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THE SUNBIRD

Volume 19 No. 1 October 1989

ALTITUDINAL DISTRIBUTION OF THE BIRDS OF THORNTON PEAK, NORTH QUEENSLAND

WALTER E. BOLES and N.W. LONGMORE

ABSTRACT

The birds of Thornton Peak, an isolated rainforest-covered mountain in north Queensland, were briefly surveyed in 1975. The survey showed that, while a number of species are distributed through all altitudes, some are altitudinally stratified. Reduced species numbers and diversity were recorded with increasing altitude. Although altitudinal stratification for Australian birds has been described before, there is little literature on the phenomenon. Some historical reasons for these patterns are proposed.

INTRODUCTION

Thornton Peak (16°10'S, 145°22'E) is an isolated area of highland rainforest near Cape Tribulation, north Queensland (Fig. 1), which rises from the coast to 1375 m above sea level. It extends 20 km inland and 20 km to the north, and is separated from neighbouring areas of highland rainforest by the Daintree and Bloomfield River valleys. Between Thornton Peak and the Atherton Tableland are 130 km of lowland rainforest, drier open forest and woodland, improved pastures and farmland. Though isolated, Thornton Peak is part of the Atherton Tableland tract (Cooktown – Ingham), and shares with the Tablelands the same avifauna. Many authors have written on the birds of the Atherton

Tablelands (*viz.* Bourke & Austin [1947], Bravery [1970], Gill [1970], and references therein), but little has been published on the birds of Thornton Peak. Previous information has come from our fieldwork (Broadbent & Clark 1976, Boles 1977, Boles & Longmore 1979).

It is known that some species of this north-eastern tract of highland rainforest have relatively sharply delimited altitudinal distributions, the approximate limits of which are fairly well understood. Kikkawa & Williams (1971) and Diamond (1972) have documented altitudinal distribution in New Guinea rainforest birds. Broadbent & Clark (1976) and Kikkawa (1983) found similar disjunct bird species' distributions by altitude in certain north-eastern Australian rainforests.

Using a variety of numerical analytical techniques on both abundance and presence/absence data, Kikkawa (1983) found the primary division in north-eastern Queensland rainforest birds was between lowland (below 50 m) and highland (which he called tableland) species (above 600 m).

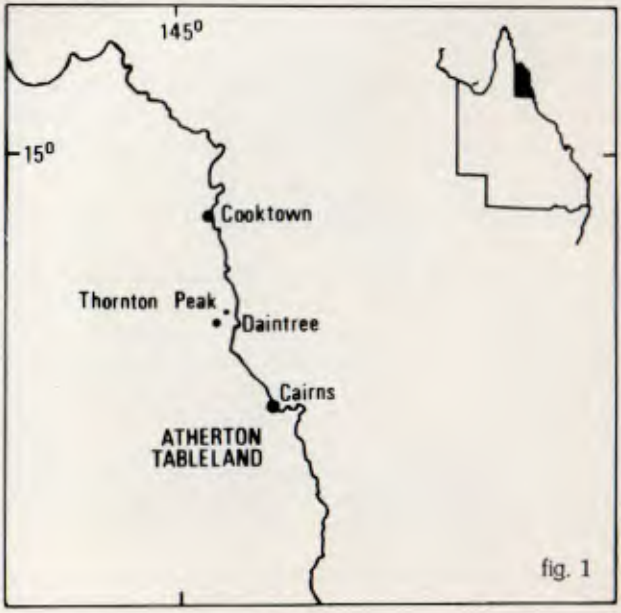

fig. 1

Among his highland sites was a mountain top site (1520 m) separated somewhat from those of lower altitudes (600–700 m). He did not sample any sites on Thornton Peak, however.

We compare here our altitudinal records of the birds of Thornton Peak with those of the Atherton Tablelands (based primarily on Gill [1970], Storr [1984] and Reader's Digest [1986]), and discuss some of our intersite differences in relation to the more extensive work in north-eastern Queensland by Kikkawa (1983).

METHODS

Between 2 November and 14 November 1975, four rainforest sites at different altitudes on Thornton Peak were surveyed by J.A. Broadbent and ourselves as part of a joint Australian Museum and Queensland Museum study of east coast rainforest fauna funded by the Interim Council of the Australian Biological Resources Study (Broadbent & Clark 1976).

At each site the numbers of birds were estimated over a three day period using three methods:

a) Spot censusing. At each of four points, the observer recorded all birds seen during an hour within a 20 m radius. The points were located 130 m from the centre point at 90° intervals. Points were censused each day between 0700 – 1100 h for three days.

b) Mist-netting. Two 60 m lines of mist nets (five 12 m nets in series) were erected at right angles in a '+' pattern, intersecting at their centre points. The nets were open for six hours on each of the three mornings, starting at 0600 h.

c) Relative abundance. The status of each species was assessed at the end of work at each site based on information from spot censusing, mist-netting and general observation. The following terms were used to describe the status of each species:

i)	common	–	species observed in reasonable numbers at all times
ii)	frequent	–	a few individuals usually seen
iii)	occasional	–	observed 2–5 times during the survey period
iv)	rare	–	observed only once

Numerical analysis of site associations based on census results were made using several polythetic agglomeration programmes, details of which appear in Broadbent & Clark (1976). Thirty-four sites from eastern Australia, including, in addition to our Thornton Peak sites, seven others from the Atherton tract ranging from 30 m to 600 m above sea level, were used in the analysis. Species diversity of each site was derived from spot censusing results and calculated using the Shannon-Weaver Index, $H=- p_i \log_e p_i$, where H is the species diversity and p_i is the numerical proportion of the i^{th} species in relation to the total number for all species recorded.

Our list is supplemented by the observations of D. Teese and R. Loyn, who visited Thornton Peak on 1-2 December 1979. But their observations were not used in assessing the status of each species, in determining similarities between sites, nor in calculating species diversity.

STUDY SITES

Study sites were selected as representatives of different rainforest types, following the structural and physiognomic classifications of Webb (1968). Three major sites occurring at different altitudes were surveyed using the methods above; these sites are referred to as Top, Middle and Bottom, according to their respective altitudes, and collectively as the 'major sites'. A fourth site (termed Supplemental) received only general observations for part of a day.

The Top site, representing Simple Microphyll Vine Fern Thicket, was surveyed from 2 to 5 November. It was located on a relatively flat area (altitude 1260 m), near the summit of Thornton Peak. The ground surface was undulating but the canopy of the forest remained more or less level, and as a result the canopy height varied from 0.5 m to 3 m. A stream running near the edge of the site was surrounded by taller trees. A photography of this habitat is in Broadbent & Clark (1976, pl.16).

The Middle site (altitude 1020 m) was a combination of Simple Microphyll Vine Fern Forest and Simple Notophyll Vine Forest. It was visited from 6 to 9 November. This site was situated on a steep slope with a southern aspect. The canopy height was about 10 m. There was no open water on the site.

The Bottom site (altitude 640 m) was surveyed from 9 to 13 November. The vegetation type was Mesophyll Vine Forest with a canopy height of 12–15 m. It was situated on a steep slope with a southern aspect. A stream flowed along one side of the site without any apparent effect on the canopy height. A large clearing caused by a tree fall occupied one edge of the site.

The Supplemental site (altitude 185 m) was on level ground between two streams. This also represented Mesophyll Vine Forest, but with a canopy height of 20 m. It was visited for part of one morning on 14 November. This site was about 1 km from the southern edge of the base of Thornton Peak. Much of the intervening land comprised formerly cleared paddocks and orchards which had been allowed to go to regrowth. No numerical comparison of the lowland rainforest of the Supplemental site was possible.

RESULTS

Table 1 presents our general assessments of each species' status at each site, as well as a summary of the altitudinal ranges given the literature. Species are arranged in altitudinal rather than taxonomic order.

There was a decrease in both species richness and species diversity with increase in altitude. At the top site, 22 species were recorded and the species diversity was 2.95. For the Middle site these values were 26 and 3.20; for the Bottom site, 34 and 3.89, respectively. The number of species recorded at the Supplemental site was greater than that of either the Top or Middle site and almost as great as that of the Bottom site. No species diversity index is included for this lowest site.

The only species we found at each of the three major Thornton Peak sites plus the Supplemental site were the White-rumped Swiftlet, Little Shrike-thrush, Mistletoebird and Spotted Catbird. Few species were observed only at the Bottom site (Table 1) of the three major sites, and some of these, such as the Sulphur-crested Cockatoo, were perhaps primarily visitors from the more open surrounding country. The majority of species recorded at the Bottom site showed definite lowland preferences (did not occur at or above 1020 m), whereas most highland species were absent. At the Middle site, this pattern had reversed: the lowland elements were missing and all highland species were present.

Two species appeared largely restricted to the Middle zone. The Tooth-billed Catbird and its 'stages' were recorded only at this elevation. Golden Bowerbirds were also observed at the Top site, but only in association with the streamside vegetation present in the corner of the site. These were female-plumaged individuals, possibly immature non-breeding males without territories. Adult males and bowers were found only at the Middle site.

No species were observed exclusively at the Top site (other than the Brahminy Kite seen once), but several were recorded only at the higher altitudes (Middle and Top sites). Among these were Topknot Pigeon, Crimson Rosella, Chowchilla, Atherton Scrubwren, Australian Fernwren, Grey-headed Robin, Grey Fantail, Golden Whistler, Bower's Shrike-thrush and Bridled Honeyeater. The Mountain Thornbill was assessed as

common at all three major sites but especially so at the higher sites. We observed the Grey-headed Robin and Spotted Catbird 60 m above the upper limit given by Storr (1984).

DISCUSSION

A pattern of stratification is discernible in the altitudinal distribution of the birds of Thornton Peak. In most cases our results compare closely with those from the Atherton Tablelands for which approximate limits have been published (see Table 1).

Based on the numerical analysis of species abundance in Broadbent & Clark (1976), the primary division in the entire study of east coast rainforest is between sites in north Queensland and those from central Queensland southwards. The major division in the north Queensland sites is by altitude: above 600 m and below 275 m. Kikkawa (1983) found that in north-east Queensland, altitude is more highly correlated with the presence of most species than was the type of rainforest, but there were also significant correlations between clusters of some bird species and the presence of certain vegetation features.

The decrease in species richness and species diversity with increasing altitude may be due at least in part to a decrease in structural diversity of the rainforest. The rainforest of the lowland Supplemental site was tall and complex with many layers. Had the period of observation been longer at this site, its species total would almost certainly have exceeded that of the three major sites. The canopy height and number of

intermediate vegetation layers decreased at each successively higher site, until the stunted Simple Microphyll Vine Fern Thicket on the Top site had a virtually uniform structure between ground and canopy.

Our Top site was comparable to the mountain top site of Kikkawa (1983), which was also Simple Microphyll Vine Fern Thicket. Likewise our Bottom site and his highland (tableland) sites are comparable. Our Middle site fell between the altitudes of Kikkawa's (1983) mountain top and other highland sites; on the bird species present, it is more similar to the mountain top. The Supplemental site falls between his dividing altitudes for lowland and highland sites, but on the basis of species recorded it is aligned with the former.

Kikkawa's (1983) results showed substantial differences between his mountain top site and his other highland sites. These differences seem more apparent than real, however, being accentuated by the lack of sites in the intervening range. This apparent dichotomy, as shown by our data from the altitudinally intermediate Middle site, is not strictly one of mountain top versus non-mountain top among highland sites. The transition in species composition between the two sets of highland sites occurs in a more gradual, less abrupt manner than his results suggest. In contrast, the zone between the highland and lowland sites may have a more pronounced transition, judging by the more marked differences in species composition.

The numerical analysis showed the Bottom site to be less similar in its avian components to either the Middle or Top sites than it was to another study area of similar altitude (600 m) at Spear's Creek, 55 km south (Broadbent & Clark 1976). While no numerical comparison of the lowland rainforest of the Supplemental site was possible, six other sites in the study located in lowlands in the northern end of the Atherton rainforest tract (altitudes ranging from 30 m to 275 m) clustered together in the numerical analysis derived from relative abundance data (Broadbent & Clark 1976: 55, fig. 10). This strongly implies that the same relationship would hold for the Supplemental site.

The Bottom site lies near the lower altitude boundary of several species. Some lowland species reach their upper limit and some highland species have their lower boundary around 600 m (Table 1). The lowland restriction of certain species (e.g. Graceful, Yellow-spotted and Macleay's Honeyeaters) suggested by our data appears to be an accurate reflection of their altitudinal preferences.

Those forms (species and subspecies) restricted to lowlands can be separated into three generalised and admittedly simplified groups (see also Kikkawa *et al.* [1981]):

1. Those found throughout humid central eastern and north-eastern Australia. Most inhabit other habitats as well as rainforest, and many are migratory. Examples are the Black-faced Monarch and Spangled Drongo.

2. Those occurring in rainforests of north-eastern Queensland northwards to Cape York, including the Iron and McIlwraith Ranges, and which are thus not restricted to the Atherton Tablelands area. Most are sedentary and show a strong preference for rainforest, although on occasion moving into adjacent non-rainforest habitats. Among these species are the Yellow-spotted and Graceful Honeyeaters and the local subspecies of the Yellow Oriole and Black Butcherbird.

3. Those endemic to the Atherton Rainforest tract, including some species (e.g. Macleay's Honeyeater) and also subspecies of more widespread species (e.g. Large-billed Scrubwren *Sericornis magnirostris viridior*, Pale-yellow Robin *Tregellasia capito nana*). These are sedentary, rainforest forms.

There is a high level of endemicity in the highland birds of the Atherton Tablelands and Thornton Peak, noticeably so when compared to the lowland community. With the exception of the highly nomadic Topknot Pigeon, all are sedentary, other than making possibly minor altitudinal shifts between seasons. Many of these endemic isolates have their closest relatives in the other rainforest tracts to the south (the Clarke Range, north-eastern New South Wales – south-eastern Queensland), or in highland New Guinea, or in both, but with few in the lowland rainforests of northern Cape York Peninsula. For example, the Bridled Honeyeater superspecies has highland representatives in the Atherton Tableland, the Clarke Range and the New Guinea highlands (Longmore & Boles 1983), and the Grey-headed Robin is restricted to the Atherton Tableland, with its nearest relative in the mountains of New Guinea.

Several species restricted to highland rainforests occupy lower altitudes and a wider choice of habitats in southern parts of their range. The Crimson Rosella has a lower limit of 600 m in the Atherton Tablelands (Table 1), 450 m in the Border Ranges (Storr 1984), and reaches the coast in parts of New South Wales (Morris *et al.* 1981). Some of the highland forms, such as the Chowchilla and Eastern Whipbird, occur in small numbers in the lowlands of districts with very high rainfall (Storr 1984).

In southern areas, at least, these incursions into lower elevations may be seasonally related: a number of species move into lower, more open habitats in winter. The altitudinal ranges would then represent the extremes over all seasons, not that of the population at any given time. Southern populations thus seem more flexible in their habitat requirements than their northern counterparts. To a lesser degree this flexibility is exhibited by some north-eastern highland species (e.g. Satin and Golden Bowerbirds, Bridled Honeyeater [Storr 1984]).

The marked altitudinal zonation may be explained by historical fluctuations of Australo-Papuan rainforest. The highland species are usually the 'older' members of their particular lineage (e.g. the Tumbunan fauna of Schodde & Calaby 1972; see also Longmore & Boles 1983, Schodde 1986). Humid refuges existed in these highland areas during the Pleistocene glaciations, when most of Australia became cooler and drier.

The highland rainforests would have been less subject to habitat deterioration and thus most likely to retain remnants of once more widely spread rainforest avifauna, now represented by existing highland forms. Lower altitude species may be more recent additions to the local avifauna which have become established as environmental conditions have improved.

Taxa restricted to higher altitudes are largely confined to their particular altitudinal zone. Of particular interest are species with subspecies restricted to the north-eastern highlands but with less altitudinally confined southern forms. One explanation is that during desiccation of eastern rainforests, the north-eastern highland stands were best able to withstand this deterioration. Consequently there would have been greater pressure to adapt to drier, more open habitats in the more southern parts of the range, with taxa failing to do so becoming extinct. Species such as the Crimson Rosella and Eastern Whipbird represent those species in which southern populations successfully adapted; Atherton highland endemics may be among those that did not.

Species common on the Atherton Tablelands that were not observed at Thornton Peak during our visit are the Eastern Yellow Robin *Eopsaltria australis*, Brown Gerygone *Gerygone mouki*, White-browed Scrubwren *Sericornis frontalis*, White-throated (Little) Treecreeper *Climacteris leucophaea* and Satin Bowerbird *Ptilonorhynchus violaceus*. We cannot explain their apparent absence on Thornton Peak during our survey. Most of these birds are noisy, conspicuous species which are difficult to overlook. Yet we may have missed the White-throated Treecreeper, recorded by Teese and Loyn (pers. comm.) during their visit.

Our results show the same general pattern of highland/lowland discontinuity on Thornton Peak as have past studies on north-east Queensland rainforest birds. It would be worthwhile to investigate at more gradual intervals the zones in which species composition changes, to determine the sharpness of these changes. Also meriting study are the effects of breeding and non-breeding seasons on the patterns of zonation in the various highland rainforest areas of eastern Australia.

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WALTER E. BOLES, Division of Vertebrate Zoology (Birds), Australian Museum, Sydney, NSW. 2000

N.W. LONGMORE, Department of Ornithology, Queensland Museum, PO Box 300, South Brisbane, Qld. 4101

TABLE 1

Altitudinal distribution of the Thornton Peak avifauna based on subjective assessments of abundance. Published data for Atherton Tablelands birds are included. Major literature sources are abbreviated as follows: Gill (1970) = G; Storr (1984) = S; Reader's Digest (1986) = RD.

Symbols used are:

r – Rare, o – Occasional, f – Frequent, c – Common
* – Species observed (Supplemental site only)
? – Scrubwrens of the Large-billed/Atherton type were recorded at 1020m; it was not determined at the time to which species they were referable (Boles & Longmore 1979)
$ – Species restricted to the Atherton rainforest tract
+ – Species with subspecies restricted to the Atherton rainforest tract

Species	Site Elevation (m) 185	640	1020	1260	Altitudinal Zones; Atherton Tablelands
Orange-footed Scrubfowl *Megapodius reinwardt*	*				all altitudes (G) <900 m (S)
Emerald Dove *Chalcophaps indica*	*				all altitudes (G)
Brush Cuckoo *Cuculus variolosus*	*				decreasing upwards (S)
Noisy Pitta *Pitta versicolor*	*				all altitudes (G)
Varied Triller *Lalage leucomela*	*				primarily coastal (S)
Fairy Gerygone *Gerygone palpebrosa*	*				primarily lowlands (S)
Graceful Honeyeater *Meliphaga gracilis*	*				<450 m (S); <300 m (RD)
Spangled Drongo *Dicrurus hottentottus*	*				coastal lowlands (S)
Black Butcherbird *Cracticus quoyi*	*				<900 m (S)
Rufous Fantail *Rhipidura rufifrons*	*	r			550–1200 m (S)

TABLE 1 (cont.)

Species	Site Elevation (m) 185	640	1020	1260	Altitudinal Zones; Atherton Tablelands
$ Macleay's Honeyeater *Xanthotis macleayana*	*	r			lowlands (RD) primarily lowlands (S)
Yellow-eyed Cuckoo-shrike *Coracina lineata*	*	o			
Dusky Honeyeater *Myzomela obscura*	*	o			lowlands (S)
Yellow Oriole *Oriolus flavocinctus*	*	o			primarily lowlands (S)
$ Victoria's Riflebird *Ptiloris victoriae*	*	o			<1200 m (S)
Wompoo Fruit-Dove *Ptilinopus magnificus*	*	f			all altitudes (G) <1500 m (S)
+ Pale-yellow Robin *Tregellasia capito*	*	f			<1050 m (S)
Black-faced Monarch *Monarcha melanopsis*	*	f			primarily lowlands (S)
Yellow-spotted Honeyeater *Meliphaga notata*	*	f			<400 m (G); <450 m (S); <600 m (RD)
Sulphur-crested Cockatoo *Cacatua galerita*	*	c			<1000 m (S)
Spectacled Monarch *Monarcha trivirgatus*	*	f	r		
White-headed Pigeon *Columba leucomela*	*	c	r		primarily 500-1500 m (S)
Silvereye *Zosterops lateralis*	*	c	r		
Superb Fruit-Dove *Ptilinopus superbus*	*	c	o		highlands and lowlands (S)
White-throated Needletail *Hirundapus caudacutus*	*			r	
+ Spotted Catbird *Ailuroedus melanotis*	*	o	c	f	<1200 m (S)
Mistletoebird *Dicaeum hirundinaceum*	*	c	f	o	

TABLE 1 (cont.)

Species	Site Elevation (m) 185	640	1020	1260	Altitudinal Zones; Atherton Tablelands
White-rumped Swiftlet *Collocalia spodiopygia*	*	c	f	c	primarily <500 m (S)
Little Shrike-thrush *Colluricincla megarhyncha*	*	c	o	f	<1000 m (RD); more common lowlands (S)
+ Large-billed Scrubwren *Sericornis magnirostris*	*	c	?		0-1000 m (RD) 750 m (S)
Pacific Baza *Aviceda subcristata*		r			
Rainbow Lorikeet *Trichoglossus haematodus*		r			prefer lowlands (RD)
$ Pied Monarch *Arses kaupi*		r			all altitudes (G) <700 m (RD) <900 m (S)
Australian King-Parrot *Alisterus scapularis*		o			primarily highlands (S)
Southern Boobook *Ninox novaeseelandiae*		o			highlands and foothills (S)
+ Lewin's Honeyeater *Meliphaga lewinii*		o			>450 m (G) >200 m (RD)
Australian Brush-turkey *Alectura lathami*		r	r		scarce <600 m (S)
+ Eastern Whipbird *Psophodes olivaceus*		r		c	300-1500 m (S)
$ Australian Fernwren *Crateroscelis gutturalis*		r	c	f	>360 m (G); >600 m (RD); 900-1500 m (350 m in wetter areas) (S)
Brown Cuckoo-Dove *Macropygia amboinensis*		o	o	r	increasing in lowlands (S)
$ Chowchilla *Orthonyx spaldingii*		o	o	f	>240 m (G); 450-1500 m (S)
$ Bridled Honeyeater *Lichenostomus frenatus*		o	o	c	>450 m (G); >300 m (RD); 450-1500 m (S)
Topknot Pigeon *Lopholaimus antarcticus*		o	c	o	

TABLE 1 (cont.)

Species	Site Elevation (m) 185	640	1020	1260	Altitudinal Zones; Atherton Tablelands
$ Mountain Thornbill *Acanthiza katherina*		c	c	c	>450 m (G); >350 m (RD); 450–1600 m (S)
Grey Whistler *Pachycephala simplex*			r		<500 m (RD); <900 m (S)
+ Yellow-throated Scrubwren *Sericornis citreogularis*			r		>600 m (G); >600–1000 m (RD) 550–1000 m (S)
$ Tooth-billed Catbird *Ailuroedus dentirostris*			f		>600 m (G) >500 m (RD); 600–1400 m (S)
+ Crimson Rosella *Platycercus elegans*			r	c	>600 m (G) 600–1500 m (S)
+ Grey Fantail *Rhipidura fuliginosa*			r	c	>500 m (G) 400–1500 m (S)
Shining Bronze-Cuckoo *Chrysococcyx lucidus*			o	r	
$ Golden Bowerbird *Prionodura newtoniana*			o	o	>900 m (G); >900 m (RD); 900–1500 m, occasionally 600 m (S)
+ Golden Whistler *Pachycephala pectoralis*			o	f	>450 m (G); 500–1500 m (S)
$ Bower's Shrike-thrush *Colluricincla boweri*			f	f	400–1200 m (S) >400 m (RD)
$ Grey-headed Robin *Poecilodryas albispecularis*			f	c	>240 m (G); >500 m (RD); 250–1200 m (S)
$ Atherton Scrubwren *Sericornis keri*			?	c	600–1500 m (S); >650 m (RD)
Brahminy Kite *Haliastur indus*				r	
Total species	31	34	26	22	
Species diversity		3.89	3.20	2.95	

OBITUARY

John Stephens Robertson, known affectionately as Jack, died in Brisbane on 16 July 1988. He was born in Rockhampton on 4 October 1897, the son of Robert Cochran Robertson and Sophia Stephens, and the grandson of Thomas B. Stephens, a former Mayor of Brisbane and cabinet minister.

He attended Brisbane Boys' Grammar School until he joined the Queensland Government Railways as an engineering cadet in 1915. In 1921, he was classified as an Assistant Engineer and was involved in the construction of the Innisfail-Tully River Railway, the Grey Street and Indooroopilly Bridges, and the Barron Falls Hydro-electric construction project. In 1934, he joined the Main Roads Department as Assistant Engineer, later becoming District Engineer and retiring in October 1962 as Deputy Bridge Engineer.

In 1918, he joined the AIF and was en route to Europe when peace was declared. He married Evelyn McNab Cribb and had a son, John Stephens, and two daughters, Marjorie and Robina. After his wife's death in 1961, he married Beatrice Muriel Smith who predeceased him in 1980. Throughout his life he was an active and committed member of the Presbyterian (later Uniting) Church.

Jack Robertson joined the RAOU in 1940 and was an enthusiastic member and minute-secretary of the Queensland Branch. With G.H. Barker and G. Mack, he organised and chaired many of their meetings at the old Queensland Museum. He was also an early member of the Australian Bird Banding Association, the Queensland Ornithological Society and a life member of the Queensland Naturalists' Club. He kept detailed and accurate notes of all his bird observations, and years later these formed a valuable contribution to the historical section of the RAOU's *Atlas of Australian Birds*. For over 30 years, he saved for the Queensland Museum many bird specimens which had been killed by vehicles, cats, etc. He was a prolific writer, with 18 publications in *The Emu*, 20 in *Australian Bird Bander/Corella* and 7 in *The Sunbird*. In a paper in *The Emu*, he described a visit to Eungella in 1959 where he observed an unusual honeyeater. This was photographed when a bird was caught on the nest. At the time he thought that it was a form of the Bridled Honeyeater *Lichenostomus frenatus*, but over 20 years later it was described as a new species, the Eungella Honeyeater *L. hindwoodi*. He also encouraged and helped many of his colleagues to write up and publish their own observations.

In 1962, he built a house at Wellington Point, named "Terete" after the

huge gum trees *Eucalyptus tereticornis* at the bottom of the garden, and established a banding station with his own ingeniously constructed trap over a bird bath and sugar–water feeder. From 1963 to 1978, he handed several thousands of birds at this location and made major contributions to our knowledge of honeyeaters, in particular. "Terete" was on the flypath of migrating friarbirds and other honeyeaters, and he kept a detailed diary of their passage for 14 years. He also envisaged other observatories located at strategic points along the Queensland coast, particularly at Cape Tribulation, to monitor bird numbers and passage. Will this ever come to pass?

Jack Robertson was a man of the highest integrity, unfailingly generous with advice, encouragement and help to others. When he moved from "Terete" to Hopetoun in 1980, he donated his valuable ornithological library, including a set of Mathews *The birds of Australia* and long runs of *Emu, Australian Bird Bander/Corella, Sunbird* and *Australian Bird Watcher*, to Griffith University. He will be remembered with great affection by all who knew him and we extend our deepest sympathy to his daughters, grandchildren and 16 greatgrandchildren.

PETER F. WOODALL

I am very grateful to Mrs. Marjorie Glasgow and Mr. Don Vernon for assistance in writing this obituary.

Jack Robertson, examining a bower bird in the Queensland Museum. (Photo : Queensland Museum)

A RANGE EXTENSION FOR THE RUFOUS-THROATED HONEYEATER *CONOPOPHILA RUFOGULARIS* ON THE CAPE YORK PENINSULA

G.F. CLARIDGE

In July 1988 I undertook a broad scale reconnaissance of large areas of Cape York west of the development road for the Australian Heritage Commission. These areas included the Embley Rangé, a steep-sided plateau rising over 90 m above the surrounding plain some 80 km east southeast of Weipa, at approximately 12°45'S, 142°37'E. The Embley Range is the largest of the residual laterite-capped mesas remaining after the erosion of the old Arukun Land Surface (Wilmott & Powell 1977). It is very similar to the other remnants of this land surface, such as the country around Weipa, in that it has tall *Eucalyptus tetrodonta* woodland and occasional *Melaleuca*-dominated swamps. The top of the plateau has no watercourses, and presumably rainfall percolates quickly into its sandy soils. Water persists in the swamps well into the dry season, and, in places, emerges along the sides of the plateau as springs supporting vine-forest patches.

The Rufous-throated Honeyeater *Conopophila rufogularis* ranges widely across northern Australia, but has been considered to be absent from Cape York north of the Archer River (Pizzey 1980). There are recent records from the west coast of the peninsula as far north as the Aurukun area (Blakers *et al.* 1984). This absence from central and northern Cape York Peninsula can perhaps be explained as an apparent absence resulting from a lack of observers in this sparsely settled area, seldom visited except along the few major roads. However, a lack of water across large parts of this region in the dry season is likely to deter this species, which is reported to favour eucalypt woodland near water (e.g. Pizzey 1980). The habitat in which the species occurs in other places (open eucalypt woodland) extends over much of the Cape York Peninsula, and is not likely to impose any restrictions on its range.

On the Embley Range in July 1988, Rufous-throated Honeyeaters were locally common where Bloodwoods (*Eucalyptus* sp.) were flowering in tall stringybark/bloodwood woodland. At this time there were also a number of *Melaleuca* spp. and *Acacia* spp. in flower, mostly near the margins of the swamps. Other honeyeaters in the area were Noisy Friarbird

Philemon corniculatus, Graceful Honeyeater *Meliphaga gracilis*, Yellow Honeyeater *Lichenostomus flavus*, White-throated Honeyeater *Melithreptus albogularis*, Banded Honeyeater *Certhionyx pectoralis* and Dusky Honeyeater *Myzomela obscura*.

During this survey I did not observe the Rufous-throated Honeyeater in similar habitat in the Pennefather River area (north of Weipa), around Weipa, near the Moreton telegraph station (east of Weipa), or in the Aurukun area. It was present in the Rokeby National Park on the Archer River.

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G.F. CLARIDGE, 9 Armstrong Street, Hermit Park, Qld. 4182.

A 1978 MASS MIGRATION OF NOISY FRIARBIRDS

M. BALDWIN

Several honeyeater species are known to engage in mass migrations, for example the 100 000 Yellow-faced Honeyeaters *Lichenostomus chrysops* passing in a single day in May on the northern New South Wales coast (Liddy 1966). This note reports a mass easterly movement of Noisy Friarbirds *Philemon corniculatus* in the Northern Tablelands of New South Wales in 1978. These and other data on Noisy Friarbirds were obtained at Gilgai (altitude 760 m, 29°51'S, 151°07E) between 1967 and 1982.

The Noisy Friarbird is a summer visitor to the Northern Tablelands of New South Wales. Winter movements, both to lower altitudes and lower latitudes, are well documented for this region, including an April-May exodus from Armidale and a 510 km movement between Mudgee and Victoria (Blakers *et al.* 1984 and references therein). Observations made at Gilgai, 10 km south of Inverell, over a period of 16 years show that the easterly migration usually lasts for only a week or two each May, when birds pass in twos and threes. Small numbers return each September, while small numbers of overwintering birds fly east each morning to a stand of flowering Box Trees *Eucalyptus albens*, returning in the afternoon. When a marked increase in numbers of migrating birds occurred in May 1978, a systematic count began, based at a cottage situated in a timbered paddock.

Birds were counted as they passed a 90 x 180 cm window overlooking an east/west tree-lined lane 30 m away. South of the lane, a few isolated trees dotted 100 ha of cultivated paddocks which were backed by a more distant belt of timber. Noisy Friarbirds moved in a broad front, crossing the open paddocks in small numbers but thronging the timber belt. Since it was impossible to count all of the individuals involved, only those which passed the window were recorded. Table 1 shows the numbers noted during June – September 1978, distinguishing fine days from those with rain. At least ten times the recorded total flew through an approximately 1 km wide corridor, and other birds were seen north and south of this area. The width of the migration is not known.

Most birds counted were involved in afternoon flights, which began about 80 minutes before sunset and lasted for about 60 minutes. Such flights began on 21 May when 110 birds flew east along the lane between 1600 and 1610 h. They protested loudly when harassed by Australian Magpies *Gymnorhina tibicen*, Little Ravens *Corvus mellori*, Red Wattlebirds *Anthochaera caruniculata* and Australian Magpie-Larks *Grallina cyanoleuca*; and also when hustled noisily through the territory of overwintering Noisy Friarbirds. During the period 26–29 May, birds were present in numbers all day, resting in trees and behaving in an aggressive and noisy fashion. Only a few were seen on 30 May, but many passed silently east the next day and on most subsequent days for about four months. Rain influenced numbers, which increased from a mean of 51 on fine days to a mean of 131 on wet days (see Table 1). Morning flights began in early May, usually involving fewer than ten birds moving east. Such flights began 15 minutes before sunrise and lasted for about 30 minutes.

TABLE 1

Numbers of Noisy Friarbirds at Gilgai in 1978, distinguishing wet and dry days.

	Rain		Fine	
Month	Days	Birds	Days	Birds
June	7	1323	11	737
July	3	474	11	484
August	3	300	12	628
September	4	132	3	24
	17	2229	37	1873

After this winter migration, Noisy Friarbirds were absent until a few noisy, aggressive birds returned to the garden for food and water on hot, dry summer days. Small numbers again moved east along the lane in February 1979, and small, aggressive parties roamed aimlessly for much of the day on 6 June. A few birds then flew east each afternoon in the period 7–16 June 1979.

This 1978 migration is noteworthy, not only for its duration but also for its occurrence in winter when this species is usually scarce or absent. The small number of migrants in typical years might suggest a local origin, whereas the thousands or tens of thousands in 1978 were presumably long-distance migrants.

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MERLE BALDWIN, Hall Street, Gilgai, Inverell, NSW. 2360.

A BLACK-BROWED ALBATROSS OFF NORTH-EASTERN QUEENSLAND

N.G. CHESHIRE

A juvenile Black-browed Albatross *Diomedea melanophrys* was seen on 11 September 1988 from the CSIRO research vessel "Franklin", 22 km north-east from Lizard Island and 4 km outside the outer edge of the Great Barrier Reef (14°33'S, 145°39'E). Here the water depth was 1000 m, the sea surface temperature 25.09°C and the surface salinity 35.21 parts per thousand. During the 14 days preceding this sighting, continuous 25 to 35 knot south-easterly winds were experienced due to a high pressure ridge extending from the northern Tasman Sea along the entire Queensland coast.

The Albatross was in sight for about 15 minutes from 0950 h and for a short period settled on the water close to the ship. It was seen by several members of the crew and scientific staff. The identification was confirmed by the following features: A medium sized albatross with a white body. The upperwings and back were greyish black, the tail was grey. The dark grey mantle shaded into a light grey hind neck and partial breast band. There was a black eye line, wider immediately in front of the eye. The underwings were dark grey shading to light grey along the central area of the inner wing. The bill was blackish brown with a black tip to both mandibles.

So far as the writer can ascertain there are no previous published records of Black-browed Albatross from north-east Queensland waters. In his survey of Albatrosses off eastern Australia, Amiet (1958) recorded the species north to 24°07'S. However his observations north of 22°S were restricted to the shallow and relatively sheltered waters of the Great Barrier Reef Lagoon. Tickell (1976) summarised occasional records of this numerous sub-antarctic breeding species from equatorial latitudes in the Indian and eastern Pacific Oceans and from the equatorial and north Atlantic Ocean.

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N.G. CHESHIRE, 4 Willora Road, Eden Hills, South Australia 5050.

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FLEAY, D.H. 1937. Nesting habits of the brush turkey.
Emu 36 153-163.

FRITH, J.H. 1976. Mallee fowl. In **Complete Book of Australian Birds** (H.J. Frith consul. ed.) pp 136-137.
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The Handbook of Australian Sea-birds. Sydney: Reed.

SLATER, P. 1970. **A Field Guide to Australian Birds.**
Non-Passerines. Adelaide: Rigby

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