



# SOUTH AUSTRALIAN ORNITHOLOGIST

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# The South Australian Ornithological Association Inc. (Birds SA)

**FOUNDED 1899**

Birds SA is the trading name of The South Australian Ornithological Association Inc.

The principal aims of the Association are to promote the study and conservation of Australian birds, to disseminate the results of research into all aspects of bird life, and to encourage bird watching as a leisure activity.

The *South Australian Ornithologist* is supplied to all members and subscribers, and is published twice a year. In addition, a quarterly *Newsletter* reports on the activities of the Association, announces its programs and includes items of general interest.

Meetings are held at 7.45 pm on the last Friday of each month (except December when there is no meeting) in the Charles Hawker Conference Centre, Waite Road, Urrbrae (near the Hartley Road Roundabout). Meetings feature presentations on topics of ornithological interest. Visitors are welcome.

The Association has a library at the meeting venue and books are available to all members for loan. It also maintains an image library and an audio library.

Regular day trips are arranged to places of ornithological interest, both during the week and at weekends, and weekend campouts are held several times a year.

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### Referees and editorial assistance:

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Revised March 2011

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**Front cover photograph:  
Hooded Plover  
Peter Gower**



# Some aspects of Hooded Plover behaviour and ecology based on a colour-banding study on Kangaroo Island

T. E. DENNIS AND D. M. BALL

## Abstract

*Between May 1986 and May 1991 on Kangaroo Island, 284 Hooded Plovers were captured at night and fitted with coloured PVC bands for individual recognition. Of these, 221 were subsequently recorded a total of 2133 times, with the last re-sight record in 2006.*

*Considerable mobility was recorded among the population, including a small number of movements to the mainland, with the furthest distance travelled from place of banding being ~145 km. Flocks of >20 birds were common in autumn and early winter, often occurring at near-coastal saline lakes where the mollusc *Coxiella striata* was abundant, or on beach habitats with heavy seagrass accumulations. Flock size and composition were dynamic and included paired birds temporarily absent from breeding beaches. The high proportion of unbanded adults among autumn-winter flocks suggests either a previously overlooked sub-population of non-territorial adults on Kangaroo Island; or a seasonal immigration of birds from elsewhere.*

*When last recorded, eight colour-banded birds were aged 10 years or more, with the oldest aged 15.5 years. Eleven known age young were in adult plumage when aged <1 year (mean  $329.1 \pm 16.7$  days; range 303-352) some of which were paired and fecund (mean age of  $346.3 \pm 15.4$  days; range 336-364). A total of 27 pairs remained together at the same location for consecutive breeding seasons; 16 of these were with the same partner on the same territory over multiple seasons (range 3-6).*

*In addition to known beach breeding habitats, the Hooded Plover flock foraging locations identified in this study appear to be important to sustain the population through the non-breeding season, and therefore need to be considered in habitat management strategies.*

## INTRODUCTION

The Hooded Plover, *Thinornis rubricollis* is a rare endemic shorebird of southern Australia found mainly in coastal habitats, with most breeding in the east of its range occurring on broad sandy high-energy beaches. The spread of urbanisation in coastal areas in the south-east of the continent has been exponential through the latter part of the 20th century (Hamilton and Cocks 1996), with the consequent increase in recreational activity directly impacting on many beach-dwelling bird species resulting in population decline of several species, including the Hooded Plover (Dowling and Weston 1999; Baird and Dann 2003; Dennis and Masters 2006; Maguire 2008).

In the mid-1980s there was growing concern at the plight of the Hooded Plover population in South Australia, including on Kangaroo Island where more than a third of the population was known to occur (Bransbury 1987). That concern initiated this study, largely emanating from the work of the late Allen Lashmar (e.g. Lashmar 1984) who sadly did not live to see the end-point of his pioneering conservation initiatives. It was his fore-sight and active contribution to studying the plight of the species which provided the motivation for the project described here. His unpublished data from eastern Kangaroo Island contributed greatly to modelling trends in the Hooded Plover population reported by Dennis and Masters (2006), who found that coincident with the rapid growth in tourism and coastal recreation, a substantial population decline (24%) had occurred on the Island between 1985 and 2004. Since that data was published, more recent surveys indicate an increase in the overall numbers of Hooded Plovers on Kangaroo Island;

i.e. from an estimated population of 110 in 2004 (Dennis and Masters 2006) to 129 in 2006; 180 in 2008 and 2010 (Ewers *et al.* 2011) and 186 in 2012 (Jane Renwick, *in litt.*). These numbers should be treated with some caution however, as the amount of habitat surveyed varied between years, with later surveys being the most comprehensive.

Initially, the underlying aim of the banding effort was to provide the basis for others to conduct a comprehensive study of the species and the issues surrounding its conservation. However, this failed to materialise and, while the project data continued to accumulate, its analysis and promulgation languished. As a consequence, the scope and therefore the outcomes of the project remained limited by being conducted through volunteer effort, with time inputs never systematic and data collection remaining largely opportunistic.

The colour-marking aspect of the project generated considerable community interest, with many local people assisting with the capture and banding effort and subsequently continuing to contribute independent sightings of marked birds.

A study of colour-banded Hooded Plovers conducted in central Victoria found varying levels of mobility and dispersal among the population, including among paired adults from established territories, outside of the breeding season (Weston, Ehmke and Maguire 2009). While Dennis and Masters (2006) have reported some aspects derived from the long-term study on Kangaroo Island (e.g. population distribution and trends) the aim of this paper is to add to what is known of the species behaviour and population dynamics. It provides observation data on aspects of: individual mobility (within and beyond Kangaroo Island) including post fledging dispersal; seasonal behaviour e.g. autumn-winter flocking; pair and territory fidelity; age at maturity and first breeding; and individual longevity.

## METHODS

### Study area

Kangaroo Island is situated ~15 km southwest of the Fleurieu Peninsula in South Australia. The Island is ~150 km in length (east-west) and ~55 km wide, with a coastline of ~500 km in total length, ~112 km of which is sandy beaches (Schulz 1995). The western and southern coastlines are exposed to Southern Ocean swell and prevailing weather patterns (Schwerdtfeger 2002) while the northern and eastern aspects are generally more sheltered and consist of moderate to low energy coastlines (Thomas and Edmonds 2002). Hooded Plovers are distributed on sandy beach habitat all around the Island (Schulz 1995; Dennis and Masters 2006).

### Individual colour-marking scheme

Between 1981 and 1985 several Hooded Plovers were experimentally captured and banded on Kangaroo Island using metal bands supplied by the Australian Bird and Bat Banding Scheme (ABBBS). Commencing in mid-May 1986, a colour-marking scheme was approved by the ABBBS enabling individual Hooded Plovers to be re-identified in the field without the stress of recapture. In addition to sequentially numbered ABBBS stainless steel bands, three coloured Darvic PVC bands were applied in a combination unique to each bird. Bands were applied to the metatarsus on each leg, i.e. two colour bands on the left and one colour band above the ABBBS metal band on the right. Seven colours were allocated to the project by the ABBBS and a single alpha code assigned to each; i.e. red = r, mid-blue = b, yellow = y, orange = o, light green = p, black = n, white = w. Metal bands were assigned the alpha code 'm'. When bands were subsequently 'read' in the field these were recorded from left to right, with each bird retaining the individual identity (Id.) code throughout the life of the project, e.g. red over green (left leg), with black over metal (right leg) was assigned the Id. code of 'rpnm'.

Standard morphometric measurements (i.e. weight, and length of head + bill, culmen, wing

and tarsus) were recorded from all birds at time of initial capture and banding, and during subsequent recapture events, with the data routinely reported to the ABBBS.

#### *Band replacement*

Some colours among the PVC bands were known to fade more rapidly than others (e.g. red) and glued joints to fail resulting in band losses, which required that these birds be recaptured and their bands replaced.

#### **Capture methods**

The nocturnal technique of using strong light to capture wildlife has been widely used for many decades around the world, including in many terrestrial bird species research projects (Labisky 1959; Campbell 1968; Benitez-Lopez *et al.* 2010). Its potential as a method to capture Hooded Plovers was discovered prior to this project by a local ornithologist; while walking a beach at night he found that a powerful hand torch successfully transfixed two adult Hooded Plovers, enabling them to be approached to within a few metres (C. Baxter, pers comm.). Subsequently, a foot-based stalking and capture technique was developed and refined to confidently capture adult and fledged immature Hooded Plovers (and other shorebird and wader species) using a modified spotlight and hand-net.

#### *Nocturnal capture method*

For freedom of movement the 'catcher' carried only the spotlight (including battery backpack) and hand-net. To avoid the risk of prematurely spooking the target species, care was taken not to project the beam further than an ~100 m search area ahead, or to 'flash' the light beam onto capture team participants. The catcher wore dark clothing and would lead, keeping the concentrated beam lowered in a search pattern and when a bird was detected, move on >25 m ahead (usually barefoot to minimise footfall noise) keeping the light on one bird and holding it forward at arm's length to minimise light backwash, quickly closing the distance to ~20 m. The final approach involved a slower and quieter

pace, keeping the net high out of the light wash, bringing it down over the bird in one smooth action at the very last moment.

With multiple target birds in one location, it was important to extinguish the spotlight and work with minimal light (one headlamp) and noise, and to quickly transfer the first captured bird to a holding box or 'bird bag', before attempting to scan for others.

A shortcoming of this capture method occurs on beaches where resident birds become accustomed to other sources of light such as street lights and vehicle headlights, resulting in them becoming extremely difficult to approach. Also, attempts to use this capture method on inland saline lagoons or on shell-grit beaches were ineffective, as the substrate 'crunched' underfoot, precluding close approach.

#### *Equipment*

A hand-held hunting spotlight fitted with a 50 watt halogen globe and powered by a small wet-cell (motorcycle) battery carried in a sealed backpack was effective and reliable for 60–90 minutes of semi-continuous use (LED lighting devices were not then available). The spotlight reflector was adjusted to concentrate the beam width and was fitted with an 80 mm shroud. Shrouding of the beam was found to be essential to eliminate light wash reflection off the operator. A simple 550 mm diameter hand-net with a 1400 mm blackened handle was used for catching, fitted with a soft synthetic dark-coloured 12 mm mesh cone.

#### *Ambient conditions*

Prevailing weather and swell conditions, as well as tide and moon-phase cycles, were critical considerations affecting the efficacy and outcomes of the capture method. Optimum conditions were moonless nights with full cloud cover and light to moderate winds to muffle footfall and other noise (Benitez-Lopez *et al.* 2010) coupled with low swell conditions during low to mid-tide (when the maximum area of firm sand would be exposed).

*Handling and minimal impact protocols*

Typically, an entire beach was sweep-searched and captured birds held in a lined and compartmented bird-box (carried by an assistant). Banding and morphometric data collection procedures were conducted subsequently in one session. On longer beaches with more than one Hooded Plover territory, presumed paired adults and young were released synchronously within the territorial boundaries.

To avoid the stress of capture and handling during the breeding season, the nocturnal capture method was limited to beaches where pairs had been previously assessed as not currently engaged with incubation or young aged <25 days.

*Diurnal capture method*

Daytime captures were only attempted with pre-fledged young aged >15 days, by which time they were more robust and feather development advanced (Dowling and Weston 1999). These captures were opportunistic on remote beaches, or based on prior observation of the stage of breeding activity in more accessible locations. Capture was by hand (or hand-net) and followed careful observation on approach to pre-determine cryptic concealment locations (behaviour typically exhibited by species with nidifugous young) and by following fresh tracks.

*Re-sighting of banded individuals*

For this study the term 're-sight' includes both the visual re-identification of an individual in the field from a record of its colour band sequence, or by physical recapture, using the nocturnal trapping method.

A standardised observation record form was widely distributed among local bird-watchers, National Park staff and project volunteers. The resulting records were carefully scrutinised and evaluated against known or apparent skill levels of the observer and the geographical probability of the record before acceptance and entry into the project database. Follow-up surveys were

conducted when a sighting record was in doubt or incomplete. The substantial re-sight records collected by visiting ornithologists in 1989 and 1990 (J. Bransbury, *in litt.*) and in 1994 (M. Schulz, *in litt.*) were also incorporated into the project.

As colour bands were found to deteriorate with fading and glued joint failure (typically after two to three summers), only a small number of valid observation records were collected after 1995. These were invariably of birds that had colour bands replaced at least once or, as with one bird (pnwm) with one colour band missing, its ABBBS band numeral sequence was read by spotting scope at close range.

*Equipment*

Visual re-identification of individual birds involved use of high-resolution binoculars and/or a tripod-mounted spotting scope. Similar optical equipment was used by volunteers involved with the project.

*Age and sex classes*

An age-class based on plumage characteristics was assigned on initial capture and subsequently, to re-sighted birds using the following definitions:

- *runners* – pre-fledged young (aged <35 days; *vide* Baird and Dann 2003);
- *juvenile* – fledged and near adult size but with pale grey crown and upper mantle;
- *sub-adult* – when moult to adult plumage had commenced or progressed, i.e. emergent black feathers visually evident in crown or mantle;
- *adult* – crown and mantle all black.

Hatchling age data was determined from monitored incubation events and considered accurate to  $\pm 3$  days. Additional data on moult progression with age was obtained from Adelaide Zoo records for a small number of captive Hooded Plovers which had been hand-reared following artificial incubation, or were bred in captivity (M. Craig and B. Backhouse, *in litt.*).

Being strongly monomorphic, Hooded Plovers cannot be accurately sexed in the field and in this study only a small number were classified from observed behavioural cues.

### Breeding season

The Hooded Plover breeding season in South Australia is annual and extends from August to the following March, which is similar to elsewhere in south-eastern Australia (Maguire 2008). Many pairs bond for consecutive seasons, often using the same area of beach (Dennis and Masters 2006; Weston, Ehmke and Maguire 2009).

### Data storage and analysis

From project commencement in 1985, all banding and re-sight data was systematically recorded in dedicated project field notebooks. From 1992 these data were transcribed to an electronic spreadsheet, which thereafter formed the project database. This subsequently provided some ability to interrogate the copious life-history notes and observation data accumulated over the life of the project and enabled determination of some aspects of the species' life history. Much of the data has been summarised as means with standard deviations.

## RESULTS

### *Number of birds banded and re-sighted*

Between November 1981 and May 1991 a total of 338 Hooded Plovers were captured and banded with ABBBS bands on Kangaroo Island. Commencing in mid-May 1985, 284 of these (31 of which were previously ABBBS banded) were also fitted with coloured PVC bands enabling easy individual recognition in the field. Most (84%) were banded in the first four years of the project. Two hundred and twenty one (69.7%) of the colour-banded birds were subsequently re-sighted (visually or physically recaptured) on a total of 2133 occasions: 21 individuals were re-sighted 20 or more times (up to 54 re-sights); 42 were re-sighted 11-20 times; 62 were re-sighted 5-10 times; with the remainder (96) re-sighted <5 times.

Among the individually colour marked birds, 116 were in adult plumage at time of first capture, 122 were either juvenile or sub-adult, and 46 were runners aged >15 days.

### *Mobility and post-breeding season dispersal*

Of the movements recorded on Kangaroo Island, 316 were of distances >10 km (range 10-98 km). Considerable mobility was recorded among the sub-adult age group (mean distance  $28.4 \pm 27.4$  km; range 5-145 km) and among unpaired adults (mean distance  $32.7 \pm 18.9$  km; range 9-105 km) and included a small number of movements to the mainland (Table 1). Details of these movements follow:

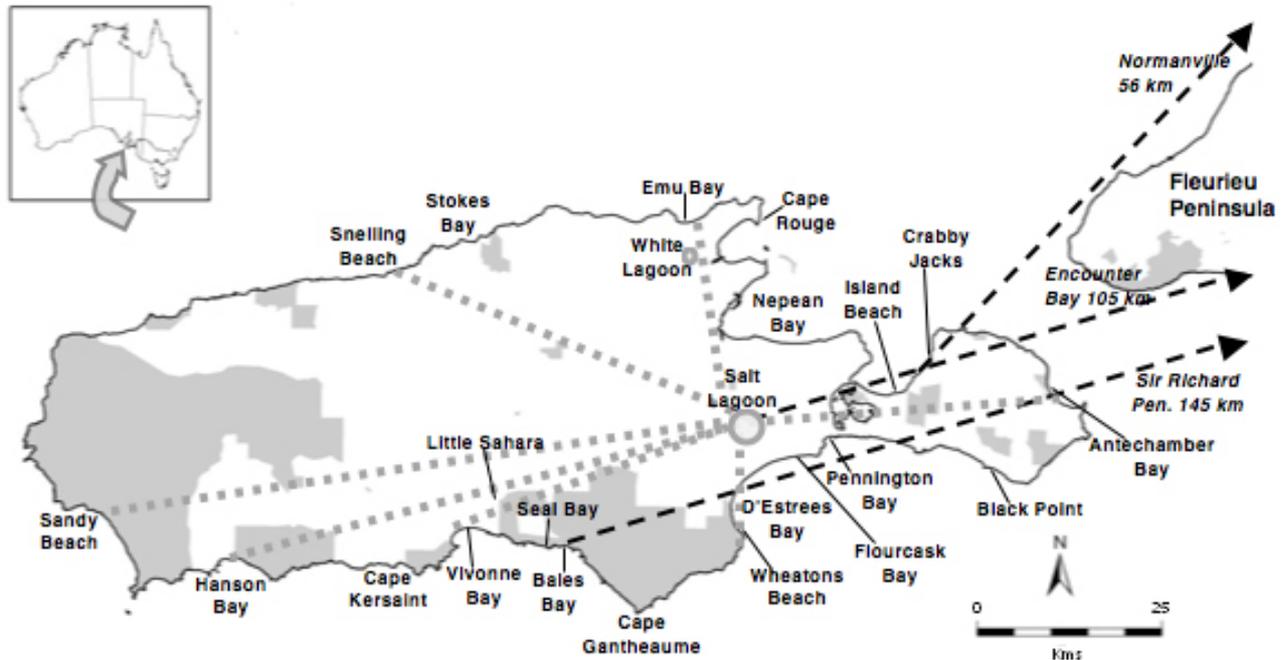
Id. nyrm: banded as a juvenile at Bales Bay on 28 February 1987, then recorded 99 days later on 7 June in a mixed-age flock of six birds ~3 km north of the Murray River mouth on the Sir Richard Peninsula, ~145 km from the last sighting on Kangaroo Island (TD pers obs.).

Id. ypom: banded as an adult at Browns Beach on 17 December 1987, then observed on 5 July 1989, 2.7 years (930 days) later, paired and breeding on Normanville Beach (L. Montagus, pers comm.), ~56 km from the last sighting on Kangaroo Island. Several subsequent sightings reported it as paired and at the same location until 26 December 1991, when it was found dead at nearby Carackalinga Beach and the band retrieved (ABBBS, *in litt.*).

Id. rywm: banded as a juvenile at Wheatons Beach on 6 February 1991. After several re-sightings among winter flocks at Salt Lagoon (Figure 1) in 1991, it was subsequently recorded on several occasions during April and May 1994, among a small mixed age flock in the Inman River estuary at Encounter Bay. For example, 5 April, >3 years (1153 days), and 14 May (1192 days) after initial capture and banding, ~105 km from the last sighting on Kangaroo Island (R. Sharpe, *in litt.*).

In addition, during the winter of 1989 several sightings of "one, sometimes two" unidentified

**Figure 1.** Examples of Hooded Plover mobility on Kangaroo Island, between breeding beaches and the autumn-winter flocking sites at Salt and White Lagoons (dotted lines), mainland dispersals (dashed arrows) and habitat locations mentioned in the text. Shaded areas denote conservation reserves.



colour-banded Hooded Plovers were reported among small flocks at Basham Beach and between Middleton and Goolwa in Encounter Bay (L. Montagus pers. comm.). These were assumed to be from Kangaroo Island, as colour-banded birds from elsewhere (e.g. Victoria) had not been recorded in South Australia. When re-sightings are grouped by age-class and by season (i.e. breeding and non-breeding) Hooded Plover movements within Kangaroo Island indicate that sub-adults (with 68.0% of movements) and non-paired adults (with 56.2% of movements) are more mobile across all habitats in the non-breeding season (Table 2).

Two nocturnal movements were recorded on the same night, both of adults recaptured <2 hours later at localities ~5 km and 12 km distant respectively.

#### **Age at maturity (based on adult plumage) and first breeding**

Re-sight records from a small number of known-age birds provided an estimated mean of 134.6 ± 12.2 days (range 119–149;  $n = 7$ ) for the average

age at which moult into sub-adult plumage commenced; and 329.1 ± 16.7 days (range 303–352;  $n = 11$ ) for when the moult into full adult plumage appeared complete (Table 3).

In addition, some hatchling to maturity data was made available from captive-bred Hooded Plovers at the Adelaide Zoo (M. Craig and B. Backhouse, *in litt.*). When these are collated with field data, the average age for moult commencement was 138.1 ± 17.3 days (range 111–163;  $n = 13$ ); and for moult completion was 327.1 ± 16.2 days (range 311–352;  $n = 13$ ) (Table 3).

Inclusive of two captive birds, five known-age individuals were paired (territory defence behaviour and copulations observed) aged <12 months (mean 334.2 ± 20.2 days; range 311–364). One of these, a female (rbwm) was recorded incubating at Black Point beach when aged 336 days (Table 3). In addition, among the young birds colour-banded when juveniles of imprecise age, 11 were later recorded as paired and breeding aged <18 months.

**Table 1. Examples of mobility among sub-adult ( $n = 13$ ) and unpaired adult ( $n = 4$ ) Hooded Plovers (age-class at time of banding) on Kangaroo Island and dispersal to nearby mainland locations ( $n = 3$ ). All movements are given as straight-line distances from previous re-sight location.**

| Individual id. code     | Total re-sights | Movements (kms)                 |                                 | Years unpaired | Behaviour notes   |
|-------------------------|-----------------|---------------------------------|---------------------------------|----------------|---|
|                         |                 | as sub-adult                    | when adult                      |                |   |
| <b>Sub-adults</b>       |                 |                                 |                                 |                |   |
| rbpm                    | 25              | 46, 44                          | 54, 15                          | 3.5            | with small winter flocks on north coast   |
| rpnm                    | 15              | 18, 14, 6, 6                    | 24, 22, 25, 26, 24, 26          | >5             | with winter flocks at Salt Lagoon '89-91  |
| boym                    | 5               | 42                              | 90, 52, 42                      | <1.5           | with winter flocks at Salt Lagoon '91   |
| nbom                    | 7               | 49, 10, 30                      | nd                              | nd             | mobile on eastern beaches as sub-adult  |
| nbrm                    | 52              | 80, 45                          | nd                              | 2.5            | 80 km flight aged <3 months (~89 days)  |
| pynm                    | 14              | 36, 42, 12                      | 38, 45                          | 3              | with winter flocks at Salt Lagoon '89-91  |
| bnbm                    | 10              | 21, 22, 22                      | 25, 8, 25, 18                   | 4.5            | mobile with small flocks on south coast   |
| obrm                    | 18              | 24, 24                          | 9, 16, 16                       | 4              | with winter flocks at Salt Lagoon '89-91  |
| yrrm                    | 6               | 10                              | 43, 67                          | nd             | 'disappeared' for >5 years  |
| prrm                    | 12              | 10, 45, 45                      | 26, 26, 18                      | 4              | with winter flocks at Salt Lagoon '91   |
| oprm                    | 15              | 5, 9                            | 10, 35, 35, 13, 33              | 2.5            | with small flocks on south coast  |
| obom                    | 13              | 22, 21                          | 12, 21                          | 1.5            | with winter flocks at Salt Lagoon '89   |
| boom                    | 15              | 5, 5, 5                         | 31, 34, 30, 30                  | 4              | with winter flocks at Salt Lagoon '91   |
| <b>Means</b>            |                 | 25.0 ± 18.2 km<br>(range 5-80)  | 29.5 ± 16.8 km<br>(range 9-90)  |                |   |
| <b>Unpaired adults</b>  |                 |                                 |                                 |                |   |
| rnwm                    | 9               | -                               | 46, 52, 52, 28, 28              | 4.5            | aged >5 years at first pairing; briefly with winter flocks                      |
| yrbm                    | 6               | -                               | 43, 43, 42, 37, 62              | 2.5            | adult when banded   |
| poom                    | 11              | -                               | 26, 34, 12, 24, 11, 11          | 2.5            | with winter flocks at Salt Lagoon '89   |
| onym                    | 8               | -                               | 24, 31                          | 3              | with winter flocks at Salt Lagoon '91   |
| <b>Means</b>            |                 |                                 | 33.7 ± 14.7 km<br>(range 11-62) |                |   |
| <b>Mainland records</b> |                 |                                 |                                 |                |   |
| ypom                    | 2               | -                               | 57                              | nd             | adult when banded; paired at Normanville Beach '89-91                           |
| nyrm                    | 2               | 145                             | -                               | nd             | with flock of sub-adults on Sir Richard Peninsula, June '87                     |
| rywm                    | 5               | 18                              | 105                             | nd             | with flocks at Salt Lagoon '91; with small flock at Encounter Bay April-May '94 |
| <b>Means (combined)</b> |                 | 28.4 ± 27.4 km<br>(range 5-145) | 32.7 ± 18.9 km<br>(range 9-105) |                |   |

**Table 2. Examples of mobility among sub-adult Hooded Plovers (prior to entering the breeding population) and a small number of unpaired adults, with movements (<100 days apart; *vide* Weston *et al.* 2009) grouped by season. Movements are given as straight-line distances from previous re-sight locations.**

| Id. code               | Total re-sights | No. of movements represented by distance from last re-sight (km) |                     |                           |                     | No. years unpaired |
|------------------------|-----------------|--|---------------------|---------------------------|---------------------|--------------------|
|                        |                 | as sub-adult   |                     | when adult                |                     |                    |
| Sub-adults             |                 | breeding season  | non-breeding season | breeding season           | non-breeding season |                    |
| rbpm                   | 25              | -  | 46, 44              | 54, 15                    | -                   | 3.5                |
| rpnm                   | 15              | 6  | 18, 14, 6           | 24, 22                    | 25, 26, 24, 26      | >5                 |
| boym                   | 5               | -  | 42                  | -                         | 90, 52, 42          | <1.5               |
| pynm                   | 14              | 36, 12   | 42                  | 38                        | 45                  | 3                  |
| bnbm                   | 10              | 22, 22   | 22                  | 21, 22, 22, 25, 8, 25, 18 | -                   | 4                  |
| obrm                   | 18              | -  | 24, 24              | 9                         | 16, 16              | 4                  |
| prrm                   | 12              | 45, 45   | 10                  | 26                        | 26, 18              | 4                  |
| oprm                   | 15              | -  | 5, 9                | 13                        | 10, 35, 35, 33      | 2.5                |
| obom                   | 13              | 22   | 21                  | 15, 22                    | 22, 12, 21, 21, 12  | 1.5                |
| boom                   | 15              | -  | 5, 5, 5             | 5, 5, 5, 24               | 31, 34, 6, 30       | 4                  |
| <b>Unpaired adults</b> |                 |  |                     |                           |                     |                    |
| rnwm                   | 9               | -  | -                   | 52, 52                    | 46, 28, 28          | 4.5                |
| yrbm                   | 6               | -  | -                   | 43                        | 43, 42, 37, 62      | 2.5                |
| poom                   | 11              | -  | -                   | 34, 11, 11                | 26, 12, 25          | 2.5                |
| onym                   | 8               | -  | -                   | 31                        | 24                  | 3                  |
| <b>Total movements</b> |                 | 8  | 17                  | 28                        | 36                  |                    |
| <b>% of movements</b>  |                 |  | 68.0%               |                           | 56.2%               |                    |

### Pair and site fidelity

Many individually marked birds were identified as paired and sedentary on apparent breeding territories over multiple seasons, i.e. 27 pairs remained together at the same location for at least one consecutive breeding season, with 16 of these recorded with the same partner on the same territory over multiple seasons (Table 4). Two of these pairs had been previously captured (nest-trapped) and banded (ABBBS bands) as breeding pairs in 1981 (A. Lashmar, *in litt.*), and both were recaptured on the same territory five years later (Table 4).

### Flocking behaviour on Kangaroo Island

In addition to favoured beach foraging locations,

flocks formed in autumn on a small number of inland saline lakes (e.g. White Lagoon and Salt Lagoon; Figure 1) and remained there through early winter before apparent dispersal in July. At these, the Salt-lake Snail, *Coxiella striata*, a minute mollusc known to be an important over-wintering food source for migratory waders (Dittmann *et al.* 2006) was abundant, and likely provided the foraging attraction for the Hooded Plover and other over-wintering migratory wader species.

In 1989, flocks were present at Salt Lagoon from late-March through to mid-July with the largest aggregations being recorded in June (A. Lashmar, *in litt.*). On the 22<sup>nd</sup> of June a flock of 34 was

**Table 3. Age estimates (in days) of sub-adult and adult Hooded Plovers based on plumage phase in re-sighted and captive-bred birds and when first recorded as paired or breeding.**

| <b>Id. code (sex)</b>     | <b>Hatch date</b> | <b>No. re-sights</b> | <b>Moult commencement*</b>        | <b>Full adult plumage</b>         | <b>Paired/breeding</b>            |
|---------------------------|-------------------|----------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| <b>Resighted birds</b>    |                   |                      |                                   |                                   |                                   |
| npbm                      | 26-1-87           | 3                    | -                                 | 325                               | -                                 |
| oprm                      | 20-2-87           | 15                   | 119                               | 313                               | -                                 |
| bbom                      | 4-10-87           | 6                    | 126                               | -                                 | -                                 |
| rbom                      | 4-10-87           | 14                   | 125                               | -                                 | -                                 |
| obom (f)                  | 5-11-87           | 13                   | 149                               | 314                               | (eggs at 505**)                   |
| rnom                      | 7-1-88            | 9                    | -                                 | 348                               | -                                 |
| rbnm                      | 25-1-88           | 14                   | 131                               | 303                               | -                                 |
| ypwm (f)                  | 12-11-89          | 5                    | -                                 | 350                               | 364                               |
| wpwm                      | 12-11-89          | 3                    | -                                 | 352                               | -                                 |
| opwm                      | 12-12-89          | 1                    | -                                 | 328                               | -                                 |
| rbwm (f)                  | 23-10-90          | 9                    | 144                               | 336                               | 336 (eggs)                        |
| bbwm                      | 23-10-90          | 12                   | 148                               | 336                               | 339                               |
| nbwm                      | 12-1-91           | 1                    | -                                 | 315                               | -                                 |
| <b>Means (days)</b>       |                   |                      | 134.6 ± 12.2                      | 329.1 ± 16.7                      | 346.3 ± 15.4                      |
| <b>Captive-bred birds</b> |                   |                      |                                   |                                   |                                   |
| AdZ930561 (f)             | 22-11-93          | na                   | 141                               | 311                               | 311 (eggs)                        |
| AdZ930562 (f)             | 21-12-93          | na                   | 155                               | -                                 | -                                 |
| AdZ930563 (m)             | 21-12-93          | na                   | 163                               | -                                 | -                                 |
| AdZ930564 (f)             | 21-12-93          | na                   | 163                               | -                                 | -                                 |
| AdZa10111 (m)             | 16-1-01           | na                   | 120                               | 321                               | 321                               |
| AdZa40665 (m)             | 5-11-04           | na                   | 111                               | -                                 | -                                 |
| <b>Means (days)</b>       |                   |                      | 142.2 ± 22.4                      | 316.0 ± 7.1                       | 316.0 ± 7.1                       |
| <b>Combined (days)</b>    |                   |                      | 138.1 ± 17.3<br>(range 111 - 163) | 327.1 ± 16.2<br>(range 303 - 352) | 334.2 ± 20.2<br>(range 311 - 364) |

\* some black adult feathers (i.e. <20% cover) appearing on crown and mantle

\*\* not included in age at first breeding estimates as it may have been a second clutch event i.e. late in breeding season

present, of which 12 were adult (four colour-banded) and 22 were juvenile or sub-adult age birds (six colour-banded). On the 29<sup>th</sup> a flock of 49 was present, of which 33 were adult (10 colour-banded) and 16 were juvenile or sub-adult age birds (two colour-banded). The mean proportion of colour-banded Hooded Plovers in these two flocks was 27%.

In 1990, flooding rains in late March filled Salt Lagoon to peak-flood level precluding observer access for the autumn-winter period of that year.

In 1991, Salt Lagoon was monitored weekly from April to mid-July. The largest aggregations were recorded in April and May (Figure 2), when the mean flock size was  $33.4 \pm 3.0$  (range 12–55) and

**Table 4. Examples of Hooded Plover pair fidelity and adherence to territory locations on Kangaroo Island spanning multiple breeding seasons.**

| Pair Id. codes | Territory location    | No. br. seasons paired | Period          | No. re-sights |           | Pair bond behaviour notes   |
|----------------|-----------------------|------------------------|-----------------|---------------|-----------|---|
|                |                       |                        |                 | paired        | off-terr. |   |
| nnrm + onrm    | Crabby Jacks          | 6                      | Nov 81 - Dec 86 | 7             | 0         | paired when first banded in 81-82 breeding season   |
| oppm + pppm    | Black Point Beach     | 5                      | Dec 81 - Jul 86 | 3             | 0         | paired when first banded in 81-82 breeding season   |
| rypm + nypm    | Island Beach          | 4                      | Jun 86 - Jun 90 | 2             | 1         | pair together in small flock <4 km distant during winter high tide event  |
| rybm + orbm    | Emu Bay (east)        | 4                      | Aug 86 - May 90 | 12            | 0         | rybm (m) not recorded away from Emu Bay over 9.5 yrs (23 re-caps.)  |
| rybm + oywm    | Emu Bay (east)        | 5                      | Mar 91 - Nov 95 | 9             | 0         | second long-term pairing for rybm on same territory   |
| rpym + bpym    | Hanson Bay (mid)      | 6                      | Jan 87 - Jan 92 | 14            | 0         | only recorded together and on territory   |
| porm + bprm    | Bales Bay (mid)       | 5                      | Feb 87 - Aug 90 | 4             | 1         | bprm 22 km E in small flock post 88-89 breeding season  |
| wowm + bpbm    | Emu Bay (mid)         | 3                      | Aug 87 - May 90 | 19            | 1         | both briefly 38 km W from highly disturbed terr. during 87-88 br. season  |
| rbpm + nrom    | Snellings Beach       | 5                      | Sep 87 - Jan 92 | 16            | 0         | both highly mobile before pairing, then only rec. together on territory   |
| nnpm + nrrm    | Antechamber Bay       | 4                      | Nov 87 - Aug 90 | 8             | 1         | both briefly 30 km distant in winter  |
| brm + rbrm     | Pennington Bay        | 3                      | Jan 88 - Sep 91 | 8             | 1         | both briefly 20 km from highly disturbed terr. during 87-88 br. season  |
| oorm + rnrn    | D'Estrees Bay (south) | 5                      | Mar 88 - Mar 92 | 27            | 1         | with winter flocks at nearby beach  |
| rrbm + onbm    | Stokes Bay            | 5                      | Jan 89 - Nov 92 | 15            | 0         | only recorded together and on territory   |
| nbrm + yrom    | D'Estrees Bay (south) | 4                      | Aug 89 - Apr 93 | 26            | 1         | with winter flocks at nearby beach  |
| pybm + bnnm    | Emu Bay (east)        | 4                      | Aug 89 - Nov 93 | 18            | 2         | both in small winter flock on nearby saline lagoon (5 km distant) in 90; bnnm (f) with flocks at Salt Lagoon (28 km distant) May - Jun 91 |
| wowm + prwm    | Emu Bay (mid)         | 3                      | Mar 91 - Feb 93 | 10            | 0         | only recorded together and on territory   |

**Table 5. Hooded Plover flock numbers and composition i.e. age-class and percentage of colour-banded (c-b) birds present at Salt Lagoon at weekly intervals during autumn and early winter in 1991.**

| April        |            |               |                 |                                       | May        |               |                 |  |
|--------------|------------|---------------|-----------------|---------------------------------------|------------|---------------|-----------------|--|
|              | Flock size | No. ad. (c-b) | No. s-ad. (c-b) | % c-b ad. & s-ad.                     | Flock size | No. ad. (c-b) | No. s-ad. (c-b) | % c-b ad. & s-ad.                      |
| Week 1       | 25         | 14 (4)        | 11 (4)          | 28.6 & 36.4                           | 12         | 10 (1)        | 2 (0)           | 10.0 & 0.0                             |
| Week 2       | 28         | 18 (6)        | 10 (4)          | 33.3 & 40.0                           | 55         | 42 (12)       | 13 (4)          | 28.6 & 30.8                            |
| Week 3       | 40         | 30 (13)       | 10 (3)          | 43.3 & 30.0                           | 43         | 33 (8)        | 10 (3)          | 24.2 & 30.0                            |
| Week 4       | 32         | 21 (7)        | 11 (1)          | 33.3 & 9.1                            | 32         | 22 (10)       | 10 (0)          | 45.4 & 0.0                             |
| <b>Means</b> | 31.3       | 20.8          | 10.5            | ad. 34.6 ± 6.2%<br>s-ad. 28.9 ± 13.8% | 35.5       | 26.8          | 8.8             | ad. 27.0 ± 14.6%<br>s-ad. 15.2 ± 17.6% |

| June         |            |               |                 |  |
|--------------|------------|---------------|-----------------|--|
|              | Flock size | No. ad. (c-b) | No. s-ad. (c-b) | % c-b ad. & s-ad.                      |
| Week 1       | 13         | 10 (6)        | 3 (2)           | 60.0 & 66.7                            |
| Week 2       | 16         | 14 (3)        | 2 (0)           | 21.4 & 0.0                             |
| Week 3       | 18         | 18 (4)        | 0               | 22.2 & 0.0                             |
| Week 4       | 5          | 4 (0)         | 1 (1)           | 0.0 & 20.0                             |
| <b>Means</b> | 13.0       | 11.5          | 1.5             | ad. 25.9 ± 24.9%<br>s-ad. 21.7 ± 31.5% |

**Combined (12 weeks)**

Mean flock size 26.6 ± 11.9 (range 5 - 55); mean c-b component 29.1 ± 13.2%

Flock composition (means): ads 19.7 ± 7.7 (c-b 29.2 ± 4.7%) and s-ad. 6.9 ± 4.7 (c-b 28.5 ± 13.3%)

the mean proportion of colour-banded birds was 28.4 ± 9.5%. The mean flock size over the autumn-winter period was 26.6 ± 11.9 birds (range 5-55) and the mean proportion of colour-banded birds among them was 29.1 ± 13.2% (Table 5).

Fourteen of the colour-banded adults among these flocks were known to be paired, and were later recorded as having returned to their respective territorial beaches during the following breeding season. Seven of these were recorded on multiple occasions during the autumn-winter of 1991, with the average (minimum) period spent at Salt Lagoon being 20.4 ± 19.7 days (range 7-64; Table 6). Among these: pobm was recorded seven times over a period of 64 days in April-June; obom and bnm were both recorded three times over 16 days in

May-June; and bnom was recorded twice over 20 days in April (Table 6).

Similarly, unpaired adults and sub-adult Hooded Plovers were also recorded on multiple occasions at Salt Lagoon in 1991, with minimum periods of time spent there averaging 32.4 ± 21.3 days (range 7-66) for unpaired adults; and 52.0 ± 24.5 days (range 7-71) for sub-adults (Table 7).

*Breeding records away from beach habitat*

In early December 2001 a single adult was observed attending a nest with two eggs ~3.5 km inland at the Little Sahara Geological Monument site (a landlocked sand dune complex inland from Vivonne Bay). In November 2010 a pair with two small runners (aged <5 days) was recorded at an un-named hyper-saline lake ~1.5 km inland from Flour Cask Bay (C. Baxter, *in litt.*).

**Table 6. Utilisation of saline lake habitat at Salt Lagoon by paired adult Hooded Plovers during the autumn and early winter of 1989 and 1991, with examples of multi-year use ( $n = 2$ ) and of extended use in 1991 ( $n = 7$ ).**

| <b>Id. code<br/>(sex)</b>   | <b>Territory<br/>location</b> | <b>Total<br/>re-sights</b> | <b>No. br.<br/>seas. paired</b> | <b>Distance (km)<br/>to Salt Lagoon</b> | <b>No. re-sights<br/>at Salt Lagoon</b> | <b>No. days at<br/>Salt Lagoon</b> | <b>Period</b>        |
|-----------------------------|-------------------------------|----------------------------|---------------------------------|---|---|------------------------------------|----------------------|
| <b>Extended use records</b> |                               |                            |                                 |   |   |                                    |                      |
| pobm (f)                    | Browns<br>Beach               | 15                         | 5                               | 22                                      | 7                                       | 64                                 | Apr-Jun 91           |
| bnom                        | D'Estrees<br>Bay              | 13                         | 2                               | 15                                      | 2                                       | 20                                 | Apr 91               |
| obom                        | Stanleys<br>Beach             | 13                         | 3                               | 14                                      | 1<br>3                                  | 1<br>16                            | Jun 89<br>May-Jun 91 |
| bnnm (f)                    | Emu Bay                       | 24                         | 4                               | 28                                      | 3                                       | 16                                 | May-Jun 91           |
| yrom                        | Wheatons<br>Beach             | 37                         | 4                               | 18                                      | 2                                       | 10                                 | Apr 91               |
| yobm (f)                    | Pelican<br>Lagoon             | 7                          | 2                               | 14                                      | 2                                       | 10                                 | Jun 91               |
| borm                        | Bales Bay                     | 22                         | 5                               | 30                                      | 2                                       | 7                                  | May 91               |
|                             |                               |                            |                                 |   | Mean period at Salt Lagoon in 91        |                                    | 20.4 ± 19.7 days     |
| <b>Single day records</b>   |                               |                            |                                 |   |   |                                    |                      |
| ppom (m)                    | Browns<br>Beach               | 12                         | 2                               | 22                                      | 1                                       | 1                                  | Jun 91               |
| opom (m)                    | Browns<br>Beach               | 5                          | 3                               | 22                                      | 1                                       | 1                                  | Jun 89               |
| ynpm (f)                    | Sandy<br>Beach                | 11                         | 3                               | 92                                      | 1                                       | 1                                  | Jun 89               |
| rnwm                        | Emu Bay                       | 9                          | 2                               | 28                                      | 1                                       | 1                                  | Apr 91               |
| boym                        | Rocky<br>River                | 5                          | 2                               | 90                                      | 1<br>1                                  | 1                                  | Jun 89<br>Apr 91     |
| ppom (m)                    | Browns<br>Beach               | 12                         | 2                               | 22                                      | 1                                       | 1                                  | Jun 91               |
| rpbm (m)                    | Nepean<br>Bay                 | 12                         | 4                               | 11                                      | 1                                       | 1                                  | May 91               |

#### *Longevity*

A total of 63 colour marked birds were aged >5 years when last recorded. Among these, 24 were aged >7 years, and eight were aged 10 years or more. Some life-history details for the three oldest follow.

Id. pnpm: banded as an adult at Wheatons Beach on the south coast in August 1986; subsequently

recorded nine times between 1988–94, 17 km distant (paired and on territory) at Cape Gantheaume; last re-sight record was late-October 1998 (on territory), when aged >13 years.

Id. pnwm: banded as sub-adult at Vivonne Bay in mid-June 1990; subsequently recorded three times (paired and on territory) 3.5 km distant near Cape Kersaint; the last re-sight record was

**Table 7. Utilisation of saline lake habitat at Salt Lagoon by unpaired adult and sub-adult Hooded Plovers during the autumn and early winter of 1989 and 1991, with examples of extended use by both groups.**

| <b>Id. code</b>        | <b>Br. seas. cohort</b> | <b>Total re-sights</b> | <b>Distance (km) from last re-sight</b> | <b>No. re-sights at Salt Lagoon</b> | <b>No. days at Salt Lagoon</b>   | <b>Period</b> |
|------------------------|-------------------------|------------------------|---|-------------------------------------|----------------------------------|---------------|
| <b>Unpaired adults</b> |                         |                        |   |                                     |                                  |               |
| onym                   | na                      | 8                      | 14                                      | 7                                   | 62                               | Apr-Jun 91    |
| obrm                   | 85-86                   | 18                     | 12                                      | 2                                   | 17                               | Jun 89        |
|                        |                         |                        |   | 6                                   | 66                               | Apr-Jun 91    |
| prrm                   | 86-87                   | 12                     | 18                                      | 5                                   | 41                               | Apr-May 91    |
| obom                   | 87-88                   | 13                     | 12                                      | 1                                   | 1                                | Jun 89        |
|                        |                         |                        |   | 2                                   | 16                               | May-Jun 91    |
| boom                   | 87-88                   | 15                     | 28                                      | 2                                   | 22                               | Apr-May 91    |
| bbnm                   | 89-90                   | 6                      | 12                                      | 5                                   | 51                               | Apr-Jun 91    |
| obnm                   | 89-90                   | 9                      | 28                                      | 4                                   | 45                               | Apr-May 91    |
| pynm                   | 89-90                   | 14                     | 42                                      | 7                                   | 29                               | May-Jun 91    |
| oynm                   | 89-90                   | 11                     | 12                                      | 3                                   | 10                               | Jun 89        |
| rrwm                   | 90-91                   | 11                     | 34                                      | 3                                   | 14                               | Apr 91        |
| orwm                   | 89-90                   | 4                      | 32                                      | 2                                   | 51                               | Apr-May 91    |
| nynm                   | 89-90                   | 4                      | 12                                      | 2                                   | 7                                | Jun 89        |
|                        |                         |                        |   | 2                                   | 7                                | May 91        |
| rpnm                   | 89-90                   | 15                     | 18                                      | 2                                   | 7                                | Jun 91        |
|                        |                         |                        |   |                                     | Mean period at Salt Lagoon in 91 |               |
|                        |                         |                        |   |                                     | 32.4 ± 21.3 days (range 7-66)    |               |
| <b>Sub-adults</b>      |                         |                        |   |                                     |                                  |               |
| boym                   | 88-89                   | 5                      | 42                                      | 2                                   | 12                               | Apr 89        |
|                        |                         |                        |   | 2                                   | 7                                | Apr 91        |
| rbwm                   | 90-91                   | 9                      | 42                                      | 8                                   | 63                               | Apr-Jun 91    |
| bbwm                   | 90-91                   | 9                      | 42                                      | 5                                   | 42                               | Apr-May 91    |
| rywm                   | 90-91                   | 5                      | 18                                      | 3                                   | 58                               | Apr-Jun 91    |
| bywm                   | 90-91                   | 5                      | 18                                      | 5                                   | 71                               | Apr-Jun 91    |
| nywm                   | 90-91                   | 5                      | 28                                      | 5                                   | 71                               | Apr-Jun 91    |
|                        |                         |                        |   |                                     | Mean period at Salt Lagoon in 91 |               |
|                        |                         |                        |   |                                     | 52.0 ± 24.5 days (range 7-71)    |               |

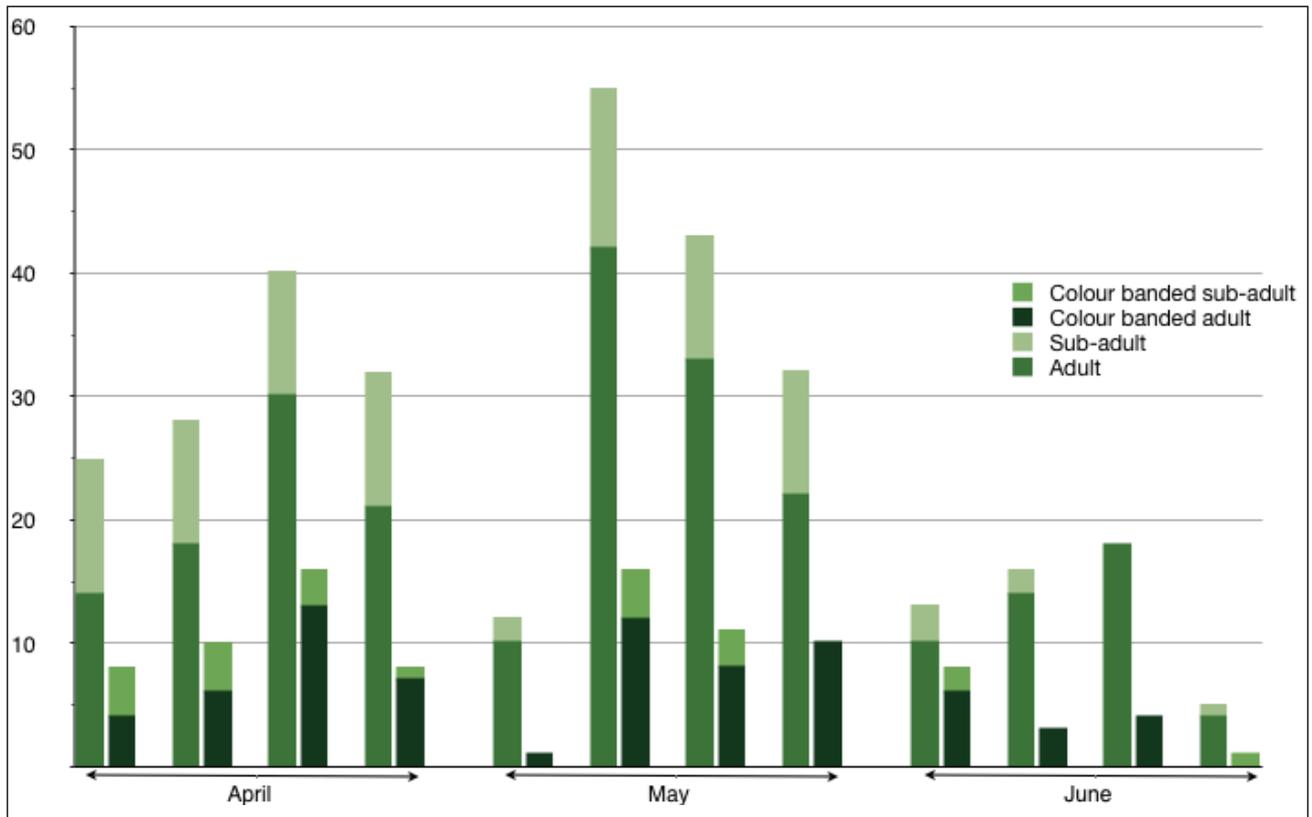
in mid-March 2002, then aged 12.5 years, when critical ABBBS band numeral sequence detail was obtained using a spotting scope (60x at ~6m).

Id. nwwm: banded at Seal Bay as a juvenile in mid-March 1991; subsequently recorded 22 times, mainly at Seal Bay; last recorded in June 2006 at Bales Bay, when aged 15.5 years. Identity was confirmed from photographs (K. Carlyon, pers

comm.) showing remaining colour bands with a left-leg combination unique to the Kangaroo Island project (ABBBS, *in litt.*).

In addition, four hand-reared or captive-bred birds at the Adelaide Zoo reached >7 years of age, one of which was 10.2 years at time of death (AdZ950482) and another (AdZa20656) was aged 9.5 years in late-May 2012 (B. Backhouse, *in litt.*).

**Figure 2. Hooded Plover flock composition (i.e. age-class and proportion of colour-banded to unbanded birds) at Salt Lagoon, recorded weekly during autumn and early winter in 1991.**



## DISCUSSION

### Age at maturity (adult plumage) and at first breeding

It is possible that field observations, which relied on visually determining moult completion, may have been subjective or inaccurate due to prevailing ambient conditions or observer error. Even if this had occurred in some cases, the number of individuals ( $n = 13$ ) re-sighted on multiple occasions in this study, and the evidence provided for age at first pairing and egg-laying at less than 12 months (Table 3) confirms the early maturity of some individuals and widens the understanding of reproductive parameters for the species.

On Phillip Island, Victoria, two known-age Hooded Plovers were first recorded breeding (incubating) aged 23.5 and 20.5 months ( $\pm 0.25$  months) respectively (Baird and Dann 2003). The South Australian Recovery Plan for the Hooded Plover recognises that some breed much earlier, i.e. 'when aged a little over 12 months' (Baker-Gabb and Weston 2006). Results from this study

confirm the potential for early-age breeding, but with wide variability for the timing of pairing and breeding (Table 3). However, the apparent Hooded Plover population increases recorded since 2004, together with the known density of pairs (1.69/km) over available habitat on Kangaroo Island (Ewers *et al.* 2011; Jane Renwick, *in litt.*) may limit the opportunity for unpaired adults to enter the breeding population spatially, as much as by age.

### Pair and site fidelity

Many individually marked birds were identified as paired and sedentary on apparent breeding territories over multiple seasons. Other than short distance (<5 km) movements, paired birds in multi-season partnerships were rarely recorded away from their territory during the breeding season (Table 4). Such movements may have occurred in response to disturbance, as in each case given in Table 4, the birds involved emanated from beaches with high levels of recreation use, including vehicle usage (Dennis and Masters 2006).

It cannot be assumed however, that the examples of pair and site fidelity provided (Table 4) are the blissful norm on Kangaroo Island, as there are examples of short-term (single or part-season) pairings (see Bransbury 1991), and unverified polygamous relationships in the data accumulated over the life of the project. However, it was beyond the scope of this study to explore these particular behavioural aspects in depth.

### Seasonal movements and flocking behaviour

Winter aggregations of Hooded Plovers on inland lakes and estuaries have been recorded throughout the species' range in south-eastern Australia, often coincident with beach habitats being deserted due to prevailing storm conditions (Schulz 1987; Baker-Gabb and Weston 2006). Prior to this study, post breeding season flocking was known to occur on Kangaroo Island: e.g. "15 Hooded Plovers in a tight huddle ... during a south-westerly storm" at Vivonne Bay in early August 1982 (Baxter 1995); 28 birds at D'Estrees Bay (including 13 sub-adults) in late April 1983 (TD pers obs.); and 46 birds on Salt Lagoon in May 1984 (A Lashmar, *in litt.*).

Over the course of this study, flocks of ten or more birds (of mixed age) were recorded in all seasons at apparently favoured coastal foraging locations and often included pairs from nearby beaches when not actively breeding. Flocking typically occurred at beaches with heavy accumulations of seagrass (*Posidonia* sp.), where prey such as sandhoppers (*Talorchestia* sp.) and other invertebrate detritivores were abundant (often super-abundant nocturnally) in the supra-littoral zone (Currey and Poulin 2006). These locations included Emu Bay and Cape Rouge on the north coast of the Island, and at D'Estrees, Bales and Vivonne Bays on the south coast (Figure 1). Other shorebird species, such as migratory waders and gulls, were also attracted to these foraging locations with spectacular flocks of >100 birds of several species being common.

Among the flocks recorded at Salt Lagoon in 1991, fourteen colour-banded adults were known to be paired, and were recorded as having returned to their respective territorial beaches in the following breeding season. Seven of these were recorded on multiple occasions spanning from seven to 64 days during the autumn-winter survey period (Table 6). These behaviours indicate that extended (or multiple short-term) periods of absence off-territory during the non-breeding season may be a social norm for the species, which aligns generally with the findings from the central regions of Victoria, where the majority of movements across all age-classes occurred during the non-breeding season (Weston, Ehmke and Maguire 2009).

Because paired and non-paired adults as well as sub-adults were regularly present among the flocks at Salt Lagoon, many for extended periods (Tables 5, 6 and 7), it can be assumed that there may be a level of seasonal reliance on some saline lakes as foraging habitat.

### Population estimates

Following extensive surveys during the early phase of this study, the Kangaroo Island Hooded Plover population was estimated at ~150 birds, i.e. 143 in 1987 (Bransbury 1987) and 151 in 1994 (Schulz 1995). However, given the proportion of unbanded adults (>60%) recorded among the autumn-winter flocks during this period (Table 5), these estimates now appear flawed. Between May 1986 and the autumn of 1991, 221 (of 284) colour-banded Hooded Plovers were re-sighted on multiple occasions. Even assuming that only 50% of these were extant in 1991, the level of dilution among the autumn-winter flocks at Salt Lagoon would indicate either:

- a previously overlooked 'floating' sub-population of non-territorial adults on Kangaroo Island; or more likely,
- a possible seasonal influx of Hooded Plovers from mainland habitats where there is an absence of saline lakes with the mollusc *Coxiella* sp. available.

### Habitat management implications

Although the exogenous factors driving individual Hooded Plover mobility and flocking behaviour are not well understood, the foraging locations on Kangaroo Island and associated dependence behaviours identified in this study, appear to answer some aspects of the species' overall habitat requirements; e.g. saline lakes appear important as refuge and seasonal foraging habitat. These may be crucial to survival outcomes for cohorts of young each breeding season and may also sustain birds from nearby mainland habitats.

In a recent study in Victoria, Weston, Ehmke and Maguire (2009) identified the need for further research into the characteristics and significance of flock foraging sites to overall population stability. Future research involving individual identification and satellite tracking technology could be usefully directed toward unravelling this aspect of the species' behaviour and habitat dependence on Kangaroo Island and elsewhere. Additionally, in accord with the Primary Recovery Actions recommended in the South Australian Hooded Plover Recovery Plan (Baker-Gabb and Weston 2006), a comprehensive phenological assessment of all habitat types frequented by the Hooded Plover is required, including saline lakes. These appear important to sustain at least some elements of the population through the non-breeding season and therefore have implications for the adequacy of habitat management on Kangaroo Island and indirectly, for conservation outcomes across the species range in South Australia.

### ACKNOWLEDGMENTS

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# Birds of the Hundred of Encounter Bay listed by John W Crompton from 1909 to 1925

PENNY PATON AND JOHN CROMPTON

## ABSTRACT

*We present an annotated list of bird species observed by John William Crompton in the Hundred of Encounter Bay between 1909 and 1925. After allowing for taxonomic changes and uncertain species, Crompton recorded 131 species, of which four were introduced. There are two published lists from roughly comparable periods and areas. Cleland's (1924, 1929) bird lists included 136 native and the same four exotic species, while Symon (1940) listed 123 native species and the same exotic species. We discuss the vegetation of the Encounter Bay district at the time of these sightings and bird species that are likely to have declined or increased in the last one hundred years.*

## INTRODUCTION

John Crompton (JC) possesses a list of birds observed by his father in the Hundred of Encounter Bay between 1909 and 1925. This list in John William Crompton's (JWC) hand-writing is believed to have been provided to his friend John Cleland for the use of South Australian Ornithological Association (SAOA) members. As there is little published information on the birds occurring on the southern Fleurieu Peninsula from the early 1900s, we have provided a transcript of this list as well as a discussion about the bird species recorded.

John William was the youngest son of Joseph and Susan Mary Crompton and brother of Alfred, Owen, Robert, Martha, Caroline and six other children (Whittell 1954, Reid 2000). The family lived at Stonyfell and Robert and Alfred were prominent members of the SAOA in the early part of the last century. Their contributions were

acknowledged by their election as Honorary Members in 1954 (Reid 2000).

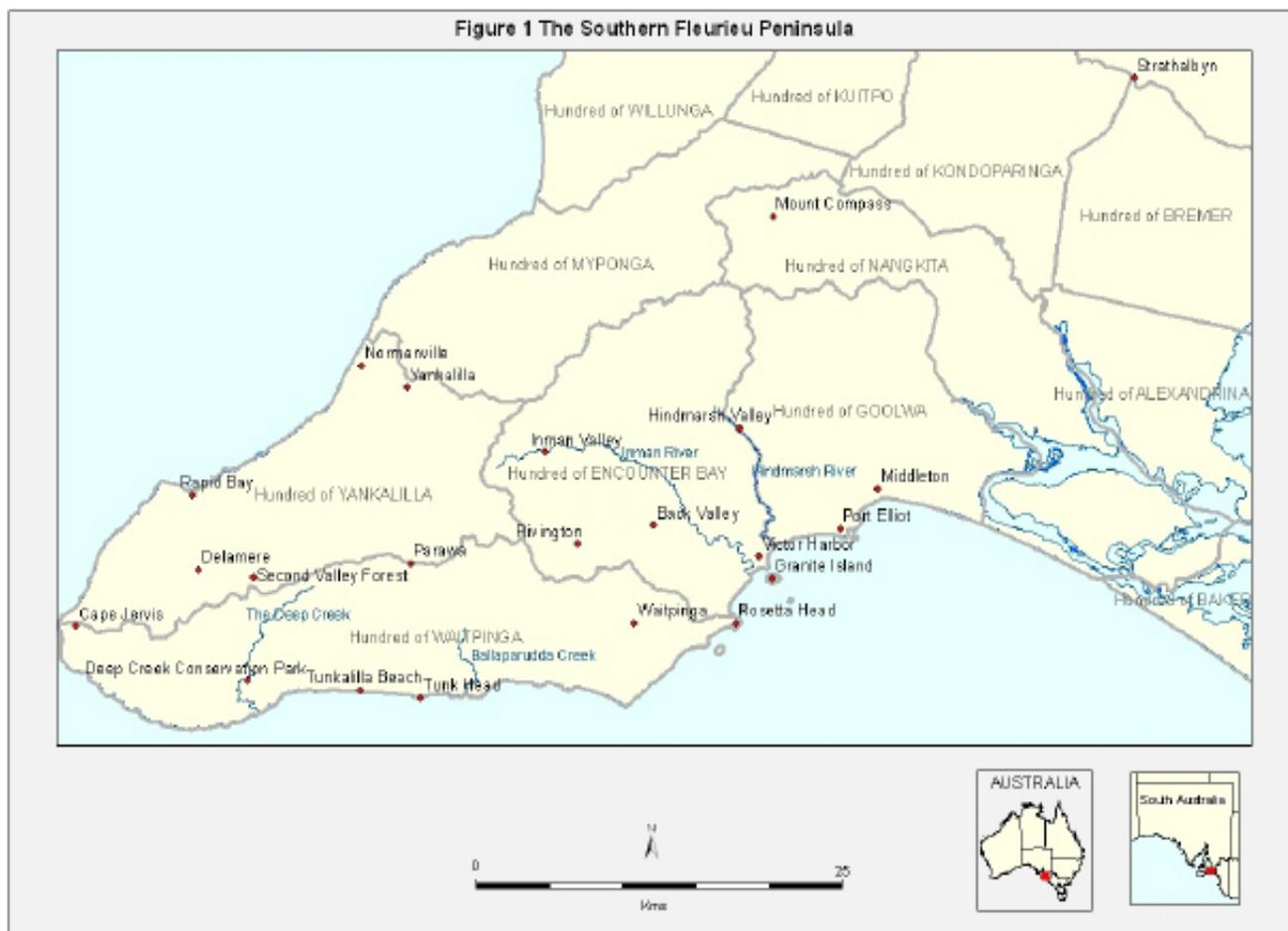
JWC leased, and later purchased, 'Rivington' at Back Valley in 1909 after a time at Roseworthy College. Along with his older brothers he clearly had an interest in birds and we deduce that he was a careful observer by the variety of birds that he observed, presumably without binoculars. The area of the Hundred is 28,275 hectares and its boundaries are roughly: southern – Rosetta Head (the Bluff) and the Range Road; western - Mount Robertson Road; northern - James Track through to Nettles Hill along the Spring Mount Ridge line; and eastern - the Hindmarsh river. Granite Island, Seal Rock and Wright Island are included, but not West Island.

## METHODS

### Birds

A transcript of JWC's original handwritten list forms Appendix 1. Some words were difficult to decipher and we made an educated guess at some and italicised and put a '?' after these words.

JWC's bird list was compared with published information from the 1920s and 1930s. There are several papers in the *South Australian Ornithologist* (SAOrn) that deal with the birds of the southern Fleurieu Peninsula for the period of interest. Cleland (1924, 1929) wrote about the birds of the Encounter Bay district, an area that he visited regularly when holidaying with his family. Slightly later Symon (1940) wrote an annotated list of the birds he recorded from the western Fleurieu Peninsula when he lived



there between January 1937 and March 1939. In addition there are records from the southern Fleurieu Peninsula listed or written up in the *SAOrn* from time to time by various observers, but notably J. B. Cleland.

Cleland (1924) described the area that his bird observations covered. His definition of the Encounter Bay district extended from Middleton through Port Elliot, Victor Harbor and Waitpinga Beach to Tunkalilla Beach opposite The Pages. On the landward side the area included the hills between Middleton and Port Elliot, the Hindmarsh River to its upper waterfall, the Inman Valley to the Victor Harbor side of the Bald Hills and the country between Waitpinga and Tunkalilla Beaches and the Inman Valley. This area extends further east than Crompton's but otherwise is roughly comparable. By comparison, Symon's (1940) bird records of 1937 to 1939 are from the western half of the Fleurieu Peninsula, covering the region south and west of a line drawn from Normanville to Yankalilla

and then southerly through Mount Hayfield to Tunk Head on the coast. Parts of the Hundreds of Yankalilla and Waitpinga are included in this region. Figure 1 shows the southern Fleurieu Peninsula which includes the areas covered by the observations of Crompton, Cleland and Symon.

### **Vegetation**

It is difficult to reconstruct the habitat and vegetation communities that occurred in the Hundred of Encounter Bay in the early years of the twentieth century, as most accounts of the vegetation of South Australia provide very generalised maps and information (e.g. Specht 1972). However early issues of *The South Australian Naturalist* include many short papers by J. B. Cleland and J. M. Black on the plants of the Encounter Bay district (Cleland and Black 1925a, 1925b, 1927, 1929, 1932; Black and Cleland 1937, 1941, 1951; Cleland 1959). The area covered in these papers extends from Middleton in the east to Tunkalilla Beach and Road in the west.

Thus Inman Valley to the Bald Hills are included, as well as the upper waterfall at Hindmarsh Valley, but not the Mount Compass and Myponga districts (Cleland and Black 1925a). This area is larger than the Hundred covered by Crompton's bird list as it extends further west, south and east but is still fairly comparable. In addition to these lists of plants there is a series of papers by Cleland (Cleland 1926a, 1926b, 1927a, 1927b, 1928a, 1928b, 1928d) on the habitats found within the Encounter Bay area as defined above.

## DISCUSSION

### Vegetation

By the late 1950s the total plant list for the Encounter Bay district was 962 species and 22 varieties, of which 709 species and 22 varieties were native (Cleland 1959).

The following summary of the habitat types found within the Hundred of Encounter Bay was derived from Cleland (1926a, 1926b, 1927a, 1927b, 1928a, 1928b, 1928c). Cleland (1926a) recognized 15 habitats:

- marine;
- saltwater estuaries, e.g. the Inman and Hindmarsh mouths;
- littoral and coastal sandhills;
- cliffs overlooking the sea, westwards from The Bluff (Rosetta Head) towards Newland Head;
- the granite formation – The Bluff, Wright, West and Granite Islands;
- the country behind the cliffs towards Waitpinga, still covered with mallee eucalypts and low shrubs;
- the now grassy hill-slopes, passing into country with scattered trees still remaining amongst the grass;
- hill-slopes with gravelly sandy loam and clay subsoil with widely dispersed *Eucalyptus fasciculosa* etc.;
- gravelly hills with undershrubs, especially low casuarinas;
- hills and valleys with deeper soils and merchantable *Eucalyptus obliqua* forests;
- glacial sands, varying from pure white to sandy loams;

- river banks, passing into the vegetation lining creeks, often in rocky valleys and sometimes with waterfalls;
- small upland swamps in or near glacial sands with flora resembling that of the Mt Compass area;
- lowland swamps, often near the sea;
- the flats behind the sandhills at Encounter Bay, once covered with shrubs and semi-swamps, but now cleared and covered with grass, but still liable to flooding.

From the descriptions of these habitats given in Cleland (1926a, 1926b, 1927a, 1927b, 1928a, 1928b, 1928c), all are included in Crompton's area except the country behind the cliffs towards Waitpinga and the lowland swamps at the mouth of Waitpinga Creek. For the purposes of describing the vegetation relevant to Crompton's bird records, the marine area can also be discounted, leaving 12 habitat types. A brief description of these follows, based upon Cleland's descriptions, including remarks about the extent of clearance at the time of his articles. This coincides with the latter part of the observation period for JWC's bird records.

The saltwater estuaries of the Hindmarsh and Inman Rivers were bordered with low clay cliffs close to their mouths (Cleland 1927a). In areas liable to inundation grew Paperbark Teatree, *Melaleuca halmaturorum*, rushes, reeds, samphires and native grasses. The vegetation subtly changed as higher ground was reached, with common plants being Drooping She-oak, *Allocasuarina verticillata*, Boobialla, *Myoporum insulare*, Christmas Bush, *Bursaria spinosa*, Swamp Wattle, *Acacia retinodes* and Coastal Wattle, *A. sophorae*. Cleland's description of the littoral and coastal sandhills covered the area from The Bluff to Port Elliot and is mainly a species list (Cleland 1926b). The steep sides of The Bluff supported a variety of low windswept shrubs and grasses, while its neck and shoulder were grazed by sheep and rabbits (Cleland 1926b). The original vegetation here had been replaced largely by introduced grasses and clovers, interspersed with small native plants.

Rising above Encounter Bay, Port Elliot and Middleton were hills already cleared in the 1920s and only a few remnants showed what these areas were originally like (Cleland 1927b). One such remnant behind Encounter Bay was a very open forest of South Australian Blue Gum, *Eucalyptus leucoxylon* with some Pink Gum and, in places, Drooping She-oak and an occasional native cherry, *Exocarpos cupressiformis* interspersed with a few small shrubs. Small numbers of a range of shrubs and groundcovers survived on roadsides and rocky areas, and native grasses like Kangaroo Grass, *Themeda triandra* and spear grasses, *Austrostipa* spp were still found in uncropped areas. Behind the sandhills of Encounter Bay and the foothills were flats "about two miles in each direction" (Cleland 1927b). These flats were much altered and the swamps drained, and Cleland surmised that they would have been covered with a thick low scrub with teatree, *Leptospermum* spp a dominant feature along with sedges and rushes.

The Hindmarsh and branches of the Inman Rivers began as creeks draining small swamps, and then cut their way through hill tops before proceeding through clay to alluvial soils. Eventually they opened out into alluvial flats and occupied wide valleys, before narrowing and deepening with evident banks close to the sea (Cleland 1928a). The vegetation of the rivers and creeks varied according to the size and configuration of their water channels. This habitat type had a long plant list, varying from aquatic plants in the water bodies, through rushes, sedges, grasses and shrubs to large eucalypts. Swamp Gum, *E. ovata* grew at Back Valley and Hall's Creek (now Hall Creek; both near 'Rivington'), South Australian Blue Gum grew on the Back Valley flats, Manna Gum, *E. viminalis* grew on flats near water in the lower Inman and sheltered hill slopes further up and River Red Gum, *E. camaldulensis* grew in or near creek beds in the lower river areas.

The small upland swamps where the creeks originated held plants similar to those in the

swamps at Mt Compass. One such swamp was at Back Valley and Cleland (1928a) lists all 30 plant species found in this swamp, which was dominated by a teatree, *Leptospermum* sp, Pink Swamp-heath, *Sprengelia incarnata* and a species of *Lepidosperma*. There were several areas of glacial sands on hill slopes or ridges behind The Bluff and north of Victor Harbor. There were other glacial sands from the Inman Valley road west to Back Valley, and along the Back Valley track (Cleland 1928a). The characteristic plants of these sandy areas were Brown Stringybark, *E. baxteri*, Cup Gum, *E. cosmophylla*, Coastal Mallee, *E. diversifolia*, Silver Banksia, *Banksia marginata* and Desert Banksia, *B. ornata*.

An example of the gravelly hills with undershrubs was found between the Waitpinga Road and Back Valley near Hall's Creek (Cleland 1928c). The predominant feature of this habitat type was the abundance of low casuarinas of three species - Small Bull Oak, *Allocasuarina striata*, Dwarf She-oak, *A. pusilla* and Slaty She-oak, *A. muelleriana*. Many other shrubs occurred including Silver Banksia, Beaked Hakea, *Hakea rostrata* and Cone-bush, *Isopogon ceratophyllus*. Areas of more fertile soils on high hills and sheltered valleys supported forests of Messmate Stringybark, *E. obliqua*; one such area was the Hindmarsh Tiers, which is on the northern outskirts of Crompton's area. Cleland describes the trees as being of "merchantable size" so they were presumably very tall trees. He also noted that the trees were 20 to 40 feet apart which he attributed to frequent fires. The understorey was often dominated by Grass-trees, *Xanthorrhoea semiplana* and Bracken Fern, *Pteridium esculentum*, but in places Myrtle Wattle, *A. myrtifolia* and Large-leaved Bush-pea, *Pultenaea daphnoides* were common.

## Birds

### *Nomenclatural changes and dubious records*

Taxonomy and nomenclature have changed considerably in the one hundred years since JWC's observations were made. To avoid confusion, we have used the English names from

Christidis and Boles (2008). Readers interested in the names that JWC used can find these in the transcript of his original list (Appendix I). Many of the species recorded by JWC still occur in the district, some are extinct or now rarely recorded and others are doubtful records, perhaps the result of observing without binoculars and also with Leach (1912) as the only field guide. In total 144 species are listed.

Some of these are now considered subspecies rather than full species, thus reducing the list by six, and there was such confusion with the corvids that it is no wonder that JWC listed three species when most likely he observed the Little Raven, *Corvus mellori* only. In addition, confusion at the time over the different sizes of the Brown Goshawk, *Accipiter fasciatus* led JWC to record a Lesser Goshawk (Leach's No.156). This bird is no longer on the Australian list and neither is the Bronze-Cuckoo (Leach's No. 235), which JWC listed, as well as Horsfield's, *Chalcites basalis* and Shining, *C. lucidus*. Twelve species are unlikely or doubtful records, as two have not been recorded for South Australia (Eastern Bristlebird, *Dasyornis brachypterus* and Red-browed Treecreeper, *Climacteris erythroptus*) while the others are either not recorded or infrequently recorded or unlikely for the southern Fleurieu Peninsula. These are the Grey Goshawk, *Accipiter novaehollandiae* and the White Goshawk (now regarded as the same species), Inland Thornbill, *Acanthiza apicalis*, Rufous Bristlebird, *Dasyornis broadbenti*, White-breasted Woodswallow, *Artamus leucorhynchus*, Pied Butcherbird, *Cracticus nigrogularis*, Crested Bellbird, *Oreoica gutturalis*, Olive Whistler, *Pachycephala olivacea* and White-browed Treecreeper, *Climacteris affinis*.

There is uncertainty over the identity of one species in JWC's list, as he mentions seeing 'the Black Oystercatcher on Inman once' but with the number 77, which is the number in Leach (1912) for the Pied Oystercatcher, whereas number 78 is the Sooty Oystercatcher. Cleland (1924) reports the Sooty Oystercatcher but not the Pied, while Symon (1940) does not record either. The common

oystercatcher at Encounter Bay near the mouth of the Inman River in the present day is the Sooty Oystercatcher. So it seems more likely that the bird in question was the Sooty Oystercatcher and JWC gave the wrong number for it.

When these taxonomic anomalies and unlikely birds are removed, 131 species remain, including four introduced species: Common Blackbird, *Turdus merula*, European Goldfinch, *Carduelis carduelis*, House Sparrow, *Passer domesticus* and Common Starling, *Sturnus vulgaris*. By comparison, Cleland's (1924, 1929) bird lists included 136 native and the same four exotic species. This included two species that Cleland was unsure of, which should be considered unconfirmed sightings – the Regent Parrot, *Polytelis anthopeplus* and the Azure Kingfisher, *Ceyx azureus*. Symon (1940) listed 123 native species and the same exotic species.

JWC himself queried a few species that he recorded. He listed the Australian Little Bittern, *Ixobrychus dubius* but added some question marks after it and the words "don't know" so he was obviously not certain of his identification. Neither Cleland nor Symon listed this species nor has it been recorded from this region (e.g. Parker *et al.* 1979, Carpenter *et al.* 2003). Thus it must be considered a dubious record, as there is no description of the bird or its habitat. JWC also seems uncertain of his recording of the Little Eagle, *Hieraaetus morphnoides*. He wrote after this bird "Not sure but seems nothing else is right beside a nest". Neither Cleland nor Symon recorded this species and, while it is not unlikely, the doubt in the observer's mind and our inability to correctly interpret his notes throw doubt over this species as well. The Southern Boobook, *Ninox novaeseelandiae* is recorded and then there is a comment that "Other owls are known but not named and probably include: Powerful, Spotted, Barn and Masked". The Spotted Owl is another name for the Southern Boobook; the Powerful Owl, *Ninox strenua* is only recorded in the Lower South East in South Australia and the Masked, *Tyto novaehollandiae*

is extremely rare and superficially similar to the Eastern Barn Owl, *Tyto javanica*. Thus the only other owl that JWC is likely to have recorded (and both Cleland and Symon listed) is the Eastern Barn Owl.

JWC and Symon both record Orange-bellied Parrot, *Neophema chrysogaster* with JWC simply describing it as uncommon. Symon notes: "N. Coastal, Hundred of Waitpinga". N. means that he recorded the species nesting, so immediately his record is suspect, because this species only breeds in Tasmania. Doubt must also exist as to the authenticity of JWC's record, given that the Neophemas are a difficult group to distinguish, compounded by the problem of using Leach (1912) for identification. Cleland (1924), JWC and Symon (1940) all record the Elegant Parrot, *N. elegans* but only Cleland (1924) reports the Rock Parrot, *N. petrophila*, a record passed on by F.E. Parsons. It is probable that both JWC and Symon misidentified the Rock Parrot or Elegant Parrots, some of which have orange bellies, as the Orange-bellied Parrot.

*Birds recorded by JWC that no longer occur or are rare in the district*

The Little Lorikeet, *Glossopsitta pusilla* is described as "seldom recognised" by JWC and was not listed by Cleland (1924, 1929). However Symon (1940) describes "numerous flocks throughout the "gum country" in the Hundred of Yankalilla during 1938" and, as he also lists the other three common lorikeet species (and all three as nesting), there seems little doubt as to the correct identification of this species. A recent paper summarises the skin and egg records as well as published sight records for the Little Lorikeet in South Australia (Horton and Black 2006). Their paper concludes that the Little Lorikeet was a moderately common breeding species in South Australia before the end of the 19<sup>th</sup> century, with its distribution extending to the Mt Lofty Ranges, Adelaide Plains and southern Flinders Ranges, and at least occasionally Kangaroo Island. Since that time it has declined critically, so that it is a very

rare visitor or almost extinct in all of its former range apart from the South East. Breeding in South Australia has not been documented since 1959. Little Lorikeets prefer dry, open sclerophyll forests and woodlands usually dominated by Eucalyptus (Higgins 1999) and most feeding records from South Australia are of birds in flowering eucalypts (Horton and Black 2006).

JWC records the Azure Kingfisher, but with no annotation, so we do not know if this species was always present nor exactly where it was recorded. Cleland (1929) has a possible record of one individual on the Waitpinga Road from 1929. There are records of this species in the Mt Lofty Ranges until the mid 1920s, e.g. Blackfellow's Creek, Meadow's Creek and Ambleside (Morgan 1925, Heysen 1926, Morgan 1927) and from the Adelaide region, e.g. along the River Torrens up to 1940 (Rix 1940) and it still occurs in the Lower South East of the State along the Glenelg River. Symon (1940) recorded this species from the western Fleurieu Peninsula, saying: "Deep Creek and Rankang (probably Rarkang) Creek. Note both these creeks have small fish in them". The Azure Kingfisher was apparently widely distributed in the Mt Lofty Ranges/ Adelaide region but probably in small numbers until the 1940s, but we can find no records beyond 1944 in the near-Adelaide region. It was late in this year that Rix (1945) recorded an apparent nesting of this species along the Onkaparinga River near Noarlunga.

The Restless Flycatcher, *Myiagra inquieta* is recognised as one of the declining birds of the Mt Lofty Ranges and the records from the last ten years are from a few locations, including two at Newland Head Conservation Park (D. Paton pers. comm.). JWC describes it as "frequently" seen, Cleland (1924) merely lists it as present and Symon (1940) records it as a breeding species. Even the second bird atlas of the Adelaide region shows the species as having been recorded from 1984-85 in nearly 60 grids, including some on the southern Fleurieu Peninsula (Paton, Carpenter and Sinclair 1994). However it was noted that they were recorded from fewer grids in 1984-85

compared with the first atlas of 1974-75 (Paton, Carpenter and Sinclair 1994). Their decline in the Mt Lofty Ranges since the mid-1980s has been swift and widespread.

JWC includes the White-bellied Cuckoo-shrike, *Coracina papuensis* (which he called by its old name of Little Cuckoo-shrike) on his list but notes "perhaps" so he was unsure of his identification. Neither Cleland (1924, 1929) nor Symon (1940) list this species. Given the confusion between this species and immature Black-faced Cuckoo-shrikes, *C. novaehollandiae* this must be considered a doubtful record.

JWC lists Spotted Quail-thrush, *Cinlosoma punctatum* but with no extra information. Fortunately Cleland (1924) is more forthcoming, describing a small number met with in two consecutive years in two localities about a mile apart, which led him to believe it might be the same pair or family party. He described them as "moving about in the scanty undergrowth beneath small Eucalypts, taking every advantage of the cover and disappearing from observation with remarkable ease". He also took a specimen in January 1922 (Cleland 1924; SAMA B47113). Cleland's daughter, Joan Paton, remembered seeing a few birds in Pink Gum scrub between The Bluff at Victor Harbor and Waitpinga some time in the 1930s (D. Paton pers. comm.). Symon (1940) had evidence of breeding and noted that the birds were "Not uncommon in the big timber and scrub country in both Hundreds" [i.e. Yankalilla and Waitpinga]. A further record from this area was made by Francis (1949) who saw two near the Second Valley Forest in May 1946. The Spotted Quail-thrush was described by Condon (1962) as "in reduced numbers, in the wetter parts of the Mt. Lofty Ranges". Glover (1966) notes that in the three years of Bird Reports 1963-65 this species is one of a number that have surprisingly not been recorded. The last published records of Spotted Quail-thrush from South Australia were in 1977 from near Ashbourne, Waitpinga Conservation Park, Spring Mount Forest and Parawa (Higgins and Peter 2002).

Julian Reid (pers. comm.) provided his recollections of what is believed to be the last sighting of the Spotted Quail-thrush in the Mt Lofty Ranges. He visited Meyer's Scrub near Ashbourne in the autumn of 1977 with John Cox and David Close. On his return to the cars when walking along the northern fence line, he heard the Quail-thrush contact/ alarm call and briefly saw one or two birds silhouetted under a Kangaroo Thorn, *Acacia paradoxa* bush. The birds were doing the usual 'ducking and bobbing' quail-thrush 'anxious routine' before they were lost to view and could not be relocated.

One bird is listed by JWC without a name, describing it as probably the Striated Fieldwren, *Calamanthus fuliginosus* (by number) with a note that it was "Among trees and grass". This bird was more likely the Rufous Fieldwren, *Calamanthus campestris* with which it was often confused. Cleland (1924) appears to have only located the Rufous Fieldwren in one spot near Victor Harbor – a bottlebrush (now *Callistemon rugulosus*) semi-swamp a few miles from The Bluff, where the birds were more easily heard than seen. A female specimen was taken in January 1924 (SAMA B28388), no doubt the same one referred to in a discussion of this group at an SAOA meeting, where another specimen from Balaparudda Creek, near Victor Harbor (October 1903) was also displayed (SAOA Monthly Proceedings 1924). The Rufous Fieldwren was recorded by Symon (1940) from the gullies between McEachern's Hill and Boat Harbour Creek mouth "higher up the water courses, where the scrub is denser and the timber bigger and forest-like". This appears to be the last published record of the fieldwren from the Fleurieu Peninsula/Mt Lofty region. As JWC also records the Chestnut-rumped Heathwren, *Hylacola pyrrhopygia* in his list, we are fairly confident that he is talking about the fieldwren and not another 'small brown bird'.

Regent Honeyeaters, *Anthochaera phrygia* once visited south-eastern South Australia at various times of the year, but with a peak in autumn

and winter, and sometimes in large numbers (Franklin and Menkhorst 1988). Most records come from the Mt Lofty Ranges, with few and isolated records from the Lower South East, the Coorong, Kangaroo Island, the mid-North and southern Flinders Ranges. There are no published records from the Fleurieu Peninsula, with neither Cleland (1924, 1929) nor Symon (1940) reporting them. It is therefore of great interest that JWC lists this species, with the note that the “Regent or Wartyface visits in numbers”. This bird has striking plumage which, together with its habit of turning up in large numbers, makes this record very plausible. Regent Honeyeaters are nectar-seeking birds of eucalypt woodlands and drier open forests (Franklin and Menkhorst 1988), so it is likely that these visitors to the southern Fleurieu were searching for blossoming eucalypts. The paucity of recordings from the Fleurieu Peninsula may be due to the relative lack of observers when irruptions were at their peak from 1910-1940, as suggested by Franklin and Menkhorst (1988). The species is now considered extinct in the Mt Lofty region; there have been few records since the 1950s, with the last record in 1977 (Franklin and Menkhorst 1988).

The Diamond Firetail, *Stagonopleura guttata* is listed by JWC and Cleland (1924) but with no annotations. Symon (1940) gives the information only that he had recorded them nesting. The lack of details is usually an indication that birds were considered common enough not to warrant any detail. However by the early 1960s Condon (1962) noted that this once common and widespread species “in the savannah woodlands” was now in scattered populations only. In the 1984-85 second bird atlas of the Adelaide region the closest Diamond Firetail records to the area of interest were about 20 km to the northeast in the Scott Conservation Park region (Paton, Carpenter and Sinclair 1994). The local extinction of Diamond Firetails from southwestern Fleurieu Peninsula is supported by the lack of records in the Bird Report for 1982-1999 (Carpenter *et al.* 2003).

The White-winged Chough, *Corcorax melanorhamphos* is recorded by JWC as “always” present and it was recorded as nesting by Symon (1940). Cleland (1924) gives locations of Waitpinga and the Inman Valley Road and Cleland (1939) reports two birds and two nests from near the Second Valley Forest Reserve in December 1938. A later record from this location was 6 May 1946, when L. S. Francis observed three birds (Francis 1949). Cleland (1948) saw a family party of choughs in Hindmarsh Valley on 21 August 1947. Graham Carpenter (pers. comm.) remembers choughs from his uncle’s scrub off Waitpinga Road and in the Second Valley Forest in the 1960s. By the early 1960s Condon (1962) recorded the White-winged Chough as a declining species and observed that it only survived “in roadside clumps or on the outskirts of government pine plantations (e.g. in Mt. Lofty Ranges).” The second bird atlas of 1984-5 recorded choughs from near Willunga and in one grid southeast of Strathalbyn but not from south of or southwest of Willunga (Paton, Carpenter and Sinclair 1994), indicating that by the mid-1980s choughs had largely disappeared from the southern Fleurieu Peninsula. This is confirmed by the lack of records from the 1982-1999 Bird Report (Carpenter *et al.* 2003). The nearest record to this area from this period was four birds 2 km north of Echunga on 18 December 1982. A more recent record of a party of four White-winged Choughs near Scott Conservation Park (16 km northeast of Victor Harbor) on 21 December 2010 suggests either a small hitherto unrecorded resident population or a wandering group out of their normal range (P. and D. Paton pers. obs.).

*Birds with probably no change in area of occupancy*  
JWC lists the Beautiful Firetail, *Stagonopleura bella* with no extra information, but Cleland (1924) observed that this species is found in the mallee and low eucalyptus forests near Waitpinga where he took two specimens in February 1921 and January 1924 (SAMA B28493 and B28494 respectively). Symon (1940) reported two only – one in May 1937 one mile east of Delamere and one in June 1938 in Brougham’s Scrub, adjoining

**Table 1. Bird species listed by Cleland (1924, 1929) and Symon (1940) that John W Crompton did not list. X(P) – recorded by F.E. Parsons and not Cleland himself; (S) - recorded for Encounter Bay on Sutton's list (see Sutton 1923).**

| Bird species (common and scientific name)             | Cleland | Symon |
|---|---------|-------|
| Crested Pigeon <i>Ocyphaps lophotes</i>               | ?       | X     |
| Australian Owlet-nightjar <i>Aegotheles cristatus</i> | X       | X     |
| Wandering Albatross <i>Diomedea exulans</i>           | X       |       |
| Giant-Petrel species <i>Macronectes</i> sp.           | X       | X     |
| Cape Petrel <i>Daption capense</i>                    | X       | X     |
| Fairy Prion <i>Pachyptila turtur</i>                  | X       |       |
| White-headed Petrel <i>Pterodroma lessonii</i>        | X       |       |
| Little Penguin <i>Eudyptula minor</i>                 | X       | X     |
| Australasian Gannet <i>Morus serrator</i>             |         | X     |
| Australian Pelican <i>Pelecanus conspicillatus</i>    | X       | X     |
| Whistling Kite <i>Haliastur sphenurus</i>             |         | X     |
| Brown Falcon <i>Falco berigora</i>                    | X       | X     |
| Peregrine Falcon <i>Falco peregrinus</i>              |         | X     |
| Crake species   |         | X     |
| Spotless Crake <i>Porzana tabuensis</i>               | X(P)    |       |
| Bush Stone-curlew <i>Burhinus grallarius</i>          | X       | X     |
| Black-winged Stilt <i>Himantopus himantopus</i>       |         | X     |
| Grey Plover <i>Pluvialis squatarola</i>               | X       |       |
| Red-capped Plover <i>Charadrius ruficapillus</i>      | X       | X     |
| Double-banded Plover <i>Charadrius bicinctus</i>      | X       | X     |
| Black-fronted Dotterel <i>Elsayornis melanops</i>     | X       | X     |
| Hooded Plover <i>Thinornis rubricollis</i>            | X       | X     |
| Masked Lapwing <i>Vanellus miles</i>                  | X       | X     |
| Latham's Snipe <i>Gallinago hardwickii</i>            | X(P)    |       |
| Little Curlew <i>Numenius minutus</i>                 | X(S)    |       |
| Eastern Curlew <i>Numenius madagascariensis</i>       | X       |       |
| Common Sandpiper <i>Actitis hypoleucos</i>            | X       |       |
| Ruddy Turnstone <i>Arenaria interpres</i>             | ?       |       |
| Red-necked Stint <i>Calidris ruficollis</i>           | X       |       |
| Sharp-tailed Sandpiper <i>Calidris acuminata</i>      |         | X     |
| Arctic Jaeger <i>Stercorarius parasiticus</i>         |         | X     |
| Fairy Tern <i>Sternula nereis</i>                     | X       | X     |
| Caspian Tern <i>Hydroprogne caspia</i>                | X       | X     |
| Whiskered Tern <i>Chlidonias hybrida</i>              | X       |       |
| Crested Tern <i>Thalasseus bergii</i>                 | X       | X     |
| Pacific Gull <i>Larus pacificus</i>                   | X       | X     |
| Swift Parrot <i>Lathamus discolor</i>                 |         | X     |
| Rock Parrot <i>Neophema petrophila</i>                | X       |       |

| Bird species (common and scientific name)                | Cleland | Symon |
|--|---------|-------|
| Eastern Barn Owl <i>Tyto javanica</i>                    | X(P)    | X     |
| White-browed Scrubwren <i>Sericornis frontalis</i>       | X       | X     |
| Weebill <i>Smicrornis brevirostris</i>                   | X(P)    |       |
| Striated Thornbill <i>Acanthiza lineata</i>              | X       | X     |
| Southern Whiteface <i>Apehelocephala leucopsis</i>       | X(P)    | X     |
| Black-chinned Honeyeater <i>Melithreptus gularis</i>     |         | X     |
| Brown-headed Honeyeater <i>Melithreptus brevirostris</i> | X       | X     |
| Striped Honeyeater <i>Plectorhyncha lanceolata</i>       | X(P)    |       |
| White-browed Babbler <i>Pomatostomus superciliosus</i>   | X       | X     |
| Horsefield's Bushlark <i>Mirafra javanica</i>            | X       | X     |
| Little Grassbird <i>Megalurus gramineus</i>              | X(P)    |       |

Sapper's Flat, west of Cape Jervis Road. Beautiful Firetails were recorded by Condon (1962) as being in the wetter heath and coastal swamps of the Mt Lofty Ranges, including near Adelaide to Mt Compass and Victor Harbor. The 1984-85 atlas (Paton, Carpenter and Sinclair 1994) has records from three locations near the south coast, most likely from Newland Head Conservation Park and locations in Deep Creek Conservation Park. The 1982-1999 Bird Report (Carpenter *et al.* 2003) lists Beautiful Firetails in Newland Head Conservation Park, Second Valley Forest, Talisker Conservation Park and Deep Creek Conservation Park from 1986 to 1999. So it seems that this is one species that has not changed a great deal in distribution, possibly due to retention of the less productive coastal heaths and low eucalypt vegetation in reserves.

*Birds that have increased in range or abundance*

Some birds are either more common now or have moved into the area since JWC's observations. Two obvious species are the Galah, *Eolophus roseicapillus*, and the Crested Pigeon, *Ocyphaps lophotes* – both species colonised the more temperate parts of South Australia in the 1900s, following vegetation clearance in these areas and the provision of additional permanent watering points over their range in arid Australia. The Crested Pigeon was not recorded by JWC but Cleland (1929) reported that a pigeon-like bird

with a crest was seen on The Bluff in August 1928. He suspected that it had been blown out to sea and made land on The Bluff. Symon (1940) says that this species was not recorded in the district before 1935. One was shot about Christmas time of that year on Yohoe Station, 3 miles west of Delamere, and a small flock of three to five birds (presumably the same birds) was seen by several observers around Yankalilla, Normanville and Rapid Bay in November and December 1936. JWC reported two Galahs in 1915 for a week and Cleland (1924) listed two birds three miles from Victor Harbor on the Adelaide Road in April 1924. Galah numbers built up reasonably quickly, as Symon (1940) noted a flock of 23 over the summer of 1938-39, and that they could be found between Yankalilla and Cape Jervis, and had nested in the Delamere and Second Valley area. Crested Pigeons and Galahs are now very common in the district and breed locally.

It is possible that the Yellow-tailed Black-Cockatoo, *Calyptorhynchus funereus* has become more abundant on the southern Fleurieu, as Symon (1940) recorded that the largest flock that he encountered was 23 birds, of which half were juvenile or immature. Larger flocks than this are seen in the district now, but it may be that pine plantations, with their large food resources, lead to larger flock sizes, without an overall increase in numbers.

*Birds not recorded by JWC*

There are a number of birds that JWC did not record that are now found in this district, and that Cleland (1924, 1929) and Symon (1940) did record (Table 1). It is impossible to say whether JWC did not see them or did not identify them. They include the White-browed Babbler, *Pomatostomus superciliosus*, White-browed Scrubwren, *Sericornis frontalis*, and Striated Thornbill, *Acanthiza lineata*. While the latter two are small, fairly nondescript and easy to overlook, the babbler is a noisy, flocking and easily-identifiable species and not easy to overlook. Under White-browed Babbler Symon (1940) wrote: "One colony at Normanville and another of about fifteen birds between Fishery Cove and Cape Jervis were the only ones observed" and recorded them breeding. Cleland (1924) simply lists this species with no annotation.

Cleland (1924) wrote a long paragraph on the White-browed Scrubwren, partly because its taxonomy was confused, and took two specimens from Waitpinga in order to shed some light on the population (SAMA B28380 on 23/1/1923 and B28378 on 23/1/1924). He recorded it from several locations near Waitpinga and mentions them as occurring in the "Cape Jervis and Encounter Bay districts". Symon (1940) simply lists them as being present but not as breeding. Scrubwrens are common still in suitable habitat in the area that JWC covered so it seems likely that he was unable to identify this species or perhaps misidentified the Chestnut-rumped Heathwren, as the two species are fairly similar. Likewise the Striated Thornbill is still common in eucalypt woodland and forests of the southern Fleurieu but is notoriously difficult to identify unless one is familiar with the call. While giving the details of two Striated Thornbill specimens collected, Cleland (1924) does not give the location for these birds nor any other information about the species in this district. Symon (1940) is no more forthcoming and lists the bird as nesting but with no other details. Many other species are seabirds or waders that possibly required more

specialist knowledge than JWC possessed or reflect little time spent on the coast.

**CONCLUSION**

JWC recorded 127 species of native birds over a period of fifteen years while resident on the southern Fleurieu Peninsula. Cleland recorded 136 native species from roughly the same area on regular visits to the region over a period of about thirty years, and Symon reported on 123 native species from his two years residence on the western Fleurieu Peninsula. All three observers recorded the same four exotic species. They mostly recorded the same species but there are differences, particularly in the range of seabirds and waders that Cleland reported, as his house was on the coast and he regularly walked the beaches looking for beach-washed birds (D. Paton pers. comm.). JWC, while interested in birds, was a farmer with little contact with other ornithologists, few books, and as far as we know, no binoculars, which restricted his identification of some of the 'small brown birds'. Nevertheless his list is fairly complete and a tribute to his observational skills and aptitude and no doubt benefited from his intimate knowledge of the country and outdoors lifestyle. Together, the three lists give us a solid background on the avifauna of a geographic area that has been little reported in the literature.

Using the three lists as a basis, we can determine that a number of bird species have declined, some to extinction. Birds believed to be extinct in the region include the Azure Kingfisher, Spotted Quail-thrush, Rufous Fieldwren, Regent Honeyeater, Diamond Firetail and White-winged Chough, while the Little Lorikeet and Restless Flycatcher are now rarely reported. There are other species that must have declined due to preferential clearance of their woodland habitat and fragmentation of native vegetation (Paton *et al.* 1999), but this historical paper cannot offer comment on these.

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## Appendix I A Transcript of the List of Birds by John W Crompton

List of Birds Recognised Inland on Hundred of Encounter Bay During 15 years ending January 18<sup>th</sup>  
1925 John W Crompton

Birds Seen Inland in Hundred of Encounter Bay Between 1909 to 1925, with index number in Leach's  
book Second Edition.

Mark + = definite signs of breeding

Mark - = No signs noticed and they are not (*sort?*)

|                                      |  |   | Leach | Authors' comments             |
|--------------------------------------|--|---|-------|-------------------------------|
| Stubble Quail in Numbers             | Often  | + | 3     |                               |
| Brown Quail or Scrub Q               | Always   | + | 4     |                               |
| Painted Quail                        | Once   | - | 8     | Painted Button-quail          |
| Peaceful Dove few                    | Often  | - | 13    |                               |
| Bronzewing Pigeon                    | Always   | + | 16    | Common Bronzewing             |
| Little Bronzewing                    | Once   | - | 17    | Brush Bronzewing              |
| Pectoral Rail, Landrail,             | Probably Always  | + | 21    | Buff-banded Rail              |
| Little Crake or Water crake          | One Season   | - | 23    | Baillon's Crake               |
| Black Moorhen Big Coote              | One Season   | - | 26    | Dusky Moorhen                 |
| Black-headed Grebe                   | Regularly  | - | 29    | Australasian Grebe            |
| Silver Gull                          | at Rivington seldom but in Inman<br>Valley often (100) | - | 72    |                               |
| Black breasted Plover                |  | + | 81    | Banded Lapwing                |
| Black Oystercatcher                  | on Inman once  | - | 77    | Australian Pied Oystercatcher |
| Snipe                                | Nearly every year                                      | - | 106   | Latham's Snipe                |
| Black Ibis                           | Occasional flock usually on<br>swamped crops           | - | 114   | Glossy Ibis                   |
| Blue crane                           | Always   | + | 119   | White-faced Heron             |
| Large White necked crane             | Winter   | - | 120   | White-necked Heron            |
| Egret smaller than Blue crane        | Once   | - | 121   | Little Egret                  |
| Nankeen Heron                        | rare   | - | 123   | Nankeen Night-Heron           |
| Minute Bittern <i>perhaps wrong?</i> | Once   | - | 124   | Australian Little Bittern     |
| Brown Bittern                        | 1915   | - | 125   | Australasian Bittern          |
| Black Swan                           | Flying only  | - | 126   |                               |
| Cape Barrengoose                     | Flying & 1 settled once                                | - | 128   | Cape Barren Goose             |
| Maned Goose                          | twice settled in numbers                               |   | 129   | Australian Wood Duck          |
| Black Duck ( <i>Lower? Murray</i> )  | Occasional   | + | 133   | Pacific Black Duck            |
| Teal                                 | Occasional   | + | 134   | Chestnut Teal                 |
| Grey Teal                            | One visit only & uncertain                             | - | 135   |                               |
| Widgeon                              | Flying only but low once                               | - | 137   | Pink-eared Duck               |
| Black Large Cormorant                |  | + | 142   | Great Cormorant               |
| Black Small Cormorant                |  | + | 143   | Little Black Cormorant        |
| Black & White Large Cormorant        |  | - | 144   | Black-faced Cormorant         |
| Sea Shag, Pied Cormorant             |  | - | 145   | Pied Cormorant                |
| Black & White Small Cormorant        |  | + | 146   | Little Pied Cormorant         |
| Swamp Hawk (fowls once)              | Always   | + | 152   | Swamp Harrier                 |

|   |  |   | <b>Leach</b> | <b>Authors' comments</b>                          |
|---|--|---|--------------|---|
| Gray Goshawk  | Always   | - | 153          | Grey Goshawk                                      |
| White Goshawk   | Once   | - | 154          | Grey Goshawk                                      |
| Australian Goshawk (fowls)  | Always   | - | 155          | Brown Goshawk                                     |
| Lesser Goshawk  | recorded & forgotten but<br>was probably shot          | - | 156          | Not recognised as a species                       |
| Collared Sparrowhawk  |  | - | 157          |   |
| Wedgetail Eagle   | Always   | + | 158          | Wedge-tailed Eagle                                |
| Little Eagle  | Not sure but seems nothing else is right beside a nest |   | 159          |   |
| Little Falcon (fowls)   | Always   | - | 170          | Australian Hobby                                  |
| Nankeen kestrel ( <i>no harm yet?</i> )   | Always   | - | 173          |   |
| Boobook Owl   |  | - | 175          | Southern Boobook                                  |
| Other owls are known but not named and probably include:  |  |   |              |   |
| Powerful  |  |   |              |   |
| Spotted   |  |   |              |   |
| Barn  |  |   |              |   |
| Masked  |  |   |              |   |
| Blue Mountain Parrot  | probably always  | + | 184          | Rainbow Lorikeet                                  |
| Green Keet  | frequent in numbers                                    | + | 185          | Musk Lorikeet                                     |
| King Keet, PurpleCrown  | seldom recognised                                      | - | 186          | Purple-crowned Lorikeet                           |
| Little Keet   | seldom recognised                                      | - | 187          | Little Lorikeet                                   |
| Black Cockatoo  | common   | + | 188          | Yellow-tailed Black-Cockatoo                      |
| White Sulphur crest   | Once flying & probably<br>escaped captive              |   | 192          | Sulphur-crested Cockatoo                          |
| Galah   | 2 in 1915 for a week                                   | + |              |   |
| Crimson Rosella v common  | Always   | + | 200          |   |
| Yellow Rosella  | uncommon   | - | 201          | Now considered a subspecies<br>of Crimson Rosella |
| Rosella   | Once   | - | 202          | Eastern Rosella                                   |
| Red-rumped Grass parrot   | Always   | - | 206          | Red-rumped Parrot                                 |
| Orange-bellied Grass parrot   | uncommon   | - | 210          | Orange-bellied Parrot                             |
| Shell parrot  | occasional in numbers                                  | - | 214          | Budgerigar  |
| Elegant Grass parrot  | Always cleared swamps<br>& sorrell                     | - | 209          | Elegant Parrot                                    |
| Podargus (Locally Doughfool, Schoolmaster)  |  | + | 217          | Tawny Frogmouth                                   |
| Swift   |  | - | 228          | Fork-tailed Swift                                 |
| Azure Kingfisher  |  | - | 220          |   |
| Laughing Jack   | Friendly & always here                                 | + | 221          | Laughing Kookaburra                               |
| Sacred Kingfisher   |  |   | 223          |   |
| Pallid Cuckoo   | Regularly  | + | 229          |   |
| Fantail Cuckoo  | Regularly  | - | 230          | Fan-tailed Cuckoo                                 |
| Narrow billed Bronze Cuckoo   |  | - | 233          | Horsfield's Bronze-Cuckoo                         |
| Broad billed Bronze Cuckoo  |  | - | 234          | Shining Bronze-Cuckoo                             |
| Bronze Cuckoo   |  | - | 235          | This spp is no longer<br>on Australian list       |
| The Bronze Cuckoos seem to be distinctly different & yet no clear reason to support the distinction being more than variation. They fly one with the other. |  |   |              |   |

|  |  |   | <b>Leach</b> | <b>Authors' comments</b>    |
|--|--|---|--------------|-----------------------------|
| Welcome Swallow  | Always   | + | 238          |                             |
| Tree Martin  |  | + | 240          |                             |
| Fairy Martin   |  | + | 241          |                             |
| Jacky Winter   | Post Sitter                                    | - | 242          | 242 & 243 are now           |
| Jacky Winter   | Post Sitter                                    | - | 243          | one species                 |
| Scarlet breasted Robin   | Always   | + | 244          | Scarlet Robin               |
| Flame breasted Robin   | Regularly except 1923 & 1924                   | - | 245          | Flame Robin                 |
| ? Pink breast if seen was in wet place near big trees & grass,<br>but it probably was some young bird. |  |   |              |                             |
| Pied Robin   | probably always                                | - | 249          | Hooded Robin                |
| White shafted Fantail, Gray Wagtail  |  | + | 254          | Grey Fantail                |
| Willie Wagtail   | Always   | + | 256          |                             |
| Leaden Flycatcher probably   | Once   | - | 257          |                             |
| Scissor Grinder  | Frequently                                     | - | 259          | Restless Flycatcher         |
| Black faced Cuckoo Shrike (Blue Fella)   |  | - | 262          | Black-faced Cuckoo-shrike   |
| Little Cuckoo Shrike   | perhaps  | - | 263          | White-bellied Cuckoo-shrike |
| Ground Thrush  |  | - | 266          | Spotted Quail-thrush        |
| Ground Wren Red rumped   |  | - | 270          | Chestnut-rumped Heathwren   |
| ? Among Trees & grass  | Probably number                                | - | 276          | Striated Fieldwren          |
| English Blackbird  | Scarce   | + | 279A         | Common Blackbird            |
| Mountain Thrush  | Probably always                                | - | 280          | Bassian Thrush              |
| Tintac   | Probably always                                | - | 281          | White-fronted Chat          |
| Tomtits Yellow Bellied   |  | + | 288          | Yellow Thornbill            |
| Tomtits Ruddy Abdomen  |  | + | 289          | Brown Thornbill             |
| Tomtits Red Rump   |  | - | 290          | Inland Thornbill            |
| Tomtits Yellow round tail  |  | - | 293          | Yellow-rumped Thornbill     |
| Tomtits Buff Rump  |  | - | 294          | Buff-rumped Thornbill       |
| Blue Wren  | Always   | + | 300          | Superb Fairy-wren           |
| Emu Wren   | Probably always                                | - | 304          | Southern Emu-wren           |
| Scrub Wren Bristlebird   | Probably always                                | - | 306          | Eastern Bristle-bird        |
| Scrub Wren Bristlebird Buffheaded  |  | - | 307          | Rufous Bristlebird          |
| Wood Swallow White rump  |  |   | 310          | White-breasted Woodswallow  |
| Wood Swallow White brow  |  |   | 311          | White-browed Woodswallow    |
| Wood Swallow Masked  |  |   | 312          | Masked Woodswallow          |
| Wood Swallow Dusky   |  |   | 313          | Dusky Woodswallow           |
| Mudpie lark, Murray magpie   |  |   | 314          | Magpie-lark                 |
| Harmonious Thrush  | Friendly, known to nest in<br>a much used shed | + | 315          | Grey Shrike-thrush          |
| White backed Magpie  | v common                                       | + | 317          | Australian Magpie           |
| Large Butcher bird   | in 1915  | - | 318          | Pied Butcherbird            |
| Common Butcher bird  | frequent singly                                | - | 319          | Grey Butcherbird            |
| appears to go away during height of spring   |  |   |              |                             |
| Shriketit yellow breasted (Crest)  |  | - | 320          | Crested Shrike-tit          |
| Crested Bellbird   |  | - | 321          |                             |
| Thickhead  |  | - | 322          | Golden Whistler             |
| Thickhead  |  | - | 323          | Rufous Whistler             |

|                                     |   |   | <b>Leach</b> | <b>Authors' comments</b>  |
|-------------------------------------|---|---|--------------|---|
| Thickhead                           | Probably Olivaceous                             | - | 325          | Olive Whistler  |
| Tree Runner                         |   | - | 328          | 328 & 329 are now lumped as   |
| Tree Runner Black capped            |   | - | 329          | Varied Sittella   |
| Tree creeper Brown                  |   | - | 330          | Brown Treecreeper   |
| Tree creeper White throat           |   | - | 331          | White-throated Treecreeper  |
| Tree creeper Red browed             |   | - | 332          | Red-browed Treecreeper  |
| Tree creeper White browed           |   | - | 333          | White-browed Treecreeper  |
| Silvereve common                    | Apparently always                               | - | 334          |   |
| Red Johnny. Mistletoe berry eater   |   | - | 336          | Mistletoebird   |
| Pardalote Aphis eaters              |   | - | 337          | 337 & 339 now lumped as   |
| Pardalote                           |   | - | 339          | Striated Pardalote  |
| Pardalote                           |   | - | 340          | 340 & 341 now lumped as   |
| Pardalote                           |   | - | 341          | Spotted Pardalote   |
| Honeyeater Blackcap                 |   | - | 342          | White-naped Honeyeater  |
| A Black honeyeater, probably number |   | - | 347          | Black Honeyeater  |
| Spinebill Sunbird                   |   | - | 348          | Eastern Spinebill   |
| Tawny crowned                       | Always  | + | 347          | Tawny-crowned Honeyeater  |
| Pied                                |   | - | 352          | Pied Honeyeater   |
| Regent or Wartyface                 | visits in numbers                               | - | 353          | Regent Honeyeater   |
| Greeny                              | seen common in red gums,<br>gives various calls | - | 363          | White-plumed Honeyeater   |
| Phylotis Sonora                     | coastal bird                                    | - | 356          | Singing Honeyeater  |
| Tasmanian or Crescent Honeyeater    |   | + | 364          |   |
| New holland                         | Always  | + | 365          | New Holland Honeyeater  |
| Noisy Miner                         | uncommon  | - | 368          |   |
| Wattlebird common                   | Always  | + | 370          | Red Wattlebird  |
| Brush Wattle bird                   | Always  | - | 371          | Little Wattlebird   |
| Spiny cheeked                       | uncommon  | - | 372          | Spiny-cheeked Honeyeater  |
| Ground lark                         |   | + | 376          | Australasian Pipit  |
| English Goldfinch                   |   | + | 377B         | European Goldfinch  |
| English Sparrow                     |   | + | 377C         | Leach 4 <sup>th</sup> Edition has 377C as<br>Tree Sparrow & 377D as House<br>Sparrow – we assume that the<br>bird he means is House Sparrow       |
| Diamond Sparrow                     |   | + | 378          | Diamond Firetail  |
| Firetail Finch                      |   | + | 379          | Beautiful Firetail  |
| Zebra Finch Chestnut-eared          |   | - | 380          |   |
| Waxbill Finch Red browed            |   | - | 382          | Red-browed Finch  |
| European Starling                   |   | + | 382A         | Common Starling   |
| ? Hazeleyed Crow                    | perhaps   |   |              | There was much confusion<br>about crows & ravens at this<br>time –the bird is probably the<br>Little Raven which was not<br>in Leach at this time |
| ? Smallbilled Crow                  | probably once                                   |   |              |   |
| Raven or Black Crow                 | visits  | - | 389          |   |
| White winged Chough                 | Always  | + | 391          |   |

|  |                  | <b>Leach</b> | <b>Authors' comments</b>                  |
|--|------------------|--------------|---|
| "Black Magpie"   | Always           | -            | 392                                       |
| Bellmagpie Black winged <i>or?</i> broad head  |                  | -            | 393                                       |
|  | seldom seen here |              | 392 & 393 now lumped<br>as Grey Currawong |
| A bird of the lark sort that sings loudly while he flies, "Chitaweela" by name about Aldinga. Found about crops or thick grass. Brown all over, heavily built. Sounds like a wheelbarrow that had deeper tone than a Greenfinch. |                  |              | This is clearly a male<br>Brown Songlark  |

January 18<sup>th</sup> 1925

Please return this list, because I have no copy and I don't wish to write one now.

John W Crompton

**Explanation of the annotations used:**

Words that are italicised and followed by a question mark e.g. (*sort?*) are words that we were unsure of but made an educated guess.

Authors' comments indicate taxonomy or the current recommended English names for the species indicated by JWC, where these are different from his names.

## Bird Notes

# Observations of Brown Quail on Point Sturt Peninsula, Lake Alexandrina

NATHANIEL DOECKE

The Brown Quail, *Coturnix ypsilophora* is considered rare throughout South Australia (Condon 1968, SAOA 1985, 2008, Marchant and Higgins 1993) including the Strathalbyn and Goolwa districts (Eckert 2000). This report covers observations of the species made from a single locality throughout the last decade.

I first recorded Brown Quail on Point Sturt Peninsula on 23 October 2000 and have observed them on many occasions since November 2001. They have been recorded calling during 44 of the succeeding 92 months to June 2009, and again from October 2010 to the present (June 2012), often from a wetland on the northern edge of the peninsula (35° 29' 30" S, 138° 59' 30" E). The quail are usually first detected by their calls, or flushed from areas of dense grassland. Sightings are usually brief but I have had a number of excellent sightings of the quail feeding on Veldt Grass, *Erharta calycina* seeds. They have been recorded calling in all months but with a noticeable increase from August-November. As my family and I live on a nearby property, observation opportunity has been fairly constant over the reporting period, as someone who recognises their call is almost always present.

The wetland area that is a favoured habitat for the birds consists of several deep channels

fed by Lake Alexandrina. Water levels in the wetland are usually highest in winter-early spring, gradually drying out over the summer. The vegetation in this area consists of dense un-grazed Wheat Grass, *Elymus scaber*, Kikuyu *Pennisetum clandestinum*, plantings of Swamp Paperbark, *Melaleuca halmaturorum*, thickets of Lignum, *Muehlenbeckia florulenta*, reeds, *Phragmites australis* and Club-rushes, *Ficinia* sp. In wetter periods and when the grasses are seeding in spring, the Brown Quail will also disperse into the surrounding paddocks to the south of Point Sturt Road. These paddocks are dominated by Perennial Veldt Grass, *Erharta calycina*, scattered with <12 year old revegetation plantings of chiefly native shrubs and trees. Brown Quail are also occasionally recorded at other times of the year in these surrounding areas and they sometimes use irrigated gardens, most notably during the summer of 2011-2012. In the last few years, there has been a shift in habitat usage by the quail. They are now recorded more frequently in the revegetation and dense grassland areas away from the lake, often around *Acacia dodonaeifolia* and *Acacia paradoxa* shrubs. This is likely due to the maturing of the revegetation, so that it now provides the dense habitat favoured by these quail.

Stubble Quail, *Coturnix pectoralis* are also recorded frequently, occasionally in mixed coveys with the Brown Quail, but they generally prefer the drier, more open grassland. They are distinguished by their smaller build and lighter brown colouration with white streaks and their rapid three-note 'pip-pi-wheat' calls, compared to the Brown's two-note rising 'pip- peeeep' calls. Little and Painted Button Quail have also been recorded in the area. The former was recorded once in 2000 and the latter was recorded in a small covey during early 2012.

### Pre-2010 observations away from the lakeside wetlands

Most of the sightings made outside the wetland before 2010 were of one or two birds. Distances referred to are from the wetland area.

- May 2004 - a covey of eight - ten was present along Point Sturt Road;
- 17 Oct 2004 - two birds flushed from *Acacia paradoxa* near road verge 350 m E;
- 10 June 2007 - two were flushed from under *Acacia dodonaeifolia* 450 m SE;
- Sep/Oct 2007 - two were seen feeding on Veldt grass seeds and observed from close range 500 m E;
- 11 November 2008 - one bird was seen crossing Point Sturt Road, then hiding in roadside vegetation;
- January 2009 - a single bird observed near a gate onto Point Sturt Road;
- 28 May 2009 - a sighting of one bird (and probably others) 400 m SE - heard in this area till 5 June.



**Brown Quail**  
**Simeon Doecke**

As a result of the Murray-Darling basin drought from 2006 onwards, Lake Alexandrina began slowly drying and by February 2010 the water level was over 300 metres from the wetland. When the Lake began to recede in the spring of 2006 observations of Brown Quail became much less frequent, and between November 2009 and October 2010 there were no observations. It seems the birds may have left the area over this eleven-month period (possibly for the nearby Goolwa Barrage region as observations there increased at that time). Certainly, if they were present, they were not calling. From mid-March 2010, however, the lake level had begun to rise due to the increased rainfall and flooding in the catchment, and Brown Quail were recorded again on 22 October 2010. From October 2010 to the present (June 2012), they have again become resident, heard or seen regularly. During 2011 they were present in higher numbers, in line with the irruption that occurred throughout much of the state at that time.

#### **Historical information on the species' status in South Australia**

There were only three records of Brown Quail in annual Bird Reports from 1964-1974 (Black 1975) two in the 1977-1981 Bird Report (Bransbury 1984) and seven in the 1982-1999 Bird Report

(Carpenter *et al* 2004). Reported observations have increased more recently with a total of 31 in Bird Reports between 2001 and 2005, 13 from the South East and 13 from Adelaide Plains/Mount Lofty Ranges (Rogers 2003-2008b), but this is likely to reflect improved observer confidence as much as an increase in prevalence.

Marchant and Higgins (1993) regarded the species as resident in the wetter parts of its range but an intermittent visitor to semi-arid and arid regions. Condon (1968) referred to only two breeding records, at Magill in 1872 and Encounter Bay in 1929. The former but not the latter is supported by two egg clutches in the South Australian Museum (SAMA B29702 and B29703). A single egg collected at Nalpa, on the northern shores of Lake Alexandrina by G. Bonnin sometime before 1978 and originally thought to be that of Stubble Quail (SAMA B31950) is the only other museum evidence of Brown Quail breeding in the State (A Black, pers. comm). Pedler (1986) observed Brown Quail breeding in sedges adjoining the Broughton River near Koolunga (Mid North) but did not consider it to be resident there. Jack Bourne (pers. comm.) has recorded Brown Quail in the South East (Bool Lagoon area) in every month during some years, but has failed to do so for periods of over twelve months at other times. Eckert (2000) reported records in the region surrounding Lake Alexandrina from the Bremer and Finniss Rivers "every few years" and considered the species to be "possibly resident" with "local breeding likely

but unconfirmed". Since 2007, there have been frequent observations from Hindmarsh Island and Sir Richard Peninsula, about 10 km south-west of this location (Cutten 2008, Syson 2008, pers. obs.)

Our observations show that a resident population exists on Point Sturt Peninsula on the southern shore of Lake Alexandrina.

#### ACKNOWLEDGEMENT

Thanks to Andrew Black for information on the species status in South Australia.

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# Eastern distributional limit of the Western population of the Blue-breasted Fairy-wren

MICHAEL AND LESLEY BROOKER

During three return trips along the Eyre Highway from Perth to Port Augusta in April–May 2003, July–August 2007 and December 2011, we searched for Blue-breasted Fairy-wrens, *Malurus pulcherrimus* in vegetation adjacent to the highway, and visited sites where they had been recorded previously by Burbidge, Casperson and Fuller (1987) and Rowley and Russell (1998).

Wrens were found at the Rowley and Russell site (25 kilometres east of the border) and at 63, 80, 88, 108 and 109 kilometres east of the border, the co-ordinates of the latter being 31° 34' 20" S, 130° 07' 44" E. All of these sites had procumbent mallees and shrubs, whereas the country east of 109 kilometres had fewer eucalypts and the inter-shrub areas were almost bare of vegetation. This apparently unsuitable habitat east of our last sighting continued along the highway for about 30 kilometres.

Wrens were not found at 133 kilometres, where Burbidge, Casperson and Fuller (1987) recorded them in 1984 on their Koonalda KD 1 site (1 kilometre south of the highway), or at 142, 154 and 155 kilometres east of the border. Some of these sites had the same procumbent mallee, teatree and shrubs as found on the more western sites but these plants tended to occur in taller, denser clumps and were surrounded by grassland. However, we suggest that the western population of the Blue-breasted Fairy-wren is unlikely to extend further east along the

highway than the 120 kilometre peg (31° 34' S, 130° 14' E), as the vegetation beyond that point appears to be unsuitable. Map "Nullabor 10" of Department of Environment and Heritage (2007) indicates that the vegetation here changes from "mallee heath and shrublands" where we know the wrens occur, to "mixed chenopod, samphire and forblands" and "chenopod shrublands", in neither of which we have records.

We did not search for the western boundary of the eastern population: the most westerly record we could find in the literature was a 1993 sighting at 20 kilometres south-west of Nundroo (Carpenter and Matthew 1997). Therefore, it would seem that the distance between the western and eastern populations is much less than the 600 kilometres given by Rowley and Russell (1997); i.e. about 210 kilometres for the definite sighting at the 109 peg, or about 200 kilometres for our presumed limit at the 120 peg.

Given that much of the distribution of this fairy-wren in Western Australia lies in the highly fragmented wheatbelt (Brooker and Brooker 2002, 2003), the relatively undisturbed coastal strip that it occupies in far south-east Western Australia and far south-west South Australia represents an important part of its range.

Of the two species of birds which, from our experience in Western Australia, we would have expected to favour similar habitat to that of the Blue-breasted Fairy-wren, the Inland Thornbill, *Acanthiza apicalis* was not recorded east of the 108 kilometre peg and the Redthroat, *Pyrrholaemus brunneus* was not recorded east of 154 kilometres. We observed the Silvereye, *Zosterops lateralis* at 80 kilometres east of the border (31° 35' 11" S, 129° 50' 02" E) on 30 December 2011, representing an extension of its range in south-western South Australia to that reported by Carpenter (2009).

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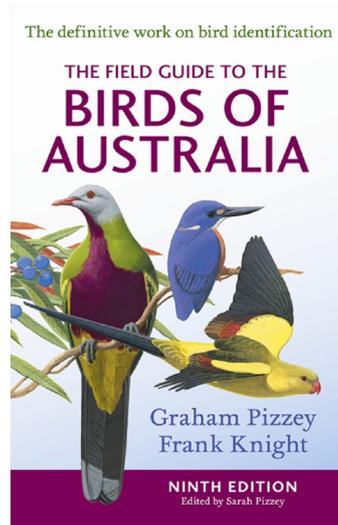
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## Book Reviews

### The field guide to the birds of Australia 9th ed.

**GRAHAM PIZZEY AND FRANK KNIGHT, EDITED BY SARAH PIZZEY**

*Harper Collins, 2013. Soft cover, 624 pages.  
A\$45.00*



The new ninth edition of *The field guide to the birds of Australia* by Pizzey and Knight is probably best described as exactly like the previous edition - only different. The most notable changes - apart from the purple trim of the cover - are:

- the alterations to the order of the taxonomy;
- the inclusion of endemic island birds such as the Lord Howe Woodhen, Norfolk Island Parakeet and Slender billed White-eye (for instance);
- the lumping of all the vagrant birds at the back of the book,
- new illustrations and species descriptions that reflect the latest splits recognised by IOC.

The new illustrations continue the tradition and high standard set by the previous editions for having the most taxonomically 'correct' bird illustrations of any Australian field guide. Most notably the new Grasswren splits are rendered superbly. It's heart-warming to see South Australia is now the Grasswren capital of the world with seven species possible in the State. The Short-tailed Grasswren, officially our second endemic bird, is emphatically listed, illustrated and described.

Inevitably the guide does not reflect all of the latest splits and lumps put forward by

taxonomical experts, but given the never-ending machinations of genetic scientists, it is a fraught exercise.

The section of 46 pages devoted to vagrants in the back of the book is the only feature of the new edition which I'm not so sure is a good thing. Comparing vagrant birds to the common or endemic birds is so much easier when the illustrations are on the same page. Nevertheless Pizzey and Knight's offering remains the pick of the Australian field guides in my view and anyone looking to purchase a new guide would be well served by this latest edition.

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# Australian bird names: a complete guide

IAN FRASER AND JEANNIE GRAY

CSIRO Publishing, Collingwood, Victoria, 2013

A\$49.95

Paperback, 352 pages, black and white illustrations

Gerygone, Cisticola ... how should these names be pronounced? What do they mean? Where do they come from? All these questions and many more can be answered with *Australian Bird Names*, a fascinating book for anyone with an interest in words about birds.

The authors, accomplished natural history writer, Ian Fraser, and language enthusiast, Jeannie Gray, have clearly enjoyed the task of researching and writing about the scientific and common names of all Australian birds, as this comes through in the engaging and often humorous text.

Browsing through even a small number of entries quickly makes clear the extent of scholarship and research that has gone into producing this book. For many species, original descriptions have been sourced and translated anew. However, the authors make it clear when they could find no definitive information about a particular name.

The book's arrangement follows Christidis and Boles (2008) and includes those additional species accepted by the Birds Australia Rarities Committee up to March 2012. Translations and derivations are given for family, genus, specific and common names, including the many and varied versions that have been in use in earlier times. For each species, status (resident/migrant/vagrant/breeding) is given. All scientific names are followed with a pronunciation guide. There is a comprehensive list of references, together with indexes of common and scientific names, at the end of the book.



The eminently readable introduction covers the significant influences on the common names of Australian birds and gives short histories of some of the more important figures and groups in Australian ornithology. There is also an explanation of how the pronunciation guides were derived and the principles used.

While this could be a dry and humourless topic, the authors' easy style and inclusion of many intriguing and sometimes funny notes about the ins and outs of the early bird collectors and namers make the book a very enjoyable one, as well as being authoritative.

Recommended for your bookshelf.

## REFERENCE

Christidis, L. and Boles, W. E. 2008. Systematics and Taxonomy of Australian Birds, CSIRO Publishing, Collingwood, Victoria.

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**NOTES**