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# THE SUNBIRD

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**Front cover:** Young male Albert's Lyrebird. Photograph by Jochen Tamm.

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**BREEDING BY BLUE-BILLED DUCK (*OXYURA AUSTRALIS*) AND FRECKLED DUCK (*STICTONETTA NAEVOSA*) IN THE GEORGINA CHANNEL COUNTRY, APRIL 2009**

ROGER JAENSCH, GUY DUTSON & JULIAN REID

**ABSTRACT**

We report observations of breeding by the Blue-billed Duck (*Oxyura australis*) and Freckled Duck (*Stictonetta naevosa*) in shrub swamps of the Eyre Creek (lower Georgina River) floodplain, Channel Country bioregion, in April 2009. At least five broods of Blue-billed Duck and a brood of Freckled Duck were seen. Based on sizes of ducklings we estimate that the clutches may have been laid a few weeks after the summer flood peaks. There have been few other records of breeding by either species in this bioregion. The records reconfirm the great importance of Channel Country wetlands for biodiversity conservation and the need for maintenance of natural flooding regimes.

**INTRODUCTION**

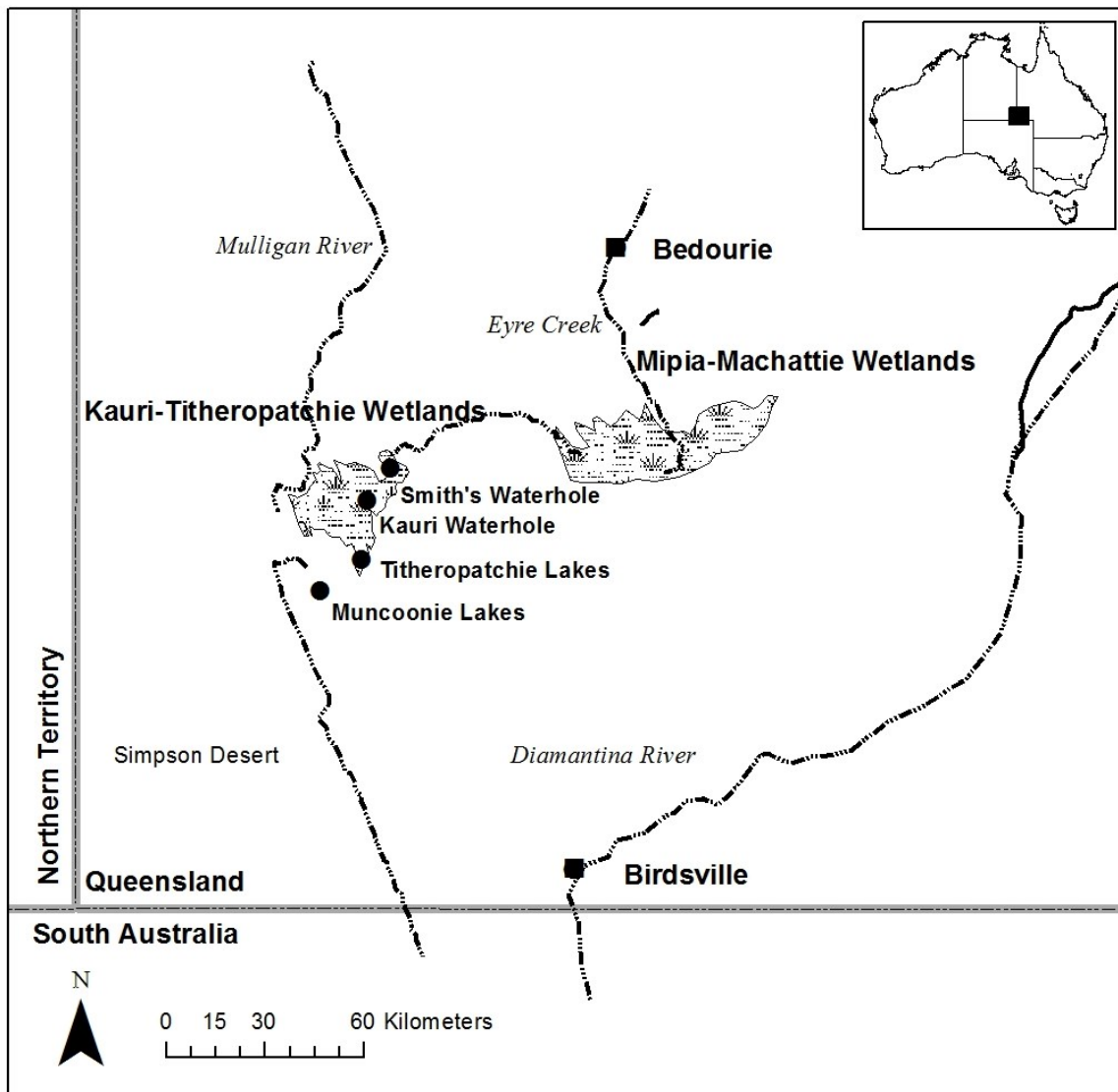
The Channel Country biogeographic region, within the Lake Eyre Basin in the arid inland of eastern Australia, includes three major river systems that are characterised by braided channels (Wilson 1999). Summer-autumn rainfall in tropical upper catchments, and less often in mid-catchment, produces major floods in these rivers roughly once every five years, though not necessarily in all rivers at the same time, thereby fully inundating extensive networks of swamps and lakes (Jaensch 2009; Reid 2010). Large areas of shrub and tree swamp with shallow water provide good but temporary breeding habitat for waterbirds (Reid & Jaensch 2004; Jaensch 2009; Reid *et al.* 2010).

Aerial surveys conducted during and soon after major floods in summer–autumn of 2000 and 2001 revealed hundreds of thousands of waterbirds and much breeding in the Cooper, Diamantina and Georgina floodplain wetlands (Reid & Jaensch 2004). In March 2001, two of us (JR, RJ) were involved in aerial transect surveys of broad floodplain of the lower Georgina River (known as Eyre Creek) downstream of Smith’s Waterhole, including Kauri Waterhole and the Titheropatchie Lakes, to a choke point north of Muncoonie Lakes near the junction with Mulligan River (Figure 1).

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Referred to for survey purposes as the ‘Kauri-Titheropatchie wetlands’, it is over 40,000 ha in area. An estimate of 200,000 total waterbirds was derived from the transect data for this wetland (Reid & Jaensch 2004).

Heavy and intense rainfall occurred in the upper catchment of the Georgina River system in summer 2009: 483 mm was recorded at Urandangi in 2009, compared with the annual mean of 303 mm, of which 358 mm (74%) fell in three episodes of heavy rainfall between 2 January and 10 February 2009 (BOM 2014a). Subsequent flooding was sufficient for floodwaters to extend downstream through the Kauri-Titheropatchie wetlands and Muncoonie Lakes to the Simpson Desert and eventually into Goyder Lagoon, South Australia (BOM 2014b). In the period 2000–2013, major floods occurred in Eyre Creek in at least eight of these 14 years and reached the Simpson Desert in at least five years (RJ personal observations; BOM 2014c).



**Figure 1.** Eyre Creek and associated wetlands, south-western Queensland.

The 2009 flood event provided the conditions for a major influx of waterbirds and we visited the Kauri-Titheropatchie wetlands for several days in April 2009, to conduct aerial and ground surveys that might improve our knowledge of waterbird breeding in this area. Full details of our methods and observations have been presented in an unpublished report (Reid *et al.* 2010); the aerial surveys were conducted in early April (JR and Damien Farine) and the ground surveys two weeks later (RJ and GD). The present article draws attention to especially noteworthy breeding records of two species of Anatidae, the Blue-billed Duck (*Oxyura australis*) and Freckled Duck (*Stictonetta naevosa*), in wetlands associated with Eyre Creek.

The Blue-billed Duck is a declining and near-threatened waterbird (Garnett *et al.* 2011). It is considered principally a southern and near-coastal species (Marchant & Higgins 1990), although frequent occurrence in substantial numbers at more northerly inland wetlands, notably Bindigolly Lakes (e.g. 2000 birds counted on 25 August 1997: Jaensch 1998) in the Mulga Lands bioregion, has been documented in recent decades. These have been assumed to be non-breeding aggregations because breeding of the Blue-billed Duck is mainly known from southern, especially near-coastal, wetlands and is not typically associated with the Channel Country, although breeding is occasionally reported from the Mulga Lands in Queensland (Marchant & Higgins 1990; Barrett *et al.* 2003).

The Freckled Duck is well known as an inhabitant of the Channel Country wetlands, with some aggregations comprising thousands of birds (e.g. Muncoonie Lakes: BirdLife International 2014). These aggregations have been assumed, but rarely documented, to represent recruitment from breeding in this region (Marchant & Higgins 1990). This knowledge gap reflects the relative inaccessibility of this bioregion and the narrow temporal window of opportunity for birds to breed and for observers to access the wetlands and detect breeding. In the inland, the Freckled Duck breeds in shrub swamp; such swamps are usually inundated to suitable depth for only a few months (Marchant & Higgins 1990; Jaensch 2009; Reid 2010).

## OBSERVATIONS

### Blue-billed Duck

On 22 April 2009, two of us (RJ, GD) saw an adult-sized grey (presumably adult female) Blue-billed Duck at Kauri Waterhole (24°59.30'S, 138°47.46'E) with seven or eight ducklings that were little more than 10 per cent of adult size. Large coolibah (*Eucalyptus coolabah*) trees and lignum (*Duma florulenta* [= *Muehlenbeckia cunninghamii*]) shrubs were in and fringing the waterhole. We

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intensively searched four 1 ha plots of mostly dried-out shrub swamp within 1 km of the waterhole and found several, empty recent nests of ducks, but none could be confirmed as nests of the Blue-billed Duck (Reid *et al.* 2010).

About 10 km to the SSW near two parallel dunes on the NE side of Upper Titheropatchie Lake (25°4.67'S, 138°46.61'E) on 24 April 2009, we observed three broods of the Blue-billed Duck. There was an adult-sized grey bird near three ducklings that were about 75 per cent of adult size; another with five ducklings at 30 per cent; and a third with just one duckling at 60 per cent. These sightings were within a radius of 500 m of these coordinates, in coolibah open-woodland with lignum or with sparse northern bluebush (*Chenopodium auricomum*), tall thickets of budda pea (*Aeschynomene indica*) and scattered channel millet (*Echinochloa turneriana*). On the same day, about 4.2 km farther to the SSE in patchy low open-shrubland within the same swale wetland, we saw a duckling near an adult-sized grey bird and a coloured adult male. Inundation in the 300 m wide swale and the lake margins was mostly continuous, with water at least 1 m deep beyond the margins (Reid *et al.* 2010).

About 7 km farther SSW, within 1 km of the junction of Upper Titheropatchie Lake and Lower Titheropatchie Lake (25°8.37'S, 138°46.40'E), on 24–25 April, we counted 30 adult-sized Blue-billed Ducks dispersed in open water, lignum, coolibah and bluebush habitats. A pair was observed copulating. Whereas many broods of ducks were seen at the two sites described above, only a few were seen at this third site despite its apparent suitability for breeding. This suggests that waterbird breeding was less advanced in this downriver section of the floodplain wetland system.

Transcription of aerial survey data later revealed that Damien Farine saw a brood of Blue-billed Ducks and one of us (JR) saw a male displaying, from the same general area in the Kauri-Titheropatchie wetlands on 7 April 2009 (Reid *et al.* 2010). It is not possible to determine if these were the same birds that were recorded (RJ, GD) two weeks later.

### **Freckled Duck**

On 24 April 2009, two of us (RJ, GD) saw an adult-sized plain grey (presumably adult female) Freckled Duck in the abovementioned swale wetland (25°4.67'S, 138°46.61'E) with six ducklings that were about 67 per cent of adult size. A male with a red bill-base, which commonly (but not always) indicates that the bird is presently engaged in breeding (Marchant & Higgins 1990), was later seen nearby. No confirmed nests of the Freckled Duck were found in areas searched intensively in nearby shrub swamp. At

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least 15 adult Freckled Ducks of undetermined gender were observed on 24–25 April, scattered within 1 km of the junction of Upper Titheropatchie Lake and Lower Titheropatchie Lake, but with no evidence of breeding.

Transcription of aerial survey data later revealed that Damien Farine saw a brood of Freckled Ducks in the same general area in the Kauri-Titheropatchie wetlands on 7 April 2009 (Reid *et al.* 2010).

Two of us (RJ, GD) also observed Freckled Ducks elsewhere in the Georgina River system at this time: on 29 April 2009, over 400 km north of the Eyre Creek sites, in the upper catchment, within the Mitchell Grass Downs bioregion, 50 km NNE of Urandangi, Queensland. These were (1) a loose group of seven males with red bill-bases and three females in a lake with inundated scattered and fringing live coolibahs, and live bluebush at some margins (21°11.32'S, 138°23.25'E), and (2) a group of four males with red bill-bases and two females in a limestone-edged lake with denser inundated coolibahs, many coolibah saplings and fringing tussocks of *Bothriochloa ewartiana* (21°8.09'S, 138°28.51'E). However, we saw no evidence of Freckled Duck breeding at either lake.

### **Other breeding waterbirds**

Breeding by over 6500 pairs of 12 other non-colonial (dispersed-breeding) species of waterbird and 2700 pairs of colonial waterbirds was documented in the Kauri-Titheropatchie wetlands in an aerial survey on 10 April 2009 and/or in the ground surveys on 22–25 April 2009 (Tables 14 & 15 in Reid *et al.* 2010). Coarse extrapolation from a small sample of intensively searched plots indicated that the total number of non-colonial nests possibly could have been an order of magnitude higher (Reid *et al.* 2010). As well as other Anatidae, such as Pink-eared Duck (*Malacorhynchus membranaceus*) and Hardhead (*Aythya australis*), these other breeding waterbirds included large numbers of Black-tailed Native-hen (*Tribonyx ventralis*) (26 recent nests in the sample plots, more than half of all nests discovered in the plots: Reid *et al.* 2010)

## **DISCUSSION AND CONCLUSIONS**

### **Blue-billed Duck**

Breeding by Blue-billed Duck in the Channel Country biogeographic region probably occurred at Bulloo Lakes in 1997 (82 birds counted, breeding suspected, 26–29 August 1997: Jaensch 1998) and has occurred at Embarka Swamp in recent decades (J. Reid personal observations) in South Australia, but otherwise breeding by this species in the Channel Country, especially in

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Queensland, is not expected (Marchant & Higgins 1990). Occasional occurrence and breeding of this species in the arid zone of the Lake Eyre Basin following exceptional wetland inundation has been documented farther south, e.g. near Lake Frome in 1974 (Blakers *et al.* 1984).

The six or more records of breeding activity by Blue-billed Duck reported in April 2009 in the Kauri-Titheropatchie wetlands, from four sites, were in a very small portion of the presumably suitable habitat. We know from personal experience that we were unlikely to have detected all broods of ducklings. Our records therefore demonstrate that from time to time the lower Georgina River wetlands can be a significant breeding area for this species, despite being dry in most months of most years.

### **Freckled Duck**

A previous record of breeding by Freckled Duck in the Channel Country in Queensland, with details on habitat, is from a lignum and belalie (*Acacia stenophylla*) shrub swamp in the middle reaches of the Diamantina River (Jaensch 2003a). Our April 2009 observations of breeding in the Eyre Creek swamps thus confirm that this duck breeds in at least two river systems of the Channel Country in Queensland. With further records of breeding from Cooper Creek in South Australia in 2000 (J. Reid personal observations), we have now established that the Freckled Duck breeds in all three river systems of the Channel Country portion of the Lake Eyre Basin. Our records from the Mitchell Grass Downs near Urandangi in April 2009 show that the species can also occur and possibly breed in suitable wetlands between the Channel Country and the Northern Territory's Barkly Tableland, where the species also sometimes breeds (Jaensch 2003b).

### **Timing of egg laying in relation to flood peak**

Information on waterbird laying dates provides an insight to the ecological requirements of waterbirds in a wetland system, notably the duration of inundation required for successful breeding. This has implications for predicting the impact of possible future proposals to regulate or otherwise change river flows.

Data on incubation period and growth to fledging indicate that for both the Blue-billed Duck and Freckled Duck these processes take around 85 days (incubation period and growing period 24 plus 62 days, and 28 plus 56 days, respectively: Marchant & Higgins 1990). In both species, laying and hatching of eggs are probably not synchronous. Nevertheless, from ground survey records we estimate that the Blue-billed Ducks that we found breeding on the Eyre Creek wetlands on 22–25 April 2009 possibly laid their

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eggs as early as about 12 February to as late as 23 March. Similarly, we deduce that the Freckled Ducks that we found breeding on these wetlands on 24 April 2009 possibly laid their eggs as early as about 15 February. Weather and flood data at the Glengyle gauge indicate that flood peaks in the lower Georgina River system (Eyre Creek) occurred on 22 January (highest peak) and 26 February (a lower peak). These peaks may have reached the downstream Kauri-Titheropatchie wetlands about a week later. Therefore, we conclude that the Freckled Ducks and earlier-breeding Blue-billed Ducks perhaps laid their eggs roughly two weeks after the first flood peak and the later-breeding Blue-billed Ducks perhaps laid two to three weeks after the second flood peak. Though based on an insufficient number of samples and several assumptions, this shows that these species can respond quickly to flooding of suitable nesting habitat in the Channel Country, thereby exploiting a relatively brief opportunity for breeding.

Further study is needed to quantify and ascertain the success of recruitment from this breeding, thereby shedding further light on the importance of these wetlands at national and international scales. Timing of surveys is critical; guided by our 2009 experience, searching in the second month after flood peaks might optimise detection of ducklings. Although the shrub swamps can be difficult to traverse even when flooded, use of a canoe may increase the area that can be searched. The number and locations of samples could be designed to ensure statistically robust extrapolation of results to the total wetland area.

### **Importance of sites and implications for management**

The presence of multiple broods of the Blue-billed Duck and at least one brood of the Freckled Duck in the Kauri-Titheropatchie wetlands as reported here, together with the prolific breeding of waterbirds in this block in 2009 (Reid *et al.* 2010), clearly demonstrate that the Kauri-Titheropatchie wetlands of Eyre Creek floodplain is a highly important habitat worthy of appropriate conservation management. There seem to be no immediate major threats to waterbird breeding here. However, possible future reduction in frequency, duration or volume of river flows in the Georgina River or other Channel Country river systems may affect the capacity of downstream wetlands, such as the Kauri-Titheropatchie wetlands, to support waterbird breeding.

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## REFERENCES

- BARRETT, G., SILCOCKS, A., BARRY, S., CUNNINGHAM, R. & POULTER, R. 2003. *The New Atlas of Australian Birds*. Birds Australia (Royal Australasian Ornithologists Union): Melbourne.
- BIRDLIFE INTERNATIONAL 2014. Important Bird Area: Lakes Muncoonie, Mumbleberry and Torquinie. <http://www.birdlife.org/datazone/sitefactsheet.php?id=24829> Accessed 26 September 2014.
- BLAKERS, M., DAVIES, S.J.J.F. & REILLY, P.N. 1984. *The Atlas of Australian Birds*. Melbourne University Press: Melbourne.
- BUREAU OF METEOROLOGY (BOM) 2014a. Rainfall, Urandangi, 2009. [http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p\\_nccObsCode=136&p\\_display\\_type=dailyDataFile&p\\_startYear=2009&p\\_c=-274590766&p\\_stn\\_num=037043](http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_nccObsCode=136&p_display_type=dailyDataFile&p_startYear=2009&p_c=-274590766&p_stn_num=037043) Accessed 26 September 2014.
- BUREAU OF METEOROLOGY (BOM) 2014b. Flooding in the Western Queensland Rivers, January to March 2009. [http://www.bom.gov.au/qld/flood/fld\\_reports/western\\_qld\\_river\\_floods\\_jan\\_mar\\_2009.pdf](http://www.bom.gov.au/qld/flood/fld_reports/western_qld_river_floods_jan_mar_2009.pdf) Accessed 26 September 2014.
- BUREAU OF METEOROLOGY (BOM) 2014c. Queensland flood summary 2010 onwards. [http://www.bom.gov.au/qld/flood/fld\\_history/floodsum\\_2010.shtml](http://www.bom.gov.au/qld/flood/fld_history/floodsum_2010.shtml) Accessed 27 October 2014.
- GARNETT, S.T., SZABO, J.K. & DUTSON, G. 2011. *The Action Plan for Australian Birds 2010*. CSIRO Publishing: Melbourne.
- JAENSCH, R.P. 1998. A survey of waterbirds of Bulloo Lake and the Cooper floodplain, south-west Queensland, August-September 1997. Unpublished report by Wetlands International – Oceania, 25 pp.
- JAENSCH, R. 2003a. Breeding by Freckled Duck *Stictonetta naevosa* in the Diamantina Channel Country. *Sunbird* 33: 24–28.
-

- JAENSCH, R. 2003b. Breeding by Freckled Duck *Stictonetta naevosa*, and a review of recent records, in the Barkly wetlands, Northern Territory. *Northern Territory Naturalist* 17: 38–42.
- JAENSCH, R. 2009. *Floodplain wetlands and waterbirds of the Channel Country*. South Australian Arid Lands Natural Resources Management Board. 26 pp.
- MARCHANT, S. & HIGGINS, P.J. 1990. *Handbook of Australian, New Zealand and Antarctic birds*. Vol. 1: *Ratites to Ducks*. Oxford University Press: Melbourne.
- REID, J.R.W. 2010. Channel Country rivers: the pulse of life. Pp. 125–143 in *Desert Channels, the Impulse to Conserve*, ed. by L. Robin, C. Dickman & M. Martin. CSIRO Publishing: Melbourne.
- REID, J.R.W. & JAENSCH, R. 2004. Aerial Waterbird Survey Results. Pp. 472–493 in *ARIDFLO Scientific Report: Environmental flow requirements of arid zone rivers with particular reference to the Lake Eyre Basin*, ed. by J.F. Costelloe, P.J. Hudson, J.T. Pritchard, J.T. Puckridge & J.R.W. Reid, School of Earth & Environmental Science, University of Adelaide. Final report to South Australian Department of Water, Land & Biodiversity Conservation and Commonwealth Department of Environment & Heritage. 827 pp.
- REID J.R.W., KINGSFORD, R.T. & JAENSCH, R.P. 2010. Waterbird Surveys in the Channel Country Floodplain Wetlands, Autumn 2009. Report by Australian National University, Canberra, University of New South Wales, Sydney, and Wetlands International – Oceania, Brisbane, for the Australian Government Department of Environment, Water, Heritage and the Arts. 81 pp. <http://www.lakeeyrebasin.gov.au/system/files/pages/71d27602-9826-4d4f-9004-fbc30cde225b/files/waterbirds-survey-report-2009.pdf> Accessed 26 September 2014.
- WILSON, B.A. 1999. Channel Country. Pp. 5/1-5/31 in *The Conservation Status of Queensland's Bioregional Ecosystems*, ed. by P.S. Sattler, & R.D. Williams. Environmental Protection Agency: Brisbane.

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## **SURVEYS OF THE RED GOSHAWK (*ERYTHROTRIORCHIS RADIATUS*) AND OTHER RAPTORS ON THE WEIPA PLATEAU, CAPE YORK PENINSULA**

S.J.S. DEBUS & J.B. SEARLE

### **ABSTRACT**

Surveys for diurnal and nocturnal raptors were conducted in the Weipa area, Cape York Peninsula, in July–August 2012 and July 2013. Diurnal raptors were surveyed by means of vehicle-based road or track transects (some through forest areas) and foot searches in forest (2012: 630 km and 30 hrs of driving, 10 hrs of searching on foot; 2013: 540 km and 10 hrs of road driving, 50 hrs of searching, mostly on foot, within forest). Owls were surveyed by listening, call playback and spotlighting (2012: four evenings, 13 sites; 2013: four evenings, 24 sites). In 2012, 15 diurnal raptor species and one owl species, the Southern Boobook (*Ninox novaeseelandiae*), were recorded in the survey area. The Red Goshawk (*Erythrotriorchis radiatus*) and Square-tailed Kite (*Lophoictinia isura*) were also recorded by a colleague during the 2012 survey period. In 2013, 19 diurnal raptor species, including a Red Goshawk and a Square-tailed Kite, and one owl, the Southern Boobook, were recorded in the survey area. Further observations of Red Goshawks were obtained from the survey area in April and August 2013 and March 2014, and of a pair of Rufous Owls (*Ninox rufa*) in April 2014. We conclude that the area of Darwin stringybark (*Eucalyptus tetradonta*) tall open forest surveyed is an important foraging habitat for between two and five pairs of Red Goshawks, and that the Weipa Plateau contains habitats suitable for Red Goshawk breeding.

### **INTRODUCTION**

Although recently reassessed as globally Near Threatened on the basis of new population data from the tropics (Garnett *et al.* 2011), the endemic Red Goshawk (*Erythrotriorchis radiatus*) is listed as Endangered under the Queensland *Nature Conservation Act* 1992 (e.g. Czechura 2012), and Vulnerable nationally under the federal *Environment Protection and Biodiversity Conservation Act* 1999. Czechura *et al.* (2011) conducted comprehensive surveys for the Red Goshawk throughout Queensland, finding the eastern side of Cape York Peninsula to be a key breeding area for this species in Queensland. However, despite inferring that the Weipa Plateau Province of the Cape York Bioregion is also likely to be an important area of habitat, the Weipa Plateau was not included in those surveys.

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As part of a broader ecological assessment of the Weipa bauxite mine being undertaken by Ecotone Environmental Services (Yungaburra) for Rio Tinto Alcan, we conducted a survey of threatened diurnal raptors and owls in the Weipa area in July–August 2012 and July 2013. The target species included two federally and state-listed Vulnerable species, the Red Goshawk and Northern Masked Owl (*Tyto novaehollandiae kimberli*), and two Near Threatened state-listed species (Qld), the Square-tailed Kite (*Lophoictinia isura*) and Grey Goshawk (*Accipiter novaehollandiae*). Although not listed as threatened, the Rufous Owl (*Ninox rufa meesi*) was included as a target species in the owl surveys, as the eastern subspecies (*N. rufa queenslandica*) is state-listed as Vulnerable. All incidental observations of other raptor species were also recorded. Incidental observations of Red Goshawks made by JBS during other ecological work in April and August 2013 and March 2014 are also reported herein.

## STUDY AREA AND METHODS

Diurnal raptors were surveyed by a combination of forest searches and road-transect searches. Forest searches involved slow driving along tracks through mature forest and along the boundary between revegetated (formerly cleared) areas and mature forest, walking through mature forest along tracks, through trackless forest or along creeks and wetland margins, and stationary watching at observation points (e.g. creek or wetland margins) with a view of the sky. Watches included sunset/dusk, when Red Goshawks are known to be active. Road transects included commuting (~20–70 km per trip in 2012, ~20–30 km per trip in 2013) between Weipa and forest survey sites, along public and private roads at traffic speed, stopping to identify any raptors observed. Transects started or finished at the town boundary (60 km/h sign, i.e. sampled non-urban habitats). Results from road transects are presented as the number of raptor sightings per kilometre, as most road transects (the commute to and from Weipa) were repeated at various times of day, meaning that individual raptors were probably recorded more than once on repeated surveys of any one road transect. The study area for the surveys is shown in Figure 1, with our records of the target raptor species. In both years, most searching targeted areas supporting mature plateau forest, representing some of the tallest forests of the region (open forest of Darwin stringybark (*Eucalyptus tetradonta*) and its usual codominant of Melville Island bloodwood (*Corymbia nesophila*)), and adjoining areas of riparian gallery forest or wetland margins.

In 2012 the survey was conducted from 26 July to 1 August, mostly in the area north-east of Weipa (Andoom on the Mapoon road, including daily

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traverses of estuarine habitat at the Mission River bridge). Surveys started from Weipa after 0700 h, and extended north as far as Tentpole Creek and the Pennefather Road just north of Ely Dam. In 2012, driving transects (including slow driving on mine tracks along the boundary between cleared or revegetated areas and mature forest) were conducted for a total of 630 km and 30 hours, and walking or watching surveys within forest were conducted for a total of 10 hours. Consequently, the results for 2012 are presented as both the number of raptor sightings per kilometre of driving, and the number of sightings per hour of total search time (40 hours).

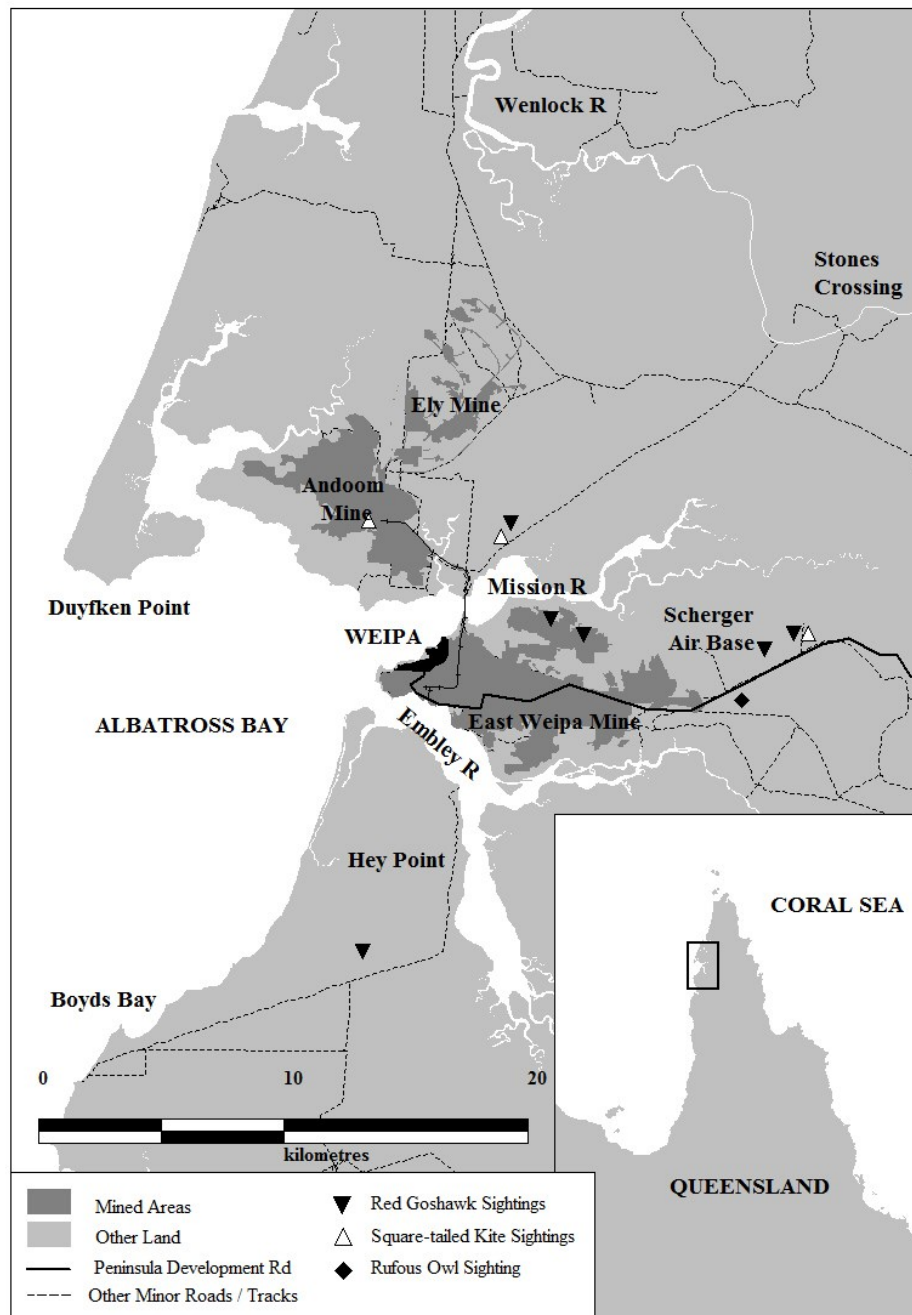


Figure 1. Raptor survey area around Weipa, showing records of the target species 2012–14.

In 2013 the survey was conducted from 23 to 31 July, mostly in the area east of Weipa, particularly east and south of the Scherger RAAF base on the Peninsula Development Road. Surveys started from Weipa at first light, and included areas where the Red Goshawk had been reported in 2012, as well as visits to the Mission River and Marmoss Creek. In 2013, road transects were conducted for a total of 540 km and 10 hours, and walking, watching or slow driving surveys in forest were conducted for a total of 50 hours. Results for 2013 are therefore presented separately for road transects (raptor sightings/km) and searching within forest (all methods, raptor sightings/hr).

Nocturnal raptors were surveyed in areas of suitable habitat from dusk by listening, call playback and stationary spotlighting, with slow spotlight-driving while travelling between playback sites or traversing tracks through mature forest. Nocturnal surveys sampled different areas in 2012 and 2013, as for diurnal raptors (above). Dusk sessions involved watching and listening for nocturnal birds, followed by call playback, over an observation period of at least 30 minutes. Calls broadcast included Masked Owl at every nocturnal site, Rufous Owl at riparian and vine-scrub sites, and various other non-threatened nocturnal birds (owls, frogmouths and nightjars) according to habitat type, e.g. Marbled Frogmouth (*Podargus ocellatus*) and Papuan Frogmouth (*P. papuensis*) in vine scrub and gallery forest. Call playback was supplemented by mechanical callers (fox whistle and squeaking toy, to simulate Masked Owl and rodent calls) for the Masked Owl, and by imitation of hooting for the Rufous Owl. The playback calls used to elicit Masked Owl responses were a repeated sequence of adult screeches and a chattering courtship call (a technique used successfully by SD on previous occasions elsewhere).

In 2012, nocturnal surveys were conducted at 13 separate sites over four evenings, including a repeat survey at one of these sites (on a subsequent night of the four). Dusk sessions were conducted at each of four sites, in rotation across the four nights. In 2013, nocturnal surveys were conducted at a total of 24 sites over four evenings, including a repeat survey at two of these sites (on a subsequent night of the four), with dusk sessions as above. In both years, Masked Owl calls were broadcast first at every site for a period of ~2 minutes, followed by an observation period of ~5 minutes, which included listening for movement and vocalisations and spotlighting the general area from which calls were played. Call playback for other nocturnal species followed, using the same protocol, and concluded with a second broadcast for the Masked Owl.

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## RESULTS

### Raptors detected in 2012

During the 2012 survey, 15 diurnal raptor species were detected, with Black Kites (*Milvus migrans*) and Whistling Kites (*Haliastur sphenurus*) being the most abundant, followed by Brown Falcons (*Falco berigora*) (Table 1); this total excludes the large urban population of Black Kites (numbering in the hundreds) within Weipa township. Despite nearly 550 raptor sightings, amounting to almost one raptor per km of road and track transect and 14 sightings per hour of total search time (vehicle transects and on foot), no Red Goshawks, Square-tailed Kites or Grey Goshawks were observed. Nevertheless, several uncommon raptors were observed during these surveys, including the Black-breasted Buzzard (*Hamirostra melanosternon*) and Little Eagle (*Hieraaetus morphoides*).

During our survey, a single Red Goshawk was independently observed within the survey area by ecologist F. Venter (personal communication) on 29 July (Figure 1). The area in which the Red Goshawk was observed

**Table 1. Number of raptor sightings by species, for 630 km of road and track transect ( $n$  sightings/km) and 40 hours of total search time (road transects and slow driving on tracks along the edge of forest 30 hrs, walking and watching in forest 10 hrs;  $n$  sightings/hr), Weipa district (mainly north-east), 26 July–1 August 2012.**

Species	$N$ sightings	$n$ /km	$n$ /hr
Eastern Osprey ( <i>Pandion cristatus</i> )	2	<0.01	0.05
Black-shouldered Kite ( <i>Elanus axillaris</i> )	13	0.02	0.33
Black-breasted Buzzard ( <i>Hamirostra melanosternon</i> )	3	<0.01	0.08
Pacific Baza ( <i>Aviceda subcristata</i> )	6	<0.01	0.15
White-bellied Sea-Eagle ( <i>Haliaeetus leucogaster</i> )	9	0.01	0.23
Whistling Kite ( <i>Haliastur sphenurus</i> )	95	0.15	2.38
Brahminy Kite ( <i>Haliastur indus</i> )	4	<0.01	0.1
Black Kite ( <i>Milvus migrans</i> )	343	0.54	8.58
Brown Goshawk ( <i>Accipiter fasciatus</i> )	13	0.02	0.33
Collared Sparrowhawk ( <i>Accipiter cirrocephalus</i> )	5	<0.01	0.13
Wedge-tailed Eagle ( <i>Aquila audax</i> )	1	<0.01	0.03
Little Eagle ( <i>Hieraaetus morphoides</i> )	2	<0.01	0.05
Nankeen Kestrel ( <i>Falco cenchroides</i> )	13	0.02	0.33
Brown Falcon ( <i>Falco berigora</i> )	28	0.04	0.7
Australian Hobby ( <i>Falco longipennis</i> )	4	<0.01	0.1
<b>Total</b>	<b>541</b>	<b>0.86</b>	<b>13.5</b>

comprised open forest of Darwin stringybark, Melville Island bloodwood and Cooktown ironwood (*Erythrophleum chlorostachys*). Despite our intensive search in this area a few days later, Red Goshawks were not observed again until 15 August, when a pair was seen in the same area (F. Venter personal communication). A single Square-tailed Kite was also observed on three occasions in this area (F. Venter personal communication). The habitat at this site, being tall Darwin stringybark-dominated forest, appeared to be the most suitable area for the Red Goshawk, of all the areas surveyed in 2012. Although these sightings were in an area >25% cleared for mining and partly revegetated (with dense shrubs and saplings), the site adjoined a large area of apparently suitable, contiguous stringybark forest and riparian/estuarine forest that could have facilitated the goshawk's presence. The middle Wenlock River may also contain suitable habitat for Red Goshawks, although track conditions and time constraints prevented us from surveying that area.

We found one active Black Kite nest, three active or attended Whistling Kite nests and two active Brahminy Kite (*Haliastur indus*) nests. Additionally, we found one old White-bellied Sea-Eagle (*Haliaeetus leucogaster*) or Wedge-tailed Eagle (*Aquila audax*) nest, several vacant or old stick nests of smaller raptors, and we observed pre-breeding activity by a pair of Collared Sparrowhawks (*Accipiter cirrocephalus*). There were also two active nests of the Eastern Osprey (*Pandion cristatus*) within the Weipa township.

No Masked Owls or Rufous Owls were detected, despite playback at vine-scrub sites known to be inhabited by Rufous Owls (prior records by JBS and other ecologists). Other nocturnal birds detected included the Tawny Frogmouth (*Podargus strigoides*), Large-tailed Nightjar (*Caprimulgus macrourus*) and Southern Boobook.

### **Raptors detected in 2013**

During the 2013 survey, 19 diurnal raptor species were detected. As for the 2012 survey, Black Kites and Whistling Kites were the most abundant, followed by Brown Falcons (Table 2); again this total excludes the large urban population of Black Kites within Weipa township. In total, 260 raptor sightings were made in 2013, amounting to approximately one raptor per 3 km of road transect and two sightings per hour in forest habitat. One adult female Red Goshawk and one Square-tailed Kite were observed during this survey period (Figure 1). No Grey Goshawks were observed, although as in 2012 several uncommon raptors were observed (e.g. Black-breasted Buzzard, Spotted Harrier (*Circus assimilis*)).

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**Table 2. Number of raptor sightings by species, for 540 km of road transect ( $n$  sightings/km) and 50 hours of forest search time (walking, watching or slow driving in forest;  $n$  sightings/hr), Weipa district (east), 23–31 July 2013.**

Species	$N$ sightings	$n$ /km	$n$ /hr
Eastern Osprey ( <i>Pandion cristatus</i> )	8	0.01	-
Black-shouldered Kite ( <i>Elanus axillaris</i> )	5	<0.01	0.02
Square-tailed Kite ( <i>Lophoictinia isura</i> )	1	-	0.02
Black-breasted Buzzard ( <i>Hamirostra melanosternon</i> )	7	<0.01	0.1
Pacific Baza ( <i>Aviceda subcristata</i> )	5	<0.01	0.06
White-bellied Sea-Eagle ( <i>Haliaeetus leucogaster</i> )	5	<0.01	0.04
Whistling Kite ( <i>Haliastur sphenurus</i> )	85	0.09	0.74
Brahminy Kite ( <i>Haliastur indus</i> )	5	<0.01	0.02
Black Kite ( <i>Mihus migrans</i> )	74	0.11	0.3
Brown Goshawk ( <i>Accipiter fasciatus</i> )	15	<0.01	0.24
Collared Sparrowhawk ( <i>Accipiter cirrocephalus</i> )	1	-	0.02
Red Goshawk ( <i>Erythrotriorchis radiatus</i> )	1	-	0.02
Spotted Harrier ( <i>Circus assimilis</i> )	1	<0.01	-
Wedge-tailed Eagle ( <i>Aquila audax</i> )	13	-	0.26
Little Eagle ( <i>Hieraaetus morphnoides</i> )	2	<0.01	0.02
Nankeen Kestrel ( <i>Falco cenchroides</i> )	4	<0.01	-
Brown Falcon ( <i>Falco berigora</i> )	22	0.03	0.14
Australian Hobby ( <i>Falco longipennis</i> )	1	<0.01	-
Peregrine Falcon ( <i>Falco peregrinus</i> )	3	-	0.06
<b>Total</b>	<b>258</b>	<b>0.29</b>	<b>2.06</b>

The Red Goshawk (Figure 2) and Square-tailed Kite were both observed foraging aerially in an area that comprised some of the tallest examples (i.e. 25+ m, with some up to 33 m) of open forest dominated by Darwin stringybark and Melville Island bloodwood on the lateritic plateau, and some of the tallest forest encountered on the survey, extending in some cases to connect with riparian forest. On the basis of forest structure and composition, this area appeared to be the most suitable of the areas searched during the July 2013 survey for these two raptor species, whereas the riparian forest, and the forest encountered on many wetland margins, generally appeared too low and/or dense for Red Goshawks (see Discussion, below).

When first sighted, the Red Goshawk was flying over the treetops at right angles to the track ~200 m ahead of our vehicle, and was almost



**Figure 2. Adult female Red Goshawk in flight in overcast conditions, east of Weipa, 24 July 2013. Photos: Jason Searle.**

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**Figure 3. Adult male Red Goshawk perched, north-east of Weipa, 16 April 2013. Photo: Jason Searle.**

discounted as a Brown Falcon (at that distance) on account of its flight style and shallow dihedral in glide. When it turned parallel with the track and soared in circles (against an overcast sky), we caught up and through binoculars discerned its diagnostic features: pale, strongly barred remiges from below; wing shape (S-shaped trailing edge and long ‘fingered’ primaries); square-tipped tail; large yellow feet; and pale face with yellow eyes (Figure 2). The sighting reinforces the similarity of the Red Goshawk to a fast-flying rufous Brown Falcon, and cautions against summarily

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dismissing apparent Brown Falcons, without careful scrutiny, in tropical woodland. When circling in a leisurely manner, the goshawk's wing-beats were almost harrier-like (though with a shallower dihedral).

One active Wedge-tailed Eagle nest containing a month-old chick was located on 24 July (in the area of the Red Goshawk sighting) along with two inactive nests, one occupied but as yet inactive Brown Falcon nest, and several vacant or old stick nests of smaller raptors. In addition, during other ecological surveys in the target area in 2013, JBS observed an active Whistling Kite nest (6 May), and an adult pair of Black-breasted Buzzards perched next to an old stick nest located in a senescing eucalypt, in the centre of a 10 ha remnant of Darwin stringybark open forest that was surrounded by a cleared area (22 April).

No Masked Owls or Rufous Owls were detected in 2013, despite playback at a riparian habitat location where the latter species had previously been recorded (adult and fledgling observed by ecologist M. Thomas: personal communication). Other nocturnal birds detected included the Tawny Frogmouth, Papuan Frogmouth, White-throated Nightjar (*Eurostopodus mysticalis*) and Southern Boobook.

During other ecological surveys in 2013, JBS observed a single Red Goshawk north-east of Weipa, across the Mission River, on 16 April (adult male, Figure 3) and south of Weipa, across the Embley River, on 18 August. The first was perched in a tall (25+ m) Darwin Stringybark in forest in which Darwin stringybark and Melville Island bloodwood were the codominant tree species. The second was in flight, and appeared to be foraging over similar Darwin stringybark open forest and associated ecotonal vegetation adjoining a creek. The bird was initially detected following the alarm response of honeyeaters feeding in broad-leaved paperbark (*Melaleuca viridiflora*) on the alluvial terrace of the creek.

During an ecological survey in 2014, JBS observed a Red Goshawk on 31 March in the same general area as the individual seen during July 2013 (its diagnostic large yellow feet being seen clearly). Also in 2014, JBS observed and photographed a Square-tailed Kite foraging over tall forest around Andoom on 15–16 July, in the general area of the April 2013 Red Goshawk sighting and ~5 km north of Venter's Square-tailed Kite sightings in 2012. On account of its similar colour pattern, the kite required careful separation from a Red Goshawk, mainly on wing shape (longer, splayed primaries) and bodily proportions (e.g. small head/bill and feet), evident in a photograph consulted later.

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Also during an ecological survey in 2014, JBS observed a pair of Rufous Owls on 1 April at one of the 2013 owl survey sites, roosting during daytime in a large swamp box (*Lophostemon suaveolens*) on the edge of riparian rainforest at the head of one of the tributaries of Marmoss Creek, in the southern part of the study area (Figure 1).

## DISCUSSION

The greater amount of time spent searching on foot in forest, and the earlier start times (first light), largely explain the greater number and diversity of raptor sightings in 2013 (Tables 1 and 2). These factors also likely explain the greater number of sightings of uncommon species such as the Black-breasted Buzzard, the detection of rare or threatened target species (Square-tailed Kite and Red Goshawk), and the detection of Wedge-tailed Eagles and their nests in 2013. Conversely, the large number of Black and Whistling Kites observed in 2012 is attributed to differences in the road survey route between years. For example, in 2012 the survey route passed along a main road with abundant road-killed macropod carrion, crossed a river estuary including habitat for aquatic kites, passed the carcass dump of pig hunters, and included an active fire front (attracting large numbers of foraging kites).

Allowing for the fact that a prior survey relied largely on vehicle-based road transects that detect highly visible roadside raptors in open habitats, but under-record forest species, the diurnal raptor community around Weipa was generally similar to that surveyed in other parts of the tropics by Gosper & Holmes (2008). There are few prior breeding records of the Wedge-tailed Eagle in the tropics and, until the present study, none for Cape York Peninsula (Marchant & Higgins 1993). Based on age-related plumage development (Debus *et al.* 2007), the eagle chick was about a month old in the last week of July; allowing 6 weeks' incubation, hatching would have occurred in the last week of June and laying in the second week of May. Our record of a nestling supports the view that egg-laying is early (April or occasionally earlier) in the tropics (Marchant & Higgins 1993). Similarly, there are few records of the Little Eagle on Cape York Peninsula (Blakers *et al.* 1984; Barrett *et al.* 2003) and some older and recent field guides show a range gap there. Our sightings show that the Little Eagle occurs well north on the Peninsula. Our observation of a Little Eagle diving at a bird in the canopy (tall shrubs in a revegetated area) supports the view that it preys on birds in the tropics (Garstone 1986; Marchant & Higgins 1993), as does the behavioural response there of waterfowl and honeyeaters to its presence (G. Czechura personal communication). The presence of adult light-breasted Brown Falcons performing pre-breeding behaviour at or near an occupied

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nest is consistent with the view that at least some individuals of the ‘dark morph’ in the tropics may be juveniles, including migrants from southern Australia (e.g. McDonald 2003): a subject for further investigation.

In both years, lack of detection on only one or two call-playback attempts per site need not imply absence of Rufous Owls, as the owls could have been unresponsive or out of range of the playback. They were present, as shown by the prior and subsequent sightings. Owl-sized hollows, for roosting and/or nesting, were present in the mature stringybark forest surveyed in both years. Similarly, lack of detection need not imply total absence of the Masked Owl, as this species is cryptic and may be unresponsive if not breeding (SD personal observation). The evidence of frequent fire (i.e. simplified, open and/or scorched ground layer), including active burning, that we observed may suppress populations of small terrestrial mammals and hence Masked Owl occurrence and breeding. Localised patterns of small-mammal abundance may also play a part (G. Czechura personal communication).

### **Suitability of habitat for threatened raptors and owls**

In the tropics, including Cape York Peninsula, the Red Goshawk typically inhabits near-coastal tall open forest of multi-species eucalypt assemblages (often dominated or codominated by Darwin stringybark and bloodwoods, with paperbark flats and riverine forest nearby), and subcoastal riparian gallery forest. It nests at heights of at least 15 m above ground, in eucalypts (commonly Darwin stringybark or bloodwoods) and paperbarks (*Melaleuca* sp.) at least 18 m tall, within 1 km of a permanent, fresh watercourse or wetland or (on Cape York Peninsula) within 1–2 km of paperbark flats or riverine forest, and often near a natural or artificial break such as a watercourse, canopy gap or road/track (e.g. Aumann & Baker-Gabb 1991; Marchant & Higgins 1993; Young 2004; Czechura *et al.* 2009, 2011). The taller, plateau stringybark-bloodwood forest that we surveyed, and in which we detected Red Goshawks, appeared to match these height criteria, but the gallery and estuarine forest in the survey area (sections of Marmoss Creek, Mission River and tributaries visited) generally did not, because the riparian trees there were mostly below the 18 m threshold. However, there were isolated weeping paperbarks (*Melaleuca leucadendra*) and brush cherries (*Syzygium* spp.) >20 m tall in the riparian zone in some locations, although much of the Clarkson’s bloodwood (*Corymbia clarksoniana*) open woodland flanking riparian areas was low (10–15 m), and the riparian zone was rarely more than one canopy width wide, probably owing to frequent fire. Such riverine habitat could potentially function as foraging habitat.

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Thus, the area surrounding the Red Goshawk sightings in 2013–14 appears to offer suitable foraging habitat for this species, by virtue of the forest structure and composition and its suitable prey base (JBS unpublished data). Further, potential breeding habitat (as described above) occurs within the broad vicinity. These records thus supplement a prior recent record of the Red Goshawk in the Weipa Plateau Province of the Cape York Bioregion (in Czechura *et al.* 2011).

Radio-tracking data have established a home-range size of up to 200 km<sup>2</sup> for the Red Goshawk, with inter-nest distances in the tropics of 6.5–23 km (Aumann & Baker-Gabb 1991; Marchant & Higgins 1993), and 7–11 km on eastern Cape York Peninsula (Czechura *et al.* 2009, 2011). New data suggest that 23 km is an overestimate, and about half that (i.e. ~11 km) may be more realistic (D. Baker-Gabb personal communication). On this basis, the distribution of the Red Goshawk records and tall Darwin stringybark-bloodwood forest in our survey suggests that there might be between two and five pairs of this species in the ~1000 km<sup>2</sup> bounded by the Ely mine, Weipa and the Scherger base (Figure 1), and another one or two pairs in the Hey Point / Boyd Bay area (~400 km<sup>2</sup>). However, from the cluster of sightings from the Mission River (adult male) and East Weipa (pair) to Scherger (adult female), we could not determine whether these represented one, two or three pairs in that area.

Extrapolating the above prior findings on home-range size and inter-nest distances to the Weipa Plateau, including assumptions about densities and the possibility of contiguous or overlapping home ranges, would require validation by survey, i.e. locating multiple nearest-neighbour occupied nests in the one breeding season. Radio-tracking, and methods that enable survey from above the forest canopy, would also be useful. A general caveat is that Red Goshawks may perch quietly within the foliage canopy rather than flushing, and thus escape detection.

It appears that the Darwin stringybark-bloodwood tall open forest of the Weipa Plateau Province may be of similar importance to the Red Goshawk as the Laura Lowlands Province documented by Czechura *et al.* (2009, 2011). As viewed from an aircraft on flights between Cairns and Weipa (SD personal observation), there is extensive potential habitat for the Red Goshawk on Cape York Peninsula, thus reinforcing the conclusions of Czechura *et al.* (2011) on the importance of this bioregion for the state's population of this species. Young (2004) similarly concluded, on the basis of 36 nests and inter-nest distances of 11–22 km, that Darwin stringybark is a key habitat on the Peninsula. We also note that the photograph captioned by

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Hollands (2003) as a breeding male Red Goshawk perched high in an 'angophora' [on the Wenlock River] appears to show a Darwin stringybark. His unspecified bloodwood nest tree at that site was, from his photographs (between pp. 76 and 77), most likely a Melville Island bloodwood (or perhaps Clarkson's bloodwood), and not a red bloodwood (*C. gummifera*) as stated by Cupper & Cupper (1981) and later reviews. The eucalypt of Hollands' (2003, p. 97) later nest site on Cape York Peninsula appears to show another bloodwood species (photo, opposite p. 77), perhaps blotchy bloodwood (*C. stockeri*).

Recent information suggests that although Red Goshawks are able to nest and hatch chicks within roadside remnant forest and plantation buffers, their breeding success declines when a threshold level of >25% of forest is cleared within 4 km of the pair's nest (Tiwi Islands: Baker-Gabb 2013). Further, although the National Recovery Plan for the Red Goshawk (DERM 2012) implies that they can nest in fragmented habitat (e.g. as on the Tiwi Islands), they still require buffer zones of at least 300 m radius, connected to intact forest and the nearest watercourse by forested corridors 600 m wide, and the removal of actual or potential nest trees is detrimental to their ongoing persistence in an area. Although this study did not provide any information on the value of revegetated mine sites to Red Goshawks, the more advanced revegetated areas adjoining mature forest may provide foraging opportunities for this species, as nectarivorous birds and other preferred prey species are seasonally abundant in these areas during flowering, or are common on the forest edge (JBS personal observation; M. Thomas & B. Foster personal communication).

The lack of detections of Masked Owls during this study, combined with the apparently low densities of suitable prey (terrestrial mammals up to bandicoot size) (JBS *et al.* unpublished data), suggest that if the Masked Owl occurs on the Weipa Plateau at all, it is at very low densities. Despite potential roost and nest hollows occurring in the Darwin stringybark open forest surveyed, we suggest that the Masked Owl may require more mammal-rich habitats than is provided by Darwin stringybark and Melville Island bloodwood. However, frequent fire, as observed during our survey, is of concern for the owl's nest and roost sites, i.e. tree hollows, and its prey base of small terrestrial mammals (e.g. Fitzsimons *et al.* 2010; Garnett *et al.* 2011; Debus 2012), and could partly explain its rarity in the area surveyed. Further call-playback surveys, in a variety of habitats and locations, would clarify the owl's status on Cape York Peninsula.

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## REFERENCES

- AUMANN, T. & BAKER-GABB, D.J. 1991. *The Ecology and Status of the Red Goshawk in Northern Australia*. RAOU Report no. 75, Royal Australasian Ornithologists Union: Melbourne.
- BAKER-GABB, D. 2013. Red Goshawk *Erythrotriorchis radiatus* surveys and monitoring on the Tiwi Islands, northern Australia during 2001–11. Program and abstracts, Australasian Raptor Association conference, Adelaide, August 2013, p. 12. [Abstract reprinted in *Boobook* 31, 2013: 73.]
- BARRETT, G., SILCOCKS, A., BARRY, S., CUNNINGHAM, R. & POULTER, R. 2003. *The New Atlas of Australian Birds*. Royal Australasian Ornithologists Union: Melbourne.
- BLAKERS, M., DAVIES, S.J.J.F. & REILLY, P.N. 1984. *The Atlas of Australian Birds*. Melbourne University Press: Melbourne.
- CUPPER, J. & CUPPER, L. 1981. *Hawks in Focus*. Jaclin Enterprises: Mildura (Victoria).
- CZECHURA, G.V. 2012. Red Goshawk *Erythrotriorchis radiatus*. Pp. 268–269 in *Queensland's Threatened Animals*, ed. by L.K. Curtis, A.J. Dennis, K.R. McDonald, P.K. Kyne & S.J.S. Debus. CSIRO Publishing: Melbourne.
- CZECHURA, G.V., HOBSON, R.G. & STEWART, D.A. 2009. Observations on the biology of the Red Goshawk *Erythrotriorchis radiatus* in Queensland. *Australian Field Ornithology* 26: 148–156.
- CZECHURA, G.V., HOBSON, R.G. & STEWART, D.A. 2011. Distribution, status and habitat of the Red Goshawk *Erythrotriorchis radiatus* in Queensland. *Corella* 35: 3–10.
- DEBUS, S.J.S. 2012. Masked Owl (northern subspecies) *Tyto novaehollandiae kimberli*. Pp. 306–307 in *Queensland's Threatened Animals*, ed. by L.K. Curtis, A.J. Dennis, K.R. McDonald, P.K. Kyne & S.J.S. Debus. CSIRO Publishing: Melbourne.
- DEBUS, S.J.S., HATFIELD, T.S., LEY, A.J. & ROSE, A.B. 2007. Breeding biology and diet of the Wedge-tailed Eagle *Aquila audax* in the New England region of New South Wales. *Australian Field Ornithology* 24: 93–120.
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- DERM 2012. National Recovery Plan for the Red Goshawk *Erythrotriorchis radiatus*. Report to Dept Sustainability, Environment, Water, Population and Communities, Canberra. Qld Dept Environment and Resource Management: Brisbane.
- FITZSIMONS, J., LEGGE, S., TRAILL, B. & WOINARSKI, J. 2010. *Into Oblivion? The Disappearing Native Mammals of Northern Australia*. The Nature Conservancy: Melbourne.
- GARNETT, S., SZABO, J. & DUTSON, G. 2011. *The Action Plan for Australian Birds 2010*. CSIRO Publishing: Melbourne.
- GARSTONE, R. 1986. Little Eagle *Hieraaetus morphnoides* takes Banded Fruit-Dove *Ptilinopus cinctus*. *Australian Bird Watcher* 11: 242–243.
- GOSPER, D. & HOLMES, G. 2008. A survey of diurnal raptors in the wet–dry tropics, northern Australia. *Corella* 32: 71–75.
- HOLLANDS, D. 2003. *Eagles, Hawks and Falcons of Australia*, 2nd edn. Bloomings Books: Melbourne.
- MARCHANT, S. & HIGGINS, P.J. (Eds) 1993. *Handbook of Australian, New Zealand and Antarctic Birds*, Vol. 2: *Raptors to Lapwings*. Oxford University Press: Melbourne.
- MCDONALD, P.G. 2003. Variable plumage and bare part colouration in the Brown Falcon, *Falco berigora*: the influence of age and sex. *Emu* 103: 21–28.
- YOUNG, J. 2004. DVD: *John Young and the Search for the Red Goshawk*. John Young Wildlife Enterprises: Toowong (Brisbane, Qld).

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# SURVEY FOR THE RED GOSHAWK (*ERYTHROTRIORCHIS RADIATUS*) IN SOUTH EAST QUEENSLAND

RICHARD SEATON

## ABSTRACT

Intensive surveys for the Red Goshawk (*Erythrotriorchis radiatus*) were undertaken in areas of suitable habitat within South East Queensland (SEQ) over 60 days between December 2013 and May 2014. Despite >470 hours of active searching, and the observation of all but one (Grey Falcon, *Falco hypoleucos*) of the 21 other raptor species known to occur in SEQ, no Red Goshawks were detected. Whether there has been a decline in the Red Goshawk population in SEQ is difficult to establish conclusively. However, when these results are taken in light of the decline in the number of observations being reported to WildNet between 1980 and 2014, the success of surveys of a similar intensity undertaken in SEQ previously, and the reported decline and probable loss of Red Goshawks from New South Wales, a continuing retraction of the species' southerly range appears probable. Recommendations of an expert workshop convened to discuss the implications of these results and to determine what action is required for the management of this species are outlined.

## INTRODUCTION

As a species that requires large areas of relatively intact, biodiverse habitat, the Red Goshawk (*Erythrotriorchis radiatus*) (Figure 1) is considered a flagship species (Czechura *et al.* 2011) whose loss from an area would likely indicate an associated decline in biodiversity. This makes knowledge of local populations not only important in terms of the Red Goshawk's conservation, but also as an indicator of ecosystem health at a landscape scale.

The Red Goshawk is listed as an Endangered species in Queensland (*Nature Conservation Act 1992*), as Vulnerable nationally (*Environment Protection and Biodiversity Conservation Act 1999*), and is ranked as a High Priority under the Department of Environment and Heritage Protection 'Back on Track' species prioritisation framework. The Back on Track Actions for Biodiversity guidance document (DERM 2010) identified habitat loss, fragmentation and the loss of nesting sites through fire as the key threats to Red Goshawk populations in South East Queensland (SEQ). However, limited knowledge of the current breeding population of Red Goshawks in this region makes it

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**Figure 1. Red Goshawk in flight. Photo: James Watson.**

difficult to determine the extent and impact of these threats. This knowledge is critical to ensuring that any threats are appropriately managed into the future.

Czechura *et al.* (2011) recommended that to better inform management actions, the population of Red Goshawks in SEQ should be re-surveyed in 2011. This paper outlines the results of surveys undertaken in the SEQ Natural Resource Management (NRM) Region between December 2013 and May 2014 in response to that recommendation. The surveys were followed up by an expert workshop to discuss the findings, their implications and what action is required for the management of this species.

## **METHODS**

Surveys for Red Goshawks were undertaken over 60 days between 10 December 2013 and 2 May 2014. They were timed to coincide with the fledgling and dispersal phase of the Red Goshawk breeding season (December to May), which was considered the most conducive period for

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maximising observations, as it is the time when both adults of a pair and fledglings are active and roaming through the landscape. Further, fledglings regularly and loudly solicit for food once they leave the nest, making them more conspicuous (e.g. Marchant & Higgins 1993; Czechura *et al.* 2009).

Broad survey areas were chosen, based on a combination of habitat mapping undertaken by SEQ Catchments, expert advice and historical records in WildNet, the fauna and flora database of Queensland's Department of Environment and Heritage Protection. Particular focus was given to areas where breeding activity had been recorded in the past 20 years or where confirmed sightings had been made within potentially suitable breeding habitat since 1990. These included the following broad areas, comprising National or Forest Parks and adjacent private properties: Conondale National Park, D'Aguiar National Park, Lockyer State Forest, Main Range National Park and Lamington National Park. These areas contain the mosaic of tall forest types described as suitable for Red Goshawk breeding (e.g. as documented by Czechura *et al.* 2009, 2011 for Queensland).

Initially, a combination of transect and point-count survey techniques was employed within the broad survey area. However, point counts were quickly favoured, as the views from transects were generally limited (as noted in Debus 1992, 1993; Czechura *et al.* 2011). Vantage points were often very scarce, so to maximise observation time surveys were usually undertaken from a single location for multiple consecutive days.

The search for nest sites was focused within each broad survey area by targeting roadsides and scanning all large emergent trees within view of point count sites with both the naked eye and with 10× binoculars. All raptor species potentially within the areas were of interest. A 30–60× telescope was also used where required to verify the identity of a bird, as was a digital camera with a 600 mm zoom telephoto lens. All individuals of raptor species observed during the surveys were recorded, along with the time, location, and the age and sex of each individual, where it could be determined.

A workshop was held on 25 June 2014 to discuss the results of these surveys and garner expert opinion on their significance. In order to provide a context to these discussions the WildNet database was interrogated for observations of Red Goshawk in SEQ since 1980. Owing to a concern that the data might be biased towards records from Toowoomba / Lockyer Valley, observations were plotted with and without these records.

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## RESULTS

In total, 472 hours were spent actively searching for Red Goshawks between December and May 2014. All areas surveyed contained large trees that appeared suitable for Red Goshawk nesting. Similarly, all of the areas contained the mosaic of tall forest types that, as mentioned previously, are described as suitable for Red Goshawk breeding.

Despite all but one (Grey Falcon, *Falco hypoleucos*) of the 21 other diurnal raptor species potentially observable either from the survey sites or during travel between survey sites (Table 1), no Red Goshawks were observed. Of the raptors observed, two are listed under Queensland's *Nature Conservation Act 2006*: Grey Goshawk (*Accipiter novaehollandiae* – Near Threatened) and Square-tailed Kite (*Lophoictinia isura* – Near Threatened).

**Table 1. Raptor species observed during Red Goshawk surveys, SEQ, December 2013–May 2014.**

Species	No. of sightings	No. of sightings/hr
Australian Hobby ( <i>Falco longipennis</i> )	3	0.006
Black Falcon ( <i>Falco subniger</i> )	1	0.002
Black Kite ( <i>Mihus migrans</i> )	1	0.002
Black-shouldered Kite ( <i>Elanus axillaris</i> )	1	0.002
Brahminy Kite ( <i>Haliastur indus</i> )	3	0.006
Brown Falcon ( <i>Falco berigora</i> )	14	0.030
Brown Goshawk ( <i>Accipiter fasciatus</i> )	40	0.085
Collared Sparrowhawk ( <i>Accipiter cirrocephalus</i> )	4	0.008
Eastern Osprey ( <i>Pandion cristatus</i> )	3	0.006
Grey Goshawk ( <i>Accipiter novaehollandiae</i> )	54	0.114
Little Eagle ( <i>Hieraaetus morphnoides</i> )	6	0.013
Nankeen Kestrel ( <i>Falco cenchroides</i> )	5	0.011
Pacific Baza ( <i>Aviceda subcristata</i> )	4	0.008
Peregrine Falcon ( <i>Falco peregrinus</i> )	18	0.038
Spotted Harrier ( <i>Circus assimilis</i> )	2	0.004
Square-tailed Kite ( <i>Lophoictinia isura</i> )	1	0.002
Swamp Harrier ( <i>Circus approximans</i> )	2	0.004
Wedge-tailed Eagle ( <i>Aquila audax</i> )	92	0.195
Whistling Kite ( <i>Haliastur sphenurus</i> )	23	0.049
White-bellied Sea-Eagle ( <i>Haliaeetus leucogaster</i> )	8	0.017

Interrogation of the WildNet database provided 75 confirmed observations of Red Goshawks from within the SEQ NRM Region between 1980 and 2014 (Figure 2). Regardless of whether the Toowoomba / Lockyer Valley records were included or not, a downward trend in the reported numbers of Red Goshawks is apparent over this period. Further, no Red Goshawks have been reported from the South D’Aguilar and Mt Mee National Parks since 1994, from Lamington National Park since 2001 and from the Conondale National Park since 2007. Not including individuals reported from the Toowoomba / Lockyer Valley, no Red Goshawks have been reported from the SEQ NRM Region since 2009.

## DISCUSSION

Owing to the challenges of surveying for such a wide-ranging and cryptic species, it will always be difficult to come to reliable conclusions on the presence or absence of Red Goshawks in SEQ. Nevertheless, surveys undertaken in SEQ 13 years ago (Hobson 2001) which employed a similar intensity and duration as the present survey detected Red Goshawks on six occasions. Thus, given the substantial survey effort in the present instance, it

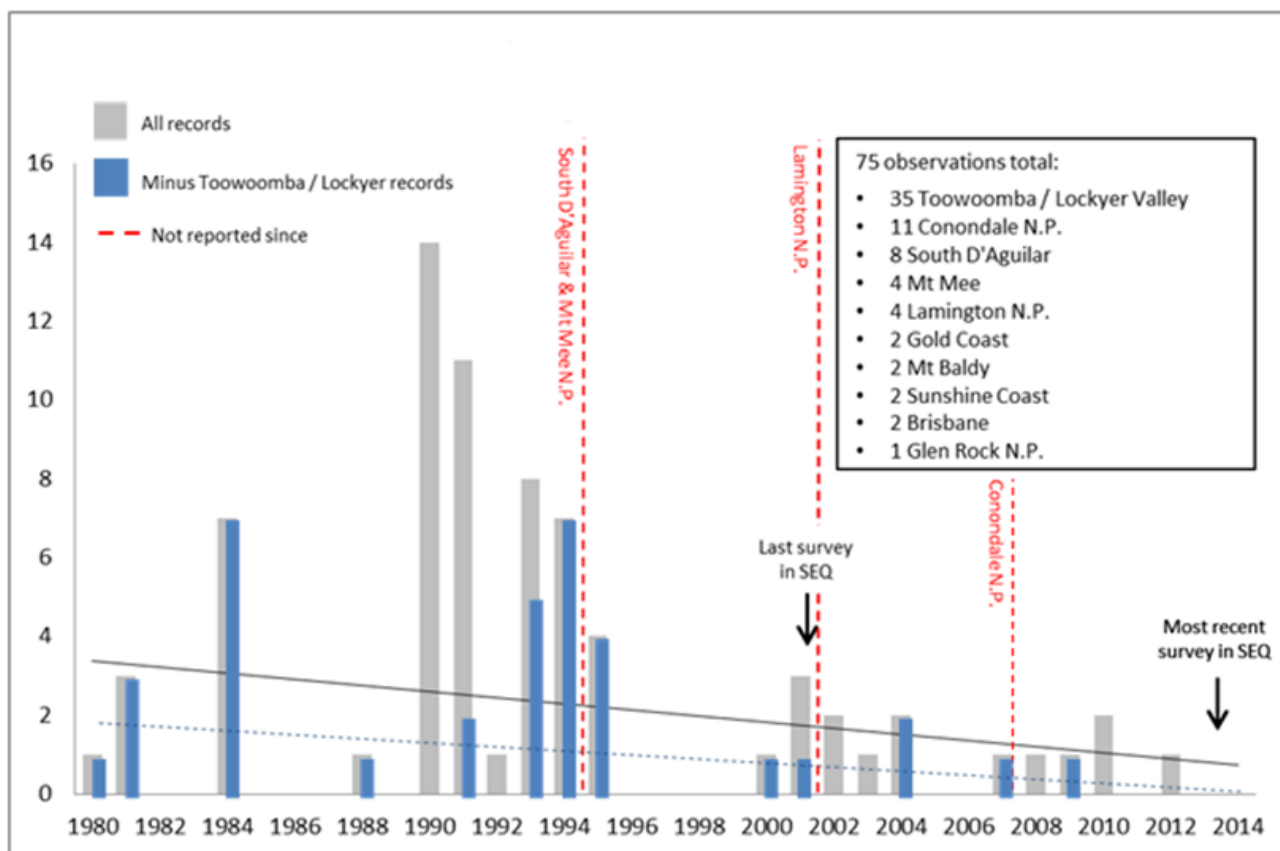


Figure 2. Observations of Red Goshawks in SEQ NRM submitted to The Department of Environment and Heritage Protections Wildnet database since 1980.



is reasonable to expect that if Red Goshawks were present they would have been observed. This is especially the case when considering that all but one (Grey Falcon) of the 21 other diurnal raptor species that are present in SEQ were observed during these surveys.

The decline in the reports of Red Goshawks submitted to WildNet over the past 34 years includes a lack of reports from National Parks, where they were once known to breed (Czechura *et al.* 2011). Further, Red Goshawks have not been reported from the D'Aguilar National Park (South D'Aguilar section and Mount Mee section) since 1994, whereas in the 14 years leading up to this they were reported 12 times from this area (Figure 2). Red Goshawk experts who live and work in SEQ have also expressed a concern that the species may be in decline in the region (Rod Hobson and Greg Czechura personal communication).

On the whole, when the results of this survey are viewed in light of the historical data, it appears likely that Red Goshawk numbers have declined in SEQ and the species may no longer be breeding in this region. The recently reported decline and probable extinction of Red Goshawks in New South Wales (where it is currently listed as Critically Endangered) (Cooper *et al.* 2014) adds weight to this conclusion and suggests that a significant retraction of the species' southerly range has occurred over the past 34+ years. Whether this decline is apparent in other parts of the bird's range, and why this may have occurred, requires further investigation but it does indicate a general decline in ecosystem health and function in SEQ.

The National Recovery Plan for the Red Goshawk (DERM 2012) outlines a number of key knowledge gaps that limit our ability to support the conservation of this species. The results of this survey further highlight the importance of addressing these knowledge gaps. An expert workshop was held to investigate priorities for recovery in SEQ specifically. The recommendations that came out of this workshop are summarised below and are further detailed in Seaton 2014.

*Management Recommendations:*

1. Establish a recovery team to drive the implementation of the recovery plan and develop specific actions to support the recovery of Red Goshawks in SEQ<sup>1</sup>.

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<sup>1</sup> At the time of writing preliminary steps towards establishing a recovery team for Red Goshawks have been taken. It is envisaged that this team will comprise species experts and relevant stakeholders from a range of agencies spread throughout the historical range of the Red Goshawk and that it will become operational before the end of 2014.

**Table 2. Easily accessed areas suitable for ongoing public surveys for Red Goshawks in SEQ.**

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- 1 Christmas Creek Road, Lamington NP
  - 2 Redwood Park, Toowoomba
  - 3 Somerset Lookout, North D'Aguilar NP
  - 4 Mt Cordeaux Lookout, Main Range NP
  - 5 Westridge Outlook, South D'Aguilar NP
  - 6 North Road (Little Yabba Creek), Conondale NP
- 

2. Owing to the recovery of the species in SEQ being reliant on improving knowledge elsewhere in its range, the Red Goshawk recovery team should have a national focus.
3. Encourage birdwatchers to spend more time looking for Red Goshawks in areas of suitable habitat in SEQ (e.g. Table 2) and report any observations to WildNet.
4. A priority for research is to determine the habitat requirements of Red Goshawks in relation to different vegetation types, fragmentation and management regimes so that landscape suitability can be assessed throughout its range.

### **ACKNOWLEDGMENTS**

These surveys were financially supported by SEQ Catchments Ltd, Griffith University, Birds Queensland and BirdLife Southern Queensland and supported in kind by the Department of Environment and Heritage Protection. Invaluable advice was provided throughout by experts Greg Czechura, Rod Hobson and Stephen Debus and particular thanks must go to Mick Atzeni for his support and enthusiasm. I also thank the staff of the Department of National Parks, Recreation, Sports and Racing for their advice and help in accessing areas suitable for surveys, and the following landowners for allowing access to their land for these surveys: Neil and Carmel McDonald, Jan and Ken Drynan, Lex and Narelle McFarlane, and Shannon O'Brien. Thanks also to David Stewart (EHP), Rod Hobson (NPRSR), Liz Gould (SEQ Catchments), Greg Czechura (Qld Museum), David Baker-Gabb (Elanus Pty Ltd, principal author of DERM (2012)) and Stephen Debus (Zoology, University of New England) for their participation in the expert workshop.

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## REFERENCES

- COOPER, R.M., McALLAN, I.A.W. & CURTIS, B.R. 2014. *An Atlas of the Birds of New South Wales & the Australian Capital Territory*, Vol. 1: *Emu to Plains-wanderer*. NSW Bird Atlassers Inc.: Sydney.
- CZECHURA, G.V., HOBSON, R.G. & STEWART, D.A. 2009. Observations on the biology of the Red Goshawk *Erythrotriorchis radiatus* in Queensland. *Australian Field Ornithology* 26: 148–156.
- CZECHURA, G.V., HOBSON, R.G. & STEWART, D.A. 2011. Distribution, status and habitat of the Red Goshawk *Erythrotriorchis radiatus* in Queensland. *Corella* 35: 3–10.
- DEBUS, S.J.S. 1992. A survey of diurnal raptors in north-east New South Wales, 1987–1990. *Australian Birds* 25: 67–77.
- DEBUS, S.J.S. 1993. The status of the Red Goshawk *Erythrotriorchis radiatus* in New South Wales. Pp. 182–191 in *Australian Raptor Studies*, ed. by P.D. Olsen. Australasian Raptor Association, RAOU: Melbourne.
- DERM 2010. Queensland Natural Resource Management Region Back on Track Actions for Biodiversity. Department of Environment and Resource Management: Brisbane.
- DERM 2012. National Recovery Plan for the Red Goshawk *Erythrotriorchis radiatus*. Report to Dept Sustainability, Environment, Water, Population and Communities, Canberra. Qld Dept Environment and Resource Management: Brisbane.
- HOBSON, R. 2001. Red Goshawk (*Erythrotriorchis radiatus*) Survey: 20th February 2001 – 28th May 2001. Internal report for the Department of Environment and Heritage Protection.
- MARCHANT, S. & HIGGINS, P.J. (Eds) 1993. *Handbook of Australian, New Zealand and Antarctic Birds*, Vol. 2: *Raptors to Lapwings*. Oxford University Press: Melbourne.
- SEATON, R. 2014. Survey for the Red Goshawk in South East Queensland: Dec–May 2014. Report prepared for SEQ Catchments Ltd, Griffith University, the Department of Environment and Heritage Protection, Birds Queensland and BirdLife Southern Queensland. <http://www.seqcatchments.com.au/survey-for-the-red-goshawk>

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## A CASE OF ALBERT'S LYREBIRD (*MENURA ALBERTI*) ACCUSTOMISING TO PEOPLE

JOCHEN TAMM

Lyrebirds are said to be “normally extremely wary and unapproachable, this being especially true of Albert’s Lyrebird, the ecology and behavior of which are consequently poorly documented” (del Hoyo *et al.* 2004, p 487). But the same authors in the same book cited from a report about Superb Lyrebirds (*Melanura novaehollandiae*) living in Sherbrooke Forest near Melbourne, Victoria, the comment that “some of these long-lived, normally shy birds have become so accustomed to people that they can be approached and followed at close quarters for long periods of time” (p. 492). Curtis (1998, p. 34) wrote: “Try to approach a singing male of either species and he will silently disappear before you get so much as a fleeting glimpse of him – unless he is accustomed to people, which only rarely happens.” Curtis was aware of a few individual lyrebirds that were accustomed to people, but he did not describe an example of Albert’s Lyrebird. Therefore, it seems to be useful to report a short-distance observation of a male Albert’s Lyrebird. This suggests that at least single individuals of this species could be able to accustom to people.



**Figure 1: Young male Albert's Lyrebird displaying just in front of us.  
All photos: Jochen Tamm.**

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**Figure 2: Closer approach in the Lamington forest undergrowth.**

In the early morning of 14 September 2013 my son Georg Tamm and I walked on the Border Track, some 3 km south of Binna Burra Lodge in Lamington National Park, Queensland. We were looking for Albert's Lyrebird and just were so lucky to find three single individuals at different places. All of these meetings were very short, because the lyrebirds ran, and one flew, away quickly. On a fourth occasion, we heard a cock singing and displaying only 30 m away from us, but totally covered in the dense undergrowth.

After another 15 minutes walk Georg, who went ahead, stopped suddenly. A male Albert's Lyrebird was feeding and scratching on the forest



**Figure 3: Finally the lyrebird came as close as 2.7 m.**

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floor just beside the track and only 5 m in front of us. Apparently it was a young male, because of the lack of lacy feathers in the bird's tail (see also Higgins *et al.* 2001). First, he did not see us, because his head and neck were in the dense vegetation. He first walked some metres uphill the forest slope, before he noticed us. Then he ran some metres away, but stopped and observed us from a distance of 8 m. And he even started to sing and display behind the cover of a big tree (Figure 1). But nevertheless we saw him well and I could shoot some pictures (Figure 2). After some 5 minutes the bird began to feed again and came as close as 2.7 m to me (Figure 3). After 10 minutes, just as hikers approached noisily, he went uphill into the dense rainforest undergrowth and disappeared slowly.

Later the same morning we saw two more lyrebirds, one of them quite close as well, but this old male was shy and hurried away. Two days later we saw another old male at the upper Cave Track. He stood for some minutes motionless at a distance of 25 m and we could see him very well.

Altogether we saw lyrebirds seven times and heard the species twice within three days. Most of the birds were really shy and difficult to observe, just as described in literature (Curtis 1998; Higgins 2001). But this young male we met showed an opposite behaviour. It was almost familiar and even a bit curious. Of course, young birds are known to be more often curious than adults in general (e.g. Pellis 1981). Moreover, the individual we observed lived beside a well-used track. But it is noteworthy that Albert's Lyrebird really is able to become accustomed to humans, at least if approached carefully and quietly.

## ACKNOWLEDGMENTS

I wish to thank Dane Panetta and Jill Brown for helpful information and advice to produce this paper.

## REFERENCES

- CURTIS, S. 1998. Lyrebirds: veiled in secrecy. *Nature Australia* 26 (1): 32–41.
- del HOYO, J., ELLIOTT, A. & CHRISTIE, D. 2004. *Handbook of the Birds of the World – Cotingas to Pipits and Wagtails*. Vol. 9: 484–495. Lynx Editions: Barcelona, Spain.
- HIGGINS, P.J. (Ed.) 2001. *Handbook of Australian, New Zealand and Antarctic Birds, Tyrant-flycatchers to Chats*. Vol. 5: 140–141. Oxford University Press: Melbourne.
- PELLIS, S.M. (1981): Exploration and play in the behavioral development of the Australian Magpie *Gymnorhina tibicen*. *Bird Behaviour* 3: 37–49.

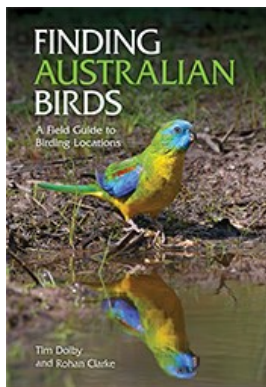
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## BOOK REVIEW

### *Finding Australian Birds* *A Field Guide to Australian Birding Locations*

By Tim Dolby and Rohan Clarke



Published by CSIRO Publishing, 2014

Paperback, 624 pages, AU\$49.95

<http://www.publish.csiro.au>

This is a comprehensive review of good birding destinations in Australia, and is well presented. As would be expected of this type of guide, the currency of information is a vital part of its appeal, and it fulfils this aspect well. It even recognises the latest evidence on the Night Parrot.

The Introduction gives some handy hints on how to watch our birds, as well as explaining our system of seasons across such a vast area and providing some travel hints.

The arrangement of the information in regional sections works very well for those planning their birding adventure, but getting directly to a specific region within the state-by-state chapters is not so easy. There is a chapter for each state and the Northern Territory, and one for eight offshore islands or groups of islands. There is then a chapter for the annotated list of birds of Australia, with an addition of 141 vagrants, arranged in the latest IOC World Bird List order. There have been many additions of vagrants over the past 20 years, as can be seen in a comparison of this publication with the Christidis & Boles 1994 monograph which had 46 in its Supplementary list. However there are a few variations as to where species have been assigned in this new IOC list and its vagrants section.

Each regional section presents a brief overview that could be very helpful for overseas visitors, and the description of habitats for each region is helpful for Australian birders. The suggested itineraries for each region are also good for

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planning a visit, as they give an indication of popular sites – especially as those species of special interest at the nominated sites are also listed.

General notes on climate, travelling guidance and site accessibility are brief but sufficient. The birding highlights that follow will also help one to gain value when planning a visit to a region, as well as for locals seeking a challenge not too far from home. The inclusion of notable subspecies in this list adds significant value for local birders.

The coverage of individual sites has just about the right amount of information, with key species and a few others of interest listed at the beginning. There are often quite detailed instructions on finding your way around a site, with the addition of maps in a few cases.

Tips on finding birds are also given, i.e. to look for Black-breasted Button-quail in scrubby areas of rainforest with lantana understorey along the first sections of Duck Creek Road (Lamington National Park). It is noteworthy that most coastal regions include some details of regular pelagic trips.

Occasional coloured text boxes highlight smaller sites or particular species. The interspersing of these boxes and photos of relevant birds or habitats makes for a pleasant reading experience. Unfortunately the boxes on interesting species are not cross-referenced in the annotated list section.

The last of the location chapters, covering eight offshore islands or groups of islands, is quite comprehensive for such small areas. Norfolk and Christmas Islands both have four sites described and Cocos-Keeling Islands has five, so this is an excellent aid if planning to visit these remote places. I am not sure how many people would visit Heard or Macquarie Islands each summer, but the detailed information for these includes what to look for in adjacent seas.

The annotated list of species is a simple cross-reference to locations for all except the most common species, i.e. about 70% in the case of the non-passerines.

Sections on further reading, useful websites and bird study groups are useful, but the section titled ‘Other Useful Resources’ lacks substance and could have simply been included in the useful websites list. It is reassuring to see a list of all the local expert birders who have assisted in this production, confirming the veracity of the information.

*David Niland*

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## BOOK REVIEW

### *Where Song Began*

By Tim Low



Published by Penguin Books, 2014

Paperback, 406 pages, AU\$32.99

[http:// www.penguin.com.au](http://www.penguin.com.au)

Read this book! As an amateur ornithologist I found it to be fascinating and informative from a number of perspectives. It is apparent that many years of research and field observation have informed this synthesis. The book comprises 12 chapters, most of which I will allude to here, although not necessarily in order. It opens with two chapters that describe the unique role that plant energy budgets have played in the evolution of that distinctly Australian group of birds, the honeyeaters. In essence, it is argued that for various reasons Australian plants produce more carbohydrates than they can use, which has promoted the evolution of a large group of birds that are well-adapted to utilise this resource and that vigorously defend its sources. Trees that sustain the production of lerp (crystallised honeydew that protects the psyllid insects that produce it) are also defended. Hence Australia is *the* land of avian aggression! An overview of the Australian avifauna, compared with the rest of the world's, is found in Chapter 11. Chapters 3 and 7 describe the gradual overturning of the well-entrenched paradigm that birds originated in the northern hemisphere. One of the strengths of the book is that the author has an open mind concerning the biogeographical aspects of ornithology, recognising the likelihood that there have been many movements, both north and south, over time. Such a broad-minded approach is essential when the fossil evidence is (and most likely will remain) poor because bones that are adapted to flight do not lend themselves to preservation. For those who like their birds intelligent as well as beautiful, Chapter 5 is devoted to parrots, which have diversified so wonderfully in Australia (and, on a personal note, are the group that attracted me to Australia from the northern hemisphere as a callow graduate!) The central role of avian frugivores, especially pigeons, in the dispersal of Aus-

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tralian woody plants is highlighted in Chapter 8, which is followed by a chapter that addresses the extensive grasslands that occur in Australia, the role of fire in maintaining these ecosystems and the birds that live there. Chapter 10 describes "life in a liquid landscape", the wonderful adaptations and ecological roles played by the birds that spend most of their lives at sea. In addition to Tim Low's engaging style of writing, a major strength of this book is how well it is referenced, with pointers to the scientific literature for readers who wish to follow up on particular topics. A very nice set of colour plates, found at the book's midpoint, rounds out this production. As I said at the outset...

*Dane Panetta*

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IUCN 2006. *2006 IUCN Red List of Threatened Species*. [www.iucnredlist.org](http://www.iucnredlist.org) Accessed 14 October 2006.

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