An annotated list of the birds of Kachana Station in the east Kimberley, Western Australia

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Abstract. An annotated list of the birds of Kachana Station was compiled to serve as background information for future research on the effects of pastoral management on the station’s avifauna. A total of 126 species have been recorded. Woodlands of the valley floor contain the most species rich bird assemblage. Within this area species distribution and abundance is patchy, partially depending on the flowering of bird-pollinated species and previous disturbance. Upland areas with a grass layer dominated by Triodia were very species poor and aquatic species were generally uncommon. Little is known of breeding in the area thus far, however, the first published observation of a Pallid Cuckoo Cacomantis pallidus parasitising a White-gaped Honeyeater Lichenostomus unicolor is presented.

Introduction

Kachana station is located in the east Kimberley, approximately 150 km south-west of Kununurra, Western Australia. It remains an active cattle station, however, the current landholders have adopted an alternative management strategy where cattle are used as a tool to increase the productivity and carrying capacity of the landscape. The strategy uses a more labour intensive system of rotational cell grazing where the ground is impacted then rested. Compared to management based on loosely controlled grazing and burning, this system allows for a build up of biomass and a higher carrying capacity.

The response of the avifauna to pastoral management is of great concern given the decline in some riparian and savanna species in northern Australia (Rowley 1993; Franklin 1999). Grazing and fire regime can alter species composition and structure of the vegetation (Woinarski 1990; Dostie et al. 2001; Petheram and Kok 2003) leading to changes in the abundance and distribution of bird species in the riparian habitats dissecting the savanna (Smith and Johnstone 1977; Rowley 1993) and the savanna itself (Franklin 1999). Given the detrimental effects that pastoralism may have, it is important to investigate techniques that may reverse the decline in affected species.

Thus far, the effects of this alternative method of management on the biota of the station are poorly understood. The aim of this study was to compile present knowledge of Kachana’s avifauna to provide a basis for future comparison and background for researchers studying the effects of management on bird assemblages. Furthermore, there are few published studies on the avifauna of the semi-arid Kimberley (though see Johnstone et al. 1977, Storr 1980 and Coote et al. 2001) and as such a detailed study of the birds of Kachana has the potential to provide a notable contribution to what is known of the region’s avifauna.

Methods and Study Site

Kachana Station consists of a valley running North-South with the plateau of the Durack Range on its western border. The main valley forms part of the Bedford stock route so is referred to herein as the ‘Stock-route Valley’. The area covered in this survey is an approximately 20 km stretch of Stock-route Valley. Water from Stock-route Valley drains through gorges dissecting the Durack Range into the Chamberlain River. The only cleared land on the property is a disused airstrip and the current airstrips that service the homestead in the north of the station and Cleanskin Camp in the south. A degraded creekline near the homestead has been revegetated since 1992 and now contains dense rank grasses. The valley is dominated by eucalypt woodland over grassland, predominantly Eucalyptus miniata, E. con-
fluenus and Corymbia grandifolia. Stands of Bauhinia cunninghamii, Cochlospermum fraseri and Grevillea spp are patchily distributed on the valley slopes. Lower slopes are more densely vegetated with densest vegetation in the creeklines which are lined by Pandanus spp, Melaleuca argentea and Eucalyptus spp. A small patch of monsoon forest remains on peaty soil near the homestead. Upper areas have a sparse overstorey of Eucalypts and Ficus platypoda over Triodia spp. Creeklines hold water all year in the deeper pools and originate in gorges that tend to be poorly vegetated except for occasional trees and Triodia. The Chamberlain River contains water all years in its deeper pools.

Observations by BH are over the period from the dry season of 1999 until June 2006. While observations are from the entire station, effort was focused on the area immediately surrounding the homestead. The neighbouring Chamberlain River was visited on an approximately monthly basis during the dry season and on occasion during the wet. Details of the avifauna on the Chamberlain River given in this paper are generally focused on waterbirds. Surveys by RP and colleagues were undertaken in May 2004 and mid August 2005. During May 2004, observations were made over the entire length of the valley while in August 2005 they were restricted to the area around Cleanskin camp and the southern airstrip. Observations made by Kevin Coate during his visit from 28-30 June 1999 have been included.

Annotated Species List

PHASIANIDAE

Brown Quail Coturnix unicolor
Common in very common in areas of grassy woodland, particularly along creeklines. Scarce in areas of spinifex. Breeding in January-February, mainly on the homestead airstrip.

ANSERANATIDAE

Magpie Goose Anseranas semipalmata
Common along the Chamberlain River during the dry season. Arriving in May, numbers peak in July-August and leave during September-October. One record of four from grassland near the homestead in July 2001.

ANATIDAE

Plumed Whistling-Duck Dendrocygna eytoni
Common from April to December at the Chamberlain River with peak numbers in August.

Black Swan Cygnus atratus
Rare visitor, one record of four from the Chamberlain River in July 2003.

COLUMBIDAE

Crested Pigeon Ocyphaps lophotes
Common along the Chamberlain River. Two records from open woodland near the homestead.

Spinifex Pigeon Geophaps plumifera
Common on spinifex ridges.

White-quilled Rock-Pigeon Petrophassa albipennis
Common in gorges and on ranges near water.

Diamond Dove Geopelia cuneata
Generally uncommon, mainly single birds along creeklines and at the southern airstrip. Moderately common in June 1999.

Peaceful Dove Geopelia striata
Very common in low-lying areas of woodland and spinifex close to creeks.

Bar-shouldered Dove Geopelia humeralis
Common along creeklines and in the monsoon forest.

PODARGIDAE

Tawny Frogmouth Podargus strigoides
Uncommon. Recorded in all months, usually in pairs. Three adults observed in monsoon forest in May 2004.

EUROSTOPIDAE

Spotted Nightjar Eurostopodus argus
Common in lightly wooded areas. One individual was flushed from a spinifex hilltop.

AEOTHIDAE

Australian Owlet-nightjar Aegotheles cristatus
Recorded over Cleanskin Camp in May 2004 and from the southern airstrip in February 2006.

ANHINGIDAE

Australian Darter Anhinga novaehollandiae
Uncommon, recorded all year at the Chamberlain River. Occasionally forage in larger pools in Stock-route Valley.

PHALACROCORACIDAE

Little Pied Cormorant Microcarbo melanoleucus
Common at the Chamberlain River; moderately common in Stock-route Valley where they forage in larger pools and gorges. Less frequent during the wet season.

Great Cormorant Phalacrocorax carbo
Uncommon on the Chamberlain River.

Little Black Cormorant Phalacrocorax sulcirostris
Common on the Chamberlain River; uncommon in Stock-route Valley where they forage in only the largest pools. Absent during the wet season.

PELECANIDAE

Australian Pelican Pelecanus conspicillatus
Uncommon dry-season visitor to the Chamberlain River and over Stock-route Valley. Numbers peak in June-July with records ceasing by September.

CICONIIDAE

Black-necked Stork Ephippiorhynchus asiaticus
Moderately common along the Chamberlain River from May to October. One sighting in Stock-route Valley.

ARDEIDAE

Black Bittern Ixobrychus flavicollis
Scarce on the Chamberlain River and in Stock-route Valley.
ley. Records in the valley were during the May 2004 and
August 2005 surveys and were widely distributed. A di-
versity of habitats were occupied being: pandanus lined
creek, tall grasses in the revegetated area and in a stand
of *Ischaemum australe* (Poaceae) adjacent to a rill.

White-necked Heron *Ardea pacifica*
Very common all year at the Chamberlain River, occasion-
ally in Stock-route Valley.

Eastern Great Egret *Ardea modesta*
Uncommon at the Chamberlain River, less frequent in
Stock-route Valley.

White-faced Heron *Egretta novaehollandiae*
Common all year at the Chamberlain River, occasionally
in Stock-route Valley.

Nankeen Night-Heron *Nycticorax caledonicus*
Common along the Chamberlain River and in Stock-
route Valley.

**THRESKIORNITHIDAE**

Australian White Ibis *Threskiornis molucca*
Uncommon, small flocks occasionally sighted grazing in
low grassland in Stock-route Valley.

Straw-necked Ibis *Threskiornis spinicollis*
Uncommon, groups of up to 20 around the homestead
and in the revegetated area from April to July.

**ACCUPTRIDAE**

Black-shouldered Kite *Elanus axillaris*
Moderately common in Stock-route Valley, always over
open grassland.

Square-tailed Kite *Lophoictinia isura*
Uncommon in Stock-route Valley. Attracted to the area
by fires.

White-bellied Sea-Eagle *Haliaeetus leucogaster*
Moderately common from May to November along the
Chamberlain River with occasional individuals wander-
ing into Stock-route Valley.

Whistling Kite *Haliastor sphenurus*
Uncommon resident of Stock-route Valley.

Black Kite *Milvus migrans*
Common, mainly along creeks but also in drier areas.
Very common during and after fires.

Brown Goshawk *Accipiter fasciatus*
Common, primarily along creeklines, also in open wood-
land. Two nesting records (September) in large paper-
barks lining creeks.

Collared Sparrowhawk *Accipiter cirrocephalus*
Common, primarily along creeklines, also in open wood-
land.

Spotted Harrier *Circus assimilis*
Uncommon, recorded from the grassland adjacent to the
Chamberlain River and areas of wooded grassland in
Stock-route Valley.

Wedge-tailed Eagle *Aquila audax*
Scarcce, observed gliding over Stock-route valley and
scavenging on dead cattle. A pair nested in a tree over-
hanging the northern gorge in 2005 with chicks observed
in the nest in August.

**FALCONIDAE**

Brown Falcon *Falco berigora*
Uncommon, in woodland and spinifex adjacent to creeks
in Stock-route Valley.

Peregrine Falcon *Falco peregrinus*
Scarcce, only recorded from open woodland near the
homestead.

**GRUIDAE**

Broga *Grus rubicunda*
Common along Chamberlain River. One group of three
in Stock-route Valley from April to May 2005 in low
grassland adjacent to creeks near the homestead.

**RALLIDAE**

Purple Swamphen *Porphyrio porphyrio*
Common along the Chamberlain River, rare records in
Stock-route Valley in areas of *Pandanus aquaticus* along
pools and creeks.

Eurasian Coot *Fulica atra*
Uncommon along the Chamberlain River, mainly in July.

**OTIDIDAE**

Australian Bustard *Ardeotis australis*
Moderately common in long grass along the Chamberlain

**CHARADRIIDAE**

Masked Lapwing *Vanellus miles*
Common along the Chamberlain River and less fre-
quently at the homestead airstrip.

**SCOLOPACIDAE**

Little Curlew *Numenius minutus*
Moderately common visitor to grassy plains near the
Chamberlain River during the wet season. Occasionally
in the area of grassland immediately to the south of the
homestead airstrip.

Wood Sandpiper *Tringa glareola*
Commonly along the Chamberlain River in the wet sea-
son.

**TURNICIDAE**

Red-chested Button-quail *Turnix pyrrohthorax*
Rare in grassland habitats. A group of four in long tus-
sock grass adjacent to a creekline in May 2005. A pair
was in open grassy woodland near the southern airstrip
and a male in spinifex near Canskin Camp in August
2005.

**CACATUIDAE**

Red-tailed Black-Cockatoo *Calyptorhynchus banksii*
Common in eucalypt woodland in parties of three to four.
Rarely in large flocks up to 130.

Galah *Eolophus roseicapillus*
Rare. Occurs in small flocks that pass through Stockroute Valley.

Little Corella *Cacatua sanguinea*
Common along the Chamberlain River and occasionally at the homestead.

Sulphur-crested Cockatoo *Cacatua galerita*
Common along creeks.

Cockatiel *Nymphicus hollandicus*
Rare, in twos or threes.

**PSITTACIDAE**

Rainbow Lorikeet *Trichoglossus haematodus*
Common in small groups in eucalypt woodland and less frequently in monsoon forest.

Varied Lorikeet *Pseudegna versicolor*
Uncommon in small flocks in woodland. Moderately common in June 1999, when flocks were attracted to flowering *Grevillea pteridisfolia*.

Red-winged Parrot *Aprosmictus erythropterus*
Moderately common to common. Mainly small flocks, occasionally larger flocks (up to 25). More abundant in the dry season when they feed intensively on kapok *Cochlospermum fraseri*.

Princess Parrot *Polytelis alexandrae*
Rare visitor. Three birds in woodland adjacent to a dry creekline in late August 2000. This is an extension of range northwards for this species (see Johnstone and Storr, 1998). The long tail, pink neck and pink fore-neck were noticeable in flight and made them immediately identifiable as Princess Parrots. They perched in a dead tree for a few minutes before leaving. The field guide Simpson and Day (1993) was consulted to confirm the sighting.

Northern Rosella *Platycercus venustus*
Common. Generally in pairs in the more densely wooded areas. Regularly observed consuming the berries of *Flueggea virosa* subsp. *melanthesoides* and the seeds of *Acacia* spp.

Budgerigar *Melopsittacus unicolor*
Nomadic, common in wet years along watercourses in groups of 10 to 20 birds. Occasionally recorded from the southern airstrip and grassy woodland away from water.

**CUCULIDAE**

Pheasant Coucal *Centropus phasianinus*
Common in thick grass of the regenerated area and in denser woodland. Occasionally in monsoon forest. Breeding observed in most years with chicks in the nest in April.

Channel-billed Cuckoo *Scythrops novaehollandiae*
Common visitor during the wet season in gorges and the *Melaleuca argentea* at the mouth of gorges. Arrive in December and leave late February.

Pallid Cuckoo *Cacomantis pallidus*
Uncommon visitor. A few records each year, in eucalypt woodland during the wet season. There was one breeding record where a White-gaped Honeyeaters *Lichenostomus unicolor* was parasitised (March-June).

**STRIGIDAE**

Barking Owl *Ninox connivens*
Uncommon along wooded creeklines.

Southern Boobook *Ninox novaeseelandiae*
Common in woodland.

**TYTONIDAE**

Eastern Barn Owl *Tyto javanica*
One record from open eucalypt woodland in March 2005.

**ALCEDINIDAE**

Azure Kingfisher *Ceyx azureus*
Common around larger pools with tall fringing vegetation. Breeding recorded in January and February.

**HALCYONIDAE**

Blue-winged Kookaburra *Dacelo leachii*
Common in eucalypt woodland. Breeding from September to November.

Red-backed Kingfisher *Todiramphus purpureoguttatus*
One recorded in August 2005 from the *Eucalyptus confluens* woodland near the southern airstrip.

Sacred Kingfisher *Todiramphus sanctus*
Uncommon in eucalypt woodland. Recorded all months.

**MEROPIDAE**

Rainbow Bee-eater *Merops ornatus*
Common winter visitor but absent during the peak of the wet season (January). Abundance is highly variable between years but with no obvious trend in response to rainfall.

**CORACIIDAE**

Dollarbird *Eurystomus orientalis*
Common breeding visitor in woodland during the wet season.

**CLIMACTERIDAE**

Black-tailed Treecreeper *Climacteris melanura*
Uncommon resident in the woodland around the southern airstrip. This area is characterised by patches of bare soil and numerous dead *Eucalyptus confluens*.

**PTILONORHYNCHIDAE**

Great Bowerbird *Ptilonorhynchus nuchalis*
Moderately common in areas of woodland. Attracted to rocky hilltops when the Rock Fig *Ficus platypoda* is fruiting. Bowers are built in patches of low, dense scrub in woodland. Breeds in April.

**MALURIDAE**

Red-backed Fairy-wren *Malurus melanoleucus*
Common in most grassland habitats but avoids areas with spinifex understory. Tend to move towards creeklines at the end of the dry season (August-December).

Variegated Fairy-wren *Malurus lamberti*
Uncommon, parties occasionally recorded from long grass in the regenerated area.

**ACANTHIZIDAE**

Weebill *Sericornis brevirostris*
Uncommon in eucalypt woodland and at the homestead.

**PARDALOTIDAE**

Red-browed Pardalote *Pardalotus rubricatus*
Moderately common along the Chamberlain River and occasionally recorded on major creeklines in Stock-route Valley.

Striped Pardalote *Pardalotus striatus*
Common along the Chamberlain River and in Stock-route Valley. Very common along major creeklines.

**MELIPHAGIDAE**

Singing Honeyeater *Lichenostomus virescens*
Uncommon in woodland between Cleanskin camp and the southern airstrip during August 2005.

White-gaped Honeyeater *Lichenostomus unicolor*
Common in the monsoon forest and along watercourses.

Grey-fronted Honeyeater *Lichenostomus plumulus*
Abundance variable. Occasionally recorded from eucalypt woodland and acacia scrub during June-July. Very common in the area around Cleanskin in August 2005 feeding on flowering *Bauhinia cunninghamii*.

Yellow-tinted Honeyeater *Lichenostomus flavescens*
Uncommon in ones and twos in eucalypt woodland.

Yellow-throated Miner *Manorina flavigula*
Moderately common in August 2005, mainly in woodland near Cleanskin camp and the southern airstrip.

Bar-breasted Honeyeater *Ramsayornis fasciatus*
Uncommon in ones and twos in *Acacia* spp. around the homestead, in monsoon forest and at the mouth of gorges.

Rufous-throated Honeyeater *Conopophila rufogularis*
Common in eucalypt woodland.

Brown Honeyeater *Lichmera indistincta*
Very common throughout woodlands and the monsoon forest.

White-throated Honeyeater *Melithreptus albogularis*
Common to very common in monsoon forest, woodlands and along creeklines.

Blue-faced Honeyeater *Entomyzon cyanotis*
Common along watercourses and in monsoon forests.

Silver-crowned Friarbird *Philemon argenticeps*
Common, mainly in small flocks. Generally in dense woodland or monsoon forest, also patches of *Grevillea pteridifolia* when flowering.

Little Friarbird *Philemon citerogularis*
Common to very common in woodland and in the monsoon forest.

**POMATOSTOMIDAE**

Grey-crowned Babbler *Pomatostomus temporalis*
Common to uncommon and patchily distributed in areas of woodland. Uncommon around the homestead but common in the Cleanskin camp area.

**NEOSITTIDAE**

Varied Sittella *Daphoenositta chrysoptera*
Uncommon, favours the crest of hills in sparse woodland with spinifex understorey.

**CAMPEPHAGIDAE**

Black-faced Cuckoo-shrike *Coracina novaehollandiae*
Common in all types of woodland.

White-bellied Cuckoo-shrike *Coracina papuensis*
Moderately common and generally in more open woodland than the Black-faced Cuckoo-Shrike.

White-winged Triller *Lalage swainsonii*
Periodically common in eucalypt woodland.

**PACHYCEPHALIDAE**

Rufous Whistler *Pachycephala rufiventris*
Common in woodland, and less frequently in the monsoon forest.

Grey Shrike Thrush *Colluricincla harmonica*
Uncommon in woodlands.

**ORIOLIDAE**

Olive-backed Oriole *Oriolus sagittatus*
Uncommon in eucalypt woodland.

**ARTAMIDAE**

White-breasted Woodswallow *Artamus leucorhynchus*
Eight recorded over woodland near Cleanskin camp in May 2004.

Masked Woodswallow *Artamus personatus*
Highly nomadic, moderately common to very common. Favours open woodlands during the dry season. Numbers are highly variable between years. Recorded at the homestead but is generally more common at Cleanskin camp. Usually in small flocks, occasionally larger flocks of over 100 birds.

White-browed Woodswallow *Artamus superciliosus*
Two in August 2005 feeding on *Bauhinia cunninghamii* amongst a flock of Masked Woodswallow.

Black-faced Woodswallow *Artamus cinerius*
Common dry season visitor, usually in pairs or family groups. Occurs mainly in open woodland.

Little Woodswallow *Artamus minor*
Commonly in gorges and adjacent woodland. Usually in pairs or small parties of up to eight. More frequent in the dry season.

Grey Butcherbird *Cracticus torquatus*
Common in gorges and adjacent rocky peaks.

Pied Butcherbird *Cracticus nigrogularis*
Very common on rocky peaks with sparse woodland.

Australian Magpie *Cracticus tibicen*
Occurs through most of Stock-route Valley in low num-

*Amytornis* 1 (2008): 7-14
bers but is absent from areas of forest or dense woodland.

**Rhipiduridae**

Northern Fantail *Rhipidura rufiventris*
Common in woodland and very common along creeklines.

Willie Wagtail *Rhipidura leucophrys*
Very common in woodland areas close to water.

**Corvidae**

Little Crow *Corvus bennetti*
Uncommon. Occurs in considerably lower numbers than Torresian Crow. Attracted to carrion.

Torresian Crow *Corvus orru*
Moderately common throughout Stock-route Valley. Aggregates in large groups when feeding on carcasses.

**Monarchidae**

Leaden Flycatcher *Myiagra rubecula*
Common in woodlands and along creeklines. Breeding begins between August and November with the hatching of chicks generally coinciding with the breaking of the wet season rains.

Restless Flycatcher *Myiagra inquieta*
Uncommon in woodlands.

Magpie-lark *Grallina cyanoleuca*
Moderately common, favouring open woodland near water.

**Petridae**

Jacky Winter *Microeca fascinans*
Scarce. Recorded a few times per year in open woodland near the homestead.

Red-capped Robin * Petroica goodenovii*
Rare non-breeding visitor to areas of open woodland.

**Alaudidae**

Horsfield's Bushlark *Mirafra javanica*
Common on the southern airstrip and in the surrounding areas of open woodland, also on the sparsely vegetated ground left by the disused airstrip.

**Cisticolidae**

Golden-headed Cisticola *Cisticola exilis*
Common in thicker areas of grass, generally close to creeklines. Breeding from March to June.

**Megaluridae**

Tawny Grassbird *Megalurus timorensis*
One in dense *Ischaenum australis* (Poaceae) adjacent to a creekline in May 2004.

Rufous Songlark *Cinclorhampus matraverti*
One in open woodland of mixed overstorey near Clean skin camp in August 2005.

Spinifexbird *Eremornis carteri*
Uncommon in long-unburnt spinifex tussocks on rocky soils.

**Nectariniidae**

Mistletoebird *Dicaeum hirundinaceum*
Generally uncommon, but widespread in areas of woodland. Breeding recorded in December with chicks hatching in late January.

**Estrildidae**

Zebra Finch *Taeniopygia guttata*
Generally uncommon in woodland, but common in drier areas and around the disused airstrip during August 2005.

Double-barred Finch *Taeniopygia bichenovii*
Common in woodland, generally keeping close to creeks. Breeding from August until the end of the dry season. Clutch size three or four.

Long-tailed Finch *Poephila acuticauda*
Common in woodland, occasionally wandering into spinifex areas to feed.

Masked Finch *Poephila personata*
Moderately common in woodland.

Crimson Finch *Neochmia phaeton*
Common along creeklines and occasionally seen in long tussock grass at the fringe of the monsoon forest. Venture away from creeks more frequently at the end of the wet season. Breeding mainly in *Pandanus* sp. from September to December.

Star Finch *Neochmia ruficauda*
Uncommon along Chamberlain River in grassland under open woodland.

Gouldian Finch *Erythrura gouldiae*
Uncommon resident in open eucalypt woodland from January to June 2006. Flocks up to 20 birds, including both black and red-faced colour forms.

Chestnut-breasted Mannikin *Lonchura castanotis*
Common in flocks (up to 70) January to May 2006 in the regenerated area near the homestead.

Pictorella Mannikin *Heteronema pectoralis*
Two records, a flock of 20-30 in June 1999 and one male in May 2006.

**Motacillidae**

Australasian Pipit *Anthus novaeseelandiae*
One on the southern airstrip in August 2005.

Discussion

A total of 126 species (68 Non-passerines, 58 passerines; 22 waterbirds) have been recorded from Kachuna Station. In comparison, previously published surveys from the Kimberley have yielded: 121 species (Edgar Ranges, Johnstone *et al.* 1981), 128 species (Drysdale River, Johnstone *et al.* 1977), 155 species (Gardner and Denison Ranges; Coate *et al.* 1998), 202 species (Kingston Rest, Coate *et al.* 2001) and 219 species (Mitchell Plateau and Admiralty Gulf, Johnstone and Smith 1981). The considerably greater species reported by Coate *et al.* (2001) and Johnstone and Smith (1981) primarily results from the additional suites of species associated with mammal habitats at Kingston Rest and the rainforest, mangal and intertidal habitats at the
The avifauna of Kachana Station is typical of the semi-arid Kimberley. There are numerous Torrussian species with Passeridae and Meliphagidae the most species rich families. Kimberley rainforest species as defined by Johnstone and Burbidge (1991) are absent. The avifauna of the rainforest patch is similar to the east Kimberley patches surveyed by Johnstone and Burbidge (1991) and is comprised of species associated with woodlands and creeklines. A number of species with a primarily Eremaean distribution were evident (eg. Cockatiel, Princess Parrot, Red-capped Robin and Zebra Finch) in drier areas, though generally as vagrants. The sighting of the Princess Parrot represents the most northerly record of this species (Johnstone and Storr 1998; Higgins 1999). Storr (1980) stated they occasionally wander into the southern part of the Fitzroy. This sighting at Kachana Station is well outside their regular distribution and at Kachana Station they can be considered no more than a rare vagrant.

Bird species richness is highest in the woodlands of the valley floor. This area contains the greatest diversity of both habitats and plant species. From existing observations, it appears that species richness and composition is patchy, partially depending on disturbance history and local availability of bird pollinated species. Species such as Singing Bushlark and Zebra Finch are most abundant around disturbed sites such as the airstrip, while the revegetated area attracts species such as Pheasant Coucal and Chestnut-breasted Mannikin. Temporary gulls of nectar, particularly from Eucalyptus spp. Bauhinia cunninghamii and Grevillea pteridifolia, result in temporary and spatially variable abundance of nectarivores such as Masked Woodswallow, Brown Honeyeater, Grey-fronted Honeyeater and Yellow-throated Miner. Eventually it is hoped to establish with a less descriptive approach the habitat variables responsible for changes in bird species composition and how these variables are affected by management.

Species richness was very poor on rocky hilltops with only the Pied Butcherbirds and Varied Sittella preferring this habitat. With a grass layer dominated by *Triodia*, it is mostly avoided by granivorous species. Furthermore, due to the paucity of flowering plants and the structurally simple vegetation, the area is generally unattractive to nectarivores and insectivores. Gorges are of intermediate richness but do have specialist species; White-quilled Rock Pigeon, Little Woodswallow and Channel-billed Cuckoo (summer). Numbers of birds in the gorges are boosted by temporary influxes of honeyeaters following flowering of the trees inhabiting the mouth of gorges.

Few species are restricted entirely to creeklines, but they do form the stronghold for numerous species. Apart from waterbirds, only the Azure Kingfisher, White-gaped Honeyeater and Crimson Finch are restricted to creeks and the adjoining vegetation. Several species, including Bar-shouldered Dove, Lead Flycatcher, Northern Fantail, are most abundant along creeks but also occur in more open woodland. These species are more widely distributed in coastal areas but as described by Woynarski et al. (2000), extend their ranges inland along river systems and creeklines. Woynarski et al. (2000) also noted temporal variation in bird composition of riparian zones, suggesting seasonal movements with the surrounding landscape. Repeated wet and dry season surveys will need to be implemented to determine if this occurs at Kachana.

The river pools of the Chamberlain River support a lower number of waterbird species compared to natural lakes and man-made dams in other studies. Furthermore, the only breeding record of waterbirds at Kachana is of Masked Lapwing. While these species are rare and the habitat has been modified, the are no signs of breeding. Rather than supporting large numbers of individuals or breeding colonies, the pools of the Chamberlain River may act as a refuge during the dry season.

Relatively few species were recorded breeding during this study. However, our observation of panties of White-gaped Honeyeaters by a Pallid Cuckoo is of particular interest because it represents only the third published record of this species breeding in the Kimberley. Previous records were from the Denison Ranges where a White-breasted Woodswallow was parasitised (Coate et al. 1998) and from the Karimurra area in the second Atlas of Australian Birds (Barrett et al. 2003). Furthermore, this is the first record of Pallid Cuckoo using White-gaped Honeyeater as a host species (Johnstone and Storr 1998; Higgins 1999), however, they have been reported using a diversity of other members of the Meliphagidae (Johnstone and Storr 1998; Higgins 1999).

This survey has provided a benchmark for future studies at Kachana Station. The presence of a diversity of granivorous species, a guild that has declined in northern Australia (Franklin 1999), makes Kachana a suitable location for studying the influence of pastoralism on Kimberley avifauna. Species richness is highest in the woodland of the valley floors so future studies on foraging behaviour and habitat selection should initially concentrate on this habitat. Greater attention should also be paid to breeding behaviour and pollination biology as both topics are comparatively poorly studied at Kachana and in the Kimberley in general (see Blakers et al. 1984; Brown et al. 1997; Barrett et al. 2003; Johnstone and Storr 2004).

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