:45	17:00	16:43	16:40	6:55	7:45	6:49	16:35	17:13	17:05
Brown Quail											2	
Chestnut-backed Button-quail												
White-bellied Sea-Eagle												
Brown Goshawk			1									
Brahminy Kite												
Brown Falcon												
Bar-shouldered Dove	5	2	12	3	1	1			3		1	
Peaceful Dove							2		2	1		
Diamond Dove					1							
Crested Pigeon												
Rainbow Lorikeet												
Red-winged Parrot	2								2			
Tawny Frogmouth												
Australian Owlet-nightjar												
Pheasant Coucal											1	1
Sacred Kingfisher												
Rainbow Bee-eater								2			1	3
Fork-tailed Swift												
Unidentified swiftlet												
Variegated Fairy-wren								6	2		3	5
Striated Pardalote												
White-throated Gerygone		1										
Little Friarbird												
Brown Honeyeater												
Singing Honeyeater	4	3	3	5	5	5	3	4	6	3	4	3
White-gaped Honeyeater	1	1			1	2				1		
Black-chinned Honeyeater												
Grey-crowned Babbler			2	5				5			5	
Rufous Whistler												1
Grey Shrike-thrush	2	1	1			2	1	2		3		1



Sites 3 and 4	3a	3b	3c	3a	3b	3c	4a	4b	4c	4a	4b	4c
Vegetation type	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D
Date (May 2011)	4/5/2011	4/5/2011	4/5/2011	3/5/2011	3/5/2011	3/5/2011	4/5/2011	4/5/2011	4/5/2011	3/5/2011	3/5/2011	3/5/2011
Restless Flycatcher											1	
Northern Fantail												
Black-faced Cuckoo-shrike			1					3	2			2
White-winged Triller												
Masked Woodswallow												
Black-faced Woodswallow												
Little Woodswallow										12		
White-breasted Woodswallow												
Pied Butcherbird												
Torresian Crow			1					1				
Great Bowerbird			2				1	2		2	1	
Zebra Finch												
Rufous Songlark												
Mistletoebird	1				2	2	1	1			1	2
Tree Martin												
Yellow White-eye												

Sites 5 and 6	5a	5b	5c	5a	5b	5c	6a	6b	6c	6a	6b	6c
Vegetation type	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D
Date (May 2011)	4/5/2011	4/5/2011	4/5/2011	5/5/2011	5/5/2011	5/5/2011	4/5/2011	4/5/2011	4/5/2011	5/5/2011	5/5/2011	5/5/2011
Start	6:36	7:14	7:41	16:08	16:32	16:59	6:20	7:10	8:00	16:00	16:30	17:05
End	6:56	7:34	8:01	16:28	16:52	17:19	6:40	7:30	8:20	16:20	16:50	17:25
Brown Quail												
Chestnut-backed Button-quail												
White-bellied Sea-Eagle												
Brown Goshawk			2				2		2		1	
Brahminy Kite						1						
Brown Falcon						1						
Bar-shouldered Dove	2	1	2	2	3	7	1	5	2	3		
Peaceful Dove		1		2		1	5	2	3		1	
Diamond Dove												
Crested Pigeon												
Rainbow Lorikeet		2										
Red-winged Parrot									2			
Tawny Frogmouth												
Australian Owlet-nightjar								1				
Pheasant Coucal								heard				
Sacred Kingfisher										1		
Rainbow Bee-eater						4						
Fork-tailed Swift												4
Unidentified swiftlet												
Variegated Fairy-wren								3			7	
Striated Pardalote												
White-throated Gerygone												
Little Friarbird							1					
Brown Honeyeater												
Singing Honeyeater	4	3	3	3	6	1	6	7	10	4	5	4
White-gaped Honeyeater				2	3	3				2	1	
Black-chinned Honeyeater												

Sites 5 and 6	5a	5b	5c	5a	5b	5c	6a	6b	6c	6a	6b	6c
Vegetation type	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D
Date (May 2011)	4/5/2011	4/5/2011	4/5/2011	5/5/2011	5/5/2011	5/5/2011	4/5/2011	4/5/2011	4/5/2011	5/5/2011	5/5/2011	5/5/2011
Grey-crowned Babbler		4				2		1	1			4
Rufous Whistler	1	1					3	1		2		
Grey Shrike-thrush	2	2	2		1			1	1	1		2
Restless Flycatcher							2	1		1		
Northern Fantail												
Black-faced Cuckoo-shrike		2							1			
White-winged Triller									2			
Masked Woodswallow			1									
Black-faced Woodswallow												
Little Woodswallow			2			1			2			3
White-breasted Woodswallow			1			4						4
Pied Butcherbird												1
Torresian Crow												
Great Bowerbird		2	3	1	2			3	4		1	
Zebra Finch	2											6
Rufous Songlark												
Mistletoebird		2	2		1		2		1			
Tree Martin												
Yellow White-eye												

Sites 7 and 8	7a	7b	7c	7a	7b PM	7c PM	8a AM	8b AM	8c AM	8a PM	8b PM	8c PM
Vegetation type	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E
Date (May 2011)	3/5/2011	3/5/2011	3/5/2011	4/5/2011	4/5/2011	4/5/2011	3/5/2011	3/5/2011	3/5/2011	4/5/2011	4/5/2011	4/5/2011
Start	6:08	6:17	6:10	16:29	16:54	16:48	6:34	6:40	6:42	16:01	17:10	16:22
End	6:28	6:37	6:30	16:49	17:14	17:08	6:54	7:00	7:02	16:21	17:30	16:42
Brown Quail												
Chestnut-backed Button-quail												
White-bellied Sea-Eagle												
Brown Goshawk												
Brahminy Kite												
Brown Falcon												
Bar-shouldered Dove	1	2	3	1	5	3	1	2	5		1	2
Peaceful Dove		1	1						2			
Diamond Dove										1		
Crested Pigeon												
Rainbow Lorikeet									1			
Red-winged Parrot								5				
Tawny Frogmouth							2					
Australian Owlet-nightjar												
Pheasant Coucal												
Sacred Kingfisher												
Rainbow Bee-eater												
Fork-tailed Swift		5										
Swiftlets									4			
Variegated Fairy-wren								3		5		
Striated Pardalote												
White-throated Gerygone												
Little Friarbird												
Brown Honeyeater					2							
Singing Honeyeater	4	2	4	3	3	6	4	2	5	4	6	4
White-gaped Honeyeater	2	1	1	2		1	3	2				
Black-chinned Honeyeater						3						

Sites 7 and 8	7a	7b	7c	7a	7b PM	7c PM	8a AM	8b AM	8c AM	8a PM	8b PM	8c PM
Vegetation type	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E
Date (May 2011)	3/5/2011	3/5/2011	3/5/2011	4/5/2011	4/5/2011	4/5/2011	3/5/2011	3/5/2011	3/5/2011	4/5/2011	4/5/2011	4/5/2011
Grey-crowned Babbler								2				
Rufous Whistler			1		2	1						
Grey Shrike-thrush	1			1		2	2			2	1	1
Restless Flycatcher												
Northern Fantail												
Black-faced Cuckoo-shrike												
White-winged Triller												
Masked Woodswallow												
Black-faced Woodswallow												
Little Woodswallow												
White-breasted Woodswallow							2					
Pied Butcherbird									1			
Torresian Crow												
Great Bowerbird							1	1	3			1
Zebra Finch												
Rufous Songlark												
Mistletoebird											1	
Tree Martin	4		8									
Yellow White-eye												

Sites 9 and 10	9a AM	9b AM	9c AM	9a AM	9b AM	9c AM	10a AM	10b AM	10c AM	10a AM	10b AM	10c AM
Vegetation type	EW	EW	EW	EW	EW	EW	EW	EW	EW	EW	EW	EW
Date (May 2011)	6/5/2011	6/5/2011	6/5/2011	4/5/2011	4/5/2011	4/5/2011	6/5/2011	6/5/2011	6/5/2011	4/5/2011	4/5/2011	4/5/2011
Start	6:16	6:48	7:15	9:20	9:41	10:04	6:02	6:28	6:52	10:00	9:35	9:10
End	6:36	7:08	7:35	9:40	10:01	10:24	6:22	6:48	7:12	10:20	9:55	9:30
Brown Quail												
Chestnut-backed Button-quail			1									
White-bellied Sea-Eagle								1				1
Brown Goshawk	1			1							1	
Brahminy Kite												
Brown Falcon												
Bar-shouldered Dove												
Peaceful Dove						1	1		1			
Diamond Dove	5											
Crested Pigeon										1	3	
Rainbow Lorikeet												
Red-winged Parrot							3	2	19	11	42	
Tawny Frogmouth												
Australian Owlet-nightjar												
Pheasant Coucal												
Sacred Kingfisher												
Rainbow Bee-eater						1				3		
Fork-tailed Swift												
Swiftlets												
Variegated Fairy-wren			2		2							
Striated Pardalote								2	1	1	3	2
White-throated Gerygone												
Little Friarbird										1		
Brown Honeyeater				1			2	4		8	8	2
Singing Honeyeater	2	2	3	3	3	1	2	2		4		2
White-gaped Honeyeater												
Black-chinned Honeyeater												
Grey-crowned Babbler	3	3					3			2		1
Rufous Whistler												
Grey Shrike-thrush	1			1								3

Sites 9 and 10	9a AM	9b AM	9c AM	9a AM	9b AM	9c AM	10a AM	10b AM	10c AM	10a AM	10b AM	10c AM
Vegetation type	EW	EW	EW	EW	EW	EW	EW	EW	EW	EW	EW	EW
Date (May 2011)	6/5/2011	6/5/2011	6/5/2011	4/5/2011	4/5/2011	4/5/2011	6/5/2011	6/5/2011	6/5/2011	4/5/2011	4/5/2011	4/5/2011
Restless Flycatcher												
Northern Fantail												
Black-faced Cuckoo-shrike	2										2	2
White-winged Triller												
Masked Woodswallow												
Black-faced Woodswallow											1	
Little Woodswallow	7											
White-breasted Woodswallow								4				
Pied Butcherbird	1	1	4				8			1		
Torresian Crow												
Great Bowerbird	2	1					2					1
Zebra Finch												
Rufous Songlark				1								
Mistletoebird					1							
Tree Martin												
Yellow White-eye												

Sites 1 & 2	1a	1a	1b	1b	1c	1c	2a	2a	2b	2b	2c	2c
Vegetation Type	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E
Date (November 2011)	22/11/11	23/11/11	22/11/11	25/11/11	22/11/11	23/11/11	22/11/11	23/11/11	22/11/11	23/11/11	22/11/11	25/11/11
Start	8:35	16:52	8:35	7:27	8:27	17:05	8:05	16:28	8:05	16:30	8:03	7:28
End	8:55	17:12	8:55	7:47	8:47	17:25	8:25	16:48	8:25	16:50	8:23	7:48
Unidentified Button-quail				1		1						
Collared Sparrowhawk				1								
Brown Goshawk												
Osprey												
Brahminy Kite												
Bar-shouldered Dove		3		6		3	1	5	2	2	2	1
Peaceful Dove	1	3	1									
Crested Pigeon												
Rainbow Lorikeet												
Red-winged Parrot				4								2
Tawny Frogmouth					3							
Australian Owlet-nightjar										1		
Pheasant Coucal	1			1								
Horsfield's Bronze-Cuckoo												
Brush Cuckoo												
Channel-billed Cuckoo										1		1
Blue-winged Kookaburra												
Dollarbird												
Rainbow Bee-eater	2	2	1									
Fork-tailed Swift												



Sites 1 & 2	1a	1a	1b	1b	1c	1c	2a	2a	2b	2b	2c	2c
Vegetation Type	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E
Date (November 2011)	22/11/11	23/11/11	22/11/11	25/11/11	22/11/11	23/11/11	22/11/11	23/11/11	22/11/11	23/11/11	22/11/11	25/11/11
Red-backed Fairy-wren												
Variegated Fairy-wren												
Striated Pardalote												
White-throated Gerygone												
Little Friarbird					1	1			1			
Brown Honeyeater	3											
Singing Honeyeater	4	8	15	8	3	13	5	10	9	6	5	9
White-gaped Honeyeater		3						2	2	1		2
Black-chinned Honeyeater												2
Grey-crowned Babbler		4		2	2	2		3	4		3	
Rufous Whistler	4	1	5	4		1	2		3			
Grey Shrike-thrush	4	4	3	3	5	2	2	3	4	2		2
Olive-backed Oriole												
Restless Flycatcher												
Willie Wagtail												
Black-faced Cuckoo-shrike	2	1			2	2			2			
White-winged Triller												
Little Woodswallow												
White-breasted Woodswallow												
Pied Butcherbird												
Torresian Crow												
Great Bowerbird	1	2						1			1	1
Zebra Finch												
Mistletoebird	1		2	1					1			1

Sites 3 & 4	3a	3a	3b	3b	3c	3c	4a	4a	4b	4b	4c	4c
Vegetation Type	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D
Date (November 2011)	22/11/11	24/11/11	22/11/11	24/11/11	22/11/11	24/11/11	22/11/11	24/11/11	22/11/11	24/11/11	22/11/11	24/11/11
Start	6:35	17:00	6:30	17:00	5:45	17:25	6:10	16:35	6:00	17:24	6:13	16:37
End	6:55	17:20	6:50	17:20	6:05	17:45	6:30	16:55	6:20	17:44	6:33	16:57
Unidentified Button-quail												
Collared Sparrowhawk						1						
Brown Goshawk												
Osprey			1									
Brahminy Kite						1						
Bar-shouldered Dove	3	10	9	2	4	2	2	3	2	3		2
Peaceful Dove		2			5							
Crested Pigeon												
Rainbow Lorikeet												
Red-winged Parrot									2			
Tawny Frogmouth												
Australian Owlet-nightjar												
Pheasant Coucal										1		
Horsfield's Bronze-Cuckoo												
Brush Cuckoo			1						1			
Channel-billed Cuckoo		1	2	1				1	1	3		1
Blue-winged Kookaburra												
Dollarbird												
Rainbow Bee-eater									1		2	
Fork-tailed Swift												
Red-backed Fairy-wren											2	
Variegated Fairy-wren												3
Striated Pardalote												
White-throated Gerygone												
Little Friarbird									2	2		
Brown Honeyeater				2								

Sites 3 & 4	3a	3a	3b	3b	3c	3c	4a	4a	4b	4b	4c	4c
Vegetation Type	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D
Date (November 2011)	22/11/11	24/11/11	22/11/11	24/11/11	22/11/11	24/11/11	22/11/11	24/11/11	22/11/11	24/11/11	22/11/11	24/11/11
Singing Honeyeater	8	10	9	13	5	6	7	10	13	5	6	6
White-gaped Honeyeater	1	2	2	4		2	1	2		1		2
Black-chinned Honeyeater			2					1	2			
Grey-crowned Babbler							4	4		3		
Rufous Whistler				1					4	1		2
Grey Shrike-thrush	2	2	5	3	1	2	1	2	2			1
Olive-backed Oriole												1
Restless Flycatcher												
Willie Wagtail												
Black-faced Cuckoo-shrike					2						1	
White-winged Triller												
Little Woodswallow								1				
White-breasted Woodswallow				3		2			1			
Pied Butcherbird												
Torresian Crow												
Great Bowerbird	3		2	2	2		3	1	2	2	2	
Zebra Finch											3	
Mistletoebird			4				1		1			

Sites 5 & 6	5a	5a	5b	5b	5c	5c	6a	6a	6b	6b	6c	6c
Vegetation Type	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D
Date (November 2011)	22/11/11	23/11/11	22/11/11	23/11/11	22/11/11	23/11/11	22/11/11	23/11/11	22/11/11	23/11/11	22/11/11	23/11/11
Start	17:05	5:52	4:36	6:00	16:58	5:57	16:30	5:26	5:05	5:30	16:31	5:26
End	17:25	6:12	4:56	6:20	17:18	6:17	16:50	5:46	5:25	5:50	16:51	5:46
Unidentified Button-quail												
Collared Sparrowhawk												
Brown Goshawk												1
Osprey												
Brahminy Kite		1										
Bar-shouldered Dove	1	2	2		4		2	3	4	1	1	3
Peaceful Dove								2				
Crested Pigeon												
Rainbow Lorikeet												
Red-winged Parrot			2									
Tawny Frogmouth									2			
Australian Owlet-nightjar												
Pheasant Coucal												
Horsfield's Bronze-Cuckoo												
Brush Cuckoo							1					
Channel-billed Cuckoo								2	2			
Blue-winged Kookaburra		1										
Dollarbird												
Rainbow Bee-eater												2
Fork-tailed Swift		170		160		180		13		30		150
Red-backed Fairy-wren												
Variegated Fairy-wren			4									
Striated Pardalote												2
White-throated Gerygone												
Little Friarbird												
Brown Honeyeater			3									

Sites 5 & 6	5a	5a	5b	5b	5c	5c	6a	6a	6b	6b	6c	6c
Vegetation Type	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D
Date (November 2011)	22/11/11	23/11/11	22/11/11	23/11/11	22/11/11	23/11/11	22/11/11	23/11/11	22/11/11	23/11/11	22/11/11	23/11/11
Singing Honeyeater	6	7	10	2	8	8	6	5	12	4	10	9
White-gaped Honeyeater		1		1		2	1		2	1		
Black-chinned Honeyeater												
Grey-crowned Babbler										3		2
Rufous Whistler		1	2				1	2		1		1
Grey Shrike-thrush					2	3		1	1	2		1
Olive-backed Oriole												2
Restless Flycatcher			1				1					
Willie Wagtail												
Black-faced Cuckoo-shrike												
White-winged Triller												
Little Woodswallow							1					
White-breasted Woodswallow												
Pied Butcherbird												
Torresian Crow								1		2		1
Great Bowerbird		1	1	2			1			1	2	
Zebra Finch												
Mistletoebird										1	1	

Sites 7 & 8	7a	7a	7b	7b	7c	7c	8a	8a	8b	8b	8c	8c
Vegetation Type	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D
Date (November 2011)	24/11/11	25/11/11	24/11/11	25/11/11	24/11/11	25/11/11	24/11/11	25/11/11	24/11/11	11	24/11/11	25/11/11
Start	7:40	5:28	7:40	5:28	7:44	5:55	8:05	5:58	8:05	6:25	8:10	6:16
End	8:00	5:48	8:00	5:48	8:04	6:15	8:25	6:18	8:25	6:45	8:30	6:36
Unidentified Button-quail												
Collared Sparrowhawk												
Brown Goshawk												
Osprey												
Brahminy Kite												
Bar-shouldered Dove		10		7		4		14				4
Peaceful Dove		3		1								
Crested Pigeon												
Rainbow Lorikeet												
Red-winged Parrot									3			2
Tawny Frogmouth			1									
Australian Owlet-nightjar												
Pheasant Coucal								2				
Horsfield's Bronze-Cuckoo						1						
Brush Cuckoo		1		1				2				1
Channel-billed Cuckoo		1				2		2		2		1
Blue-winged Kookaburra												
Dollarbird												
Rainbow Bee-eater												1
Fork-tailed Swift												
Red-backed Fairy-wren												
Variegated Fairy-wren			3									
Striated Pardalote												
White-throated Gerygone												1
Little Friarbird					2							
Brown Honeyeater	3			3		2				2		4

Sites 7 & 8	7a	7a	7b	7b	7c	7c	8a	8a	8b	8b	8c	8c
Vegetation Type	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E	MVT-E	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D	MVT-D
Date (November 2011)	24/11/11	25/11/11	24/11/11	25/11/11	24/11/11	25/11/11	24/11/11	25/11/11	24/11/11	25/11/11	24/11/11	25/11/11
Singing Honeyeater	7	6	4	8	11	14	6	10	5	10	11	12
White-gaped Honeyeater	3	3	1	5	3	4		2		1	2	4
Black-chinned Honeyeater												
Grey-crowned Babbler		3			5			3				4
Rufous Whistler	1		1	1							1	1
Grey Shrike-thrush	3		1	2	1	4	2	2	2	3	3	3
Olive-backed Oriole	1			1		1						
Restless Flycatcher												
Willie Wagtail												
Black-faced Cuckoo-shrike												
White-winged Triller												
Little Woodswallow									1	2		2
White-breasted Woodswallow												
Pied Butcherbird												
Torresian Crow												
Great Bowerbird				1		5				1	1	4
Zebra Finch												
Mistletoebird	1				1							

Sites 9 & 10	9a	9a	9b	9b	9c	9c	10a	10a	10b	10b	10c	10c
Vegetation Type	EW	EW	EW	EW	EW	EW	EW	EW	EW	EW	EW	EW
Date (November 2011)	23/11/11	24/11/11	23/11/11	24/11/11	23/11/11	24/11/11	23/11/11	24/11/11	23/11/11	24/11/11	23/11/11	24/11/11
Start	6:58	5:55	7:05	6:00	7:10	6:04	8:01	6:55	8:05	6:51	8:02	6:51
End	7:18	6:15	7:25	6:20	7:30	6:24	8:21	7:15	8:25	7:11	8:22	7:11
Unidentified Button-quail												
Collared Sparrowhawk												
Brown Goshawk												
Osprey												
Brahminy Kite												
Bar-shouldered Dove	7											
Peaceful Dove		3			6							
Crested Pigeon									1			1
Rainbow Lorikeet							2		2		2	
Red-winged Parrot							3	1		2		
Tawny Frogmouth								1				
Australian Owlet-nightjar												
Pheasant Coucal			1		1							
Horsfield's Bronze-Cuckoo												
Brush Cuckoo												
Channel-billed Cuckoo												
Blue-winged Kookaburra							1	1	1			
Dollarbird							1					
Rainbow Bee-eater			1									
Fork-tailed Swift	80			100		200	200	100		250		50
Red-backed Fairy-wren												
Variegated Fairy-wren				1	6	2						
Striated Pardalote												
White-throated Gerygone												
Little Friarbird		2		1			3	1	5	4	5	3
Brown Honeyeater									4	2		



Sites 9 & 10	9a	9a	9b	9b	9c	9c	10a	10a	10b	10b	10c	10c
Vegetation Type	EW	EW	EW	EW	EW	EW	EW	EW	EW	EW	EW	EW
Date (November 2011)	23/11/11	24/11/11	23/11/11	24/11/11	23/11/11	24/11/11	23/11/11	24/11/11	23/11/11	24/11/11	23/11/11	24/11/11
Singing Honeyeater	3	3	1	5	2	2	2	2	7	20	3	
White-gaped Honeyeater												
Black-chinned Honeyeater												
Grey-crowned Babbler		3		4			6		3	4	3	
Rufous Whistler												
Grey Shrike-thrush							1	1	1	1		
Olive-backed Oriole									1			
Restless Flycatcher												
Willie Wagtail											1	
Black-faced Cuckoo-shrike	1	3		1		3	2	1	1	1		
White-winged Triller	1											
Little Woodswallow												
White-breasted Woodswallow	5	2										
Pied Butcherbird	1										2	
Torresian Crow	2			1								
Great Bowerbird								1				1
Zebra Finch	2											
Mistletoebird												

### Appendix 3. Bird species list from systematic censusing separated into frugivore category.

#### **Obligate frugivores**

Channel-billed Cuckoo  
Olive-backed Oriole  
Mistletoebird

#### **Facultative frugivores**

Rainbow Lorikeet  
White-gaped Honeyeater  
Great Bowerbird  
Yellow White-eye

#### **Occasional frugivores**

Brown Quail  
Chestnut-backed Button-quail  
Red-backed Button-quail  
Bar-shouldered Dove  
Peaceful Dove  
Diamond Dove  
Crested Pigeon  
Red-winged Parrot  
Pheasant Coucal  
Horsfield's Bronze-Cuckoo  
Brush Cuckoo  
Little Friarbird  
Brown Honeyeater  
Singing Honeyeater  
Black-chinned Honeyeater  
Black-faced Cuckoo-shrike

#### **Non-frugivores**

White-bellied Sea-Eagle  
Collared Sparrowhawk  
Brown Goshawk  
Osprey  
Brahminy Kite  
Brown Falcon  
Tawny Frogmouth  
Australian Owlet-nightjar  
Blue-winged Kookaburra  
Sacred Kingfisher  
Dollarbird  
Rainbow Bee-eater  
Red-backed Fairy-wren  
Variegated Fairy-wren  
Striated Pardalote  
White-throated Gerygone  
Grey-crowned Babbler  
Rufous Whistler  
Grey Shrike-thrush  
Restless Flycatcher  
Northern Fantail  
Willie Wagtail  
White-winged Triller  
Masked Woodswallow  
Black-faced Woodswallow  
Little Woodswallow  
White-breasted Woodswallow  
Pied Butcherbird  
Torresian Crow  
Zebra Finch  
Rufous Songlark  
Tree Martin

#### Appendix 4. Annotated Species List (birds) for James Price Point region , May and November 2011).

SPECIES	May 2011	November 2011
<b>Brown Quail</b>	Seen and heard at Quondong Pt in vine thicket and grassland; flushed from deciduous vine thicket at site 3	Covey in grassland near Quondong Point (25/11/2011).
<b>Plumed Whistling-Duck</b>	Heard over Broome pre-dawn (3/5/2011)	
<b>Bar-shouldered Dove</b>	Common throughout the study area	Common throughout the study area.
<b>Peaceful Dove</b>	Seen occasionally in woodland and vine thicket throughout study area	Few seen and heard.
<b>Diamond Dove</b>	Seen occasionally in woodland and vine thicket throughout study area	
<b>Crested Pigeon</b>	Small flock seen along Manari Rd, but not elsewhere in the study area; seen regularly in Broome	One in site 9 (23/11/2011) and seen in Broome.
<b>Tawny Frogmouth</b>	Two flushed from vine thicket at site 8a (3/5/2011) and one in vine thicket at site 2b (5/5/2011).	Three flushed in site 1a and two flushed site 5a (22/11/2011). One flushed in sites 10a and 7b (24/11/2011).
<b>Australian Owlet-nightjar</b>	Two seen near sites 5 and 6 (4/5/2011).	One in site 2b (23/11/2011).
<b>Unidentified swiftlet.</b>	Several recorded overhead during morning surveys at site 8c (3/5/2011)	
<b>Fork-tailed Swift</b>	Few observed overhead during morning surveys (3/5/2011, 5/5/2011)	Many overhead on 23/11/2011 and 24/11/2011 flying into an easterly wind; flock estimated at least 2000 on one occasion.
<b>Lesser Frigatebird</b>		One over site 1b (22/11/2011).
<b>White-faced Heron</b>	One seen flying over mangroves near Broome township (6/5).	
<b>Eastern Reef Egret</b>	Individual birds seen several times at Quondong Pt, along shoreline	
<b>Eastern Osprey</b>	One on its nest on the Telstra tower in Broome (3/5).	One perched in 3b.
<b>Black-shouldered Kite</b>	One flying over woodland along Broome-Cape Leveque Rd (3/5).	One near woodland site (24/11/2011).
<b>White-bellied Sea-Eagle</b>	A pair seen perching in Eucalypt woodland adjacent to Broome-Cape Leveque Rd (2/5). A nest with attendant bird found at site 10	
<b>Whistling Kite</b>	One seen in study area; several around Broome township	Several around Broome but seen only around 5am; also one near Quondong Point (24/11/2011).
<b>Brahminy Kite</b>	One seen crossing access track near sites 1 and 2 (3/5/2011), one low over site 5c (5/5/2011) and occasional birds seen in Broome	One over site 5b (23/11/2011).
<b>Black Kite</b>	One seen in study area; several	Several around Broome but seen

SPECIES	May 2011	November 2011
	around Broome township	only around 5am.
<b>Brown Goshawk</b>	Individuals and groups of up to three, including a juvenile, seen regularly throughout the study area	Pair over Manari Road near Quondong Point Turnoff and one near 3c.
<b>Collared Sparrowhawk</b>		Pair over Manari Road near Quondong Point Turnoff and male near Quondong Point (24/11/2011).
<b>Nankeen Kestrel</b>	Several seen around study area.	Several in Broome.
<b>Brown Falcon</b>	Several seen around study area; 4-5 seen regularly on entrance track	Two along Cape Leveque Road (23/11/2011).
<b>Masked Lapwing</b>		Groups of up to 10 on fields and lawns in Broome.
<b>Red-backed Button-quail</b>	One flushed from deciduous vine thicket at Quondong Pt; several other possible sightings throughout the study area.	
<b>Chestnut-backed Button-quail</b>	Several possible records; one from site 9c	
<b>Unidentified Button-quail</b>		Unidentified button-quail seen site 1c (24/11/2011).
<b>Silver Gull</b>		Several at Quondong Point (24/11/2011).
<b>Red-tailed Black-Cockatoo</b>	Pair flying over Broome (6/5/2011).	
<b>Cockatiel</b>	A small flock heard and seen near Quondong Pt (2/5/2011).	
<b>Red-winged Parrot</b>	Flocks of up to ~40 seen throughout the study area; seen regularly in Broome	Seen regularly throughout study area in flocks of up to 10.
<b>Rainbow Lorikeet</b>	Very common in Broome township; small flocks heard and seen around the study area	Several seen in woodland daily.
<b>Pheasant Coucal</b>	Seen throughout vine thicket areas of the study area; also seen in Broome township	Seen in vine thicket areas and in woodland and heard regularly.
<b>Channel-billed Cuckoo</b>		Seen and heard regularly in vine thicket.
<b>Brush Cuckoo</b>		Heard regularly throughout study area.
<b>Barking Owl</b>	One heard calling in Broome township (2/5/2011).	Two calling at night in Broome (21/11/2011).
<b>Southern Boobook</b>	Five seen along Manari Rd on dusk (4/5/2011).	
<b>Sacred Kingfisher</b>	Heard and seen in Broome township (5/5/2011); one recorded from site 6a (5/5/2011).	One heard near site 1 (23/11/2011).
<b>Blue-winged Kookaburra</b>	Heard outside of site 1b (4/5/2011) and around Broome township	Heard near Woodside Meteorological Tower station (22/11/2011) and seen occasionally

SPECIES	May 2011	November 2011
		throughout.
<b>Dollarbird</b>		Seen occasionally in study area.
<b>Rainbow Bee-eater</b>	A few in woodland and deciduous vine thicket areas of the study area	Few seen throughout.
<b>Great Bowerbird</b>	Moderately common throughout the study area	Moderately common throughout the study area.
<b>Red-backed Fairy-wren</b>	One seen in deciduous vine thicket at Quondong Pt (2/5/2011).	Group seen in site 3c (22/11/2011).
<b>Variegated Fairy-wren</b>	Seen regularly in deciduous vine thicket throughout the study area. Several nests with nestlings also recorded within the study area.	Group seen in site 9c (23/11/2011)
<b>White-throated Gerygone</b>	Heard occasionally in Eucalypt woodlands of the study area	Heard on 25/11/2011 only.
<b>Striated Pardalote</b>	Heard occasionally in Eucalypt woodlands of the study area.	Heard site 6c (23/11/2011).
<b>Singing Honeyeater</b>	Very common throughout the study area and Broome township	Very common throughout the study area and Broome township.
<b>White-gaped Honeyeater</b>	Heard and seen regularly in the vine thickets throughout the study area; also in the Broome township.	Heard and seen regularly in the vine thickets throughout the study area; also in the Broome township.
<b>Rufous-throated Honeyeater</b>	Heard and seen occasionally in Paperbark woodlands	
<b>Red-headed Honeyeater</b>	Three males seen in mangroves adjacent to Broome township (6/5/2011).	
<b>Brown Honeyeater</b>	Heard and seen in vine thickets and Paperbark woodlands	Seen occasionally; most in woodland
<b>Black-chinned Honeyeater</b>	Several occasionally in open shrubland adjacent to vine thicket near site 8b (2/5/2011) and deciduous vine thicket near sites 1 and 2 (5/5/2011).	Seen occasionally in vine thickets and woodland
<b>Little Friarbird</b>	Heard regularly within woodland areas of the study area; one recorded from deciduous vine thicket at site 6a (4/5/2011). Common within Broome township	Seen and heard regularly in woodland; present in Broome but less obvious than in May 2011
<b>Grey-crowned Babbler</b>	Groups of 2-7 seen regularly throughout the study area in deciduous vine thicket and woodland areas	Seen regularly throughout study area.
<b>Black-faced Cuckoo-shrike</b>	Groups of up to 4 seen regularly throughout all vegetation types of the study area.	Throughout study area in groups of up to 4.
<b>White-winged Triller</b>	Uncommon; seen and heard at site 6 (4-5/5/2011).	Female in site 9a (23/11/2011).
<b>Rufous Whistler</b>	Regularly heard and seen in all vegetation types of the study area	Regularly heard and seen in all vegetation types of the study area.

SPECIES	May 2011	November 2011
<b>Grey Shrike-thrush</b>	Regularly heard and seen in vine thickets of the study area	Regularly seen and heard in vine thickets. Some unusual calls noted.
<b>Olive-backed Oriole</b>	Heard and seen in Broome township	Few seen in vine thicket and woodland.
<b>White-breasted Woodswallow</b>	Small flocks recorded from the study area	Regularly seen in small numbers.
<b>Masked Woodswallow</b>	Small flocks in the study area	
<b>Black-faced Woodswallow</b>	One recorded from site 10a (4/5/2011).	
<b>Little Woodswallow</b>	Small flocks in the study area	Few in vine thicket and woodland.
<b>Pied Butcherbird</b>	Individuals seen regularly along Manari Rd; seen and heard regularly in Eucalypt woodlands of the study area	One seen crossing Manari Road (22/11/2011) and seen in woodland sites.
<b>Grey Fantail</b>	One seen in evergreen vine thicket at Quondong Pt (2/5/2011).	
<b>Northern Fantail</b>	Seen occasionally in deciduous vine thicket	
<b>Willie Wagtail</b>	Seen regularly along Manari Rd, but not elsewhere within the study area. Seen regularly within Broome township.	One in site 9c (23/11/2011).
<b>Torresian Crow</b>	Seen and heard regularly throughout deciduous vine thicket and woodland vegetation types of the study area	Pairs throughout the study area.
<b>Restless Flycatcher</b>	Heard and seen regularly in Paperbark woodlands in the study area	Few in Monsoon Vine Thicket – Deciduous.
<b>Magpie-lark</b>	Common in Broome township; one seen along Broome-Cape Leveque Rd (5/5/2011).	Common in Broome
<b>Rufous Songlark</b>	Heard at site 9a (4/5/2011).	
<b>Brown Songlark</b>	Heard and seen near site 4 (3/5/2011); probably a juvenile male	
<b>Yellow White-eye</b>	Several in vine thicket at site 2b (3/5/2011).	
<b>Tree Martin</b>	Some observed overhead during morning surveys (3/5/2011).	
<b>Mistletoebird</b>	Common throughout vine thickets and woodlands of the study area	Common throughout vine thickets and woodlands of the study area.
<b>Long-tailed Finch</b>	A small flock seen departing a pool of water along Manari Rd (2/5/2011) and a juvenile near Site 5 (6/05/2011).	
<b>Zebra Finch</b>	Several small flocks observed throughout the study area	Group of up to 20 around compound.

**Appendix 5. ANOSIM results for three vegetation types (MVT-E, Monsoon Vine Thicket – Evergreen; MVT-D, Monsoon Vine Thicket – Deciduous; and EW, eucalypt woodland) and three distances (Zones 1, 2 and 3) from James Price Point.**

ANOSIM run using average bird abundance per quadrat (across four surveys; two in May and two in November) and all species (individually) as the variables.

<b>R-values</b>	Vegetation	DVT	DVT	EVT	EVT	EVT	EW	EW
Vegetation	Zone	2	3	1	2	3	1	3
DVT	1	-0.1543	0.09877	0.2926	-0.1358	0.3519	0.8272	1
DVT	2		0.1481	0.4475	0.1667	0.3333	0.6296	1
DVT	3			0.009259	0.1111	0.1481	0.7778	1
EVT	1				0.1142	0.2778	0.9074	1
EVT	2					0.2222	0.6667	1
EVT	3						0.7778	1
EW	1							0.8889

<b>P-values</b>	Vegetation	DVT	DVT	EVT	EVT	EVT	EW	EW
Vegetation	Zone	2	3	1	2	3	1	3
DVT	1	0.7421	0.2509	0.0104	0.7001	0.0725	0.0106	0.0141
DVT	2		0.4025	0.0222	0.2992	0.1984	0.1023	0.1012
DVT	3			0.4511	0.3949	0.3069	0.1002	0.0963
EVT	1				0.3379	0.0813	0.0121	0.0119
EVT	2					0.1959	0.0978	0.0977
EVT	3						0.1043	0.1015
EW	1							0.0983

**Appendix 6. ANOSIM results for three vegetation types (MVT-E, Monsoon Vine Thicket – Evergreen; MVT-D, Monsoon Vine Thicket – Deciduous; and EW, eucalypt woodland).**

ANOSIM run using standardised average bird abundance per quadrat (across four surveys) and foraging guilds (pooled species) as the variables.

R-values	MVT-E	EW
MVT-D	0.03388	0.7575
MVT-E		0.7445

P-values	MVT-E	EW
MVT-D	0.2106	0.0002
MVT-E		0.0002



**Appendix 7. SIMPER results for comparison of bird foraging guilds (obligate, facultative, occasional and non- frugivores) within vine thicket vegetation types (MVT-E, Monsoon Vine Thicket – Evergreen; MVT-D, Monsoon Vine Thicket – Deciduous) with eucalypt woodland (EW).**

Standardised (relative to guild maxima) abundance data were used.

Taxon	Contribution	Cumulative %	MVT-D Mean abundance 1.	EW Mean abundance 2.
Non-frugivore	18	34.84	0.135	0.559
Facultative	12.95	59.92	0.438	0.146
Obligate	12.3	83.73	0.324	0.037
Occasional	8.402	100	0.383	0.402

Taxon	Contribution	Cumulative %	MVT-E Mean abundance 1.	EW Mean abundance 2.
Non-frugivore	17.18	32.38	0.177	0.559
Facultative	17	64.42	0.568	0.146
Obligate	11.06	85.26	0.324	0.037
Occasional	7.825	100	0.367	0.402

**Appendix 8. Bird species of the Dampier Peninsula (Dampierland) based on general database sources, indicating those recorded in the James Price Point Area during Woodside surveys. Regional studies and databases include: the Birdlife Australia Birddata, Naturemap, Rogers *et al.* 2009, ENV 2008, DEC threatened and priority fauna search and DSEWPaC protected matters search tool.**

Common Name	Latin Name	Conservation Status			James Price Point Data				Regional Studies and databases
		EPBC Act	WC Act	DEC	Bamford 2011	Biota 2009	AECOM 2010	Ecologia 2011	
Phasianidae (Pheasants and allies)					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Brown Quail	<i>Coturnix ypsilophora</i>				✓	✓	✓	✓	✓
Indian Peafowl	<i>*Pavo cristatus</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Anseranatidae (Magpie geese)					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Magpie Goose	<i>Anseranas semipalmata</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Anatidae (Geese swans and ducks)					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Plumed Whistling-Duck	<i>Dendrocygna eytoni</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Wandering Whistling-Duck	<i>Dendrocygna arcuata</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Freckled Duck	<i>Stictonetta naevosa</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Black Swan	<i>Cygnus atratus</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Radjah Shelduck	<i>Tadorna radjah</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Australian Shelduck	<i>Tadorna tadornoides</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Australian Wood Duck	<i>Chenonetta jubata</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Pink-eared Duck	<i>Malacorhynchus membranaceus</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Green Pygmy-Goose	<i>Nettapus pulchellus</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Garganey	<i>Ana querquedula</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Australasian Shoveler	<i>Anas rhynchos</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Grey Teal	<i>Anas gracilis</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Chestnut Teal	<i>Anas castanea</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Pacific Black Duck	<i>Anas superciliosa</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Hardhead	<i>Aythya australis</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓

Common Name	Latin Name	Conservation Status			James Price Point Data				Regional Studies and databases
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<b>Podicipedidae (Grebes)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Australasian Grebe	<i>Tachybaptus novaehollandiae</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Hoary-headed Grebe	<i>Poliiocephalus poliocephalus</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Great Crested Grebe	<i>Podiceps cristatus</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
<b>Columbidae (Pigeons and doves)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Rock Dove/ Domestic Pigeon	<i>*Columba livia</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Flock Bronzewing	<i>Phaps histrionica</i>			P4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓	✓
Crested Pigeon	<i>Ocyphaps lophotes</i>				✓	✓	✓	<input type="checkbox"/>	✓
Diamond Dove	<i>Geopelia cuneata</i>				✓	✓	✓	✓	✓
Peaceful Dove	<i>Geopelia striata</i>				✓	✓	✓	✓	✓
Bar-shouldered Dove	<i>Geopelia humeralis</i>				✓	✓	✓	✓	✓
Pied Imperial Pigeon	<i>Ducula bicolor</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
<b>Podargidae (Australian frogmouths)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Tawny Frogmouth	<i>Podargus strigoides</i>				✓	✓	✓	✓	✓
<b>Eurostopodidae (Nightjars)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Spotted Nightjar	<i>Eurostopodus argus</i>					<input type="checkbox"/>	✓	<input type="checkbox"/>	✓
<b>Aegothelidae (Owlet-nightjars)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Australian Owlet-nightjar	<i>Aegotheles cristatus</i>				✓	<input type="checkbox"/>	✓	✓	✓
<b>Apodidae (Typical swifts)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Swiftlet	<i>Collocalia</i> sp.				✓				
White-throated Needletail	<i>Hirundapus caudacutus</i>	M	S3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Fork-tailed Swift	<i>Apus pacificus</i>	M	S3		✓	<input type="checkbox"/>	✓	✓	✓
House Swift	<i>Apus affinis</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
<b>Hydrobatidae (Storm petrels)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Leach's Storm-Petrel	<i>Hydrobates leucorhoa</i>	M	S3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓

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<b>Oceanitidae (Storm petrels)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Wilson's Storm-Petrel	<i>Oceanites oceanicus</i>	M	S3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
<b>Diomedeiidae (Albatrosses)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Grey-headed Albatross	<i>Thalassarche chrysostoma</i>	EN	S1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
<b>Procellariidae (Petrels, shearwaters, diving-petrels)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Bulwer's Petrel	<i>Bulweia bulweii</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Wedge-tailed Shearwater	<i>Ardenna pacificus</i>	M	S3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Short-tailed Shearwater	<i>Ardenna tenuirostris</i>	M	S3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Streaked Shearwater	<i>Calonectris leucomelas</i>	M	S3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Hutton's Shearwater	<i>Puffinus huttoni</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
<b>Fregatidae (Frigatebirds)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Lesser Frigatebird	<i>Fregata ariel</i>	M	S3		✓	✓	✓	✓	✓
<b>Sulidae (Gannets and boobies)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Masked Booby	<i>Sula dactylatra</i>	M	S3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Brown Booby	<i>Sula leucogaster</i>	M	S3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓	✓
<b>Anhingidae (Darters)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Australasian Darter	<i>Anhinga novaehollandiae</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
<b>Phalacrocoracidae (Cormorants)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Little Pied Cormorant	<i>Microcarbo melanoleucos</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Great Cormorant	<i>Phalacrocorax carbo</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Little Black Cormorant	<i>Phalacrocorax sulcirostris</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Pied Cormorant	<i>Phalacrocorax varius</i>					<input type="checkbox"/>	✓	<input type="checkbox"/>	✓
<b>Pelecanidae (Pelicans)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Australian Pelican	<i>Pelecanus conspicillatus</i>					<input type="checkbox"/>	✓	✓	✓

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<b>Ciconiidae (Storks)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
<b>Ardeidae (Herons, egrets and bitterns)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Australian Little Bittern	<i>Ixobrychus dubius</i>			P4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Black Bittern	<i>Ixobrychus flavicollis</i>			P3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
White-necked Heron	<i>Ardea pacifica</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Eastern Great Egret	<i>Ardea modesta</i>	M	S3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Intermediate Egret	<i>Ardea intermedia</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Pied Heron	<i>Egretta picata</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
White-faced Heron	<i>Egretta novaehollandiae</i>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Cattle Egret	<i>Ardea ibis</i>	M	S3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Striated Heron	<i>Butorides striatus</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Little Egret	<i>Egretta garzetta</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Eastern Reef Egret	<i>Egretta sacra</i>	M	S3		✓	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Nankeen Night Heron	<i>Nycticorax caledonicus</i>				<input type="checkbox"/>	✓	<input type="checkbox"/>	<input type="checkbox"/>	✓
<b>Threskiornithidae (Ibis and spoonbills)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Glossy Ibis	<i>Plegadis falcinellus</i>	M	S3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Australian White Ibis	<i>Threskiornis molucca</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Straw-necked Ibis	<i>Threskiornis spinicollis</i>					<input type="checkbox"/>	✓	<input type="checkbox"/>	✓
Royal Spoonbill	<i>Platalea regia</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Yellow-billed Spoonbill	<i>Platalea flavipes</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
<b>Accipitridae (Osprey, hawks and eagles)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Eastern Osprey	<i>Pandion cristatus</i>	M			✓	✓	✓	<input type="checkbox"/>	✓
Black-shouldered Kite	<i>Elanus axillaris</i>				✓	<input type="checkbox"/>	✓	<input type="checkbox"/>	✓
Square-tailed Kite	<i>Lophoictinia isura</i>				<input type="checkbox"/>	✓	<input type="checkbox"/>	✓	✓
Black-breasted Buzzard	<i>Hamirostra melanosternon</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓

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White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	M	S3		✓	✓	✓	✓	✓
Whistling Kite	<i>Haliastur sphenurus</i>				✓	□	□	□	✓
Brahminy Kite	<i>Haliastur indus</i>				✓	□	✓	✓	✓
Black Kite	<i>Milvus migrans</i>				✓	□	□	✓	✓
Brown Goshawk	<i>Accipiter fasciatus</i>				✓	✓	✓	✓	✓
Collared Sparrowhawk	<i>Accipiter cirrhocephalus</i>				□	□	□	□	✓
Grey Goshawk	<i>Accipiter novaehollandiae</i>				□	□	□	□	✓
Spotted Harrier	<i>Circus assimilis</i>				□	□	□	□	✓
Swamp Harrier	<i>Circus approximans</i>				□	□	□	□	✓
Red Goshawk	<i>Erythrotriorchis radiatus</i>	VU	S1		□	□	□	□	✓
Wedge-tailed Eagle	<i>Aquila audax</i>				□	□	□	□	✓
Little Eagle	<i>Hieraaetus morphnoides</i>				□	□	□	✓	✓
<b>Falconidae (Falcons)</b>					□	□	□	□	✓
Nankeen Kestrel	<i>Falco cenchroides</i>				✓	✓	✓	✓	✓
Brown Falcon	<i>Falco berigora</i>				✓	✓	✓	✓	✓
Australian Hobby	<i>Falco longipennis</i>					□	✓	□	✓
Grey Falcon	<i>Falco hypoleucos</i>			P4	□	□	□	□	✓
Black Falcon	<i>Falco subniger</i>				□	□	□	□	✓
Peregrine Falcon	<i>Falco peregrinus</i>		S4			✓	✓	□	✓
<b>Gruidae (Cranes)</b>					□	□	□	□	✓
Brolga	<i>Grus rubicunda</i>				□	□	□	□	✓
<b>Rallidae (Rails, crakes, swamphens and coot)</b>					□	□	□	□	✓
Purple Swamphen	<i>Porphyrio porphyrio</i>				□	□	□	□	✓
Red-legged Crake	<i>Rallina fasciata</i>				□	□	□	□	✓
Buff-banded Rail	<i>Gallirallus philippensis</i>				□	□	□	□	✓

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Baillon's Crake	<i>Porzana pusilla</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Australian Spotted Crake	<i>Porzana fluminea</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Spotless Crake	<i>Porzana tabuensis</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
White-browed Crake	<i>Amaurornis cinerea</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Black-tailed Native-hen	<i>Tribonyx ventralis</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Eurasian Coot	<i>Fulica atra</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
<b>Otididae (Bustards)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Australian Bustard	<i>Ardeotis australis</i>			P4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓	✓
<b>Burhinidae (Stone-curlews)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Bush Stone-curlew	<i>Burhinus grallarius</i>			P4	<input type="checkbox"/>	✓	<input type="checkbox"/>	<input type="checkbox"/>	✓
Beach Stone-curlew	<i>Esacus magnirostris</i>					<input type="checkbox"/>	✓	<input type="checkbox"/>	✓
<b>Haematopodidae (Oyster catchers)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Australian Pied Oystercatcher	<i>Haematopus longirostris</i>					✓	✓	✓	✓
Sooty Oystercatcher	<i>Haematopus fuliginosus</i>					<input type="checkbox"/>	✓	✓	✓
<b>Recurvirostridae (Stilts and avocets)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Black-winged Stilt	<i>Himantopus himantopus</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Red-necked Avocet	<i>Recurvirostra novaehollandiae</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Banded Stilt	<i>Cladorhynchus leucocephalus</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
<b>Charadriidae (Lapwings, plovers and dotterels)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Pacific Golden Plover	<i>Pluvialis fulva</i>	M	S3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Grey Plover	<i>Pluvialis squatarola</i>	M	S3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Little Ringed Plover	<i>Charadrius dubius</i>	M	S3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Greater Sand Plover	<i>Charadrius leschenaultii</i>	M	S3			<input type="checkbox"/>	✓	<input type="checkbox"/>	✓
Lesser Sand Plover	<i>Charadrius mongolus</i>	M	S3			<input type="checkbox"/>	✓	<input type="checkbox"/>	✓
Red-capped Plover	<i>Charadrius ruficapillus</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓	✓

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Oriental Plover	<i>Charadrius veredus</i>	M	S3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Black-fronted Dotterel	<i>Elseyaornis melanops</i>					<input type="checkbox"/>	✓	<input type="checkbox"/>	✓
Red-kneed Dotterel	<i>Erythrogonys cinctus</i>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Masked Lapwing	<i>Vanellus miles</i>					<input type="checkbox"/>	✓	<input type="checkbox"/>	✓
Banded Lapwing	<i>Vanellus tricolor</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Jacanidae (Lotus birds)					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Comb-crested Jacana	<i>Irediparra gallinacea</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Rostratulidae (Painted snipe)					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Australian Painted Snipe	<i>Rostratula australis</i>	VU	S1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Scolopacidae (Curlews, sandpipers, snipes, godwits and phalaropes)					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Pin-tailed Snipe	<i>Gallinago stenura</i>	M	S3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Swinhoe's Snipe	<i>Gallinago megala</i>	M	S3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Black-tailed Godwit	<i>Limosa limosa</i>	M	S3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Bar-tailed Godwit	<i>Limosa lapponica</i>	M	S3			<input type="checkbox"/>	✓	<input type="checkbox"/>	✓
Little Curlew	<i>Numenius minutus</i>	M	S3			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Whimbrel	<i>Numenius phaeopus</i>	M	S3			<input type="checkbox"/>	✓	<input type="checkbox"/>	✓
Eastern Curlew	<i>Numenius madagascariensis</i>	M	S3	P4		<input type="checkbox"/>	✓	<input type="checkbox"/>	✓
Eurasian Curlew	<i>Numenius arquata</i>	M	S3			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Terek Sandpiper	<i>Xenus cinereus</i>	M	S3			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Common Sandpiper	<i>Actitis hypoleucos</i>	M	S3			✓	<input type="checkbox"/>	<input type="checkbox"/>	✓
Grey-tailed Tattler	<i>Tringa brevipes</i>	M	S3			<input type="checkbox"/>	✓	<input type="checkbox"/>	✓
Wood Sandpiper	<i>Tringa glareola</i>	M	S3			<input type="checkbox"/>	✓	<input type="checkbox"/>	✓
Common Greenshank	<i>Tringa nebularia</i>	M	S3			<input type="checkbox"/>	✓	<input type="checkbox"/>	✓
Marsh Sandpiper	<i>Tringa stagnatilis</i>	M	S3			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Common Redshank	<i>Tringa totanus</i>	M	S3			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓



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Ruddy Turnstone	<i>Arenaria interpres</i>	M	S3			<input type="checkbox"/>	✓	<input type="checkbox"/>	✓
Asian Dowitcher	<i>Limnodromus semipalmatus</i>	M	S3			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Great Knot	<i>Calidris tenuirostris</i>	M	S3			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Red Knot	<i>Calidris canutus</i>	M	S3			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Sanderling	<i>Calidris alba</i>	M	S3			<input type="checkbox"/>	✓	<input type="checkbox"/>	✓
Red-necked Stint	<i>Calidris ruficollis</i>	M	S3			<input type="checkbox"/>	✓	<input type="checkbox"/>	✓
Long-toed Stint	<i>Calidris subminuta</i>	M	S3			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Pectoral Sandpiper	<i>Calidris melanotos</i>	M	S3			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Sharp-tailed Sandpiper	<i>Calidris acuminata</i>	M	S3			<input type="checkbox"/>	✓	<input type="checkbox"/>	✓
Curlew Sandpiper	<i>Calidris ferruginea</i>	M	S3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Broad-billed Sandpiper	<i>Limicola falcinellus</i>	M	S3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Ruff	<i>Philomachus pugnax</i>	M	S3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Red-necked Phalarope	<i>Phalaropus lobatus</i>	M	S3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
<b>Turnicidae (Button-quails)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Red-backed Button-quail	<i>Turnix maculosus</i>				✓	<input type="checkbox"/>		<input type="checkbox"/>	✓
Chestnut-backed Button-quail	<i>Turnix castanotus</i>			P4	✓	<input type="checkbox"/>	✓	<input type="checkbox"/>	✓
Red-chested Button-quail	<i>Turnix pyrrhothorax</i>					<input type="checkbox"/>	✓	✓	✓
Little Button-quail	<i>Turnix velox</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓	✓
<b>Glareolidae (Pratincoles)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Oriental Pratincole	<i>Glareola maldivarum</i>	M	S3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Australian Pratincole	<i>Stiltia isabella</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
<b>Stercorariidae (Skuas and Jaegers)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Arctic Jaeger	<i>Stercorarius parasiticus</i>	M	S3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓

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Laridae (Gulls, terns and allies)					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Common Noddy	<i>Anous stolidus</i>	M	S3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Bridled Tern	<i>Onychoprion anaethetus</i>	M	S3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Little Tern	<i>Sternula albifrons</i>	M	S3			<input type="checkbox"/>	✓	<input type="checkbox"/>	✓
Fairy Tern	<i>Sternula nereis</i>	VU				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Gull-billed Tern	<i>Gelochelidon nilotica</i>					<input type="checkbox"/>	✓	<input type="checkbox"/>	✓
Caspian Tern	<i>Hydroprogne caspia</i>	M	S3			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Whiskered Tern	<i>Chlidonias hybrida</i>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
White-winged Black Tern	<i>Chlidonia leucopterus</i>	M	S3			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Roseate Tern	<i>Sterna dougallii</i>	M	S3			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Black-naped Tern	<i>Sterna sumatrana</i>	M	S3			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Common Tern	<i>Sterna hirundo</i>	M	S3			<input type="checkbox"/>	✓	✓	✓
Lesser Crested Tern	<i>Thalasseus bengalensis</i>	M	S3			<input type="checkbox"/>	✓	✓	✓
Crested Tern	<i>Thalasseus bergii</i>					<input type="checkbox"/>	✓	✓	✓
Silver Gull	<i>Chroicocephalus novaehollandiae</i>					<input type="checkbox"/>	✓	<input type="checkbox"/>	✓
Sabine's Gull	<i>Xema sabini</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Cacatuidae (Psittacidae) (Cockatoos)					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Red-tailed Black-Cockatoo	<i>Calyptorhynchus banksii</i>					<input type="checkbox"/>	✓	✓	✓
Galah	<i>Eolophus roseicapillus</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Little Corella	<i>Cacatua sanguinea</i>					<input type="checkbox"/>	✓	<input type="checkbox"/>	✓
Cockatiel	<i>Nymphicus hollandicus</i>				✓	<input type="checkbox"/>	<input type="checkbox"/>	✓	✓
Psittacidae (Parrots)					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Rainbow Lorikeet	<i>Trichoglossus haematodus</i>				✓	✓	✓	✓	✓
Varied Lorikeet	<i>Psitteuteles versicolor</i>				<input type="checkbox"/>	✓	<input type="checkbox"/>	✓	✓
Red-winged Parrot	<i>Aprosmictus erythropterus</i>				✓	✓	✓	✓	✓
Princess Parrot	<i>Polytelis alexandrae</i>	VU		P4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓

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Budgerigar	<i>Melopsittacus undulatus</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
<b>Cuculidae (Parasitic cuckoos)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Pheasant Coucal	<i>Centropus phasianinus</i>				✓	✓	✓	✓	✓
Channel-billed Cuckoo	<i>Scythrops novaehollandiae</i>				✓	<input type="checkbox"/>	✓	<input type="checkbox"/>	✓
Horsfield's Bronze-Cuckoo	<i>Chalcites basal</i>					✓	✓	✓	✓
Black-eared Cuckoo	<i>Chalcites osculans</i>					✓	✓	<input type="checkbox"/>	✓
Shining Bronze-Cuckoo	<i>Chalcites lucidus</i>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Little Bronze-Cuckoo	<i>Chalcites minutillus</i>					<input type="checkbox"/>	<input type="checkbox"/>	✓	✓
Pallid Cuckoo	<i>Cacomantis pallidus</i>					<input type="checkbox"/>	✓	✓	✓
Brush Cuckoo	<i>Cacomantis variolosus</i>				✓	✓	✓	<input type="checkbox"/>	✓
Oriental Cuckoo	<i>Cuculus optatus</i>					<input type="checkbox"/>	✓	<input type="checkbox"/>	✓
<b>Strigidae Strigidae (Hawk owls)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Barking Owl	<i>Ninox connivens</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Southern Boobook	<i>Ninox novaeseelandiae</i>				✓	<input type="checkbox"/>	<input type="checkbox"/>	✓	✓
<b>Tytonidae (Barn owls)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Eastern Barn Owl	<i>Tyto javanica</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Eastern Grass Owl	<i>Tyto longimembris</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
<b>Halcyonidae (Tree kingfishers)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Blue-winged Kookaburra	<i>Dacelo leachii</i>				✓	✓	✓	✓	✓
Red-backed Kingfisher	<i>Todiramphus pyrrhopygius</i>					✓	✓	<input type="checkbox"/>	✓
Sacred Kingfisher	<i>Todiramphus sanctus</i>				✓	✓	✓	✓	✓
Collared Kingfisher	<i>Todiramphus chloris</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
<b>Meropidae (Bee-eaters)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Rainbow Bee-eater	<i>Merops ornatus</i>	M	S3		✓	✓	✓	✓	✓

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<b>Coraciidae (Dollar birds)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Dollarbird	<i>Eurystomus orientalis</i>				✓	✓	<input type="checkbox"/>	✓	✓
<b>Climacteridae (Treecreepers)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Black-tailed Treecreeper	<i>Climacteris melanura</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
<b>Ptilinorhynchidae (Bowerbirds)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Great Bowerbird	<i>Ptilonorhynchus nuchalis</i>				✓	✓	✓	✓	✓
<b>Maluridae (Fairy-wrens, emu-wrens and grasswrens)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Variegated Fairy-wren	<i>Malurus lamberti</i>				✓	✓	✓	✓	✓
Red-backed Fairy-wren	<i>Malurus melanocephalus</i>				✓	✓	✓	✓	✓
<b>Acanthizidae (Australasian warblers)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Weebill	<i>Smicronis brevirostris</i>				<input type="checkbox"/>	✓	<input type="checkbox"/>	✓	✓
Mangrove Gerygone	<i>Gerygone levigaster</i>					<input type="checkbox"/>	✓	<input type="checkbox"/>	✓
Western Gerygone	<i>Gerygone fusca</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Dusky Gerygone	<i>Gerygone tenebrosa</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
White-throated Gerygone	<i>Gerygone albogularis</i>				✓	✓	✓	✓	✓
<b>Pardalotidae (Pardalotes)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Red-browed Pardalote	<i>Pardalotus rubricatus</i>					✓	✓	<input type="checkbox"/>	✓
Striated Pardalote	<i>Pardalotus striatus</i>				✓	✓		✓	✓
<b>Meliphagidae (Honeyeaters)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Pied Honeyeater	<i>Certhionyx variegatus</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Singing Honeyeater	<i>Lichenostomus virescens</i>				✓	✓	✓	✓	✓
White-gaped Honeyeater	<i>Lichenostomus unicolor</i>				✓	✓	✓	✓	✓
Grey-headed Honeyeater	<i>Lichenostomus keartlandi</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Grey-fronted Honeyeater	<i>Lichenostomus plumulus</i>				<input type="checkbox"/>	✓	<input type="checkbox"/>	<input type="checkbox"/>	✓

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Yellow-tinted Honeyeater	<i>Lichenostomus flavescens</i>				<input type="checkbox"/>	✓	<input type="checkbox"/>	✓	✓
White-plumed Honeyeater	<i>Lichenostomus penicillatus</i>					✓	✓	<input type="checkbox"/>	✓
White-fronted Honeyeater	<i>Purnella albifrons</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Yellow-throated Miner	<i>Manorina flavigula</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Spiny-cheeked Honeyeater	<i>Acanthagenys rufogularis</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Rufous-throated Honeyeater	<i>Conopophila rufogularis</i>				✓	✓	✓	✓	✓
Crimson Chat	<i>Epthianura tricolor</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Orange Chat	<i>Epthianura aurifrons</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Yellow Chat	<i>Epthianura crocea</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Black Honeyeater	<i>Sugomel niger</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Red-headed Honeyeater	<i>Myzomela erythrocephala</i>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Banded Honeyeater	<i>Cissomela pectoralis</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓	✓
Brown Honeyeater	<i>Lichmera indistincta</i>				✓	✓	✓	✓	✓
Black-chinned Honeyeater	<i>Melithreptus gularis</i>				✓	✓	✓	✓	✓
White-throated Honeyeater	<i>Melithreptus albogularis</i>					<input type="checkbox"/>	✓	✓	✓
Silver-crowned Friarbird	<i>Philemon argenticeps</i>					<input type="checkbox"/>	✓	<input type="checkbox"/>	✓
Little Friarbird	<i>Philemon citreogularis</i>				✓	✓	✓	✓	✓
<b>Pomatostomidae (Babblers)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Grey-crowned Babbler	<i>Pomatostomus temporalis</i>				✓	✓	✓	✓	✓
<b>Neosittidae (Sittellas)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Varied Sittella	<i>Daphoenositta chrysoptera</i>					✓	✓	✓	✓
<b>Campephagidae (Cuckoo-shrikes, trillers)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>				✓	✓	✓	✓	✓
White-bellied Cuckoo-shrike	<i>Coracina papuensis</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
White-winged Triller	<i>Lalage sueurii</i>				✓	<input type="checkbox"/>	✓	✓	✓

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Pachycephalidae (Whistlers, shrike-thrushes and allies)					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Mangrove Golden Whistler	<i>Pachycephala melanura</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Rufous Whistler	<i>Pachycephala rufiventris</i>				✓	✓	✓	✓	✓
White-breasted Whistler	<i>Pachycephala lanioides</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Grey Shrike-thrush	<i>Colluricincla harmonica</i>				✓	✓	✓	✓	✓
Crested Bellbird	<i>Oreoica gutturalis</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Oriolidae (Orioles and figbirds)					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Olive-backed Oriole	<i>Oriolus sagittatus</i>				✓	<input type="checkbox"/>	✓	✓	✓
Artamidae (Woodswallows, butcherbirds and currawongs)					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
White-breasted Woodswallow	<i>Artamus leucorhynchus</i>				✓	✓	✓	<input type="checkbox"/>	✓
Masked Woodswallow	<i>Artamus personatus</i>				<input type="checkbox"/>	<input type="checkbox"/>	✓	✓	✓
White-browed Woodswallow	<i>Artamus superciliosus</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓	✓
Black-faced Woodswallow	<i>Artamus cinereus</i>				✓	✓	✓	✓	✓
Little Woodswallow	<i>Artamus minor</i>				✓	✓	✓	✓	✓
Grey Butcherbird	<i>Cracticus torquatus</i>				<input type="checkbox"/>	✓	<input type="checkbox"/>	<input type="checkbox"/>	✓
Pied Butcherbird	<i>Cracticus nigrogularis</i>				✓	✓	✓	✓	✓
Australian Magpie	<i>Cracticus tibicen</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Rhipiduridae (Fantails)					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Grey Fantail	<i>Rhipidura albiscapa</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Mangrove Grey Fantail	<i>Rhipidura phasiana</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Northern Fantail	<i>Rhipidura rufiventris</i>				✓	✓	✓	✓	✓
Willie Wagtail	<i>Rhipidura leucophrys</i>				✓	✓	✓	✓	✓

Common Name	Latin Name	Conservation Status			James Price Point Data				Regional Studies and databases
		EPBC Act	WC Act	DEC	Bamford 2011	Biota 2009	AECOM 2010	Ecologia 2011	
Corvidae (Crows and allies)					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Little Crow	<i>Corvus bennetti</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Torresian Crow	<i>Corvus orru</i>				✓	✓	✓	✓	✓
Monarchidae (Flycatchers, monarchs and magpie-lark)					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Broad-billed Flycatcher	<i>Myiagra ruficollis</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Leaden Flycatcher	<i>Myiagra rubecula</i>					✓	✓	✓	✓
Restless Flycatcher	<i>Myiagra inquieta</i>				✓	✓	✓	✓	✓
Magpie-lark	<i>Grallina cyanoleuca</i>				✓	<input type="checkbox"/>	✓	<input type="checkbox"/>	✓
Petroicidae (Australasian robins)					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Jacky Winter	<i>Microeca fascinans</i>					✓	✓	✓	✓
Lemon-bellied Flycatcher	<i>Microeca flavigaster</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Red-capped Robin	<i>Petroica goodenovii</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Hooded Robin	<i>Melanodryas cucullata</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Mangrove Robin	<i>Peneonanthe pulverulenta</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Alaudidae (Old world larks)					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Horsfield's Bushlark	<i>Mirafrja javanica</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Cisticolidae (Sylviidae) (Cisticolas)					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Golden-headed Cisticola	<i>Cisticola exilis</i>				<input type="checkbox"/>	✓	<input type="checkbox"/>	<input type="checkbox"/>	✓
Acrocephalidae (Sylviidae) (Reed-warblers)					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Australian Reed-Warbler	<i>Acrocephalus australis</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓

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Megaluridae (Grassbirds)					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Tawny Grassbird	Megalurus timoriensis				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Little Grassbird	Megalurus gramineus				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Rufous Songlark	Cincloramphus mathewsi				✓	<input type="checkbox"/>		✓	✓
Brown Songlark	Cincloramphus cruralis				✓	<input type="checkbox"/>	<input type="checkbox"/>	✓	✓
Timaliidae (Zosteropidae) (White-eyes)					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Yellow White-eye	Zosterops luteus				✓	<input type="checkbox"/>	✓	<input type="checkbox"/>	✓
Hirundinidae (Swallows and martins)									✓
Barn Swallow	Hirundo rustica	M	S3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Welcome Swallow	Hirundo neoxena				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Fairy Martin	Petrochelidon ariel				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓	✓
Tree Martin	Petrochelidon nigricans				✓	✓		✓	✓
Red-rumped Swallow	Cecropis daurica		S3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Muscicapidae (Old world chats)					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Blue-and-White Flycatcher	Cyanoptila cyanomelana				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Sturnidae (Starlings and mynas)					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Common Starling	Sturnus vulgaris				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Nectariniidae (Dicaeidae) (Flowerpeckers and sunbirds)					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Mistletoebird	Dicaeum hirundinaceum				✓	<input type="checkbox"/>	✓	✓	✓
Estrildidae (Grass finches)					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Zebra Finch	Taeniopygia guttata				✓	✓	✓	<input type="checkbox"/>	✓
Double-barred Finch	Taeniopygia bichenovii				<input type="checkbox"/>	✓	<input type="checkbox"/>	✓	✓
Long-tailed Finch	Poephila acuticauda				✓	✓	<input type="checkbox"/>	✓	✓
Painted Finch	Emblema pictum				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Gouldian Finch	Erythrura gouldiae	EN,M	S1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓



Common Name	Latin Name	Conservation Status			James Price Point Data				Regional Studies and databases
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Chestnut-breasted Mannikin	<i>Lonchura castaneothorax</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Pictorella Mannikin	<i>Heteromunia pectoralis</i>			P4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
<b>Motacillidae (Pipits and wagtails)</b>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Australasian Pipit	<i>Anthus novaeseelandiae</i>				✓	✓	<input type="checkbox"/>	<input type="checkbox"/>	✓
Yellow Wagtail	<i>Motacilla flava</i>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓

Note 1. Two species have been removed from this list as it is suspected they were erroneous. Red-winged Fairy-wren *Malurus elegans* was listed by Biota (2009) but is known only from the south-west of Western Australia, while the Silvereye *Zosterops lateralis* was listed by Birddata but is not usually recorded north of North West Cape.

Note 2. Dates of surveys in the James Price Point Coastal area were: Bamford – May and November 2011; Ecologia – April-May 2011; Biota – March 2009; AECOM – November 2010