

4. What is an acceptable time frame between release and recovery before rehabilitation can be considered to be effective?

The longer the rehabilitation banding programme continues, the more opportunity there is to amass valid information on the measured success of rehabilitation, including a greater opportunity for longer periods between release and recovery. Likewise, the longer a rehabilitated bird survives after release, the more potential it has to produce young. From an environmental perspective an integrated approach between banders studying a selected control area plus the addition of rehabilitated birds to this area may assist in answering the question of the effects of releasing rehabilitated birds.

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HELICOPTER EFFECTS UPON NESTING WHITE-BELLIED SEA-EAGLES AND UPON SMALLER BIRDS AT AN ISOLATED PROTECTED LOCATION (ESHELBY ISLAND, GREAT BARRIER REEF, AUSTRALIA)

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The results are reported of a three-day study of helicopter effects upon small birds and breeding White-bellied Sea-eagles on a remote, rarely-visited Queensland island. Regular close passes by the helicopter above a sea-eagle nest, compounded by the presence of people and rain, probably caused breeding failure. Habituation to such activity is most unlikely to occur because it represents an intense short-term exposure to piercing sound and wind. In all such cases the birds could be expected to leave the nest and remain away during operation of the helicopter. If helicopters must be used near eagle nests, authorities must choose more appropriate times in the breeding cycles of the birds. No lasting impacts on small non-breeding birds were detected.

INTRODUCTION

Visits by people such as adventure and eco-tourists, fishers, scientists and private recreationists to formerly remote Australian

islands is increasing with improvements to aircraft and boats. On the Great Barrier Reef a multiplicity of laws necessitates that an array of requirements be satisfied by people wishing to visit islands and waters adjacent to them (Stokes *et al.* 1996).

Park management agencies are being required more and more, to make decisions about whether access to islands should occur and the nature of visits. With helicopter or fixed wing aircraft use, there are few studies on which to base management decisions. A recent opportunity to examine helicopter effects upon bushbirds and nesting raptors on an island rarely visited by people is therefore of interest.

Eshelby Island (20°01'S, 148°37'E) near Airlie Beach and Bowen in the Whitsunday region of Queensland is part of the Great Barrier Reef Marine Park (GBRMP). Since 1987 it has been declared a Preservation Zone and access prohibited except by permit. The island is visited infrequently by lighthouse maintenance crews (twice yearly for one to three days), park staff on patrol, and illegal vessels.

The island is vegetated by forest and grass areas and has large colonies of breeding seabirds from late September–February (Walker and Hegerl 1986). A White-bellied Sea-eagle *Haliaeetus leucogaster* nest is located 4 m above the ground in a Mackay Cedar tree *Perianthes toona* about 80 m east and 50 m downslope from the helipad. The large nest size indicates repeated use over the years. The tree was climbed on 5 June 1994 and on 4 August to inspect the nest contents.

A lighthouse maintenance visit occurred from 4–6 June 1994 with the main task being to extend the existing concrete helipad. Ian Kerr (Queensland Department of Environment and Heritage) was environmental site supervisor on 4 June and myself on 5–6 June. No seabirds were present but both raptors were nesting. Materials for the job were attached to an 18 m steel cable suspended below the helicopter for transfer from the ship to the island helipad. Altogether 55 ship-to-shore flights were made over the three days, primarily to deliver wet concrete whilst hovering over the pad. For operational and safety reasons related to wind direction and lighthouse location the helicopter had to fly directly above the sea-eagle nest on its approach to the helipad. Regrettably as this was, the opportunity was taken to record the effect of the helicopter flights upon incubation at the eagle nest and upon small forest-bird behaviour.

On 4 June, equipment was transferred from the ship to the lighthouse in three helicopter flights commencing at 2.30 pm. Times and flight paths

were not noted. On 5–6 June the helicopter passed with very loud noise about 100 m above the nest creating a strong wind wash in the vegetation. On 5 June, 25 flights were made between 1430 and 1750 hours at 7–8 minute intervals. On 6 June, 25 flights were made at 3–5 minute intervals between 0735 and 0945 hours, with another three occurring to 1400 hours.

On 5–6 June, I maintained an almost continuous watch on the sea-eagle nest from a position 30 m away and upslope, within a thick bush which I believe effectively screened me from the sea-eagles. This permitted a constant view of the nest top but not the contents, and a large arc of the surrounding sea including ship and helicopter activity. A record was kept of each helicopter flight, flight times and paths, and sea-eagle and other bird behaviour. Birds recorded on the island are listed in Table 1.

TABLE 1

Birds recorded at Eshelby Island in June and/or August 1994.

White-bellied Sea-eagle <i>Haliaeetus leucogaster</i>
Welcome Swallow <i>Hirundo neoxena</i>
Osprey <i>Pandion haliaetus</i> .
Yellow-bellied Sunbird <i>Nectarinia jugularis</i>
Orange-footed Scrubfowl <i>Megapodius reinwardt</i>
Silvereye <i>Zosterops lateralis</i>
Bar-shouldered Dove <i>Geopelia humeralis</i>
Brown Quail <i>Coturnix ypsilophora</i>
Rose-crowned Fruit-Dove <i>Ptilinopus regina</i>
Golden Whistler <i>Pachycephala pectoralis</i>
White-breasted Woodswallow <i>Artamus leucorhynchus</i>

OBSERVATIONS

In June the sea-eagle nest contained two eggs at an unknown stage of incubation. In August there were no eggs or young, but a few green leaves were present. An Osprey nest was also found, but the contents were not seen. Although on both visits a pair was present nearby, they may not have been breeding. No other observations of the Ospreys were made. Other evidence of breeding on the island included a pair of Silvereyes feeding three very recently fledged young, and an adult male Golden Whistler feeding a fledged young.

The weather on the three June days was overcast with occasional rain squalls. In the final hour of the third day, a squall of about 25 minutes duration crossed the island whilst helicopter operations were underway and the sea-eagles were off the nest.

The sea eagles left the nest area during the helicopter flights on the first day (4 June). On 5 June, an eagle remained brooding during the first flight at about 1430 hours but the pair stayed off the nest for most of the remaining helicopter operations over the two days (three hours on 5 June, seven and a half hours on 6 June). Both parents usually circled over the ocean about 300–500 m from the nest during the operation. Occasionally, during the longer intervals of 5 June whilst the helicopter was at or near the ship, an eagle flew near the nest. On three consecutive occasions, between the 7th and 9th flight of the day, a bird briefly landed at the nest to depart as the helicopter approached. On the 10th flight, both birds landed briefly. A single bird also landed briefly between the 13th, 17th and 23rd flights.

On 6 June, the ship had moved and anchored closer to the island. The eagles left the nest for unknown reasons at least 20 minutes before the first flight. A bird twice landed briefly before the first flight suggesting that they were being affected by the boat activity and the presence of people at the helipad. The bird flew with the initial approach of the helicopter. Attempts to re-visit the nest were fewer on this day, possibly due to the shorter intervals between flights and the constant presence of helicopter noise due to the ship being much closer. One bird flew over the nest 43 minutes after the first flight of the day, and a bird landed briefly after the 16th flight, 70 minutes into the operation, when the helicopter made a refuelling stop of about 8 minutes. On neither day were the eagles seen to return to the nest at the end of human activity on the island.

On 4 August, the eagle nest contained fresh green leaves but no egg or chick. Two adults were seen near the island. No food remains were found beneath the nest, suggesting that the eggs present in June had not hatched.

On 5 June, with the approach of the strong wind and noise of the helicopter, small birds in the surrounding vegetation such as the doves, Silvereyes and Yellow-bellied Sunbirds flew downslope from the main wind zone. However, they always returned to forest near the helipad within 1–2 minutes of helicopter departure for the ship. On the initial flights of the day, it appeared that the Silvereyes were the first to return to the area, and there appeared to be less vocalization.

Similarly the White-breasted Woodswallows hawking from the eagle nest tree routinely returned to the area within minutes of each helicopter departure on the first day. Golden Whistler vocalizations were commonplace, apparently in response to the noise of each helicopter approach. On 6 June, despite the almost constant helicopter noise and wind rush, the bush birds were seemingly less distracted by it. The Silvereyes contact called and probed the leaves etc. for food while the helicopter was hovering less than 50 m away, doves called antiphonally and there was no discernible effect of the hovering helicopter on an Orange-footed Scrubfowl about 80 m from it.

DISCUSSION

There are few quantified studies of the effects of human intrusion upon breeding birds, especially raptors and especially by helicopters (Hockin *et al.* 1992). The Eshelby Island situation provided an opportunity to observe close-range helicopter impact on an isolated nesting pair of eagles, possibly with little prior exposure to people and their noise, especially that of a nearby helicopter. Although some raptors adapt under certain conditions to nest successfully in the presence of helicopter, aircraft and boat intrusion (pers. obs.; Hockin *et al.* 1992), it is difficult to imagine any species remaining at a nest with a helicopter flying/hovering about 100 m above them at constant short intervals.

It is highly likely that in this case the helicopter flights, compounded by the presence of people and rain caused breeding failure of the sea-eagles. In all such cases involving repeated intense short-term exposure to piercing sound and wind, the eagles could be expected to leave the nest and remain away during operation of the helicopter. Habituation is most unlikely to ever occur. Therefore, if it is essential that helicopters be used near raptor nests, authorities must choose times in the birds' breeding cycles where such activity is least likely to disrupt the breeding. In this instance, a subsequent report to the authorities recommended that future annual lighthouse maintenance visits to Eshelby be scheduled to occur either from early March to mid-April, or in mid-late September, the former before commencement of sea-eagle and at the end of seabird breeding on the island, and the latter to coincide with the period when the sea-eagles may be expected to

have young but before commencement of seabird breeding.

From the study the helicopter appeared to cause no lasting impact on the non-breeding small birds of the island.

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SATELLITE TRACKING OF A WANDERING ALBATROSS FROM THE ANTIPODES ISLANDS, NEW ZEALAND, TO SOUTH AMERICA

A radio-satellite transmitter (PTT) has been placed on an adult male Wandering Albatross *Diomedea exulans antipodensis* which had just finished successful breeding and raising a chick. The bird left the Antipodes Islands region (49°40'S, 178°45'E) on 27 January 1996 (UTC) and arrived in waters to the west of Chile on 13 February 1996. The flight, which was of c. 8 000 km, took 17 days. The bird flew directly west to east across the southern Pacific Ocean (Fig. 1). During a 2.8 day period between 10–13 February it flew c. 2 900 km.

The details of this first tracked flight of a Wandering Albatross across the Pacific Ocean will be reported elsewhere.

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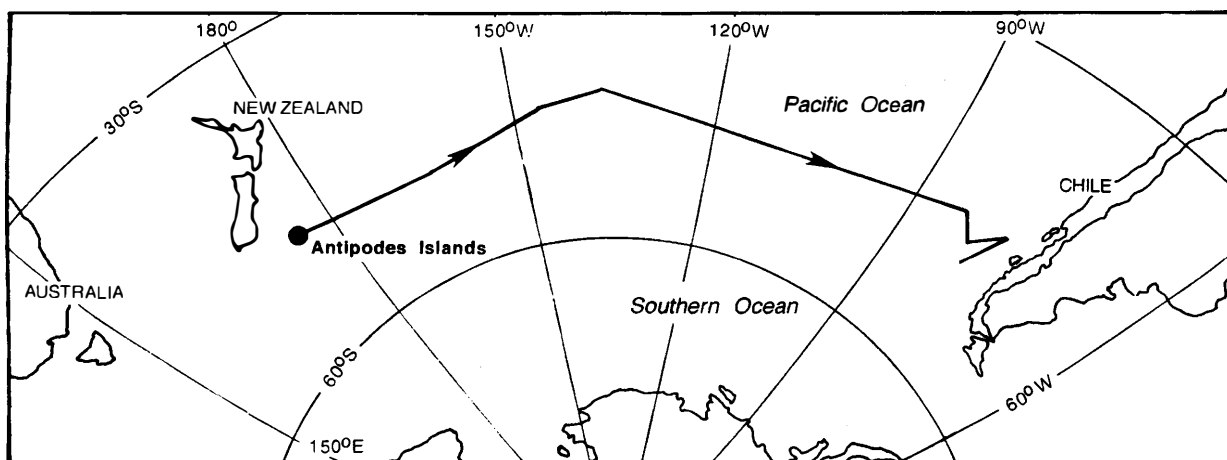


Figure 1. Flight of a Wandering Albatross across the Pacific Ocean from the Antipodes Islands. The flight path is schematic from data received at 2.8 day intervals.