

A REPORT ON EIGHT YEARS OF BANDING REHABILITATED BIRDS

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The WA Rehabilitation Banding Group was formed to evaluate the success of returning sick, injured and orphaned birds to the wild. Over eight years 3 578 birds of 123 species were banded and during this time 132 recoveries were made. Time between release and recovery was more than three months in over 50 per cent of recoveries. Some individual recoveries showed long periods of survival and a few had travelled quite extensive distances. An analysis of encounter method and recovery method showed injury to be the common cause in both cases. Whilst many questions remain unanswered, continuation of the banding programme will permit longer recovery periods, possibly more recoveries and hopefully more interesting and significant results.

INTRODUCTION

Since its inception in 1979, over 13 000 birds have been admitted to the WA Native Bird Hospital. All birds released have either been hand reared or nursed through injuries of various kinds. Suitability for release has been based on assessment of motor and sensory capabilities with respect to the lifestyle of the particular species. For most species pre-release fitness (cardiovascular capacity) has been attained by flight exercise in suitable aviaries. Hand reared birds have been grouped with those of their own species and all precautions taken to prevent imprinting. Great care has been taken in organizing release sites. This includes liaison with the Department of Conservation and Land Management, landholders and in some instances co-ordinating air freight or other transport to the original find site.

Evaluation of the success of rehabilitation is a critical component of the care process. In 1985 the WA Native Bird Hospital commenced banding of rehabilitated native birds prior to their release in order to monitor the success of returning sick, injured and orphaned birds to the wild. This evaluation not only provides valuable information in assessing management procedures; it also provides justification for what is often considered an emotive and unscientific pursuit. This paper presents the findings of the banding programme up until 30th June, 1993, and evaluates the success of rehabilitation.

METHODS

This programme was initially carried out under the supervision of Perry de Rebeira, Regional Organizer in WA for the Australian Bird and Bat Banding Scheme. Bands were supplied by the ABBBS and the programme followed ABBBS guidelines. For the first three years four banders were involved. In 1988 another joined the project until late 1992 when only two banders remained in the WA Rehabilitation Group (WARG). All five banders were working exclusively as rehabilitators and had previously been involved in the rehabilitation of wildlife for over 10 years. Between them there was a comprehensive coverage of approximately 1 980 km² of the Perth metropolitan area from which birds were received for treatment. In addition, birds often came from elsewhere in the state of WA.

Analysis of successful rehabilitation was based on confirmed recoveries in the seven and a half year period from January 1986 to June 1993. Data on recoveries were obtained from the ABBBS (78 birds) or directly by WARG from birds brought into the hospital (43 birds) or band numbers reported by the public (11 birds).

For each bird recovered, data were collected on the method of encounter when banded, method of encounter when recovered and status of bird when released, as well as standard banding data on locations, dates, ages of birds, etc. Whilst data obtained directly by the hospital were more specific with respect to method of encounter and the status of the bird, almost all recoveries could be assigned to the broad encounter and status codes designated under the ABBBS scheme.

RESULTS

A total of 124 species were banded during the study, of which 25 species were recovered (Table 1). In general, the species recovered were

TABLE 1

Birds banded and recovered 1988–1993.

Species	No. released	No. recovered
Australasian Gannet <i>Morus serrator</i>	1	—
Australasian Shoveler <i>Anas rhynchotis</i>	2	—
Australian Bustard <i>Ardeotis australis</i>	1	—
Australian Hobby <i>Falco longipennis</i>	3	—
Australian Magpie <i>Gymnorhina tibicen</i>	402	15
Australian Owlet-nightjar <i>Aegotheles cristatus</i>	4	—
Australian Pelican <i>Pelecanus conspicillatus</i>	12	2
Australian Raven <i>Corvus coronoides</i>	53	2
Australian Ringneck <i>Barnardius zonarius</i>	178	1
Australian Shelduck <i>Tadorna tadornoides</i>	37	—
Australian Spotted Crake <i>Porzana fluminea</i>	1	—
Australian White Ibis <i>Threskiornis molucca</i>	2	—
Australian Wood Duck <i>Chenonetta jubata</i>	219	2
Banded Lapwing <i>Vanellus tricolor</i>	3	—
Barn Owl <i>Tyto alba</i>	18	3
Black Swan <i>Cygnus atratus</i>	119	5
Black-browed Albatross <i>Diomedea melanophrys</i>	1	—
Black-faced Cuckoo-shrike <i>Coracina novaehollandiae</i>	36	—
Black-faced Woodswallow <i>Artamus cinereus</i>	3	—
Black-fronted Plover <i>Elsayornis melanops</i>	2	—
Black-shouldered Kite <i>Elanus axillaris</i>	2	—
Black-tailed Native-hen <i>Gallinula ventralis</i>	1	—
Black-winged Stilt <i>Himantopus himantopus</i>	2	—
Blue Petrel <i>Halobaena caerulea</i>	3	—
Blue-billed Duck <i>Oxyura australis</i>	2	—
Bridled Tern <i>Sterna anaethetus</i>	1	—
Brown Falcon <i>Falco berigora</i>	2	—
Brown Goshawk <i>Accipiter fasciatus</i>	7	—
Brown Honeyeater <i>Lichmera indistincta</i>	29	—
Brown Quail <i>Coturnix ypsilophora</i>	1	—
Bush Stone-Curlew <i>Burhinus grallarius</i>	1	—
Cape Petrel <i>Daption capense</i>	1	—
Caspian Tern <i>Sterna caspia</i>	3	—
Cattle Egret <i>Ardea ibis</i>	3	—
Collared Sparrowhawk <i>Accipiter cirrhocephalus</i>	4	—
Common Bronzewing <i>Phaps chalcoptera</i>	66	10
Crested Pigeon <i>Ocyphaps lophotes</i>	1	—
Crested Tern <i>Sterna bergii</i>	7	—
Dusky Moorhen <i>Gallinula tenebrosa</i>	4	—
Dusky Woodswallow <i>Artamus cyanopterus</i>	3	—
Eurasian Coot <i>Fulica atra</i>	17	—
Fairy Prion <i>Pachyptila turtur</i>	1	—
Fan-tailed Cuckoo <i>Cacomantis flabelliformis</i>	6	—
Flesh-footed Shearwater <i>Puffinus carneipes</i>	3	—
Galah <i>Cacatua roseicapilla</i>	29	—
Great Cormorant <i>Phalacrocorax carbo</i>	1	—
Great Egret <i>Ardea alba</i>	8	—
Great Knot <i>Calidris tenuirostris</i>	1	—
Great Skua <i>Catharacta skua</i>	2	—
Grey Butcherbird <i>Cracticus torquatus</i>	13	1
Grey Currawong <i>Strepera versicolor</i>	1	—
Grey Fantail <i>Rhipidura fuliginosa</i>	3	—
Grey Shrike-thrush <i>Colluricincla harmonica</i>	1	—
Grey Teal <i>Anas gracilis</i>	42	—

Table 1 — *continued.*

Species	No. released	No. recovered
Hardhead <i>Aythya australis</i>	25	—
Hoary-headed Grebe <i>Poliiocephalus poliocephalus</i>	3	—
Hooded Plover <i>Thinornis rubricollis</i>	1	—
Horsefield's Bronze-Cuckoo <i>Chrysococcyx basalis</i>	5	—
Inland Thornbill <i>Acanthiza apicalis</i>	3	—
Laughing Kookaburra <i>Dacelo novaeguineae</i>	190	19
Laughing Turtle-dove <i>Streptopelia senegalensis</i>	323	6
Light-mantled Sooty Albatross <i>Phoebastria palpebrata</i>	1	—
Little Bittern <i>Ixobrychus minutus</i>	1	—
Little Black Cormorant <i>Phalacrocorax sulcirostris</i>	2	—
Little Corella <i>Cacatua sanguinea</i>	2	—
Little Eagle <i>Hieraaetus morphnoides</i>	3	—
Little Egret <i>Egretta garzetta</i>	2	—
Little Penguin <i>Eudyptula minor</i>	14	—
Little Pied Cormorant <i>Phalacrocorax melanoleucos</i>	6	1
Little Wattlebird <i>Anthochaera chrysoptera</i>	4	1
Long-billed Black-cockatoo <i>Calyptorhynchus baudinii</i>	23	—
Magpie-lark <i>Grallina cyanoleuca</i>	31	3
Mistletoebird <i>Dicaeum hirundinaceum</i>	1	—
Musk Duck <i>Biziura lobata</i>	2	—
Nankeen Kestrel <i>Falco cenchroides</i>	21	—
Nankeen Night Heron <i>Nycticorax caledonicus</i>	43	2
New Holland Honeyeater <i>Phylidinyris novaehollandiae</i>	21	—
Northern Giant Petrel <i>Macronectes halli</i>	2	—
Pacific Black Duck <i>Anas superciliosa</i>	469	17
Pallid Cuckoo <i>Cuculus pallidus</i>	4	—
Peregrine Falcon <i>Falco peregrinus</i>	2	—
Pied Butcherbird <i>Cracticus nigrogularis</i>	1	—
Pied Cormorant <i>Phalacrocorax varius</i>	6	1
Pink-eared Duck <i>Malacorhynchus membranaceus</i>	1	—
Purple Swamphen <i>Porphyrio porphyrio</i>	8	—
Rainbow Bee-eater <i>Merops ornatus</i>	12	—
Red Wattlebird <i>Anthochaera carunculata</i>	123	7
Red-capped Parrot <i>Purpureicephalus spurius</i>	50	—
Red-eared Firetail <i>Stagonopleura oculata</i>	1	—
Regent Parrot <i>Polytelis anthopeplus</i>	1	—
Richard's Pipit <i>Anthus novaeseelandiae</i>	5	—
Rock Dove <i>Columba livia</i>	8	—
Rufous Whistler <i>Pachycephala rufiventris</i>	7	—
Sacred Kingfisher <i>Todiramphus sanctus</i>	111	3
Scarlet Robin <i>Petroica multicolor</i>	11	—
Shining Bronze-Cuckoo <i>Chrysococcyx lucidus</i>	5	—
Silver Gull <i>Larus novaehollandiae</i>	31	—
Silveryeye <i>Zosterops lateralis</i>	36	—
Singing Honeyeater <i>Lichenostomus virescens</i>	229	7
South Polar Skua <i>Catharacta maccormicki</i>	1	—
Southern Boobook <i>Ninox novaeseelandiae</i>	31	3
Southern Giant-Petrel <i>Macronectes giganteus</i>	19	—
Splendid Fairy-wren <i>Malurus splendens</i>	2	—
Spotted Turtle-Dove <i>Streptopelia chinensis</i>	44	2
Square-tailed Kite <i>Lophoictinia isura</i>	2	—
Straw-necked Ibis <i>Threskiornis spinicollis</i>	4	—
Striated Pardalote <i>Pardalotus striatus</i>	20	—
Swamp Harrier <i>Circus approximans</i>	1	1
Tawny Frogmouth <i>Podargus strigoides</i>	96	6
Tree Martin <i>Hirundo nigricans</i>	10	—

Table 1 — *continued.*

Species	No. released	No. recovered
Wedge-tailed Shearwater <i>Puffinus pacificus</i>	3	—
Welcome Swallow <i>Hirundo neoxena</i>	51	—
Western Rosella <i>Platycercus icterotis</i>	2	—
Western Spinebill <i>Acanthorhynchus superciliosus</i>	7	—
White-backed Swallow <i>Cheramoeca leucosternum</i>	4	—
White-faced Heron <i>Egretta novaehollandiae</i>	30	—
White-faced Storm-Petrel <i>Pelagodroma marina</i>	1	—
White-naped Honeyeater <i>Melithreptus lunatus</i>	1	—
White-winged Triller <i>Lalage sueurii</i>	1	—
Willie Wagtail <i>Rhipidura leucophrys</i>	13	—
Yellow-billed Spoonbill <i>Platalea flavipes</i>	2	—
Yellow-nosed Albatross <i>Diomedea chlororhynchos</i>	2	—
Yellow-throated Miner <i>Manorina flavigula</i>	13	2
Total	3 578	125

those most commonly banded, e.g. Laughing Kookaburra *Dacelo novaeguineae* (19 recoveries), Pacific Black Duck *Anas superciliosa* (17 recoveries), Australian Magpie *Gymnorhina tibicen* (15 recoveries) and Common Bronzewing *Phaps chalcoptera* (10 recoveries).

Of the 3 578 birds banded, 125 birds were recovered a total of 132 times, a recovery rate of 3.5 per cent.

For three of seven birds recovered twice, the period between recoveries was greater than one year. One Common Bronzewing was found inside a man-made structure eight months after release following recovery from an injury, and three years later it was caught by a cat and subsequently died. A Laughing Kookaburra, that was originally injured, was found injured ten months later and finally, two years after this release, was found dead in a water trough.

Overall, 34 per cent of recoveries were of dead birds, and 63 per cent of recoveries were of live birds, with three per cent unreported. Of the 83 live recoveries, 48 were still alive or re-released after a second period of nursing, and 35 were euthanased or died during further rehabilitation (Table 2).

Information on the distance travelled between release and recovery sites was available for 131 recoveries (Table 3). The longest movement observed was by a hand reared Nankeen Night Heron *Nycticorax caledonicus* which flew 1 323 km and was found 25 days after release. It was found injured and was subsequently euthanased. An adult Pacific Black Duck had flown 497 km after a period of 11 months whereupon it was shot and killed.

The majority of recoveries (43%) occurred less than three months from time of release (Table 4), and the final status of these 57 recoveries was 35

TABLE 2

Status at encounter and recovery of rehabilitated birds.

Initial encounter	Recovered alive released alive	Recovered alive but not released	Recovered dead	Unknown	Total
Sick or injured	20	18	18	3	59
Found on road but not certainly hit by car	10	4	2	0	16
Nestling hand reared	16	9	24	1	50
Other	2	4	1	0	7
Total	48	35	45	4	132

TABLE 3

Distance travelled between release and recovery.

Distance (km)	No. birds
<1	53
1-10	42
11-50	30
51-100	2
101-500	3
501-1 000	0
>1 000	1
Unknown	1
Total	132

TABLE 4

Time between recovery and release.

Time interval	No. birds
<3 months	57
3-6 months	16
7-12 months	25
>1-2 years	15
>2-3 years	8
>3-4 years	4
>4-5 years	1
>5-6 years	1
>6 years	2
Unknown	3
Total	132

dead and 22 alive. Of 15 birds recovered between one and two years after rehabilitation, seven had a final outcome of alive, seven dead and for one the status was unknown. The majority of these birds were Laughing Kookaburras (four birds) and Pacific Black Ducks (six birds).

Several birds were known to survive for much longer periods. A Pacific Black Duck originally admitted as a day-old duckling was recovered injured over four years and seven months later, and was subsequently euthanased. One of its siblings was recovered after five years and was subsequently released. After six years an Australian Magpie, rehabilitated as a juvenile, was found dead. A Singing Honeyeater *Lichenostomus virescens* initially captured by a cat was hit by a car six years and nine months after release and subsequently died.

DISCUSSION

Whilst Butler (1985) feels the logical individual who sees a sick, injured or displaced bird will suggest immediate euthanasia, he concedes that

the emotional aspect of humanity is an equally valid point of view. Furthermore, Tingay *et al.* (1977) and Tingay (1985) showed that the rehabilitation and release of hand reared Black Swans *Cygnus atratus* significantly and favourably influenced the management of a wetland near Bussleton, Western Australia. He also provided anecdotal evidence of increased populations of the Southern Boobook *Ninox novaeseelandiae* possibly created by the known release of this species into recent urban subdivisions. Releasing birds into artificially regenerated habitats or returning an injured adult of a species with low population density to its own area may positively assist bird populations.

The fact that many birds rehabilitated by the WA Native Bird Hospital were recovered a considerable time after release, indicates that rehabilitation is at least partially effective. However, the most appropriate method of evaluating success is to compare recovery rates of rehabilitated birds with recovery rates of control birds which had not been sick or injured.

The reported recovery rate for all birds banded in Australia was nine per cent for the 19 year period between 1953 and 1972 (Purchase 1973). This is substantially higher than the 3.5 per cent recovery rate of banded rehabilitated birds for the 8½ year period of this study. Part of this difference is probably related to the shorter period in which birds could have been recovered, but more importantly the comparison suffers from differences in the species banded. To properly determine differences in survival between rehabilitated and control birds, a large sample of birds of the same species must be banded in each treatment. At present, there are too few data on any species of rehabilitated bird to make an effective comparison.

In addition to comparison of survival rates between rehabilitated and control birds, other factors must be considered when deciding whether successful rehabilitation has been achieved. These include:

1. If a bird was recovered alive but subsequently died/euthanased, was this an indication of initial viability?
2. Was the bird unable to manage with the outcome of the original injury or was the new injury primary in nature and not secondary?
3. Was the injury or death from human or natural causes?

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).