*Corella*, 1985, 9 (2): 49-54

# THE RAPTORS OF THE BLACKALL — CONONDALE RANGES AND ADJOINING LOWLANDS, SOUTH-EASTERN QUEENSLAND

G. V. CZECHURA

Qucemland Museum, Fortitude Valley, Queensland, 4006.

*Received 2 August, 1985*

Twenty-eight species of raptor have been recorded from eight major vegetation types represented in the Blackall-Conondale Ranges and adjacent lowlands. Included within these twenty-eight species are nineteen residents.

These raptors may be grouped according to broad vegetation preferences. Three species favour dense forests, six species open forests, six species open (largely disturbed) habitats, one species freshwater and three are independent of major habitat types. A feature of the raptor fauna is the use by many species of ecotones and corridors to enter largely unsuitable habitats.

## INTRODUCTION

The Blackall-Conondale Range region of southeastern Queensland (Fig. 1) supports a diverse series of native vegetation types, ranging from closed (notophyll and microphyll) vine forests to eucalypt open forests and woodland (Roberts 1977a, Stanton and Morgan 1977, McEvoy *et al.* 1979). These vegetation types are distributed in a mosaic pattern over a moderate altitudinal range (150 to 800 metres above sea level). Terrain over much of the area is steep and greatly dissected and gives rise to numerous permanent and temporary watercourses. In recent historical times extensive clearing of native vegetation has occurred on both the Blackall Range and on the adjoining lowlands (Illidge 1924, Francis 1970) where much of the original native vegetation has now been replaced with open pasture, mixed farmland or semi-urban development. Plantations of both exotic and native conifers have been established in the Jimna and Kenilworth sections of Conondale Range.

Recently, Czechura (1984) has provided information on the occurrence of raptors in the neighbouring Moreton Bay region, using historical and contemporary records. In contrast to the Moreton region, there is no worthwhile historical information available for the Blackall-Conondale Range. Even modern records are few. Roberts (1977a) and McEvoy *et al.* (1979) have provided bird lists for Conondale Range while Roberts (1979) makes specific reference to some of the less common species recorded here. In addition, several notes (Czechura 1970, 1971, 1979, 1980, 1981a) include observations made on raptors within the Blackall-Conondale Ranges and adjacent lowlands. The presence of Red Goshawks (*Erythrotriorchis radiatus*), Powerful Owls *Ninox strenua* and Sooty Owls *Tyto tenebricosa* has been noted in conservation proposals for Conondale Range (Roberts 1977b).

The following contribution discusses the distribution of twenty-two species of diurnal raptor and six species of owl recorded from both upland and lowland habitats of this region.

## HABITAT TYPES

Eight major vegetation types are recognised herein, although it should be noted that numerous transitional types exist as well. The classification of rainforests follows Webb (1978)

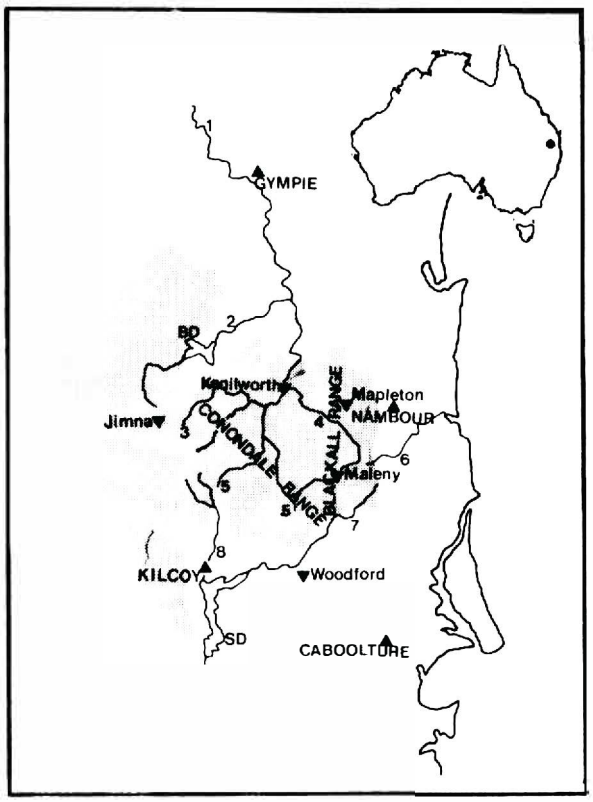


Figure 1. *The Blackall-Conondale Ranges and adjacent lowlands. The shaded area shows general area above 150 m, a.s.l. Abbreviations are BD — Borumba Dam, SD — Somerset Dam. Watercourses are: 1 — Mary River, 2 — Yabba Creek, 3 — Little Yabba/Booloumba Creeks, 4 — Obi-Obi Creek, 5 — Mary River Headwaters, 6 — Mooloola River, 7 — Stanley River, 8 Kilcoy Creek.*

while that of other vegetation types follows Specht (1970) and Groves (1981). Roberts (1977a), Stanton and Morgan (1977) and McEvoy *et al.* (1979) provide additional information on the first four of the dominant forest types listed below.

**Complex Notophyll Vine Forest** (CNVF). Well distributed in upland areas also present in lowlands as gallery forest. At least four separate floristic types of CNVF have been identified in the area (Roberts 1977a).

**Low Microphyll Vine Forest** (LMVF). Restricted to drier north-western areas around Jimna and Yabba Creek.

**Tall Open Forest** (TOF). A number of distinct types of TOF may be recognised on the basis of species composition, structure and species dominance. In general TOF occurs on acidic soils in areas of moderate fire frequency. Widespread, often in association with CNVF.

**Open Forest** (OF). Several distinct floristic types present. These are widespread throughout the entire area. Probably the most extensive remaining native forest types.

**Woodland** (W). Not extensive. Occurs in the north-west as an Ironbark dominated community, 'various types of woodland' along the coastal lowlands (Coaldrake 1961) and a local 'heath' community in the foothills of the Blackall Range immediately to the north-west of Nambour.

**Freshwater** (F). Open water, including reservoirs, larger rivers and ponds, and swamps. A description of wetland types found in this area is to be provided elsewhere (Czechura, in prep.).

**Disturbed Open** (DO). Consists of all pastures, orchards and crops as well as extensively grassed situations.

**Plantations (P).** Restricted to *Pinus* and *Araucaria* plantations grown on former farmland or native forest.

## MATERIAL AND METHODS

Information used here was gathered by a number of different methods including casual searches, fixed-point observation, walking and driving transects. Major problems of observability were experienced in all but three habitat types (W, DO, F). Steep terrain, dence vegetation, limited field of view and difficulty of access served to preclude application of traditional census techniques such as those used by Craighead and Craighead (1969). A bias towards soaring rather than skulking species was evident (also noted by Smeenk 1974). Therefore it was not possible to quantify observations, i.e. subjective ratings of abundance were constructed and 'habitat' was viewed in term of recognizable vegetation types.

Habitat, status, and occurrence for each species of raptor observed in the area are summarised in the following list. Specific sighting records (month, year) are only given for less common raptors. Status has been judged on the

basis of relative frequencies of encounter, although such records have been modified, in some cases, to take into account known numbers/pairs of birds frequenting well worked areas.

## LIST OF SPECIES

**Osprey** *Pandion haliaetus* (F).
Irregular visitor from coastal areas. Recorded from vicinity of riverine situations in Nambour-Beerwah area and, rarely, larger reservoirs. Occasionally observed overflying eastern slopes of the Blackall Range.

**Black-shouldered Kite** *Elanus notatus* (OF, W, DO).
Breeding resident. Favours open grassland or where such areas abut forest or woodland. Local movements, apparently in response to prey abundance, have been observed. May be common and conspicuous in some years. Few records of this species have been made in the area since October, 1983.

**Pacific Baza** *Aviceda subcristata* (CNVR, LMVF, TOF, OF).
Uncommon but may be conspicuous in some local areas. Breeding records Booloumba Creek (Conondale Range), Maleny Nambour. Apparently subject to local movements; absent or very uncommon in upland areas during winter although some birds present on lowlands or foothills at this time. Large flocks up to 30 birds (near Jimna, May, 1978) and smaller flocks of 10 to 12 birds (Kenilworth, June, 1980) have been recorded. Small flocks (5-10) birds are usually encountered entering uplands during September to October period.

**Black Kite** *Milvus migrans* (DO).
Highly irregular. An irruption of these kites occurred (October-November, 1978) in the Kilcoy area, when two to three hundred birds were resident in the vicinity of the local abattoirs for several weeks. Individual birds were sighted around Woodford and Kenilworth during this time. A lone bird has recently been observed (March, 1983) near Kilcoy.

**Square-tailed Kite** *Lophoictinia isura* (OF, DO).
Irregular. Three records of single overflying birds (Beerwah, August 1972; Woodford, February 1977; Kilcoy, September 1981).

**Black-breasted Buzzard** *Hamirostra melanosternon* (DO)
Vagrant. Two birds observed in lowlands south of Maleny (Novemher 1968) over a period of two days.

**Brahminy Kite** *Haliastur indus* (F).
Irregular visitor from coast. Known from occasional individuals overflying eastern, coastal lowlands (Nambour-Beerwah area) and eastern slopes of the Blackall Range.

**Whistling Kite** *H. sphenurus* (OF, W, F, DO).
Common breeding resident in lowlands. Infrequent and irregular visitor to uplands. Particularly numerous in the drier Kilcoy-Woodford lowlands. These kites generally favour riverine areas, particularly along the Mary and Stanley River systems.

**Brown Goshawk** *Accipiter fasciatus* (LMVF, TOF, OF, W, DO, P).
Common breeding resident found throughout the entire area. Although normally absent from CNVF, individuals have been observed hunting along roads and on logging sites in such areas. Commonly observed overflying many areas. Observations in the Maleny area indicate a sizeable population of 'floating' immature birds may be present.

**Collared Sparrowhawk** *A. cirrhocephalus* (TOF, OF, W, DO, P).
Uncommon breeding resident. Essentially a bird of the lowlands and foothills, although regularly encountered in drier open forest in the north-west. As with the preceding species, roading and logging disturbance will allow these birds to establish hunting territories in upland CNVF areas, e.g. Conondale Range, Blackall Range.

**Grey Goshawk** *A. novaehollandiae* (CNVF, LMVF, TOF, OF, DO, P).
Uncommon breeding resident. Both grey and white phase individuals have been recorded, although grey phase predominate. Unlike former *Accipiter* species, this goshawk favours moist dense forest, including CNVF and TOF gallery forest. In the Kenilworth area, all four species of *Accipiter* may occur together where TOF-OF-P ecotones occur.

**Red Goshawk** *Erythrotriorchis radiatus* (CNVF, TOF, OF).
Rare. Recorded breeding in 'the upper Mary River' (Beruldsen, in Favoloro 1981). Usually observed soaring or in high flight during late morning to midday period. One bird flushed from cover along a logging road in CNVF on Conondale Range. Sightings on Conondale Range fall within an area of some 50 sq km south-west of Kenilworth. Regular sightings have been made in this area during September to November 1984. Three separate sightings of individual birds have been made on adjacent parts of Blackall Range (January 1969, December 1972, February 1979). Many of these sightings have been made in the vicinity of the larger watercourses. From the available observations, it would seem that only one (possibly two) pair occurs within the area. Prey is unknown, but the presence of these hawks usually elicits widespread alarm amongst other birds, such as warning calls and avoidance behaviour. (I have outlined elsewhere (Czechura 1984) the reasons why *Accipiter* should accommodate this goshawk).

**White-bellied Sea-Eagle** *Haliaeetus leucogaster* (F).
Rare. Usually observed overflying eastern and southern sections of the Blackall Range. One pair is known to breed at Somerset Dam near Kilcoy.

**Wedge-tailed Eagle** *Aquila audax* (all habitats except extensive CNVF).
Uncommon breeding resident. At least eight pairs are found through the area. Paired birds are rather sedentary. Lone eagles are frequently encountered elsewhere over entire Blackall-Conondale Range area. Apparently, upland areas are more favoured by eagles but this may reflect disturbance effects or local persecution.

**Little Eagle** *Hieraaetus morphnoides* (OF, W, DO).
Possible resident. Usually recorded in north-west. In addition, occasional birds have been sighted around Kenilworth and along the Mary River valley. Otherwise little is known of the status of these birds within the area. Most sightings involve dark phase birds. Spring to summer sightings predominate.

**Spotted Harrier** *Circus assimilis* (W, DO).
Irregular visitor (May-December) to southern sections of the area (Kilcoy-Woodford) or rare vagrant in eastern coastal areas (e.g. Beerwah). Present singly or in pairs, invariably adult birds.

**Marsh Harrier** *Circus aeruginosus* (F, DO).
Vagrant. Regular visitor in summer only. All sightings come from coastal plains or Kilcoy — Woodford lowlands and involve immature birds.

**Black Falcon** *Falco subniger* (W, F, DO).
Vagrant. Irregular visitor particularly during drought conditions. These birds have been recorded from Kilcoy-Woodford area and adjacent southern slopes of the Blackall Range. A pair was resident in the Kilcoy area during September to November 1978. At other times only single falcons have been observed.

**Peregrine Falcon** *F. peregrinus* (CNVF, TOF, OF, W, F, DO).
Rare. Breeding resident. Most sightings involve these resident adults, although occasional immature birds have been encountered. Observations have established that, at least, three pairs of these falcons are resident. Peregrines have been observed in most habitats, thus making categorization of 'preferred habitat' very difficult. Outside the breeding season, adult birds remain in the vicinity of nesting areas but are very secretive.

**Australian Hobby** *F. longipennis* (TOF, OF, W, F, DO).
Rare. Breeding resident. Although occasional birds (usually immatures) have been observed on the Blackall Range, this falcon is largely restricted to lowland areas, particularly drier open forest-woodland areas. In February 1984, an immature bird was observed pursuing an Australian Kestrel in an attempt to steal a large grasshopper *Valanga irregularis* from it.

**Brown Falcon** *F. berigora* (OF, W, F, DO).
Common breeding resident. Occurs throughout the area although may not be present at some localities for several consecutive years. During 1980-1981, Brown Falcons were observed infrequently throughout the entire Blackall-Conondale Range area. In contrast, numerous sightings have been made since mid-1982. Considerable variation in plumage is exhibited by resident Brown Falcons, both pale breasted and dark phase birds have been regularly recorded, although intermediate plumage types predominate.

**Australian Kestrel** *F. cenchroides* (OF, W, F, DO).
Very common breeding resident. Occurs throughout the area. Sedentary. Small aggregations (up to 8 individuals) have been observed feeding together during periods of high grasshopper or rodent (*Mus musculus*) incidence. Several pairs of kestrels observed around Maleny have shown strong attachment to particular breeding sites, usually hollow dead trees.

**Barn Owl** *Tyto alba* (OF, W, DO).
Common. Breeding resident. Occurs throughout area, probably nomadic. Known to breed in three hollows (Maleny) and roost in dense tree cover.

**Masked Owl** *T. novaehollandiae* (OF).
Rare. Known from skins in Queensland Museum collection (0.17668, 0.17703) both of which originated in the Beerwah area. Recently recorded from the Booloumba Creek headwaters of Conondale Range (J. Porter pers. comm.) and Little Yabba Creek (C. Roberts pers. comm.). It has since been found that these birds were breeding here (C. Corben pers. comm.). Calls which may he attributable to this species have also been heard at Mapleton State Forest (Blackall Range).

**Sooty Owl** *T. tenebricosa* (CNVR, TOF).
Rare. Known only from dense forests on Conondale Range, (Kilcoy and Booloumba Creek) where it presumably breeds and one record from CNVF near Maleny (October 1979). The presence of Sooty Owls is usually determined by their 'falling-bomb' call.

**Powerful Owl** *Ninox strenua* (CNVF, TOF, OF).
Rare. Known only from Conondale Range (Little Yabba and Booloumba Creeks) and a single record (December 1968) from dense eucalypt forest at Maleny. With the exception of the Maleny bird, all records are based on call only. The absence of further records from Maleny probably reflects the destruction of native forest in the area since the original sighting. Presumably breeding on Conondale Range.

**Barking Owl** *N. connivens* (TOF, OF).
Rare. Known from calling birds on Conondale Range. 'Screaming-women' calls have traditionally been reported from Landsborough-Maleny area. A lone Barking Owl has been sighted along a roadside at night (October-December 1980; at Mt Mellum) in this area. Presumably breeding.

**Southern Boobook** *N. novaeseelandiae* (all habitats).
Very common, resident breeding species. Numerous sightigs have been made of these birds at night and at the roost. By far the most common owl in this area.

## RESULTS

Twenty-eight species of raptor have so far been recorded from the Blackall-Conondale Range area. Eight species are vagrants or casual visitors: Osprey, Black Kite, Square-tailed Kite, Black-breasted Buzzard, Brahminy Kite, Spotted Harrier, Marsh Harrier and Black Falcon. These vagrants are associated with drier open habitats (5 spp.), freshwater swamps (1 spp.) and aquatic habitats (2 spp.). The appearance of most open habitat vagrants coincides with drought periods (Black-breasted Buzzard and Black Falcon, 1968; Black Kite and Black Falcon 1978, 1983). Both harriers are seen irregularly but usually during a fairly well defined period in the spring and summer months. In contrast, Ospreys and Brahminy Kites may be encountered at anytime.

Six species of owl and thirteen species of diurnal raptor may be regarded as being resident. Definite breeding records (i.e. nests, nestlings, juvenile birds) exist for all of the diurnal species, as well as Barn Owl, Masked Owl and Southern Boobook. Indirect evidence (e.g. territorial behaviour, regularity of observation at specific locations during the breeding season) suggests

the remaining owl species do so as well. Recent observations suggest that the Little Eagle may also be a resident but its status here remains problematical. The resident raptors occupy a fairly wide range of habitats. However, on closer examination it is possible to determine major habitat preferences. Table 1 lists resident species according to five major habitat groupings. These categories do overlap to some degree, but serve as a means of highlighting those areas where a given raptor spends most of its time conducting roosting, breeding and feeding. Overflying records have been omitted from consideration.

TABLE 1

Major habitat preferences of resident raptors on the Blackall-Conondale Ranges.

| Dense Forest[1] | Open-Forest[2] | Open[3] | Independent |
|---|---|---|---|
| Grey Goshawk | Pacific Baza | Black-shouldered Kite | Wedge-tailed Eagle |
| Sooty Owl | Brown Goshawk | Whistling Kite | Peregrine Falcon |
| Powerful Owl | Collared Sparrowhawk | Australian Hobby | Southern Boobook |
| | Red Goshawk | Brown Falcon | |
| | Barking Owl | Australian Kestrel | Freshwater |
| | Masked Owl | Barn Owl | White-bellied Sea Eagle |

[1](CNVF, LMVF, TOF); [2](OF, W); [3](W, DO).

## DISCUSSION

Both dense and open-forest habitats are favoured by short-winged *Accipiter* spp. which is not surprising in view of their morphological adaptations for hunting in close cover (Grossman and Hamlet 1964, Brown and Amadon 1969, Wattel 1973). In such habitats, long-winged raptors such as Peregrine Falcons are obliged to hunt above the tree canopy or around clearings. While the dense forest, open forest and open habitat species conduct a majority of their activities (i.e. breeding, hunting, roosting) in such areas all species will readily (or temporarily) utilize ecotone or 'corridor' situations (e.g. roadways, hedgerows). For example, Brown Goshawk, Red Goshawk and Collared Sparrowhawk have been recorded hunting and/or skulking along roadways through CNVF-TOF. The latter species also regularly hunts in logging sites or small clearings surrounded by dense forest (Conondale Range, Mapleton State Forest) although this species is absent from continuous tracts of such forest. Brown Goshawks and Collared Sparrowhawks may also be found hunting in open areas provided suitable cover exists nearby. The Pacific Baza shows a similar response to corridors and ecotones, but is less likely to be encountered in extensive open situations (e.g. Kilcoy lowlands). Australian Hobby, Brown Falcon and Australian Kestrel on the other hand, will readily take advantage of clearings and roadways to extend their hunting activities into forested areas.

The situation with respect to the resident forest owls is less clear. However, it seems significant that none of these species has been regularly recorded outside extensive, continuous forest and ecotones/corridors located within these areas. Even fortuitous sightings are made in areas suporting the 'preferred' habitat types. Most sightings of the larger forest owls have occurred on the Mary River drainage of Conondale Range. Regular calling by Sooty Owls, Powerful Owls, and Barking Owls during the spring to summer period from particular localities, strongly suggest that breeding territories are being held here. The forested areas of the Mary River drainage are known to support sizable populations of those phalangerid and petaurid possums normally preyed on by these owls (Fleay 1968, Burton 1973, Seebeck 1976).

Raptors of open habitats seem to act as 'replacements' for forest raptors in areas where native forests have been cleared. Newly created open habitats have apparently been colonised from either pre-existing adjacent open areas (Balck-shouldered Kite, Whistling Kite, Barn Owl) or from OF to W situations where these raptors already overlap with some forest species (Brown Falcon, Australian Hobby, Australian Kestrel). Not all species have met with equal success. Both Whistling Kites and Australian Hobbies are more-or-less restricted to lowlands and foothills of the ranges.

Three species (Wedge-tailed Eagle, Peregrine Falcon and Southern Boobook) occur throughout the area and cannot be viewed as 'habitat' (at least as defined above) dependent forms. The location of suitable nest sites may provide a partial explanation of these habitat independent distribution patterns. For example, Pere-

grine Falcons may find suitable nest sites in dense forest, but often may be required to hunt elsewhere, as Clunie (1972) has observed on Fiji. Similarly, tall trees suitable for Wedge-tailed Eagles as nest sites may be found in TOF, although these birds are required to seek prey (e.g. Hares *Lepus capensis*) and carrion in nearby grassland. Boobooks, provided that suitable nesting sites are available, will tend to hunt anywhere in their vicinity.

## ACKNOWLEDGEMENTS

I wish to thank a number of people for their field assistance in the period 1967 to 1983, especially Paul Boston, Robin Czechura, Gunter Maywald, Greg Roberts and Gary Silk. Jim Porter and Chris Corben (Queensland Department of Forestry) supplied records of some of the rarer species. Glen Ingram and Ralph Molnar (Queensland Museum) and Penny Olsen (Division of Wildlife and Rangelands Research, CSIRO) made valuable comments on early drafts of the manuscript.

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