

## Letter-winged Kites *Elanus scriptus* in the South-west of the Northern Territory, 1994–95

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### Summary

Roosting colonies of Letter-winged Kites were discovered by chance at Saltbeef Lake (up to 10 birds) and Nyrripi (up to four birds) in the south-west of the Northern Territory during 1994 and 1995, respectively, with the former colony probably persisting for at least 16 months. Nine species of small native mammal, mostly *Pseudomys* mice, provided the majority of food for the Saltbeef Lake colony, with grasshoppers an important supplement during the hot months. Skinks, invertebrates and carrion accounted for most of the diet at Nyrripi. Interesting records of prey animals outside their usual distribution areas were a Fat-tailed Dunnart *Sminthopsis crassicaudata*, a Common Brushtail Possum *Trichosurus vulpecula*, and some *Pseudomys* mice that may have been the Western Chestnut Mouse *P. nanus*. Two pellets contained dasyurid hairs that could not be identified to genus level.

### Introduction

For the most part, the Letter-winged Kite *Elanus scriptus* occurs in the grasslands, lightly wooded shrublands, and timbered drainages and flood-outs of western Queensland and north-eastern South Australia (Parker 1970, 1971; Storr 1973; Blakers et al. 1984; Marchant & Higgins 1993). This area coincides approximately with the core distribution of the Long-haired Rat *Rattus villosissimus*, its main prey species (Jackson 1919, Hall 1969, Parker 1971, Strahan 1983, Ey 1984). The Kites breed continuously when rat populations build following good rains and elevated seed production. When the rat populations collapse as arid conditions return, many of the Kites disperse in search of food to areas where they do not generally occur (Jackson 1919, Irby 1934, Serventy 1953, Taylor 1970, Hollands 1979).

In the Northern Territory the Letter-winged Kite is most common in the Barkly Tablelands in the area between 18–20°S and 135–138°E. It is uncommon in the north, although there have been several recent Top End breeding records (Marchant & Higgins 1993), and in the south it is apparently rare. Apart from some sightings during Royal Australasian Ornithologists Union (RAOU) Atlas fieldwork (Blakers et al. 1984), the only published twentieth-century records for south of 20°S in the Northern Territory have been provided by Parker (1971) for Alice Springs (23°42'S, 133°52'E; 1968 and 1970), Uluru (25°21'S, 131°02'E; 1969) and Chilla Well (21°31'S, 130°59'E), and by Gibson (1986) or Marchant & Higgins (1993) for Chilla Well, Saltbeef Lake (20°52'S, 130°25'E) and Lake Surprise (20°12'S, 131°49'E).

In August 1994 a single Letter-winged Kite was found at Saltbeef Lake (20°50'S, 130°21'E) in the southern Tanami Desert, and six months later two Letter-winged Kites were located near Nyrripi (22°39'S, 130°34'E). During the ensuing months these chance discoveries provided an opportunity to learn something of the diet and behaviour of the species in the south-west of the Northern Territory.

Saltbeef Lake is an infrequently filled saline lake of c. 300 ha, part of a large

fossil river system. Several species of samphire including *Halosarcia indica* predominate within and at the margins of this system, and small patches of calcareous sands support short annual grasses. Away from the drainage the topography is flat sandplain with low (<2 m), widely spaced dunes supporting spinifex *Triodia* and sparse shrubs to 1 m. Trees are absent except for small isolated patches of Beefwood *Grevillea striata*.

Nyrripi lies beside Waite Creek, a well-defined but shallow watercourse fringed by scattered, spreading River Red Gums *Eucalyptus camaldulensis* and a few Ghost Gums *E. papuana*. The surrounding area is sandplain with widely separated dunes, spinifex and sparse *Acacia* shrubland.

## Methods

The Letter-winged Kite colonies at Saltbeef Lake and Nyrripi were visited on several occasions from August 1994 to December 1995. At each visit the number of birds present was recorded, together with general behavioural observations, and all prey remains and cast pellets beneath the roost-trees were collected.

Prey material was identified to species where possible. Mammalian remains were identified from cranial, dental and hair characteristics, using the methods of Brunner & Coman (1974) in the case of the latter. Bird and insect remains were identified by comparison with reference materials, and reptile remains by scale characteristics and/or dentition. The remains of a species in a pellet were equated with the consumption of one individual, except where the number of identifiable parts indicated otherwise.

## Results

On visits to Saltbeef Lake during August 1994–November 1995 the number of Letter-winged Kites recorded varied from 0 to 10 (Table 1). All were adults, and on all but one occasion they were found c. 4 km south of the lake, roosting together in one of 8–10 dead Beefwood trees c. 3.5 m tall and c. 25 m apart. The exception was the final sighting, on 27 November 1995, when they were roosting in a single Beefwood c. 500 m west of the lake.

Early in the morning the Kites roosted at or near the top of the roost-tree. As the day became hotter they moved into partial shade on lower branches. Otherwise they were inactive during the day, unless approached. When this occurred they flushed, circled the area several times, then settled in a different tree. By the following morning they had usually returned to the tree from which they were flushed originally. Early on 15 September 1994 a single Kite was flushed from the ground c. 4 km west of the trees where others were roosting. It then circled overhead before flying back in their direction. No prey material was found at the position from which the Kite was flushed.

On 11 July 1995 a dead Letter-winged Kite was found in spinifex c. 1.5 km east of the lake. It was the only Kite located on that visit, although one was found roosting and apparently healthy during a visit the following month.

A total of 189 prey items was identified from 109 Letter-winged Kite pellets collected at Saltbeef Lake (Table 2). Mammals occurred in 95% of these pellets, accounting for 66% of the items identified and an estimated 80–90% of the dietary biomass. Most were small (<40 g) native species, with mice captured 4–5 times more often than dasyurids. There was no significant difference in the diet between years, but there was a seasonal shift ( $\chi^2 = 13.8$ ,  $p < 0.005$ ,  $df = 2$ ). Mammals were relatively important in the cooler months (77% of April–August items,  $n = 106$ ,

Table 1

Letter-winged Kite colonies at Saltbeef Lake and Nyrripi, south-western Northern Territory, August 1994–November 1995.

Visit date	No. Kites present	Roost-tree species
<b>Saltbeef Lake</b>		
03 Aug. 94	1	Beefwood <i>Grevillea striata</i>
04 Aug. 94	1	"
15 Sept. 94	6 <sup>1</sup>	"
15 Nov. 94	1	"
? Dec. 94	0	
12 Jan. 95	0	
24 Feb. 95	1	Beefwood
05 Apr. 95	7	"
24 May 95	0	
11 Jul. 95	1	On ground, found dead
25 Aug. 95	1	Beefwood
10 Oct. 95	0	
27 Nov. 95	10	Beefwood
<b>Nyrripi</b>		
17 Feb. 95	2	Ghost Gum <i>Eucalyptus papuana</i>
23 Feb. 95	2	"
18 Mar. 95	4	"
10 Apr. 95	2	"
01 May 95	0	
21 May 95	0	
20 Jun. 95	0	

<sup>1</sup> One (additional?) Kite was flushed from the ground c. 4 km from the roost-tree.

Table 2

Diet of Letter-winged Kites at Saltbeef Lake and Nyrripi, south-western Northern Territory, August 1994–November 1995<sup>1</sup>.

Species	No. individuals
<b>Saltbeef Lake:</b>	
<i>Mammals</i>	
Fat-tailed Antechinus <i>Pseudantechinus macdonnellensis</i>	3
Fat-tailed Dunnart <i>Sminthopsis crassicaudata</i>	1
Stripe-faced Dunnart <i>S. macroura</i>	11
Desert Dunnart <i>S. youngsoni</i>	5
Unidentified dasyurid <sup>2</sup>	2
Common Brushtail Possum <i>Trichosurus vulpecula</i>	1
Western Chestnut Mouse <i>Pseudomys nanus</i> (?)	17
Desert Mouse <i>P. desertor</i>	29
Sandy Inland Mouse <i>P. hermannsburgensis</i>	40
<i>Pseudomys hermannsburgensis</i> (?) <sup>3</sup>	2
<i>Pseudomys</i> sp.	1
Forrest's Mouse <i>Leggadina forresti</i>	6
Spinifex Hopping-mouse <i>Notomys alexis</i>	6
Rabbit <i>Oryctolagus cuniculus</i>	1
Unidentified mammal	2

Table 2 continued

<i>Species</i>	<i>No. individuals</i>
<b>Saltbeef Lake continued:</b>	
<i>Birds</i>	
Little Button-quail <i>Turnix velox</i>	5
Fairy-wren <i>Malurus</i> sp.	1
Unidentified birds	8
<i>Reptiles</i>	
Unidentified Scincidae	12
<i>Invertebrates</i>	
Coleoptera: Scarabaeidae	3
Coleoptera: Elateridae	1
Coleoptera: unidentified	6
Orthoptera: unidentified	22
Lepidoptera: unidentified	1
Hymenoptera: Formicoidea	1
Unidentified insect	1
Unidentified scorpion	1
<b>Nyrripi:</b>	
<i>Mammals</i>	
Sandy Inland Mouse	1
Cattle <i>Bos taurus</i>	4
Unidentified mammals <sup>4</sup>	2
<i>Birds</i>	
Budgerigar <i>Melopsittacus undulatus</i>	1
<i>Reptiles</i>	
Unidentified Scincidae	10
<i>Invertebrates</i>	
Coleoptera: Curculionidae	1
Coleoptera: unidentified	2
Hymenoptera: Formicoidea	3

<sup>1</sup>The material from Saltbeef Lake was collected during visits between August 1994 and November 1995. The Nyrripi material was collected on three visits during February–March 1995.

<sup>2</sup>The hairs of these animals were more like those of a quoll *Dasyurus* sp. than any of the other dasyurids, but they could not be assigned to genus with confidence. They were not referable to *Pseudantechinus*, *Dasycercus* or *Dasyuroides* (Hans Brunner pers. comm.).

<sup>3</sup>The hairs of these animals were small for *Pseudomys hermannsburgensis*, possibly from very young animals. They were similar to those of adult Delicate Mouse *P. delicatulus*, a species not known for the area.

<sup>4</sup>There was insufficient hair in these samples for identification.

versus 54% of November–December items,  $n = 83$ ), whereas the reverse was true for reptiles (2% vs 12% of items) and invertebrates (13% vs 27% of items).

At Nyrripi the Kites (all adults) were always found roosting together deep within the foliage of one of two well-foliated Ghost Gums c. 60 m apart. No Kites were located elsewhere despite intensive searches of all apparently suitable trees in the vicinity. They invariably flushed on close approach and circled for 1–3 minutes before settling together in a different tree. Signs of distress were never noted, but no Kites were found at Nyrripi after mid April 1995 (Table 1).





**Adult Letter-winged Kite**

Plate 19

Photo: G.A. Cumming

Only one small mammal was identified from the 14 pellets and two prey remains obtained from Nyrripi (Table 2). Skinks and carrion from large mammals were relatively more important in the diet there than at Saltbeef Lake, although seasonal factors (the Nyrripi material being collected during February–March) may explain part of the difference.

## Discussion

The Saltbeef Lake and Nyrripi colonies were noteworthy for several reasons. Generally when Letter-winged Kites disperse as local Long-haired Rat populations decline they have been thought to travel as far as the coast before settling for any length of time, although this belief may have been an artefact of the concentration of observers in coastal areas. Hollands (1979) noted that 13 of the 14 colonies known to persist for longer than a day or two at any one place during the 1977–79 irruption were established within a few kilometres of the coast in South Australia, Victoria or New South Wales. (Small groups were also recorded in coastal areas of Western Australia and Queensland, but information is lacking on their length of stay.) This also seemed to be the case in the Kite irruptions of 1951–53 and 1969–70, although the evidence is somewhat thin (Serventy 1953, Parker 1970, Taylor 1970, Marchant & Higgins 1993). Moreover, most of the irruption colonies persist for a few months at most, presumably because the Kites are unable to capture enough food to survive longer. If attendance at Saltbeef Lake was unbroken throughout the study period, the colony there surpassed the previous longevity record of c. 15.5 months at Werribee, Victoria (Hollands 1979).

Little is known of the Letter-winged Kite's diet in the absence of abundant Long-haired Rats. Parker (1971) reported the Kites to eat mainly the Stripe-faced Dunnart *Sminthopsis macroura* and Forrest's Mouse *Leggadina forresti* at

Brunette Downs on the Barkly Tablelands following the near-demise of Long-haired Rats there in 1970. The diet appears to have been almost exclusively House Mice *Mus domesticus* during 1977–78 at Carrum Downs (Carter 1979) and Werribee (Hollands 1979) in Victoria, in north-eastern South Australia during October 1980 (Baker-Gabb & Pettigrew 1982), and on the Darling Downs, Queensland, during a recent House Mouse plague (Mathieson et al. 1997). The inclusion of lizards and invertebrates in the diet at both Saltbeef Lake and Nyrripi during the hot months presumably reflected an inadequate supply of small mammals, and it may also indicate some degree of switching to diurnal foraging. Carrion has not previously been reported in the Letter-winged Kite's diet, and its use at Nyrripi, and possibly also at Saltbeef Lake, provides further evidence for a dearth of small mammalian prey.

In general, small mammals were recorded in the Letter-winged Kite diet at Saltbeef Lake in approximate proportion to their presumed abundance in the southern Tanami, based on trapping programs conducted in the area by the Parks & Wildlife Commission of the Northern Territory (unpublished data) and the local Barn Owl *Tyto alba* diet (Smith & Cole 1989). The major exception to this was the relatively low incidence of Spinifex Hopping-mice *Notomys alexis* in the Kite's diet compared with that found for the Barn Owl. However, Spinifex Hopping-mice populations fluctuate dramatically (Newsome & Corbett 1975, Watts & Aslin 1981) and there is evidence that their numbers were low during the present study (NT Parks & Wildlife Commission unpublished data).

The occurrence in a single pellet each of the remains of a Fat-tailed Dunnart *Sminthopsis crassicaudata* and a Common Brushtail Possum *Trichosurus vulpecula* is of particular interest. Both species are rare in the Northern Territory, with the former unknown from the southern Tanami area and the latter once abundant there but not recorded in the area for many years (Gibson 1986). Both were identified from hairs rather than skeletal material, but the identifications were positive (Hans Brunner pers. comm.). The possible records of the Western Chestnut Mouse *Pseudomys nanus* (again identified from hairs only) would extend the range of that species by several hundred kilometres. The unidentified dasyurid hairs found in two pellets are intriguing. Round in cross section, c. 40 µm in diameter, and with a relatively large cortex and slight 'pinkish' tinge, they were probably closest in characteristics to those of the Western Quoll *Dasyurus geoffroii* (Hans Brunner pers. comm.). This species is considered possibly extinct in Central Australia (Gibson 1986).

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