

BIRDS OF THE SOUTH-WESTERN LITTLE SANDY DESERT

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ABSTRACT

Surveys of the avifauna of the south-western Little Sandy Desert study area between 1995 and 1999 revealed the presence of 116 bird species (61 passerines, 55 non-passerines). Pattern analysis of counts on quadrats selected to sample the main landform and vegetation types showed the presence of four quadrat and four species groups however, the association between these groups was weak. The largest species group (34 species) included ubiquitous species and the second largest (20 species) included birds associated with mulga woodland. Quadrats were grouped into mulga, sandstone, sand dune and sandplain areas. The weak association is probably due to the study area being arid and lying within a single natural region and to birds being mobile and less bound to specialised habitats than some other groups of organisms. A total of 42 species were recorded breeding after summer and winter-spring rains. Most birds recorded are typical of arid zone habitats in Australia, although 20 species of waterbird were recorded along Savory Creek, an intermittent drainage channel.

INTRODUCTION

Knowledge of avian community structure and composition in arid Australia is rudimentary. In Western Australia species assemblage data have been published for some sites, for example, on the Nullarbor Plain (Burbidge *et al.* 1987) and the Eastern Goldfields (Burbidge *et al.* 1995). Information is particularly scant from the widespread desert sandy surfaces dominated by spinifex (*Triodia* spp.) hummock grasslands and scattered shrubs and trees. Some studies have reported on birds of mulga (*Acacia aneura*) communities (eg, Cody 1994, Recher and Davis 1997); however, mulga is sparse and patchy in the sandy deserts.

Annotated species lists for tropical sandy deserts have been published for the Great Sandy Desert (Start And Fuller 1983), the Tanami Desert (Gibson 1986) and the northern Simpson Desert (Gibson and Cole 1988). Lists for the Great Victoria Desert can be found in McKenzie and Burbidge (1979) and Black and Badman (1986). The latter authors provide comparisons between vegetation associations, but these are not based on rigorous data collection.

A detailed analysis of birds of the southern Carnarvon Basin (Burbidge *et al.* 2000) includes some habitats similar to sandy desert habitats.

We are not aware of any previous detailed studies on the birds of the Little Sandy Desert of Western Australia, particularly the south-western portion of the area.

METHODS

Visits to the study area when birds were recorded, together with type of data collected, were as follows (dates are inclusive):

Trip 1	25 July 1995 to 30 July 1995	opportunistic
Trip 2	19 October 1995 to 26 October 1995	opportunistic
Trip 3	6 June 1996 to 22 June 1996	quadrat and opportunistic
Trip 4	10 October 1996 to 26 October 1996	quadrat and opportunistic
Trip 5	13 April 1997 to 19 April 1997	quadrat and opportunistic
Trip 6	13 August 1997 to 28 August 1997	quadrat and opportunistic
Trip 7	14 September 1999 to 19 September 1999	opportunistic

Climatic features of the study area are provided in Chapter 2.

QUADRAT DATA COLLECTION

Elsewhere within this publication is a full description of the area surveyed together with descriptions of each survey site (Chapter 2). Appendix 2.3 provides a list of the five bird survey sites that were surveyed near each of the three focal areas across the latitudinal extent of the study area.

During each survey, each of the five quadrats within the three focal areas was sampled on three occasions over a five-day period. Two surveys were conducted each morning, the first commencing shortly before sunrise, the second on completion of the first count, about two hours after sunrise and the third in the late afternoon. During each trip, each site was surveyed once at each start time.

About 1.5 hours was spent on census work on each quadrat on each visit. In total, 4.5 hours of actual census time was spent on each of the 15 quadrat during each survey. The quadrats were unbounded - the single observer could wander anywhere on the quadrat, depending on where he saw birds or decided to search for them. While the size of the quadrat was not restricted, the observer was required to limit all census work to the confines of the vegetation and landscape-soil types described for that particular site. Outside these areas, records were classed as opportunistic. The observer carried a pair of 8 x 56 binoculars.

For each species observed, the following data were recorded:

- numbers of individuals, plus, where possible, age and sex;

- activity (e.g. whether feeding, on the ground, in vegetation, flying overhead); and
- whether breeding - for all breeding observations, we recorded breeding stage, from individuals carrying nesting material, to eggs, to adults feeding chicks, to recently flying young.

During each census, information on wind, temperature, cloud cover and rain were recorded. However, this information has not been used in the analyses described below.

Nocturnal observations were made while camping at each survey site (at least once per trip) as well as during spotlighting and head torching for nocturnal animals. The evening work and overnight stays proved very beneficial for bird data, as many nocturnal species (i.e. Nightjars, Owls, Bush Stone-curlew) were recorded.

In some instances, observations included sightings of fresh tracks, mainly Emu and Australian Bustard. On other occasions, particularly in areas of dense scrub, bird whistles (Audubon bird call) were used to attract some species. These bird callers were also beneficial on sandplains and dunes, when working in areas of thick spinifex (*Triodia* spp.).

OPPORTUNISTIC DATA COLLECTION

In addition to the census survey of each site, all members of the survey team made opportunistic bird observations from any area within the general region under survey.

QUADRAT DATA ANALYSES

Matrices were generated from quadrat data, showing presence/absence of bird species by quadrat. Before analysis we filtered the data to remove records of:

- all birds recorded overhead that did not land within the quadrat,
- waterbirds,
- *Corvus* spp. not identified to species, and
- species recorded on only a single quadrat.

Community composition and the relationship between the 15 survey sites was examined using pattern analyses on presence/absence data via the computer package PATN (Belbin 1994). Survey sites were associated according to similarities in their bird fauna using the Czekanowski metric (Faith *et al.* 1987) and the unweighted pair grouped arithmetic averaging clustering strategy (UPGMA, $\beta = -0.1$). Singletons were excluded from the presence/absence matrices prior to analysis. The veracity of the clustering dendrogram with respect to the association matrix was subjectively investigated using the cophenetic correlation. Subsequently accord between the clustering dendrogram and the association matrix was investigated by the construction of a two-way table of the species and trapping grid classifications using the routine outlined by Belbin (1991).

RESULTS

A total of 116 bird species (61 passerines, 55 non-passerines) were recorded in the study area (Table 5.1). Twenty species of waterbirds were recorded; nineteen of them on S1, which included part of Savory Creek. Some 85 species were recorded on quadrats; of these 11 species were recorded on only one quadrat (Table 5.2).

QUADRAT CLASSIFICATION

The dendrogram of quadrat classification for the 15 survey sites on the basis of the 74 bird species recorded on more than one quadrat is given in Figure 5.1. The dendrogram of species classification is given in Figure 5.2. The association between quadrats was weak, as indicated by a cophenetic correlation of $r = 0.67$. After inspection of the dendrograms we based further analyses on four quadrat groups and four species groups. These are presented in a two-way table (Table 5.3) while the distribution of the four quadrat groups across the survey area is presented in Appendix 5.1.

Comments on these groups are presented below:

- Quadrat group 1 (B1, C3, B2 and S1) comprise mainly mulga-dominated quadrats, but also includes S1, which is dominated by samphire (*Halosarcia*), but has some small trees, habitat used by birds such as Australian Magpie, while other species were attracted to the drinking water in the creek (e.g. Australian Ringneck, Little Corella).
- Quadrat group 2 includes the sandstone-dominated habitats of B5 and C1, but also included C5, which has mulga on heavy soils.
- Quadrat group 3 includes the two sand dune quadrats - B3 and S4.
- Quadrat group 4 includes all sandplain quadrats (B4, C4, C2 and S2) plus S3 (laterite and mulga) and S5 (sandstone).
- Species group 1 birds (15 species) are typical of the sandplain habitats, but were found almost equally elsewhere.
- Species group 2 (4 species) includes a few birds located only or mostly on dunes. These were Grey-headed Honeyeater, White-backed Swallow, Striated Pardalote and Spinifexbird.
- Species group 3 (20 species) birds are mainly found in mulga-dominated quadrats, and includes mulga and other tree specialists such as Australian Magpie, Little Corella, Cockatiel, Mulga Parrot, Australian Ringneck, Southern Boobook, Whistling Kite, Southern Whiteface, Grey-crowned Babbler, Varied Sittella and Western Gerygone.
- Species group 4 (34 species) contains ubiquitous birds found in all habitats sampled by the quadrats.

Quadrat group 2 (mainly sandstone, but including C5) is typified by the absence of birds associated with mulga and dunes.

Table 5.1 Phylogenetic list of bird species recorded in study area, 1995 – 1999; scientific and common names follow Christidis and Boles (1994).

Scientific name	Common name
<i>Dromaius novaehollandiae</i> (Latham, 1790)	Emu
<i>Cygnus atratus</i> (Latham, 1790)	Black Swan
<i>Tadorna tadornoides</i> (Jardine & Selby, 1828)	Australian Shelduck
<i>Chenonetta jubata</i> (Latham, 1801)	Australian Wood Duck
<i>Anas superciliosa</i> Gmelin, 1789	Pacific Black Duck
<i>Anas gracilis</i> Buller, 1869	Grey Teal
<i>Malacorhynchus membranaceus</i> (Latham, 1801)	Pink-eared Duck
<i>Aythya australis</i> (Eyton, 1838)	Hardhead
<i>Poliiocephalus poliocephalus</i> (Jardine & Selby, 1827)	Hoary-headed Grebe
<i>Anhinga melanogaster</i> Pennant, 1769	Darter
<i>Phalacrocorax melanoleucos</i> (Vieillot, 1817)	Little Pied Cormorant
<i>Egretta novaehollandiae</i> (Latham, 1790)	White-faced Heron
<i>Ardea pacifica</i> Latham, 1801	White-necked Heron
<i>Ardea alba</i> Linnaeus, 1758	Great Egret
<i>Elanus axillaris</i> (Latham, 1801)	Black-shouldered Kite
<i>Hamirostra melanostemon</i> (Gould, 1841)	Black-breasted Buzzard
<i>Milvus migrans</i> (Boddaert, 1783)	Black Kite
<i>Haliastur sphenurus</i> (Vieillot, 1818)	Whistling Kite
<i>Circus assimilis</i> Jardine & Selby, 1828	Spotted Harrier
<i>Accipiter fasciatus</i> (Vigors & Horsfield, 1827)	Brown Goshawk
<i>Accipiter cirrocephalus</i> (Vieillot, 1817)	Collared Sparrowhawk
<i>Aquila audax</i> (Latham, 1801)	Wedge-tailed Eagle
<i>Hieraaetus morphnoides</i> (Gould, 1841)	Little Eagle
<i>Falco berigora</i> Vigors & Horsfield, 1827	Brown Falcon
<i>Falco longipennis</i> Swainson, 1837	Australian Hobby
<i>Falco cenchroides</i> Vigors & Horsfield, 1827	Nankeen Kestrel
<i>Fulica atra</i> Linnaeus, 1758	Eurasian Coot
<i>Ardeotis australis</i> (Gray, 1829)	Australian Bustard
<i>Turnix velox</i> (Gould, 1841)	Little Button-quail
<i>Tringa glareola</i> Linnaeus, 1758	Wood Sandpiper
<i>Actitis hypoleucos</i> (Linnaeus, 1758)	Common Sandpiper
<i>Burhinus grallarius</i> (Latham, 1801)	Bush Stone-curlew
<i>Himantopus himantopus</i> (Linnaeus, 1758)	Black-winged Stilt
<i>Recurvirostra novaehollandiae</i> Vieillot, 1816	Red-necked Avocet
<i>Charadrius ruficapillus</i> Temminck, 1822	Red-capped Plover
<i>Elsayornis melanops</i> (Vieillot, 1818)	Black-fronted Dotterel
<i>Stiltia isabella</i> (Vieillot, 1816)	Australian Pratincole
<i>Phaps chalcoptera</i> (Latham, 1790)	Common Bronzewing
<i>Ocyphaps lophotes</i> (Temminck, 1822)	Crested Pigeon
<i>Geophaps plumifera</i> Gould, 1842	Spinifex Pigeon
<i>Geopelia cuneata</i> (Latham, 1801)	Diamond Dove
<i>Cacatua roseicapilla</i> Vieillot, 1817	Galah
<i>Cacatua sanguinea</i> Gould, 1843	Little Corella
<i>Nymphicus hollandicus</i> (Kerr, 1792)	Cockatiel
<i>Barnardius zonarius</i> (Shaw, 1805)	Australian Ringneck
<i>Psephotus varius</i> Clark, 1910	Mulga Parrot
<i>Melopsittacus undulatus</i> (Shaw, 1805)	Budgerigar
<i>Cuculus pallidus</i> (Latham, 1801)	Pallid Cuckoo
<i>Chrysococcyx basalis</i> (Horsfield, 1821)	Horsfield's Bronze-Cuckoo
<i>Ninox novaeseelandiae</i> (Gmelin, 1788)	Southern Boobook
<i>Podargus strigoides</i> (Latham, 1801)	Tawny Frogmouth
<i>Eurostopodus argus</i> Hartert, 1892	Spotted Nightjar
<i>Aegotheles cristatus</i> (Shaw, 1790)	Australian Owllet-nightjar
<i>Todiramphus pyrrhopygia</i> (Gould, 1841)	Red-backed Kingfisher
<i>Merops ornatus</i> Latham, 1801	Rainbow Bee-eater
<i>Malurus lamberti</i> Vigors & Horsfield, 1827	Variiegated Fairy-wren
<i>Malurus leucopterus</i> Dumont, 1824	White-winged Fairy-wren
<i>Stipiturus ruficeps</i> Campbell, 1899	Rufous-crowned Emu-wren
<i>Amytornis striatus</i> (Gould, 1840)	Striated Grasswren
<i>Pardalotus striatus</i> (Gmelin, 1789)	Striated Pardalote
<i>Pyrrholaemus brunneus</i> Gould, 1841	Redthroat

Scientific name	Common name
<i>Smicronis brevirostris</i> (Gould, 1838)	Weebill
<i>Gerygone fusca</i> (Gould, 1838)	Western Gerygone
<i>Acanthiza apicalis</i> Gould, 1847	Inland Thornbill
<i>Acanthiza uropygialis</i> Gould, 1838	Chestnut-rumped Thornbill
<i>Acanthiza robustirostris</i> Milligan, 1903	Slaty-backed Thornbill
<i>Acanthiza chrysorrhoa</i> (Quoy & Gaimard, 1830)	Yellow-rumped Thornbill
<i>Aphelocephala leucopsis</i> (Gould, 1841)	Southern Whiteface
<i>Aphelocephala nigricincta</i> (North, 1895)	Banded Whiteface
<i>Acanthagenys rufogularis</i> Gould, 1857	Spiny-cheeked Honeyeater
<i>Manorina flavigula</i> (Gould, 1840)	Yellow-throated Miner
<i>Lichenostomus virescens</i> (Vieillot, 1817)	Singing Honeyeater
<i>Lichenostomus keartlandi</i> (North, 1895)	Grey-headed Honeyeater
<i>Lichenostomus penicillatus</i> (Gould, 1837)	White-plumed Honeyeater
<i>Lichmera indistincta</i> (Vigors & Horsfield, 1827)	Brown Honeyeater
<i>Phylidonyris albifrons</i> (Gould, 1841)	White-fronted Honeyeater
<i>Certhionyx niger</i> (Gould, 1838)	Black Honeyeater
<i>Certhionyx variegatus</i> Lesson, 1830	Pied Honeyeater
<i>Epthianura tricolor</i> Gould, 1841	Crimson Chat
<i>Epthianura aurifrons</i> Gould, 1838	Orange Chat
<i>Microeca fascinans</i> (Latham, 1801)	Jacky Winter
<i>Petroica goodenovii</i> (Vigors & Horsfield, 1827)	Red-capped Robin
<i>Melanodryas cucullata</i> (Latham, 1801)	Hooded Robin
<i>Pomatostomus temporalis</i> (Vigors & Horsfield, 1827)	Grey-crowned Babbler
<i>Pomatostomus superciliosus</i> (Vigors & Horsfield, 1827)	White-browed Babbler
<i>Cinclosoma cinnamomeum</i> Gould, 1846	Cinnamon Quail-thrush
<i>Daphoenositta chrysoptera</i> (Latham, 1801)	Varied Sittella
<i>Oreoica gutturalis</i> (Vigors & Horsfield, 1827)	Crested Bellbird
<i>Pachycephala rufiventris</i> (Latham, 1801)	Rufous Whistler
<i>Colluricincla harmonica</i> (Latham, 1801)	Grey Shrike-thrush
<i>Grallina cyanoleuca</i> (Latham, 1801)	Magpie-lark
<i>Rhipidura fuliginosa</i> (Sparrman, 1787)	Grey Fantail
<i>Rhipidura leucophrys</i> (Latham, 1801)	Willie Wagtail
<i>Coracina novaehollandiae</i> (Gmelin, 1789)	Black-faced Cuckoo-shrike
<i>Coracina maxima</i> (Rüppell, 1839)	Ground Cuckoo-shrike
<i>Lalage sueurii</i> (Vieillot, 1818)	White-winged Triller
<i>Artamus personatus</i> (Gould, 1841)	Masked Woodswallow
<i>Artamus cinereus</i> Vieillot, 1817	Black-faced Woodswallow
<i>Artamus minor</i> Vieillot, 1817	Little Woodswallow
<i>Cracticus torquatus</i> (Latham, 1801)	Grey Butcherbird
<i>Cracticus nigrogularis</i> (Gould, 1837)	Pied Butcherbird
<i>Gymnorhina tibicen</i> (Latham, 1801)	Australian Magpie
<i>Corvus bennetti</i> North, 1901	Little Crow
<i>Corvus orru</i> Bonaparte, 1851	Torresian Crow
<i>Chlamydera guttata</i> Gould, 1862	Western Bowerbird
<i>Mirafra javanica</i> Horsfield, 1821	Singing Bushlark
<i>Anthus novaeseelandiae</i> (Gmelin, 1789)	Richard's Pipit
<i>Taeniopygia guttata</i> (Vieillot, 1817)	Zebra Finch
<i>Emblema pictum</i> Gould, 1842	Painted Finch
<i>Dicaeum hirundinaceum</i> (Shaw, 1792)	Mistletoebird
<i>Cheramoeca leucosternus</i> (Gould, 1841)	White-backed Swallow
<i>Hirundo nigricans</i> Vieillot, 1817	Tree Martin
<i>Hirundo ariel</i> (Gould, 1843)	Fairy Martin
<i>Eremiornis carteri</i> North, 1900	Spinifexbird
<i>Cincloramphus mathewsi</i> Iredale, 1911	Rufous Songlark
<i>Cincloramphus cruralis</i> (Vigors & Horsfield, 1827)	Brown Songlark

Table 5.2 Bird species recorded on only one quadrat (does not include waterbirds recorded at S1).

Scientific name	Common name
<i>Elanus axillaris</i> (Latham, 1801)	Black-shouldered Kite
<i>Burhinus grallarius</i> (Latham, 1801)	Bush Stone-curlew
<i>Malurus lamberti</i> Vigors & Horsfield, 1827	Variigated Fairy-wren
<i>Amytomis striatus</i> (Gould, 1840)	Striated Grasswren
<i>Lichenostomus penicillatus</i> (Gould, 1837)	White-plumed Honeyeater
<i>Epthianura tricolor</i> Gould, 1841	Crimson Chat
<i>Microeca fascians</i> (Latham, 1801)	Jacky Winter
<i>Mirafra javanica</i> Horsfield, 1821	Singing Bushlark
<i>Hirundo ariel</i> (Gould, 1843)	Fairy Martin
<i>Cincloramphus mathewsi</i> Iredale, 1911	Rufous Songlark
<i>Cincloramphus cruralis</i> (Vigors & Horsfield, 1827)	Brown Songlark

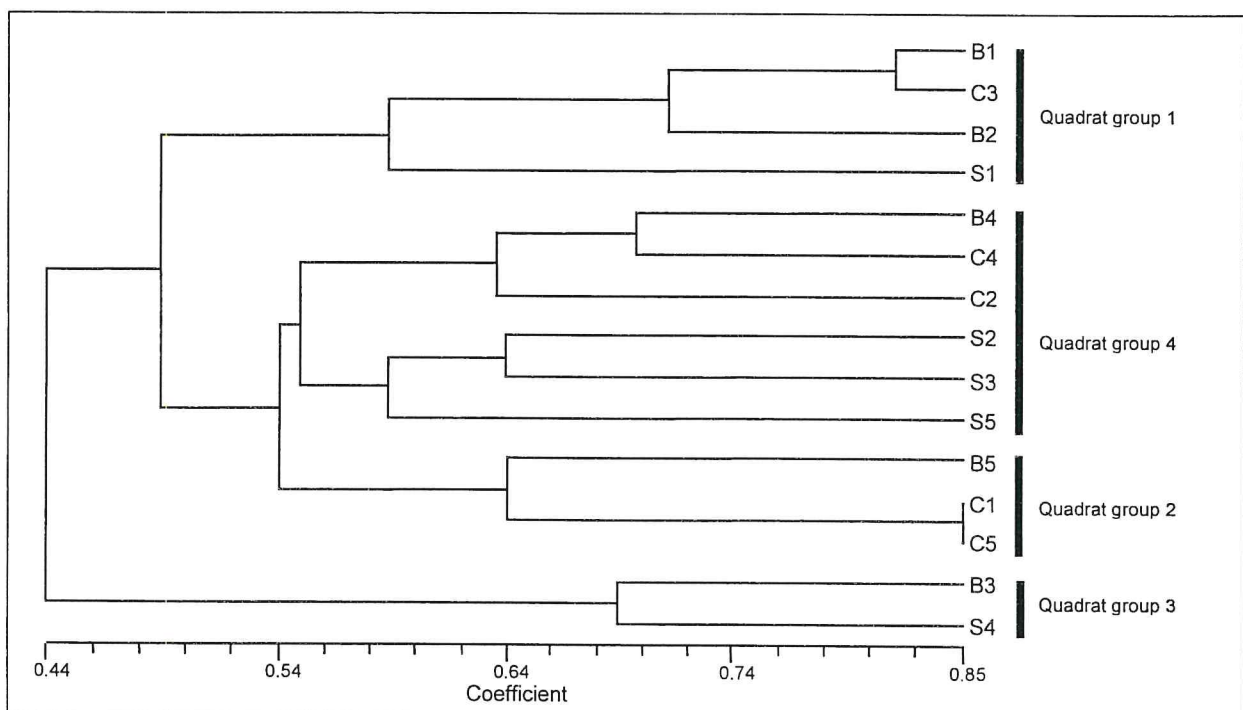


Figure 5.1 Dendrogram of quadrat classification based on the presence/absence of 74 bird species recorded at fifteen sites. (The clustering procedure employed the Czekanowski association measure and the flexible UPGMA agglomerative strategy ($\beta = -0.1$). Association between quadrats depicted in dendrogram is not very strong as indicated by a cophenetic correlation of $r = 0.67$. Values less than 0.7 are indicative of 'poor fit' (Rohlf 2000).

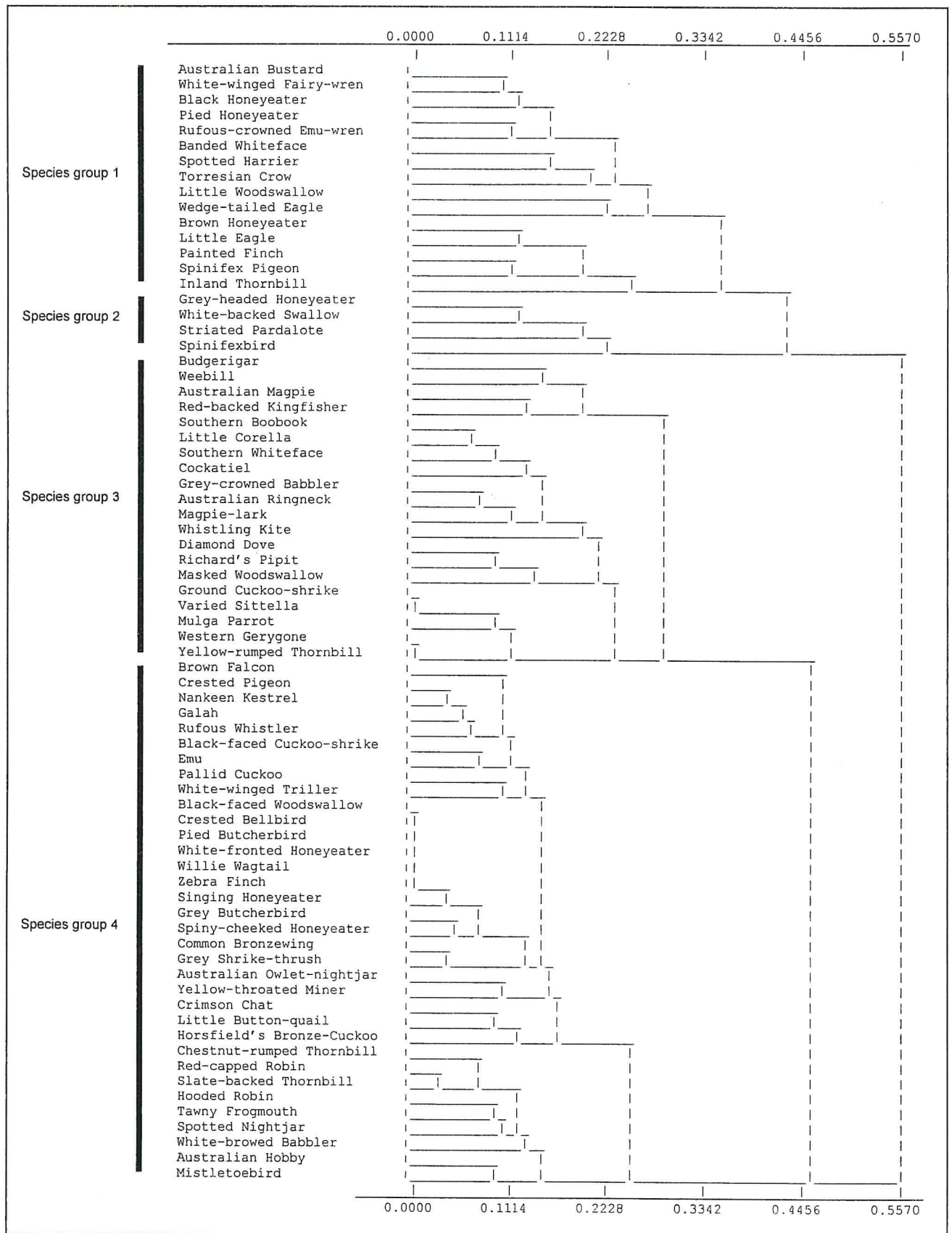


Figure 5.2. Dendrogram of species classification. See Table 5.1 for scientific names. The clustering procedure employed a two-way association measure and the flexible UPGMA agglomerative strategy ($\beta = -0.1$) (Belbin 1991).

Table 5.3 Two-way table of bird species recorded at quadrats in the south-western Little Sandy Desert study area (waterbirds and singletons excluded). See Table 5.1 for scientific names.

Species	Bird species	Quadrat Groups														
		Group 1				Group 2			Group 3		Group 4					
Groups		B1	C3	B2	S1	B5	C1	C5	B3	S4	B4	C4	C2	S2	S3	S5
Group 1	Australian Bustard			*							*	*	*	*	*	*
	White-winged Fairy-wren				*			*			*	*	*	*	*	*
	Black Honeyeater						*	*	*		*	*	*	*	*	*
	Pied Honeyeater					*	*				*	*	*	*	*	*
	Rufous-crowned Emu-wren					*		*		*	*	*	*	*	*	*
	Banded Whiteface										*	*	*	*	*	*
	Spotted Harrier		*								*	*	*	*	*	*
	Torresian Crow											*	*	*	*	*
	Little Woodswallow					*	*					*	*	*	*	*
	Wedge-tailed Eagle					*					*	*	*	*	*	*
	Brown Honeyeater											*	*	*	*	*
	Little Eagle					*	*					*	*	*	*	*
	Painted Finch					*	*					*	*	*	*	*
	Spinifex Pigeon					*	*					*	*	*	*	*
Inland Thornbill					*	*	*				*	*	*	*	*	
Group 2	Grey-headed Honeyeater								*	*	*	*	*	*	*	*
	White-backed Swallow								*	*	*	*	*	*	*	*
	Striated Pardalote				*				*	*	*	*	*	*	*	*
	Spinifexbird								*	*	*	*	*	*	*	*
Group 3	Budgerigar	*	*						*	*	*	*	*	*	*	*
	Weebill	*							*	*	*	*	*	*	*	*
	Australian Magpie	*							*	*	*	*	*	*	*	*
	Red-backed Kingfisher	*	*						*	*	*	*	*	*	*	*
	Southern Boobook	*	*		*				*	*	*	*	*	*	*	*
	Little Crow	*	*	*	*				*	*	*	*	*	*	*	*
	Southern Whiteface	*	*	*	*				*	*	*	*	*	*	*	*
	Cockatiel	*	*		*				*	*	*	*	*	*	*	*
	Grey-crowned Babbler	*	*	*	*				*	*	*	*	*	*	*	*
	Australian Ringneck	*	*	*	*				*	*	*	*	*	*	*	*
	Magpie-lark	*	*	*	*				*	*	*	*	*	*	*	*
	Whistling Kite	*	*	*	*				*	*	*	*	*	*	*	*
	Diamond Dove	*	*	*	*				*	*	*	*	*	*	*	*
	Richard's Pipit	*	*	*	*				*	*	*	*	*	*	*	*
	Masked Woodswallow	*	*	*	*				*	*	*	*	*	*	*	*
	Ground Cuckoo-shrike	*	*	*	*				*	*	*	*	*	*	*	*
	Varied Sittella	*	*	*	*				*	*	*	*	*	*	*	*
	Mulga Parrot	*	*	*	*				*	*	*	*	*	*	*	*
Western Gerygone	*	*	*	*				*	*	*	*	*	*	*	*	
Yellow-rumped Thornbill	*	*	*	*				*	*	*	*	*	*	*	*	
Group 4	Brown Falcon	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Crested Pigeon	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Nankeen Kestrel	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Galah	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Rufous Whistler	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Black-faced Cuckoo-shrike	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Emu	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Pallid Cuckoo	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	White-winged Triller	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Black-faced Woodswallow	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Crested Bellbird	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Pied Butcherbird	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	White-fronted Honeyeater	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Willie Wagtail	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Zebra Finch	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Singing Honeyeater	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Grey Butcherbird	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Spiny-cheeked Honeyeater	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Common Bronzewing	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Grey Shrike-thrush	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Australian Owlet-nightjar	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Yellow-throated Miner	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Crimson Chat	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Little Button-quail	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Horsfield's Bronze-Cuckoo	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Chestnut-rumped Thornbill	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Red-capped Robin	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Slaty-backed Thornbill	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Hooded Robin	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Tawny Frogmouth	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Spotted Nightjar	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
White-browed Babbler	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Australian Hobby	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Mistletoebird	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	

BREEDING SPECIES

A total of 42 species (141 records) were recorded breeding in the study area (Table 5.3). Nineteen species were recorded breeding in autumn after reasonable summer rains, 34 in winter/spring after winter rains and 12 in both. Autumn refers to Trip 5 while winter/spring refers to Trips 1, 2, 3, 4, 6 and 7; thus effort was much greater for winter and spring than for autumn. An addled egg of a Red-necked Avocet was found at Yanneri Lake on 10 September 1999, however, a breeding date can not be allocated for it and it is not included in Table 5.3.

Table 5.4 Birds recorded breeding in the south-western Little Sandy Desert study area, with season and number of breeding records. See Table 5.1 for scientific names.

Species	Autumn	Winter/Spring	Total
Emu	1		1
Black Swan	1		1
Grey Teal		1	1
Wedge-tailed Eagle		1	1
Brown Falcon		1	1
Australian Hobby		3	3
Nankeen Kestrel		2	2
Little Button-quail	2	4	6
Common Bronzewing	1	1	2
Galah		2	2
Budgerigar	1		1
Pallid Cuckoo		1	1
Horsfield's Bronze-Cuckoo		2	2
Tawny Frogmouth		2	2
Australian Owlet-nightjar		1	1
White-winged Fairy-wren	2	1	3
Chestnut-rumped Thornbill	2	5	7
Southern Whiteface		1	1
Banded Whiteface		8	8
Spiny-cheeked Honeyeater	4	9	13
Yellow-throated Miner		3	3
Singing Honeyeater	2		2
Grey-headed Honeyeater		1	1
White-fronted Honeyeater	7	16	23
Black Honeyeater	1		1
Red-capped Robin	2	3	5
Hooded Robin	2		2
Grey-crowned Babbler		2	2
White-browed Babbler	1	2	3
Crested Bellbird		4	4
Rufous Whistler	1	1	2
Grey Shrike-thrush		1	1
Magpie-lark		1	1
Black-faced Cuckoo-shrike		1	1
Ground Cuckoo-shrike	1		1
Black-faced Woodswallow		1	1
Little Woodswallow		1	1
Pied Butcherbird	1	2	3
Richard's Pipit	1	1	2
Zebra Finch	3	18	21
White-backed Swallow		1	1
	19 species (36 records)	34 species (104 records)	41 species (140 records)

DISCUSSION

QUADRAT DATA

Birds are mobile and less bound to particular habitat types than some other types of organisms. Additionally, being in an arid, single natural region, the south-western Little Sandy Desert study area had comparatively little variation in landforms and vegetation between quadrats and relatively few species of bird were recorded on quadrats. Thus, the weak cophenetic correlation between quadrats after species classification was not unexpected. There were limited differences between the avifaunas of quadrat groups.

We would have expected a clearer grouping of mulga-dominated habitats; however, even with this habitat the grouping was not as clear as might be expected. Mulga (*Acacia aneura*) low woodland was present at S3, C3, C5, B1 and B2 with some present also at C1; however, only B1, B2 and C3 (and the samphire-dominated S1) grouped clearly with mulga birds. The absence of mulga or tree birds such as parrots, Grey-crowned Babbler and the Western Gerygone from C5 was possibly due to the mulga at this quadrat being very dense, preventing these species flying below the canopy. Also there was a dense ground cover of *Triodia*, adding spinifex birds to the quadrat's list of species. The quadrats in Group 1 had more open mulga and an open ground cover, mainly of soft tussock grasses. Quadrat S3 was only a small area of mulga (it also included a creek line with spinifex - hence the record of the Spinifexbird), whereas B1, B2 and C3 were located in extensive mulga woodland areas.

The grouping of sand dune habitats (B3 and S4) was due to the presence of the White-backed Swallow, Grey-headed Honeyeater and Striated Pardalote. The first of these is attracted to dune slopes for breeding, while the latter two were attracted to the *Corymbia chippendalei* trees on the crest of the dunes.

BREEDING BIRDS

The 41 breeding species recorded would all be expected to breed in the study area. The different number of species and records between autumn and winter/spring is due largely to the much lower sampling effort during autumn however, in this area, some birds would breed only in spring, (e.g. raptors, cockatoos and most parrots, but not the Budgerigar).

TOTAL SPECIES LIST

The bird species recorded in the study area are typical of arid Western Australia, although the 20 species of waterbird would only be recorded here in suitable habitat after heavy rainfall. Most were recorded along Savory Creek, an intermittent major drainage of the eastern Pilbara, which flows east into Lake Disappointment. The 116 bird species (61 passerines, 55 non-

passerines) recorded would be close to the maximum expected for this area, particularly with the amount of effort possible. With additional effort up to a further 22 species of non-waterbirds might be expected. These are listed in Table 5.4.

Many species of waterbird and waders may occur briefly after heavy rainfall, particularly along Savory Creek, (eg Australian Pelican (*Pelecanus conspicillatus*), Ibises, spoonbills, cormorants, Black-tailed Native-hen (*Gallinula ventralis*), lapwings, dotterels and sandpipers, and the Gull-billed (*Sterna nilotica*) and Whiskered (*Chlidonias hybridus*) Terns).

Table 5.4 Birds species expected to occur in the Little Sandy Desert but not recorded during this survey.

Species	Scientific name	Comments
Square-tailed Kite	<i>Lophoictinia isura</i>	
Black Kite	<i>Milvus migrans</i>	
Grey Falcon	<i>Falco hypoleucos</i>	A rare species in this area
Peregrine Falcon	<i>Falco peregrinus</i>	May not be present because of the absence of cliffs or large trees
Peaceful Dove	<i>Geopelia striata</i>	
Princess Parrot	<i>Polytelis alexandrae</i>	May not occur in the Desert due to limited Desert Oak (<i>Allocasuarina decaisneana</i>) woodlands
Bourke's Parrot	<i>Neopsephotus bourkii</i>	At its northern limit
Black-eared Cuckoo	<i>Chrysococcyx osculans</i>	
Barking Owl	<i>Ninox connivens</i>	
Barn Owl	<i>Tyto alba</i>	
Fork-tailed Swift	<i>Apus pacificus</i>	
Blue-winged Kookaburra	<i>Dacelo leachii</i>	Only likely along Savory Creek
Sacred Kingfisher	<i>Todiramphus sanctus</i>	
Black-tailed Treecreeper	<i>Climacteris melanura</i>	Only likely along Savory Creek
Chiming Wedgebill	<i>Psophodes occidentalis</i>	
Rufous Fieldwren	<i>Calamanthus campestris</i>	
Slender-billed Thornbill	<i>Acanthiza iredalei</i>	
Grey-fronted Honeyeater	<i>Lichenostomus plumulus</i>	
Grey Honeyeater	<i>Conopophila whitei</i>	
Red-Browed Pardalote	<i>Pardalotus rubricatus</i>	
Splendid Fairy-wren	<i>Malurus splendens</i>	
Welcome Swallow	<i>Cheramoeca leucosternus</i>	

Several species recorded were near the periphery of their ranges (Blakers *et al.* 1984, Johnstone and Storr 1998). Species recorded near their northern limit were the Mulga Parrot, Ground Cuckoo-Shrike, Jack Winter (another race in the Kimberley), Cinnamon Quail-thrush, White-browed Babbler, Redthroat, Yellow-rumped Thornbill and Southern Whiteface. Species near the southern limit of their range were the Singing Bushlark (in Western Australia), Spinifexbird, Rufous-crowned Emu-wren and Grey-headed Honeyeater (extends further south in central Australia).

The Action Plan for Australian birds (Garnett and Crowley 2000) lists two of the species recorded in the study area as 'near threatened'; these are Australian Bustard and Bush Stone-curlew. No threatened species were recorded.

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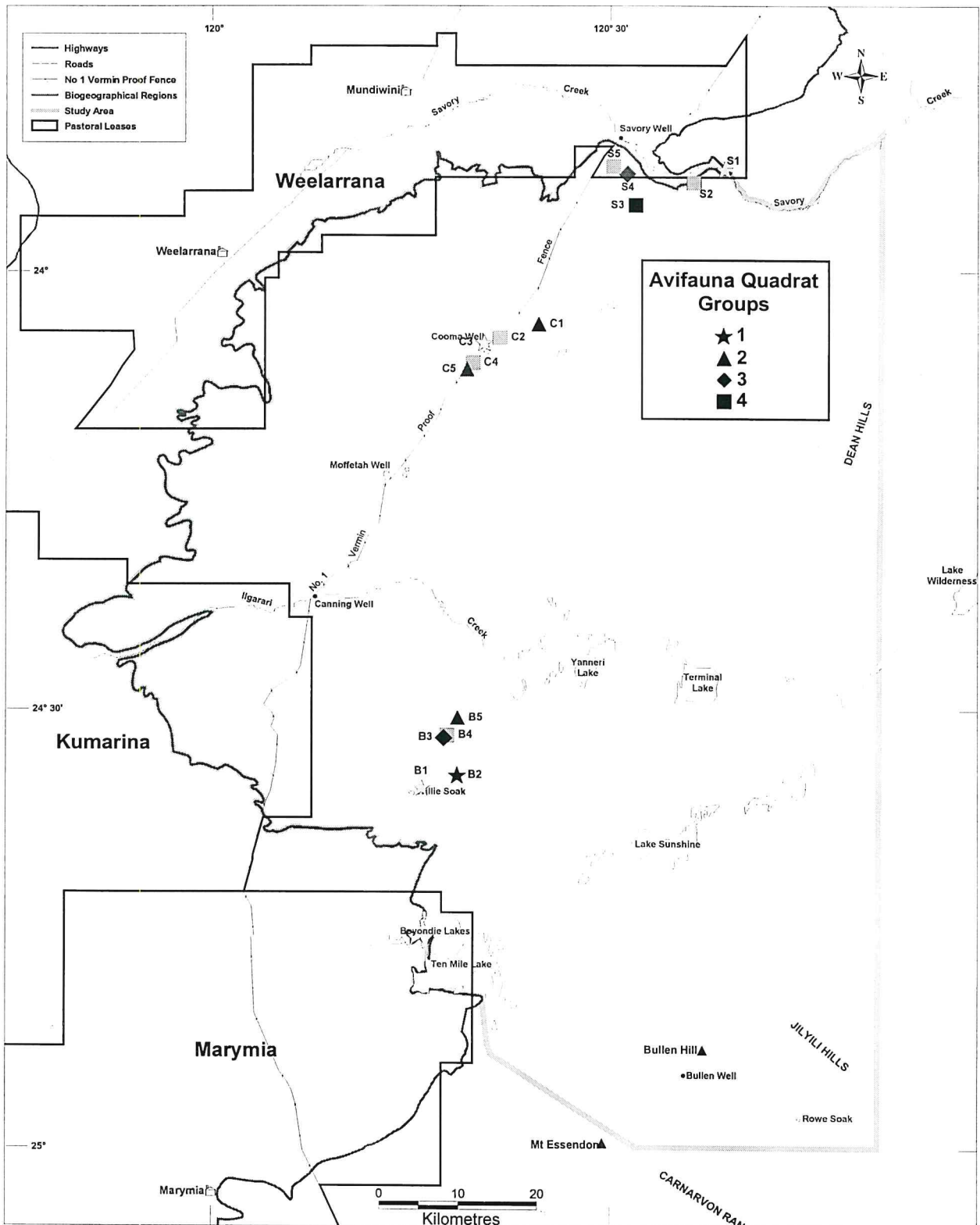
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APPENDIX 5.1

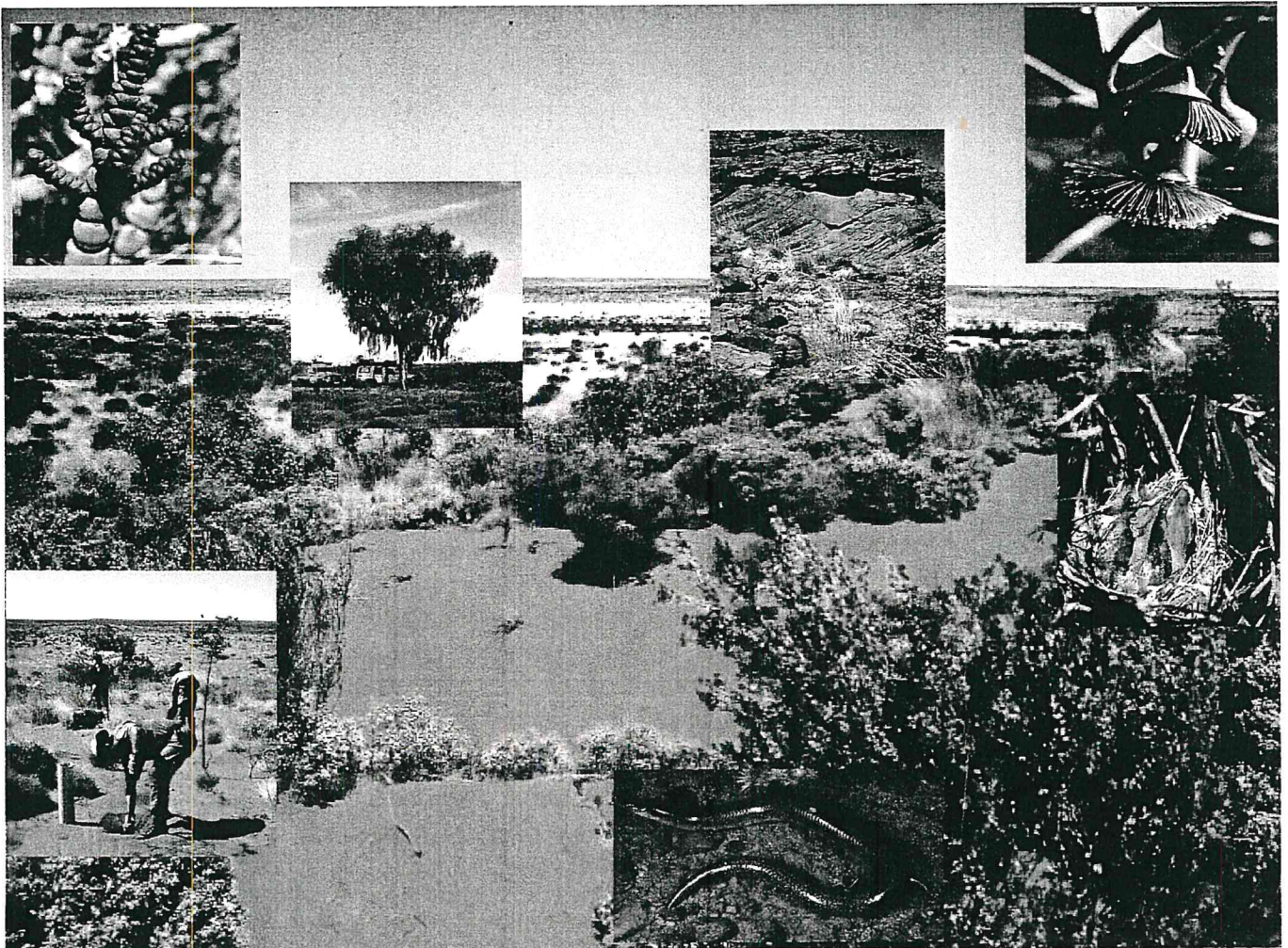
Map of the south-western Little Sandy Desert study area showing the distribution of avifauna quadrat groups.



Biological survey of the south-western Little Sandy Desert

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