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## THE SQUARE-TAILED KITE *LOPHOICTINIA ISURA* IN QUEENSLAND

S.J.S. DEBUS and G.V. CZECHURA

### SUMMARY

Records of the Square-tailed Kite *Lophoictinia isura* in Queensland (n=297, mostly since 1970) were analysed for patterns of seasonal and distributional occurrence. The species is widely distributed in all regions of the State, but predominantly in eastern regions from the coast to the inland slopes of the Divide, in open forest and woodland. It breeds in eastern and central regions north to 18°S. It is a breeding resident in eastern regions (South-east, Mid-east and North-east Queensland) and Central Queensland, and apparently a spring breeding migrant to South-central Queensland. It is a winter (dry-season), non-breeding migrant to Cape York Peninsula and North-west Queensland, with apparent autumn and late winter/spring movement pulses in eastern Queensland.

### INTRODUCTION

Storr (1984) gave the distribution of the Square-tailed Kite *Lophoictinia isura* in Queensland as eastern (north to Cape York and west to Chinchilla), and far north-western (south to Riversleigh and east to Armstrong Creek). He classified it as "locally moderately common in eastern interior but generally scarce; rarely reported from east coast". He recorded breeding on the lower Dawson River and in the Chinchilla district. Recently, the species has been listed as threatened nationally, classified as "insufficiently known" (Brouwer & Garnett 1990). There is thus some concern for the future of an endemic species in a monotypic genus.

Previous papers on the Square-tailed Kite have dealt with its distribution and status in other eastern States (Debus 1983, Debus & Silveira 1989, Debus 1991). The species is a spring-summer breeding migrant in south-eastern

Australia, with winter absences most pronounced at higher latitudes. There is some southwards movement down the Channel Country of north-east South Australia in late winter (Debus 1991), and southwards movement in Victoria in spring (Binns *et al.* 1991). Preliminary data indicate that it is a breeding resident in coastal south-east Queensland, and predominantly a dry-season, non-breeding visitor to north-east and north-west Queensland (Debus & Czechura 1989, Debus & Silveira 1989, Squire in Debus 1991). On this basis one might predict spring and autumn movement pulses in south-east Queensland, augmenting the numbers of resident birds; southern birds "leapfrogging" the residents to winter in northern Queensland; and late winter southwards movement through the Channel Country in south-west Queensland, at least in wet years. This paper examines the pattern of Square-tailed Kite occurrences in different parts of Queensland, and critically reappraises Storr's (1984) assessment of its range and status in the State. We also take the opportunity to collate additional notes on its biology.

## METHODS

All available records of the Square-tailed Kite in Queensland to December 1991 were collated and analysed by month, and by region as defined in the QOSI annual bird reports (e.g. Figure 2 in Britton 1991). As in previous papers in this series, one record is defined as one bird at one locality during one month or part thereof, and nestlings were not counted. Monthly records were pooled into seasonal totals for each region (spring = September-November; summer = December-February; autumn = March-May; winter = June-August). Where records were undated, they were included in regional totals to assess the relative importance of different regions. Records were obtained from the following sources: *Emu* (Macgillivray 1924, Lord 1956, Liddy 1959, Bravery 1970, Gill 1970); *Corella* (Czechura 1985); *Australian Bird Watcher* (Wheeler 1967, Morris 1977, Bruce 1979, Debus 1981, Sharrock 1982); *Sunbird* (Hughes & Hughes 1984a, Horton 1975, Longmore 1978, Jones 1986, Cameron 1992); *South Australian Ornithologist* (Squire, Table 2 in Debus 1991); QOSI annual bird reports (Stewart 1984, Palliser 1985, Niland 1986, Redhead 1988, 1990, Britton 1990a,b, 1991); *QOSI Newsletter* (Patterson & Hinz 1986, Nye 1987, Dowling & Long 1991, Noyce 1991, Noyce & Noyce 1991, Robbie 1991, Whittle 1992, Murphy 1992); *Australasian Raptor Association News* (Templeton 1983, Hughes & Hughes 1984b, Pavey 1985a,b, 1988); *Bird Observer* (Sharrock 1984); *NSW Field Ornithologists Club Newsletter* (Morris 1987); books and other publications (Thomson 1935, Cupper & Cupper 1981, Hollands 1984); regional survey papers (McEvoy & Kirkpatrick 1971, Lavery & Grimes 1974, Kirkpatrick & Searle 1977); RAOU Atlas of Australian Birds unusual record forms (sighted); RAOU Nest Record Scheme (NRS - data cards/sheets sighted); RAOU Bird of Prey Watch Scheme (descriptions sighted); museum specimens

(Queensland Museum, Australian Museum, South Australian Museum); unpublished sources (including GVC 85 dated, unpublished records, SJSJ 5 unpublished records: see Appendix 1). Care was taken not to double-count records that were reported in different publications (e.g. *Sunbird* and *QOSI Newsletter*; Cameron 1976, Cupper & Cupper 1981, Hollands 1984).

Literature records were accepted only if there was reasonable certainty that they applied to genuine Square-tailed Kites, and not to some other species. The following records were rejected on the grounds that they are referable to the Black Kite *Milvus migrans*.

Broadbent (1910): "common" on the Herbert River.

Macgillivray (1914, 1918): McLennan's records of groups or flocks in north-west and north-east Queensland are erroneous (see also Liddy 1963).

Jackson (1919): "several" on the Diamantina River.

Cleland (1920): undated record, no description, Dalby-Bunya Mountains (he confused the two species elsewhere - see Debus 1991).

Le Souef (1920): "nearly always circling with Black Kites", Townsville.

Cameron (1932): "very common" at Quilpie; eating sheep carrion.

Marshall (1932): "several" Tambo-Blackall.

Bourke & Austin (1947): "several", Kairi, north-east Queensland.

Roff (1967): multiple sightings of up to 53 birds, Cape York.

In practice, most acceptable records are for the period since 1970, after publication of modern field guides.

## RESULTS

### *Distribution and seasonal occurrence*

Most records (83%) of the Square-tailed Kite are from northern and eastern Queensland (Table 1): North-west Queensland 5%, North-east Queensland 21%, Mid-east Queensland 8%, South-east Queensland 49%. These zones differ in their respective seasonal pattern of records. In North-west Queensland, all records (n=15) fall in the period May to September (the dry), with no breeding recorded. In North-east Queensland the species is present all year, with a peak in the dry season, and two breeding records: 25% in spring-summer, 75% in autumn-winter (especially May-July). In Central Queensland it is present all year; many records (53%) are for August-September, i.e. the start of the breeding season, with breeding recorded. In Mid-east Queensland the species is present all year, and breeds: 48% in spring-summer, 52% in autumn-winter, with a peak in August-September (the start of the breeding season). In South-central Queensland, where it breeds, it is recorded mainly in spring: 72% of records in spring-summer, 28% in autumn-winter, mainly (67%) September-November. In South-east Queens-

TABLE 1

## Records of the Square-tailed Kite in Queensland by region and month

Zone	Summer			Autumn			Winter				Spring			Undated	Total
	D	J	F	M	A	M	J	J	A	?	S	O	N		
NWQ						2	1	5	2		5				15
NCQ															0
NEQ	1	3	2	3	2	11	9	10	5		1	5	1	9	62
WCQ					2		1		1		1				5
CQ	1			1			1		6	2	2		2		15
MEQ		2	2		2	1	1	2	6		5	2			23
SWQ			2	2			1		2						7
SCQ		1			1	2	1		1		4	5	3	7	25
SEQ	24	8	5	11	7	9	5	15	15		19	13	7	7	145
Total															297

? = month not specified. Sources: see text.

land, with breeding recorded frequently, there is virtually no gross seasonal fluctuation in numbers although monthly totals fluctuate considerably. Records for other regions are few. In West-central Queensland most records are for autumn-winter, with one possible breeding record (see below). In South-west Queensland, all records are for February-August, i.e. post-breeding to pre-breeding. There are no records for North-central Queensland, a remote region.

Where sufficient details were given, undated records fit the above pattern. North-east Queensland: "several" undated Cardwell September-January and "odd birds" August-October (Campbell & Barnard 1917, Barnard 1926). Many sightings throughout the year (H. Beste/Atlas). Observed on Cape York all year, "several" June-July (Garnett & Bredl 1985).

South-central Queensland: four records in seven trips Roma-Charleville August-April (Templeton 1983).

South-east Queensland: breeding Dawson River August-October (Barnard 1934). Breeding Chinchilla, October (Cameron 1976). Brisbane northern suburbs and hinterland, many sightings throughout the year (GVC: Appendix 1).

### **Breeding**

We collated many breeding records additional to those in Storr (1984).

West-central Queensland: a nest in a River Gum near Cloncurry, freshly lined with green leaves, 7 April 1967 (C.A.C. Cameron/NRS). However, this does not necessarily mean that laying was imminent: the Black-breasted Buzzard *Hamirostra melanosternon* lines nests up to three months before laying (Cupper & Cupper 1981); the Square-tailed Kite is closely related and is similar in breeding behaviour (Debus *et al.* 1992). Misidentification is a possibility, given that the observer was not familiar with the Square-tailed Kite until 1969 (A.C. Cameron 1976, C.A.C. Cameron 1992).

Central Queensland: active nest on the Campaspe River, September 1981 (B. Traill/Atlas; details in Table 4 of Debus & Czechura 1989).

Mid-east Queensland: active nest at Yeppoon, spring 1985 (M. Crawford/NRS; details in Table 4 of Debus & Czechura 1989).

South-central Queensland: building near Charleville, August 1923 (Macgilivray 1924; details in Table 4 of Debus & Czechura 1989). Pair "nesting" at Mitchell near the river 23 October 1982, incubating mid November, attempt failed during severe drought (Sharrock 1984); overlooked by Debus & Czechura



(1989). Building at Thallon, September 1987 (Nye 1987; details in Table 4 of Debus & Czechura 1989).

South-east Queensland: historical record of egg(s) collected on the Darling Downs (Qld Museum), overlooked by Storr (1984). Active nest at Gladstone November-December 1978 (N. Gibson/NRS; details in Table 4 of Debus & Czechura 1989). Many breeding records Chinchilla, Bororen, Anakie 1975-1980 (Cupper & Cupper 1981, Hollands 1984). Reported as possibly nesting at Gympie, in a dead tree in April (Hughes & Hughes 1984a), but unlikely on nest site and date (*cf.* Debus & Czechura 1989). Nesting at Deception Bay in September 1991 (Dowling & Long 1991). Successfully bred Gin Gin summer 1990-91, raising one fledgling (E. Zillmann pers. comm.; photograph of fledgling sighted). Adult pair and fledgling Caboolture summer 1988-89, and Petrie-Kallangur December 1990 (GVC).

### **Habitat**

Habitat notes for many of the sightings in this paper have been presented and analysed elsewhere (Debus & Czechura 1989, including GVC's sightings in Table 2 of that paper). The pair breeding at Mitchell (Sharrock 1984) were in River Red Gum *Eucalyptus camaldulensis* near remnant cypress pine *Callitris* sp., Bimble Box *E. populnea*, ironbark and Carbeen *E. tessellaris* in cleared areas. Habitat notes for our unpublished sightings are included in Appendix 1. The Square-tailed Kite occurs over a variety of habitats from eucalypt open forest and woodland to open woodland, pasture and well-treed urban areas, often on ecotones, and particularly in the vicinity of water-courses. Nests are placed in open forest or woodland, those in non-coastal situations usually in riparian woodland.

### **Changes in status**

Several observers reported changes in the Square-tailed Kite's numerical status at a given locality over a period of years, or factors affecting its breeding. Barnard (1925) noted that it was becoming scarce in the Dawson River valley (SEQ). Although he did not associate cause and effect, he also described habitat changes (clearing, deterioration of water supply) related to agricultural development of his property. Adams (1983) noted that it was rare at Springsure (SEQ), and becoming more so as further areas came under cultivation. Cameron (1992) reported that habitat clearance forced a pair 8 km to a new breeding site (Chinchilla, SEQ). A patch of open forest in the Gin Gin area (SEQ) supported breeding pairs of Square-tailed Kite, Red Goshawk *Erythrotriorchis radiatus* and Little Eagle *Hieraetus morphnoides* until it was cleared (E. Zillmann pers. comm.). Sharrock (1984) noted breeding failure during drought.

Conversely, in recent years the Square-tailed Kite appears to be adapting to some extent to the "green" outer suburbs and hinterland of Brisbane. Breeding has been recorded at Caboolture, Petrie-Kallangur and Deception Bay, the nest or centre of activity of the respective pairs being separated by 12, 16 and 22 km. A fourth pair occurs at Beerwah, 26 and 32 km from Caboolture and Deception Bay, respectively. This apparent ability of the Kite to adapt may be made possible by the physical environment and abundance of passerines, including Noisy Miners *Manorina melanocephala* on which it preys. Probably most important is the habitat structure: numerous trees, shrubs etc. which form an extensive ecotone complex, and allow the Kites to exploit the tree cover from top to bottom and readily gain access to nests or prey, located laterally in trees. Further, these areas afford protection from shooting, as discharge of firearms is illegal and readily detected in the urban context.

### *Other aspects of biology*

Two or more Square-tailed Kites were seen feeding on insects after a bushfire, at Thallon (SCQ) in November 1977 (L. Gibson/Atlas; detailed description sighted; record overlooked by Debus & Czechura 1989). This adds support to the statement of Thomson (1935) that the species was seen with Black Kites on the fringe of fires on Cape York.

A Kite was seen to capture a juvenile Common Koel *Eudynamis scolopacea* in the Brisbane suburbs: at Caboolture early in December 1990, the Kite snatched the Koel from or near a nest in a low tree or tall shrub, and carried it about 75 m to a tall creekside eucalypt to pluck and eat it (GVC). At the same location on 5 January 1992, a Square-tailed Kite flopped into the same tree (like a Pacific Baza *Aviceda subcristata*) with its wings and tail spread over the foliage, to pick small unidentified insects from the leaves. It then "rowed" over the top of the foliage before dropping from the opposite side to take flight. A comparison of Baza and Square-tailed Kite foliage-hunting techniques is being undertaken (Czechura in prep.).

Other aspects of biology reported by Cameron (1992) include a unique case of two broods in a season (fledged November and again in February), by a pair during exceptionally good seasonal conditions (Chinchilla, SEQ).

## DISCUSSION

### *Distribution*

Recent records show that the Square-tailed Kite has a wider distribution in

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Queensland than allowed for by Storr (1984). There are acceptable records for West-central Queensland (e.g. Mt Isa, Boulia), and South-west Queensland in the Channel Country along the Cooper and Diamantina. It has been recorded in every region of Queensland, except for North-central Queensland which is remote and apparently seldom visited by bird-watchers. It might be expected there.

The number of records (c. 300, most in the last 20 years) suggests that Queensland is one of the strongholds of the Square-tailed Kite. The data suggest that the most important regions for the species are South-east and North-east Queensland, with significant numbers also in Mid-east, South-central, Central and North-west Queensland, and fewer birds in remote western regions where the species is restricted to riverine woodland. These records may to some extent reflect the distribution and density of observers. However, contrary to Storr (1984), it is clear that it is recorded most frequently in eastern areas from the coast to the inland slopes of the Dividing Range.

The Square-tailed Kite's breeding distribution is also wider than stated by Storr (1984), with breeding farther inland (SCQ) and farther north (CQ and MEQ) than recorded by him. There are also breeding records for RAOU Atlas blocks 18/145,146 (Blakers *et al.* 1984), the details for which we could not check as they were apparently not supported by unusual record forms. The crucial question that remains to be answered is whether it breeds in the far north, on Cape York Peninsula or in the Gulf drainages.

### ***Seasonal pattern***

Regarding the Square-tailed Kite's seasonal movements, the data do not entirely bear out our predictions. Interpretation is hampered by the uneven coverage of the State by observers, particularly the paucity of records in the west, and by the generally low number of records and observers in most regions except South-east and North-east Queensland. There may be a seasonal bias in observers' visits to inland and northern areas (too hot/wet in summer). There was often no behavioural information with records, therefore we could not assess whether conspicuousness (display) inflated spring records (probably not greatly, *cf.* Debus & Silveira 1989). As is the case with Queensland Museum records (e.g. the vertebrate atlas: GVC), most observations are more or less restricted to major roadways. Several of the pairs of Square-tailed Kites in South-east Queensland are not visible from major roads (GVC). Nevertheless, some patterns are evident.

The Square-tailed Kite is a breeding resident in coastal eastern Queensland north to 18°S. It is an autumn-winter (dry season), non-breeding migrant to

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North-west and North-east Queensland north of 18°S. It is present all year and breeds in Mid-east, Central and South-central Queensland; the peak in August-September (MEQ, CQ) and September-November (SCQ) may represent a flush of records as birds seek and claim territory, or it may also represent a pulse of southward movement at this time. The species may be predominantly a spring breeding migrant to South-central Queensland, a region with more pronounced seasonal variation in conditions than South-east Queensland (*cf.* Nix 1976).

There is some evidence of movement pulses in South-east Queensland: the monthly totals (Table 1) suggest a decline through late summer (as local juveniles disperse?); a peak through autumn (passage?); an increase through late winter (return passage?) to a peak in early spring (re-establishment of local territories?); and a decline through spring, as birds are tied to nests, before a peak (fledging) in December. Some migrating birds may use flyways along the Dividing Range (*cf.* Binns *et al.* 1991), away from Brisbane-based observers. Recent observations from Brisbane Forest Park indicate some movement between the coast and the Brisbane Valley, following similar flight paths used by Australian Pelicans *Pelecanus conspicillatus*, Ospreys *Pandion haliaetus*, Brahminy Kites *Haliastur indus* and White-bellied Sea-Eagles *Haliaeetus leucogaster* over the subcoastal range (GVC). A similar phenomenon may occur also in the Blackall-Conondale Ranges to the north.

The few records suggest a post-breeding and pre-breeding visitor (passage?) to South-west Queensland, and a dry-season visitor to West-central Queensland. The meagre data suggest the intriguing possibility that some southern birds may move north via inland Queensland in late summer-autumn and return via central-eastern Queensland in late winter, with a few also returning via the Channel Country in wet years (see also Debus 1991). There is no hard evidence of this, or of "leapfrogging", without banded or marked birds (e.g. "window" marking of the flight feathers of cohorts raised in New South Wales or Victoria). Data are required on the characters and movements of age classes recognisable in the field.

### **Management**

Limited data suggest that the Square-tailed Kite is adversely affected by habitat clearance, a logical prediction from its specialised foraging ecology (*cf.* Debus & Czechura 1989). Further clearance of habitat for agriculture in coastal and subcoastal Queensland seems inevitable, therefore sufficient reserves should be established to sample breeding populations of the Square-tailed Kite and its prey over its geographic range. The presence of breeding Square-tailed Kites may be a useful indicator of the viability of a habitat patch

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and its passerine population. Also, the presence of the Kites in urban areas highlights the importance of a varied urban landscape (versus continuous urban sprawl), and the fact that quality-of-life issues and conservation of rare wildlife (e.g. Peregrine Falcons *Falco peregrinus* and Powerful Owls *Ninox strenua* in the urban context) may be solved together. Of most concern is the potential for "Graslan" arboricide to devastate vast areas of eucalypt woodland, and thus decimate populations of the Square-tailed Kite and many other bird species down the food chain. Also of great concern is the effect of clearing of watercourse vegetation, both on the Square-tailed Kite and other fauna which depend on it, and on related ecological problems such as algal blooms.

Many questions on the Square-tailed Kite's ecology need to be answered before management prescriptions can be formulated. The tropics (Cape York, Gulf country) appear to be an important wintering area, but information on its non-breeding foraging ecology is almost non-existent. How does the Kite behave there? How do migrating birds behave - do they feed en route? Where are their key feeding areas? What is the Kite's true breeding distribution in the State? Does it breed in the far north or north-east, and if so, when? Effective conservation of the Square-tailed Kite will automatically entail conservation spin-offs for species and habitats down the food chain, and thus have wider benefits, an argument we have advanced previously for the Red Goshawk. The latter species is of even greater concern, classified nationally as "vulnerable". Aumann & Baker-Gabb (1991) have made recommendations relating to the Queensland situation, and these should be followed as a matter of urgency. Such action would also benefit the Square-tailed Kite and many other bird species.

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## APPENDIX 1

**Details of personal sightings of the Square-tailed Kite in  
Queensland (GVC, SJSD)**

Region	Locality	Comments
<b>GVC:</b>		
SEQ	Maleny area	Various sightings along southern slopes of Blackall Range, usually early spring and summer, single birds only. Cleared forest, open forest and pasture interfaces.
SEQ	Woodford-Kilcoy	Regularly observed since 1968, pairs and single birds, usually in vicinity of major watercourses. Throughout year. Open forest, lightly timbered country and pasture.
SEQ	Caboolture	Regularly observed since 1985; pairs, singles and up to three birds seen together but most commonly 1-2 at any given time, throughout year although infrequent in spring. Open forest, urban, cleared and lightly timbered country, often near permanent watercourses.
SEQ	Beerwah	Irregular sightings, mainly in March-July period; pair in 1991-92 breeding season may have been overlooked previously, or recently established (access to several sites has been better recently). Coastal lowlands, pasture, open forest and urban.
SEQ	Eumundi-Cooroy	Occasional sightings of lone birds from Bruce Highway, throughout year. Open forest, urban and pasture.
SEQ	Gympie-Murgon	May, August, September 1976; December 1977; September 1981; July 1983, 1985; April 1987. All singles. Woodland, open forest and partly cleared country. Urban (Gympie x 1).
SEQ	Maryborough-Mundubbera	July 1975; December 1978; August 1982; all singles. Lightly timbered country.

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SEQ	Maryborough-Childers	April 1974; July 1975; August 1976, 1979; June 1983; February 1985; March 1986; December 1988; September 1990. All singles. Woodland, open forest, cleared and urban.
SEQ	Gin Gin	October 1972; July 1975; August 1979; December 1979, 1987 (pair); September 1990 (pair). Mostly singles. Lightly timbered, woodland and open forest.
SEQ	Miriam Vale	July 1975; August 1976, 1979; May 1977; March 1982; January 1983; February 1984; September 1990. All singles. Lightly timbered country.
SEQ	Gladstone	July 1974; December 1983; singles. Woodland.
SEQ	Rockhampton	October 1972; July 1974; singles. Woodland.
MEQ	Marlborough	July 1974; August 1976; January 1979; singles. Lightly timbered country, woodland.
MEQ	St Lawrence	August 1979; July 1983; February 1984; September 1990; singles. As above.
MEQ	Bowen	August 1975, one. Lightly timbered country, near urban.
NEQ	Townsville	January 1979, one. Edge of pastureland near open forest.
NEQ	Atherton	December 1979, one. Pastureland.
NEQ	Atherton-Hughenden	May 1984, one. Woodland.
CQ	Hughenden	June 1982; May 1984; singles. Woodland.
CQ	Richmond	August 1983, one. Woodland/pasture interface.
CQ	Pentland	December 1983, one. Riverine open forest.
SCQ	Barcaldine-Tambo	May 1984, one. As above.
SCQ	Charleville	June 1982, one. Lightly timbered country.
SWQ	Quilpie	February 1983, one. Woodland.
SCQ	Springsure-Rolleston	April 1974, one. Riverine open forest.
SEQ	Roma	May 1981, one. Lightly timbered country.
SEQ	Miles-Chinchilla	January 1972 (pair); November 1976; May 1974; mostly singles. Open forest and woodland, near water.

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SEQ	St George-Moonie	December 1973; January 1982; singles. Woodland and open forest.
SEQ	Goondiwindi	February 1981, one. Lightly timbered country near riverine open forest.
SEQ	Stanthorpe-Warwick	March 1988; August 1989; singles. Pastureland near open forest.
SEQ	Upper BrisbaneValley	December 1982; January 1983; singles. Open forest.
SEQ	Boonah	August 1979; September 1981; singles. Lightly timbered country.
SEQ	Brisbane	Northern suburbs - regularly sighted in the Petrie-Kallangur area throughout the year, mainly singles; pair plus juvenile December 1990. Singles near Nudgee September, December 1990. Single birds Brisbane Forest Park February 1991, August-September 1991; public report to Qld Museum about same time; overflying heavily timbered country either east to west or west to east. Open forest and urban.
SEQ	Ipswich	September 1979; July 1983; May 1986; singles. Near urban, open forest and lightly timbered country.
<b>SJSD:</b>		
CQ	Aramac-Clermont	August 1978, singles over riverine woodland x 3; <i>Acacia</i> tall shrubland near open and riverine woodland x 1; pair displaying (Debus 1981) over eucalypt woodland and open forest.
SEQ	Toolara State Forest	May 1980, single bird soaring over and around crowns of extensive eucalypt open forest.
SEQ	Gin Gin	July 1988, single bird over roadside eucalypt open forest near pasture.

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## DAWN CALL OF THE PIED BUTCHERBIRD NEAR TOOWOOMBA

G.J. GLASS

During October 1989, a Pied Butcherbird *Cracticus nigrogularis* delighted us with an unusual pre-dawn call. The call began each morning before it was light enough to see, and usually continued for about nine or ten minutes. At first it was difficult to identify the bird, and attempts to find it in the poor light resulted in its flying off and continuing its call from another tree far down in the valley. As the call could be heard clearly from our house, it was a simple matter to turn on our tape recorder and record it. Late in September 1990, a Pied Butcherbird returned to the tree outside the bedroom window with a greatly improved song. Again, he (can we assume a male territorial song?) began before it was light enough to see, but this year the song often lasted for 20 minutes. It is assumed that the same individual was involved in both years.

Mrs. Lesley de Voil, a Toowoomba musician, has kindly transcribed the calls, and her scores appear below. As can be seen, the 1989 call is in two parts: the first part consists of five (to my untrained ear, four) notes, down the scale, followed by a pause before the more complicated second part. The notes within the brackets in the score were added occasionally. The notes marked with a 'v' are very complex, to my ear, trilled. The bracketed notes shown at the end of part (a) are easily recognised as part of the common call of this bird. Frequently one of the parts was repeated, up to three times, before continuing with the parts alternately. The time taken for each call was about 6 or 7 seconds; the pauses between the parts, and at the end, were 1.5 - 2 seconds.

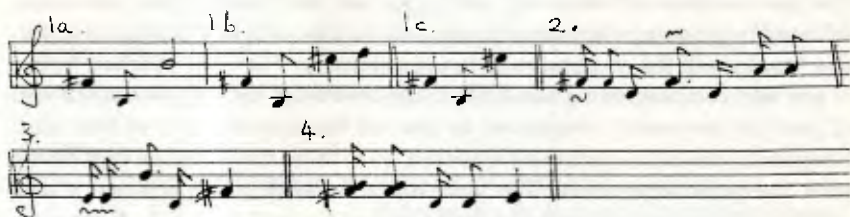


### 1989 call

In the rich 1990 song, there were two main phrases, marked '1' and '2' in the score below. They were sung more or less alternately. As can be seen, there are three versions of phrase 1. The one marked '1b' was the more usual rendition, and it was sometimes repeated immediately; 1c was occasionally sung in place of 1b, and sometimes 1a was sung after 1b. Phrase 2 was the mainstay of the whole song. It was sung in every set of the song. Phrase 3

syllabises as 'What'll we do Jack?', and was a sort of comic relief. One found oneself hoping to hear it again, while phrase 4, in a minor key, was rare. In a 20 minute recorded passage the frequency of each phrase was as follows: phrase 1a, twice; phrase 1b, 33 times (including repeats); phrase 1c, once; phrase 2, 31 times; phrase 3, 7 times; phrase 4, twice.

As October wore on, and the dawn came earlier, the bird began calling earlier and earlier to match the light, or lack of it. He also flew around more as he called, so that it was impractical to try to record his call with our household recorder. Towards the end of the spring period the calls were shorter, and the bird seemed to have difficulty remembering the exact notes of phrase 1, having to make a couple of attempts and achieving rather flat top notes. In the months following the October 1989 dawn call, the Pied Butcherbird's midday concert occasionally included snatches from his spring call, usually from part (b). Again in 1990, in full summer, there have been snatches of the special spring call, but oddly enough he has reverted to that phrase labelled part (b) from the spring of 1989.



### 1990 call

The bird was an adult in good black-and-white plumage, obviously one of our resident family of two or three adults and two or three juveniles. The location was a farmhouse garden at Gowrie Junction, 15km north-west of Toowoomba (27° 34'S, 151° 58'E).

As a postscript, I later heard a call exactly like the 1989 part (a) call whilst at Taroom (25° 38'S, 149° 48'E) at midday on 23 September 1990.

*GLORIA J. GLASS, M.S. 1049, Toowoomba Mail Centre, Q 4352.*

## NOTES ON THE NESTING OF WEDGE-TAILED SHEARWATERS ON HERON ISLAND

GENE NG

Wedge-tailed Shearwaters *Puffinus pacificus* are numerous on Heron Island in the Capricorn-Bunker Group (23° 26'S, 151° 54'E), where they may be found nesting in close proximity to the Heron Island Research Station. Egg-laying begins in early December and the last birds are fledged towards the end of April (Ogden 1979).

The aim of field work early in 1990 was to establish whether there were correlations between the aspects of the birds' nest-burrow entrances (i.e. direction faced by the opening of a nest-burrow), habitat type and environmental exposure (prevailing winds, incident sunlight). Nest-burrows were investigated in two distinct habitats. One was closed *Pisonia grandis* forest and the other was the open coastal or strand region, where the vegetation is dominated by *Casuarina equisetifolia* and there is a ground cover of *Thurea involuta*. Hill & Barnes (1989) showed that there is no unambiguous preference for natural *Pisonia* forest, though the highest density of burrows in 1985 was in such forest, provided there was a ground layer of fallen *Pisonia*.

Within each of these two habitat types, burrows were sampled in ten quadrats (each a square of side 10 m). Aspect details were recorded for each burrow in these quadrats, along with the direction of the prevailing wind in the region under investigation. There were three times as many burrows in the closed habitat (67) as there were in the open habitat (21), representing a significant difference ( $X^2 = 22.52$ ,  $df = 1$ ,  $P < 0.01$ ). The numbers of nests with southerly (090° - 270° true) and northerly (270° - 090° true) aspects were not significantly different in either habitat (Chi-squared tests,  $P > 0.05$ ): 13 out of 21 (62%) southerly in the open habitat, 33 out of 67 (49%) southerly in the closed habitat.

Clearly, the *Pisonia* forest seems to be the preferred nesting habitat of the birds on Heron Island. In these sheltered areas, where the *Pisonia* canopy cover helps to reduce temperature fluctuations near the burrows, there was no obvious pattern to nest placement. Those birds that do nest in open habitats may be attempting to minimize the amount of heat absorbed from the sun by making use of the prevailing south-easterly winds and constructing burrows with a southerly aspect (though, as noted, this was not statistically significant).

Further research should be conducted to examine the degree of curvature within the burrows and whether it affects the physical conditions of the nest-



burrow. This could be investigated at other colonies of Wedge-tailed Shearwaters and other shearwater species. How significant are other environmental factors besides heat on burrow direction? How important is the avoidance of heat to these birds, the breeding distribution of which ranges from the northern tropics to the warm temperate regions of Australia (Blakers *et al.* 1984), and widely in tropical and subtropical regions of the Pacific and Indian Oceans (Harrison 1983)?

### ACKNOWLEDGEMENTS

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- GENE NG, c/- Barry Jahnke, Box 111, Indooroopilly, Q 4068.
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## A FURTHER QUEENSLAND RECORD OF THE CARPENTARIAN GRASSWREN

P.L. HARRIS

At noon on 23 June 1990, while searching for Dusky Grasswrens *Amytornis purnelli* approximately 100 km NNW of Mt Isa in north-western Queensland, I found a different species of *Amytornis*, the Carpentarian Grasswren *A. dorotheae*. I was alerted to its presence by the call, which is different from that of the local Dusky Grasswren. Three birds, two male and one female, were observed for ten minutes from a distance of 20-25 m using Zeiss 10x40 binoculars. They were foraging on the ground. One bird flew 20 m when disturbed.

The following description is taken from my field notes. Head black, streaked white; back rufous with white striations; tail chestnut; throat and breast white with a black whisker stripe below the eye; indistinct rufous lores; belly and undertail rufous; bill and feet blackish. The female had noticeably darker, chestnut flanks and belly. Birds appeared to be larger than the local race of the Dusky Grasswren, with a longer tail which was carried high. The alarm call was recorded as 'tzzt' and cannot be confused with that of the Dusky Grasswren. The fairly long song contained a varied trill sequence.

The location is at the headwaters of Goat Creek, which is part of the Gunpowder Creek drainage system, flowing north to the Gulf of Carpentaria. The geology is predominantly laminated siltstone with the highest ranges formed from sandstone/quartzite. Vegetation is low, open woodland dominated by *Eucalyptus leucophloia* (Snappy Gum), with *Plectrachne pungens*, *Triodia longiceps* and *T. molesta* (spinifex) ground cover. Lancewood *Acacia shirleyi*, a tree species which forms dense pure stands, also occurs in the area. Sparse shrub species include the wattles *A. gonoclada*, *A. hilliana*, *A. orthocarpa* and *A. monticola*. The area has been extensively explored by mining interests and present land use is beef cattle production. Hummock grasses are less than 0.6 m high.

This locality, 95 km NNW of Mt Isa at 19°55'S, 139°05'E, is approximately 300 km south-east of two documented localities for the Carpentarian Grasswren at Lagoon Creek Gorge (Westmoreland Station) and Hell's Gate (Cliffdale Creek Station) in McKean & Martin (1989). As a threatened species, the Carpentarian Grasswren is listed as probably vulnerable though indeterminate, because there is insufficient information to allow a proper determination of the most appropriate category (Brouwer & Garnett 1990). As the habitat at this site was different, in respect to both geology and vegetation, from the usual habitat for this species (McKean & Martin 1989), this find may

represent an undescribed race of *A. dorotheae* or possibly a new species of *Amytornis*.

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#### BOOK REVIEW: ADDENDA/CORRIGENDA

In Sunbird 21: 63-64, J. Thompson reviewed two books dealing with aspects of the New Zealand avifauna, both published in 1990. The Editor of *Notornis*, B.D. Heather (*in litt.*) has pointed out that the two publishers were transposed by Thompson. Each book is available from OSNZ, P.O. Box 12397, Wellington, New Zealand at a cost of NZ \$35 plus NZ \$6 postage. This error is regrettable and the further details are appreciated.

P.L. Britton (Editor)

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

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SERVENTY, D., SERVENTY, V.N. & WARHAM, J. 1971. *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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