Bird surveys of the Timor Caves area 2005-2006

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During 2005-2006, Hunter Bird Observers Club collaborated with the Newcastle and Hunter Valley Speleological Society in a study of the Timor Caves and surrounding area. The Timor Caves are situated towards the north-west corner of the Hunter Region, some 30km north of the locality of Timor. 107 species were recorded in a series of surveys over 10 months including breeding evidence for 33 species. The presence of some NSW Threatened Species, and the absence of some other Threatened Species that might reasonably have been expected to have been recorded, is discussed.

INTRODUCTION

In mid 2005, Hunter Bird Observers Club (HBOC) was approached by the Newcastle and Hunter Valley Speleological Society (NHVSS) to join in a study that they were undertaking of the Timor Caves. The main focus of the NHVSS study was to locate and map the extensive complex of limestone karst caves in the area, which had not been systematically studied previously. However, they also decided to document other features of the area, including the natural vegetation and the native wildlife including birds. The results of that study have been published (Rutledge 2008), including a brief chapter about the birds identified to be present in the area (Stuart 2008a). This article expands upon that chapter.

The Timor Caves are located within the Hunter Region, approximately 15km north of the locality of Timor, and close to the foot of the Liverpool Ranges (the general coordinates are 31°40-42'S, 151°05-07'E). The area has an altitude ranging from 530-650m. **Figure 1** shows the general location.

The Timor limestone karst comprises five separate outcrops extending north/south on either side of the Isis River valley. Much of the valley floor and some of the slopes are cleared of native vegetation and have been sown with cereal and pasture crops. However, most of the slopes, ridge tops and gully floors retain some native vegetation cover, which has been classified (Dykes 2008) into four main vegetation types: Grass Tree Scrubs, Lomandra Herbland, Eucalyptus Woodland and Rainforest. The Grass Tree Scrubs are the most distinctive vegetation community type, but Eucalyptus Woodland is the most prevalent type and the area of Rainforest is very small (Dykes 2008).

In their surveys NHVSS identified 80 caves, including 27 that were previously unknown (many of those caves are small). Several of the better known caves are in a reserve and publicly accessible via the privately owned Isaacs Creek camping area. Most of the other caves are on private property where public access is limited. By joining with NHVSS on the surveys, HBOC was therefore able to gain access to these areas.

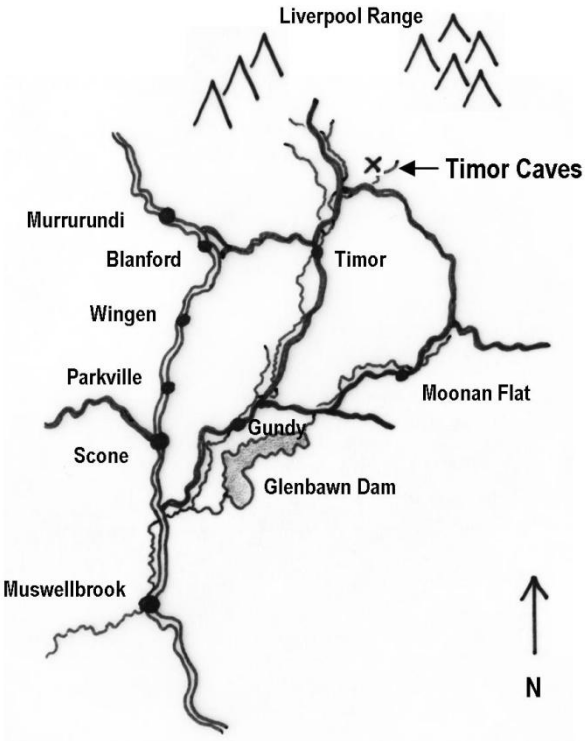

Figure 1. General location of the Timor Caves

SURVEY AREA AND METHODOLOGY

Figure 2 indicates the survey area, which encompasses several private properties and totals around 250-300 hectares (predominantly consisting of dry woodland). There are a number of rough 4WD tracks within the area, permitting convenient access to some remote gullies. HBOC made five visits to the area between November 2005 and September 2006 (NB there was no visit during winter). During most visits, the team camped at the Isaacs Creek camping site but on two occasions, the camp was at the Glen Dhu homestead on the diametrically opposite side of the survey area. Overall, there was very good coverage obtained of the survey area by day. Some night time surveying was also done but the coverage was restricted to areas close to the camp sites.

Several observers participated in the surveys and this contributed to good coverage in terms of both area and season. However, a negative was that this introduced a range of observer skills and observer techniques. Most observers surveyed transects within the area, recording all of the birds found along the transect. However, there were differences in technique by individual observers, and the precise location where any particular species had occurred, was seldom noted.

For the above reasons, the analysis of results in this paper largely has been restricted just to the overall species list since any more sophisticated analysis is not possible (for example, it is pointless to analyse the recording rate for species, because of the variations in observer technique and intensity of surveying). However, the number of surveys in which each species was recorded has been indicated in the bird list that accompanies the paper.

SURVEY RESULTS

Overall 107 bird species were recorded, with 33 found to be breeding. The full species list, with breeding status indicated, is presented in **Table 1**. 37 species were recorded from somewhere within the survey area during every visit, and 19 species were recorded on only one visit.

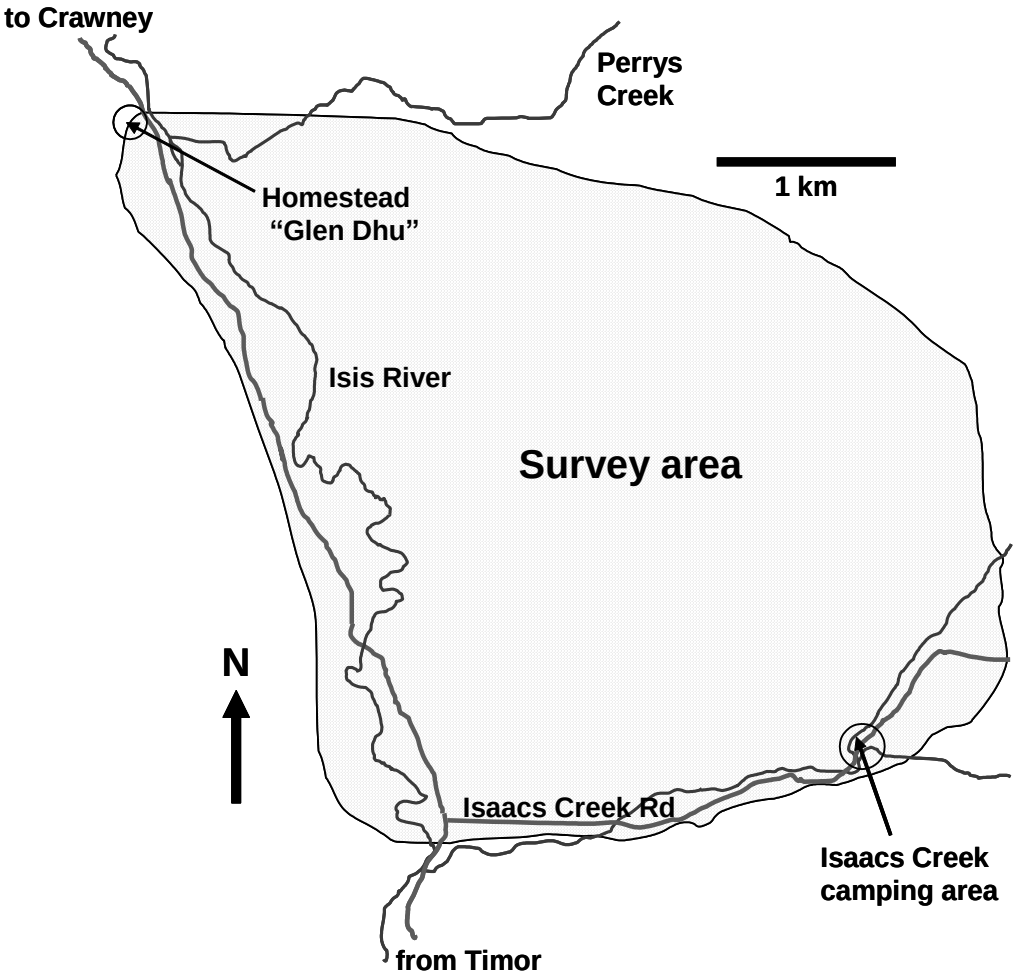

Figure 2. Timor Caves survey area.

DISCUSSION

The only species found to be utilising the caves were Welcome Swallows *Hirundo neoxena*. In the breeding season, many pairs were found to be nesting within the first two or three metres of the entrances of some of the larger caves. The birds were observed to hawk for insects in the area outside the cave, for example, above the open woodland and grassland along Isaacs Creek, then return to the cave to feed their nestlings. The mud nests typically were spaced about one metre apart, and were built utilising ledges and crevices on the roof or else high on the walls of the cave.

Welcome Swallows were plentiful in the Timor Caves area, and were present in all seasons. In summer, their close relatives, Fairy Martins *Petrochelidon ariel*, also were abundant. They built their nests in colonies of 10-20 pairs in the various concrete drainage culverts installed under roads in the area, and hawked for insects in the nearby paddocks. In one cave, a disused nest (with the characteristic bottle shape for Fairy Martin) was located—at least sometimes therefore, this species has utilised the Timor Caves themselves.

The tendency of both Welcome Swallows and Fairy Martins to nest in caves is well known. In the Birds Australia Nest Records Scheme (NRS) database, of 240 natural sites chosen by Welcome Swallows to build nests, 184 (76.7%) of the sites were in caves, cliffs or under rock overhangs (Higgins *et al.* 2006, p. 1532). In contrast though, only 1.5% of Fairy Martin nests in the NRS database were in caves (Higgins *et al.* 2006, p. 1575).

A feature of the area was the large number of Musk Lorikeets *Glossopsitta concinna* present, especially in summer. Sightings of this colourful nectar lover were widespread through the area. In most years, the species only occurs irregularly any further to the east within the Hunter Region although there are occasional years when there is a large influx - for example, in 2007 when 1000+ birds were in the lower Hunter (Stuart 2008b). In summertime, birds were feeding on the plentiful blossom present. In addition, a pair of Musk Lorikeets was found to be nesting near Isaacs Creek in late 2005. Breeding by Musk Lorikeets normally is an uncommon occurrence in the Hunter Region, which further highlights the significance of the Timor Caves area for this species.

Little Lorikeets *Glossopsitta pusilla* also were plentiful in the woodlands around Timor Caves. This is an important observation since the NSW Scientific Committee is considering whether to classify the Little Lorikeet as Vulnerable in New South Wales. The Timor Caves area seems to be a stronghold for the species and this may be an important factor in considering future management strategies for New South Wales.

The general habitat of the area seemed suitable for seven species that are already classified as Vulnerable in New South Wales: Turquoise Parrot *Neophema pulchella*, Brown Treecreeper *Climacteris picumnus*, Grey-crowned Babbler *Pomatostomus temporalis*, Speckled Warbler *Chthonicola sagittata* , Black-chinned Honeyeater *Melithreptus gularis*, Hooded Robin *Melanodryas cucullata* and Diamond Firetail *Stagonopleura guttata*. However, despite extensive searching, the only NSW Vulnerable species that were recorded were Speckled Warbler and Diamond Firetail.

Speckled Warblers mainly were foraging in pairs on the ground and in low shrubs or the lower trunks of taller trees. They were found at four separate locations in the surveys so at least four pairs of them are present in the Timor Caves area. For most of the sightings, the birds were in loose company with thornbills and other small birds. No evidence of breeding was found, however, the species is generally considered to be sedentary and so it very likely does breed locally.

Small groups of Diamond Firetails were recorded at three locations within the survey area, sometimes in company with Red-browed Finches *Neochmia temporalis* and Double-barred Finches *Taeniopygia bichenovii.* Again, no evidence of breeding was found, however, the species is generally considered to be sedentary and so it also probably breeds locally.

It is a matter for conjecture as to the absence of the five other species classified as Vulnerable in NSW. Perhaps they would have been found from a more intensive or longer survey effort. However, the survey effort was reasonably intensive (5 visits, mostly involving 2 days of surveying by 2-4 observers) and it seems unlikely that birds would have been overlooked if they were present. Suitable habitat seemed to be available for all five of the missing species. 2006 was a year of severe drought for the Hunter Region generally, and possibly this had an impact on the local viability of some species. It would be interesting if at some future time, during a normal or a wet year for the

Timor area, follow-up surveys could be carried out.

A notable floral aspect to the Timor Caves area is the forests of large grass trees *(Xanthorrhea glauca angustifolia)* growing in the limestone karst terrain. In most of the surveys, the grass trees were only sparsely used by birds except occasionally as a perch. However, in spring there was extensive utilisation by many species of honeyeaters, which often were observed to be feeding on the rich nectar of the flowering grass tree spike. As well, many Crimson Rosellas *Platycercus elegans* utilised the grass trees in spring. At least one species was also using the grass trees for breeding. In September 2006, a pair of White-eared Honeyeaters *Lichenostomus leucotis* had a nest with eggs deep within the foliage of one of the grass trees.

In all, 33 species were recorded as breeding in the Timor Caves area during the surveys. These are indicated in **Table 1**. However, many other species recorded in the area would be expected to breed locally. More intensive surveying especially in spring would no doubt add to the list of breeding species for the Timor Caves area.

CONCLUSIONS

The value in working with other ecologically focussed organisations was clearly demonstrated by this project. The area around the Timor Caves seems to be only rarely visited by birdwatchers and certainly there are very few data known to exist relating to the birds present in the area. Without the justification of the NHVSS project to survey the caves, it may have been difficult to obtain permission from landowners to access all the private property in the area. Also, the collaboration with the NHVSS team created opportunities to educate - which was definitely a two-way process!

The bird list that has been generated from the study will no doubt prove useful: especially as a reference point for future studies in the area should these occur. The species list and the usefulness of the data would be expected to increase if a more intensive and/or longer duration study had been made. Also, with the wisdom of hindsight, there may have been missed opportunities in the study - for example, to place more emphasis on collecting data on abundance and reporting rates and to select some smaller sub-areas (a series of 2ha Atlas sites covering a number of different habitat types, for example) for more intensive data collection. Readers contemplating similar studies of a relatively large area, especially if it will involve multiple observers, are urged to consider this point.

ACKNOWLEDGEMENTS

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Table 1. Birds of Timor Caves Area.

Brown Quail *Coturnix ypsilophora* (2)
Australian Wood Duck *Chenonetta jubata* (4)
Grey Teal *Anas gracilis* (2)
Pacific Black Duck *Anas superciliosa* (3)
Common Bronzewing *Phaps chalcoptera* (2)
Crested Pigeon *Ocyphaps lophotes* (3)
Peaceful Dove *Geopelia striata* (3)
Tawny Frogmouth *Podargus strigoides* (4)
Australian Owlet-nightjar *Aegotheles cristatus* (3)
White-throated Needletail *Hirundapus caudacutus* (3)
Little Pied Cormorant *Microcarbo melanoleucos* (1)
Great Cormorant *Phalacrocorax carbo* (1)
White-faced Heron *Egretta novaehollandiae* (4)
White-bellied Sea-Eagle *Haliaeetus leucogaster* (1)
Brown Goshawk *Accipiter fasciatus* (3)
Collared Sparrowhawk *Accipiter cirrocephalus* (2)
Wedge-tailed Eagle *Aquila audax* (5)
Nankeen Kestrel *Falco cenchroides* (4)
Australian Hobby *Falco longipennis* (2)
Masked Lapwing *Vanellus miles* (3)
Galah *Eolophus roseicapillus* (5)
Sulphur-crested Cockatoo *Cacatua galerita* (5)
Musk Lorikeet *Glossopsitta concinna* (5)
Little Lorikeet *Glossopsitta pusilla* (4)
Australian King-Parrot *Alisterus scapularis* (5)
Crimson Rosella *Platycercus elegans* (5)
Eastern Rosella *Platycercus eximius* (5)
Red-rumped Parrot *Psephotus haematonotus* (3)
Eastern Koel *Eudynamys orientalis* (2)
Channel-billed Cuckoo *Scythrops novaehollandiae* (2)
Horsfield's Bronze-Cuckoo *Chalcites basalis* (1)
Shining Bronze-Cuckoo *Chalcites lucidus* (2)
Pallid Cuckoo *Cacomantis pallidus* (1)
Fan-tailed Cuckoo *Cacomantis flabelliformis* (2)
Brush Cuckoo *Cacomantis variolosus* (2)
Southern Boobook *Ninox novaeseelandiae* (1)
Eastern Barn Owl *Tyto javanica* (1)
Laughing Kookaburra *Dacelo novaeguineae* (5)
Sacred Kingfisher *Todiramphus sanctus* (3)
Rainbow Bee-eater *Merops ornatus* (4)
Dollarbird *Eurystomus orientalis* (3)
White-throated Treecreeper *Cormobates leucophaea* (5)
Satin Bowerbird *Ptilonorhynchus violaceus* (5)
Superb Fairy-wren *Malurus cyaneus* (5)
Variegated Fairy-wren *Malurus lamberti* (1)
White-browed Scrubwren *Sericornis frontalis* (5)
Speckled Warbler *Chthonicola sagittata* (2)
Weebill *Smicrornis brevirostris* (2)
Brown Gerygone *Gerygone mouki* (1)
Western Gerygone *Gerygone fusca* (1)
White-throated Gerygone *Gerygone albogularis* (4)
Striated Thornbill *Acanthiza lineata* (5)
Yellow Thornbill *Acanthiza nana* (4)
Yellow-rumped Thornbill *Acanthiza chrysorrhoa* (4)
Buff-rumped Thornbill *Acanthiza reguloides* (4)
Brown Thornbill *Acanthiza pusilla* (5)
Spotted Pardalote *Pardalotus punctatus* (5)
Striated Pardalote *Pardalotus striatus* (4)
Eastern Spinebill *Acanthorhynchus tenuirostris* (5)
Yellow-faced Honeyeater *Lichenostomus chrysops* (5)
White-eared Honeyeater *Lichenostomus leucotis* (5)
Fuscous Honeyeater *Lichenostomus fuscus* (1)
White-plumed Honeyeater *Lichenostomus penicillatus* (1)
Noisy Miner *Manorina melanocephala* (5)
Red Wattlebird *Anthochaera carunculata* (4)
Scarlet Honeyeater *Myzomela sanguinolenta* (4)
New Holland Honeyeater *Phylidonyris novaehollandiae* (3)
White-cheeked Honeyeater *Phylidonyris niger* (1)
Brown-headed Honeyeater *Melithreptus brevirostris* (3)
White-naped Honeyeater *Melithreptus lunatus* (4)
Noisy Friarbird *Philemon corniculatus* (5)
Striped Honeyeater *Plectorhyncha lanceolata* (1)
Varied Sittella *Daphoenositta chrysoptera* (4)
Black-faced Cuckoo-shrike *Coracina novaehollandiae* (5)
Cicadabird *Coracina tenuirostris* (1)
White-winged Triller *Lalage sueurii* (2)
Golden Whistler *Pachycephala pectoralis* (1)
Rufous Whistler *Pachycephala rufiventris* (5)
Grey Shrike-thrush *Colluricincla harmonica* (5)
Olive-backed Oriole *Oriolus sagittatus* (3)
Dusky Woodswallow *Artamus cyanopterus* (5)
Grey Butcherbird *Cracticus torquatus* (4)
Pied Butcherbird *Cracticus nigrogularis* (5)
Australian Magpie *Cracticus tibicen* (5)
Pied Currawong *Strepera graculina* (5)
Grey Fantail *Rhipidura albiscapa* (5)
Willie Wagtail *Rhipidura leucophrys* (5)
Australian Raven *Corvus coronoides* (5)
Leaden Flycatcher *Myiagra rubecula* (3)
Restless Flycatcher *Myiagra inquieta* (3)
Magpie-Lark *Grallina cyanoleuca* (5)
Jacky Winter *Microeca fascinans* (5)
Scarlet Robin *Petroica boodang* (1)
Eastern Yellow Robin *Eopsaltria australis* (5)
Rufous Songlark *Cincloramphus mathewsi* (3)
Silvereye *Zosterops lateralis* (5)
White-backed Swallow *Cheramoeca leucosterna* (1)
Welcome Swallow *Hirundo neoxena* (5)
Fairy Martin *Petrochelidon ariel* (2)
Tree Martin *Petrochelidon nigricans* (2)
Common Starling *Sturnus vulgaris* (2)
Common Myna *Sturnus tristis* (4)
Mistletoebird *Dicaeum hirundinaceum* (5)
Double-barred Finch *Taeniopygia bichenovii* (4)
Red-browed Finch *Neochmia temporalis* (5)
Diamond Firetail *Stagonopleura guttata* (3)
Australasian Pipit *Anthus novaeseelandiae* (2)

Bold font shows species recorded breeding
(N) = Number of surveys where recorded