

The Whistler



Bassian & Russet-tailed Thrushes
Tropical seabirds in the Hunter
Flagged Bar-tailed Godwits
Early Hunter records
Saltmarsh wildfire
Dollarbirds
Tattlers



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- To encourage and further the study and conservation of Australian birds and their habitat
- To encourage bird observing as a leisure-time activity

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Liz Crawford (Production Manager)
Chris Herbert (Cover design)

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Authors wishing to submit manuscripts for consideration for publication should consult **Instructions for Authors** on page 61 and submit to the **Editors**: Mike Newman omgnewman@bigpond.com and/or Harold Tarrant haroldandjudith@virginmedia.com

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PO Box 24
New Lambton NSW 2305
Website: www.hboc.org.au

Front cover: Grey-tailed Tattler *Tringa brevipes* – Photo: Chris Herbert

Back cover: Bar-tailed Godwit *Limosa lapponica* - Photo: Chris Herbert

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The *Whistler* - Editorial

How will information about birdlife in the Hunter Region contribute to the serious study of birds and their environment? The short answer is that we do not know. A casual observation might open the door to a new understanding of a species, with ultimate implications for its preservation. One recognises that such important moments of discovery will be rare, but there are many other uses to which casual observations may ultimately be put, especially when the information is combined with related information: other records of an observed behaviour in the same species, records for this behaviour in a new species, indications of an extension or contraction in the range of a species, or of the effects of habitat modification on a species. All observers have the capacity to provide pieces of the overall jigsaw, and we must continue to encourage readers to supply such insights in the form of short notes when they stumble upon them. As this issue twice demonstrates, a small observation concerning a particular species may often accompany articles that deal with that species at greater length.

Inevitably, longer-term studies are extremely valuable, often essential, particularly for mapping and understanding changes in bird distribution. Studies beyond two to three years are generally not suited to higher degree theses, or indeed other academic research projects that receive funding for the same sort of period or less. Without long-term records the connections made by Mike Newman's paper linking the Noisy Miner *Manorina melanocephala* with the Grey Butcherbird *Cracticus torquatus* would remain undocumented. There may be new aspects of a long-term study that become ideal material for an article in this journal when data are exploited from a different perspective. The on-going work of Liz Crawford and Chris Herbert on the shorebirds of the Hunter Estuary, combined with other long-term work being carried out at other sites, both national and international, has enabled the production of what we hope will be the first of a number of articles relating to Hunter sightings of flagged shorebirds; in this case the Bar-tailed Godwit *Limosa lapponica*. Their paper provides evidence of how the Hunter Estuary supplies seasonal habitat to both exhausted godwits on passage at the end of their southward migration and permanent habitat for some throughout the austral summer. This

paper not only demonstrates the conservation importance of the Hunter Estuary, but also provides the methods and analysis required to replicate the approach at other sites in the flyway. Further north, on-going work in Port Stephens by Lois Wooding and Alan Stuart has demonstrated a different estuarine site's importance for another non-breeding shorebird, the Grey-tailed Tattler *Tringa brevipes*.

The kind of study that is necessarily completed over a limited time-span is exemplified in the study by Rob Kyte and Mike Newman of the effects of fire on saltmarsh at Ash Island. Habitat is changed dynamically over a comparatively short period, during which the changing responses of different bird species to burnt areas must be assessed. Still more truncated are studies of the impact of short-term extreme weather events. Given the predicted increase in such events it becomes important to document which species are primarily affected and in what ways. The study of unusual observations resulting from ex-Tropical Cyclone Oswald, by Mick Roderick and Allan Richardson, is of this kind; to compensate for the short-term nature of the study it draws, like the study of Dollarbird departure dates by Mike Newman, on data from many observers. These short-term studies stand in contrast to the note by Mike Newman on the disappearance of Noisy Miners from woodland at Green Wattle Creek a decade after cattle were removed allowing understorey vegetation to regenerate slowly; a classic example of the value of long-term data sets.

A set of data acquired from many observers is also central to the study by Dan Williams on *Zoothera* thrush species. This is the second of our 'species accounts', dealing with the distribution of one or more species within the Hunter Region. Although such an article might be seen superficially as indicating where these species can be sought, it critically examines the evidence, places on record the known distribution in recent years, and raises the issue of seasonal migration, thus adding to our knowledge of these birds and indicating where our knowledge is inadequate and further data is required. Ultimately, we may need to build further on the current picture to guarantee free passage for this bird between its breeding areas and its winter habitat.

Last, but not least, is the second of a series of articles by Alan Stuart reviewing the historical literature of the birds of the Hunter Region. How things have changed over the last 100 years! That Alan is able to synthesise a view of the bird populations of that time is a tribute to the authors of that era. Hopefully, future generations will hold the current *Whistler* authors in similar esteem and applaud their vision in providing detailed documentation of the Hunter Region's birds at the start of the 21st Century.

We are delighted to again receive generous financial support from the Hunter-Central Rivers Catchment Management Authority towards publication of this edition. Their support is tangible evidence of the value land managers and by inference the community, place on the commitment of Hunter Bird Observers Club members to monitoring and studying the bird populations of the Hunter Region. The availability of a public record of their findings is of paramount importance to the conservation of birds and their habitat in the Hunter Region. It is opportune to congratulate all the authors for their endeavour in completing an exacting task, particularly those who are not experienced in the preparation of scientific papers and dealing with critical peer review. Well done!

Harold Tarrant and Mike Newman
Joint Editors

Tropical seabirds off the Hunter coastline as a result of ex-Tropical Cyclone Oswald Jan-Feb 2013

Michael Roderick¹ and Allan Richardson²

¹ 3 Alderson Street, Shortland, NSW 2307, Australia mickhbb@yahoo.com.au

² 36 Beauty Point Road, Morisset, NSW 2264, Australia alnsrichardson@bigpond.com

For the most part, the latitudinal distribution of each seabird species follows more or less set patterns associated with the seasonal distribution of breeding and feeding regimes. However, stochastic weather events can push birds out of their normal range into unfamiliar latitudes. In January 2013 weather patterns across the Gulf of Carpentaria and the Coral Sea combined to build Tropical Cyclone Oswald and then push it down the Queensland coast, degrading its Tropical Cyclone status and feeding it with moisture-laden air to dump torrential rain on the south-east Queensland coastline. The effect of this system's southward push was to drive high numbers of tropical seabird species well beyond their normal low latitudes and well into NSW waters. Exceptional numbers of seabirds were observed off the Hunter Region coast and further south, including a large number of inshore and inland observations of locally rare tropical seabird species that normally frequent oceanic habitats.

INTRODUCTION

In late January 2013, a range of bird species that are normally considered “tropical” were recorded along the coastline of New South Wales (NSW), including the Hunter Region. The appearance of these birds was directly related to the movement of ex-Tropical Cyclone Oswald down the eastern seaboard. Oswald pushed before it an exceedingly large number of tropical seabirds, including many species not normally found in high numbers off the NSW coast. It also resulted in several seabirds that would normally be found at or beyond the continental shelf, being observed close to shore by land-based observers.

This paper documents the “event” with regards to unusual seabirds recorded along the coastline of the Hunter Region, from Crowdy Head (31° 50' 36"S 152° 45' 4"E) south to Swansea (33° 05' 49"S 152° 39' 29"E), but predominantly from the Newcastle area where the bulk of observations were made. The main vantage points in the Newcastle area were along Fort Drive and at the seaward end of Nobbys Breakwall. Although the focus of this paper is tropical seabirds the scope is extended to other unusual pelagic birds recorded.

Tropical Cyclone Oswald

Tropical cyclones originate north of approximately 23° S because they require sea surface temperatures exceeding 26-27° C to sustain

cumulonimbus development (Sturman & Tapper 1996). Tropical Cyclone (TC) Oswald began as a tropical low pressure system on 17 January 2013 that formed in the south-western Gulf of Carpentaria off the Northern Territory coast. The system was closely monitored over the next couple of days, but soon made landfall south-west of Borroloola before it looped back into the Gulf of Carpentaria to reform as TC Oswald by 21 January.

The storm grew in intensity and travelled unhindered east over the Cape York Peninsula, then out from the North Queensland coast where it was fed by moisture-laden monsoonal air flows establishing to the north. At the same time a high pressure system over New Zealand prevented the storm from progressing eastwards, forcing it south down the Queensland coastline (**Figure 1**). The storm stalled along the south-east Queensland coastline and was fed moist air from the Coral Sea, which brought about the intense rainfall experienced by that region. It continued south along the coastline and into NSW, becoming an ex-tropical cyclone in the process. By 30 January the storm had travelled some 3,000 km south along the coast, with considerable flow-on effects along the NSW coast to southwards of Sydney before eventually petering out in the Tasman Sea (Wikipedia 2013).

The southward progress of the storm and its considerable intensity pushed many tropical seabirds well south of their normal distribution.



Figure 1. Satellite image of TC Oswald when situated on the North Queensland coast (source: Wikipedia 2013)

KEY SOURCES OF INFORMATION

The main forum for reporting the various Oswald-related sightings was the Hunter Bird Observers Club (HBOC) email chat-group “Hunterbirding”. Numerous emails were sent to the forum during the time that Oswald “blow-ins” were present in the area. Some sightings were also posted to the national email chat-group (“Birding-aus”) and to NSW Birdline (Eremaea 2013). Where appropriate, records published here have been subject to scrutiny by records appraisal committees (refer to Species Accounts).

Chronology of Hunter Records

Significant sightings along the Hunter coastline commenced on 28 January, when a single Sooty Tern *Onychoprion fuscatus* and an estimated 4500 Wedge-tailed Shearwaters *Ardenna pacifica* were observed from Fort Drive, Newcastle (DW). Later that day 4 Sooty Terns and 2 Streaked Shearwaters *Calonectris leucomelas* were seen amongst other more locally common species at the same location (SR).

Later that day a dishevelled Red-footed Booby *Sula sula* was found sheltering on an aerial mast at Swansea Heads Marine Rescue Station, near the entrance to Lake Macquarie (AR). The bird was so exhausted that during two hours' observation, by three observers, the bird not once lifted its head from a roosting position on its back (see **Figure 2**). The bird had a light intermediate plumage with light underparts, but its dark underwing coverts suggested the bird was of North Queensland origin (Marchant & Higgins 1990).



Figure 2. Red-footed Booby on Swansea Heads' Marine Rescue mast 28 January 2013 (Photo Allan Richardson)

On the morning of 29 January, the first report was of a Sooty Tern seen flying over land at Salt Ash (TC), clearly a bird that had been blown inland from the storm. The first records from Fort Drive were 4 Sooty Terns and 2 Streaked Shearwaters (CA), followed by a White-necked Petrel *Pterodroma cervicalis*, 2 Buller's Shearwaters *Ardenna bulleri* and 50+ Sooty Terns (MR).

Sooty Terns dominated reports from other locations that afternoon, including exhausted birds that had made landfall. Three birds (1 on the ground) were reported from Birubi Point (DE), 8 birds (2 juveniles on the ground) at Stockton Beach (GA) (**Figure 3**), a single bird at Merewether Beach (EM), and 3 birds flying over Mosbri Crescent in suburban Newcastle (PH).



Figure 3. Sooty Tern adult (background) and juvenile (foreground) on Stockton Beach 30 January 2013 (Photo Gavin Ayre)

More seabirds were sighted off Nobbys Breakwall that afternoon, with 1 Streaked Shearwater, 1 Buller's Shearwater, 2 Pomarine Jaegers *Stercorarius pomarinus* and 50+ Sooty Terns seen by one observer (MK). Around the same time two other observers reported numerous Sooty Terns and a Tahiti Petrel *Pseudobulweria rostrata* off Newcastle Baths (AL/MN). The record of Tahiti Petrel is particularly unusual and is a bird very rarely sighted from land, especially at this latitude. At a similar time, observers at Fort Drive reported 1 Streaked Shearwater, 2 probable White-necked Petrels, 1 Buller's Shearwater and a small *Pterodroma* petrel that was most likely a Gould's Petrel *P. leucoptera* (MR *et al.*). Over 100 Sooty Terns were also seen.

The morning of 30 January saw 2 Lesser Frigatebirds *Fregata ariel* reported from Fort Drive (RM) (**Figure 4**), with the same observer reporting a Buller's Shearwater, 2 White-necked Petrels and 8 Sooty Terns about an hour later. An unidentified frigatebird was seen soon after from Fort Drive along with 10 Sooty Terns (MK). Elsewhere another Lesser Frigatebird was seen at Boat Harbour, Port Stephens, along with approximately 20 Sooty Terns (DE).

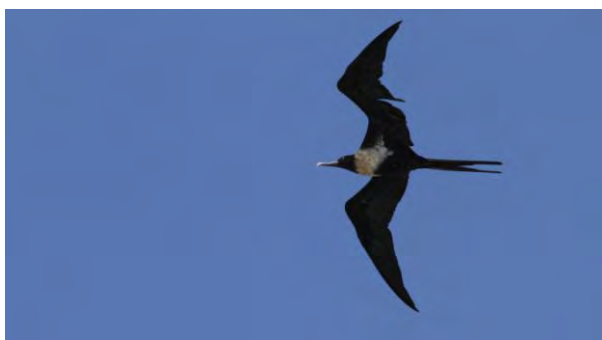


Figure 4. Lesser Frigatebird off Nobbys Breakwall 30 January 2013 (Photo Lorna Mee)

Arguably the 'peak' seawatching associated with Oswald occurred on the afternoon of 30 January. A group of around a dozen observers had gathered in the late afternoon at Fort Drive and noted a drop in the numbers of Sooty Terns compared to the past 48 hours. However, a tern that looked like a 'pale Sooty Tern' was observed and identified as a Bridled Tern *Onychoprion anaethetus* – the first record for the Hunter Region (LC/MR).

Soon after, a fishing trawler was seen coming towards the heads. An observer who had brought a bicycle quickly made his way to the end of Nobbys Breakwall. Within minutes of arrival there he reported "Buller's and Streaked Shearwaters" behind the boat, amongst the larger numbers of

mostly Wedge-tailed Shearwaters (SR). The same observer then reported seeing a "large, dark petrel with a whitish bill". Although it was not seen clearly enough to be confirmed, it is possible that this was a species in the Genus *Procellaria*. Moments later a Black Noddy *Anous minutus* was reported by the same observer and a decision was made by the Fort Drive observers to go and join him.

This decision was immediately complicated however by 2 Lesser Frigatebirds (both immature birds) that were first seen flying over the eastern end of Scott Street, above Fort Scratchley, then towards Nobbys Breakwall. These birds were also seen by the people that had since made it to the end of Nobbys Breakwall, but at a distance as the birds had travelled north over the harbour and were last seen wheeling over Stockton Breakwall.

Soon after a group of around 15 people had gathered at the end of Nobbys Breakwall where the Black Noddy, a possible Common Noddy *Anous stolidus*, a Bridled Tern (assumed to be the same bird as seen from Fort Drive), a Streaked Shearwater, 2 Arctic Jaegers *Stercorarius parasiticus* and 2 juvenile Sooty Terns were seen. Amongst the groups of Wedge-tailed Shearwaters, a few Flesh-footed Shearwaters *Ardenna carneipes* were also present.

The morning of 31 January began with early reports of the Black Noddy, Bridled Tern (**Figure 5**), a juvenile Lesser Frigatebird from the end of Nobbys Breakwall and an adult female crossing the harbour behind Nobbys Beach (AR). More reports of these species were to follow from several other observers over the course of the day and images were taken of all 3 species listed above.



Figure 5. Bridled Tern off Nobbys Breakwall 31 January 2013 (Photo Michael Kearns)

In the early afternoon an observer based at Merewether Heights (off Hickson Street) described seeing a White-tailed Tropicbird *Phaethon lepturus* flying northwards, followed moments later by a frigatebird species (probably a Lesser; JG).

This was to be the final addition to the “tropical” species seen during the “Oswald event” and from 1 February far fewer reports of these birds were received. Lesser Frigatebirds were however recorded until 3 February, whilst a Black Noddy was photographed (in poor condition) on Nobbys Breakwall on 4 February (RN).

Records outside the Hunter Region

Prior to the effects of Oswald being felt off the Hunter coastline, some significant sightings were made to the north, including records of seabirds well inland. Perhaps the most extraordinary of these was a Bulwer’s Petrel *Bulweria bulwerii* found at Oakey, 140km from the south-eastern Queensland coastline and 400m above sea level (per M. Atzeni). The fact that no records of this species had previously been confirmed anywhere on the east coast of Australia makes this inland record particularly significant.

The most obvious birds reported elsewhere in NSW were Sooty Terns and Lesser Frigatebirds. Sooty Terns were reported from numerous sites as far south as Ulladulla and often in counts of greater than 50 birds (source: Birdline NSW). Lesser Frigatebirds were reported at 18 locations along the NSW coast, again as far south as Ulladulla, 270km south of the Hunter Region. An estimated total of 85 frigatebirds (predominantly Lesser) were reported in NSW during this time (Birding NSW 2013).

Other unusual tropical species recorded elsewhere in NSW included 2 Roseate Terns *Sterna dougallii*, 31 Bridled Terns and 2 Great Frigatebirds *Fregata minor* seen during the same period at Ballina. Each of these species is on the NSW Ornithological Records Appraisal Committee (ORAC) review list.

SPECIES ACCOUNTS

Seven typically “tropical” species recorded off the Hunter coastline during Oswald have been outlined in **Table 1**. An account of the status as described in the Handlist of Birds in NSW (Morris *et al.* 1981), the relevant volumes of the Handbook

of Australian and New Zealand Birds and HBOC Checklist of Birds in the Hunter Region (Stuart 2012a) is provided, along with discussion of their occurrence during the Oswald event. Whilst some other land-based sightings were noteworthy (e.g. White-necked Petrel, Streaked / Buller’s Shearwaters), they have not been discussed as they are not considered to be “tropical” in occurrence and range.

Of the species listed in **Table 1**, the White-tailed Tropicbird, Tahiti Petrel, Lesser Frigatebird and Black Noddy records have been reviewed and accepted by the HBOC Records Appraisal Committee. The Red-footed Booby and Bridled Tern records have been reviewed and accepted by the NSW ORAC.

DISCUSSION

In the southern hemisphere tropical cyclones rotate in a clockwise direction (Sturman & Tapper 1996). The very intense wind associated with the rotation of these storms is the key driver of coast-pounding storm surges (NOAA 2013). In the case of Oswald, which was held against the Queensland coast by easterly wind flows, the outer oceanic circulation on its eastern flank was in a southerly direction then turning westerly on its southerly front (see **Figure 1**).

Unusually high numbers of Sooty Terns (12 birds) were recorded during the Port Stephens pelagic birdwatching outing on 20 January and may have been a precursor to the numbers of tropical seabirds seen from shore soon after.

As the storm progressed south, the effect of these wind directions was to sweep oceanic birds trapped in the path of the storm southward and then westward. The front’s easterly air flows, maintained by north-easterly moisture-laden input from the Coral Sea, gave birds caught in its path no escape to the north or east once trapped in the storm’s path. Birds affected by these conditions would inevitably be swept along by the weather. This is the most likely explanation for the large numbers of tropical oceanic birds swept inland in south-eastern Queensland and the large numbers of oceanic birds that ultimately arrived along the NSW coast in inshore and sometimes inland contexts.

The intensity of the onshore weather against the Hunter coast on 28 January was very fierce, pushing birds inshore and only allowing the more

resilient of birds to stay aloft over the ocean. Large numbers of Wedge-tailed Shearwater were observed inshore from Fort Drive in Newcastle as well as Sooty Tern and Streaked Shearwater.

Further south, not a single bird was observed over the ocean or Moon Island outside of Swansea Heads during the last two hours of 28 January, although the occasional Crested Tern *Sterna bergii* and Arctic Jaeger battled with the conditions in the Lake Macquarie entrance channel itself.

The observations over the following days in the wake of the storm's fury can only be described as extraordinary for central and southern NSW inshore waters.

Lesser Frigatebird, Black Noddy, Bridled Tern, White-tailed Tropicbird and large numbers of Sooty Terns are all rare sightings in central NSW waters. Furthermore, the inshore presence of a number of normally pelagic species off Newcastle, such as White-necked Petrel, Buller's Shearwater, Streaked Shearwater, Tahiti Petrel and a small unidentified *Pterodroma* species reinforces the effect the severe weather played on the distribution of both tropical and pelagic seabirds.

LIST OF OBSERVERS

The various observers referred to in this paper are listed below, in order of appearance in the text.

DW = Dan Williams
 SR = Steve Roderick
 AR = Allan Richardson
 TC = Tom Clarke
 CA = Craig Anderson
 MR = Mick Roderick
 DE = Darryl Eggins
 LC = Liz Crawford
 GA = Gavin Ayre
 EM = Eula McKane
 PH = Phil Hansbro
 MK = Michael Kearns
 AL = Ann Lindsey
 MN = Mike Newman
 RM = Robert McDonald
 JG = John Goswell
 RN = Richard Nicholas

REFERENCES

- BirdLife Australia (2013). *Atlas News: April 2013*. (BirdLife Australia: Carlton, Victoria.)
- Birding NSW (Central Coast Group) (2013). *The Twitcher* 8 (2). February 2013.
- Eremaea (2013). *NSW Birdline - Recent Sightings*. Sourced throughout event period from: <http://www.ereamaea.com/BirdlineRecentSightings.aspx?Culture=en-AU&Birdline=2&Path=8>
- Higgins, P.J. and Davies, S.J.J.F. (Eds) (1996). 'Handbook of Australian, New Zealand and Antarctic Birds. Volume 3: Snipe to Pigeons'. (Oxford University Press: Melbourne.)
- Marchant, S. and Higgins, P.J. (Eds) (1990). 'Handbook of Australian, New Zealand and Antarctic Birds. Volume 1: Ratites to Ducks'. (Oxford University Press: Melbourne.)
- Marchant, S. and Higgins, P.J. (Eds) (1993). 'Handbook of Australian, New Zealand and Antarctic Birds. Volume 2: Raptors to Lapwings'. (Oxford University Press: Melbourne.)
- Morris, A.K., McGill, A.R. and Holmes, G. (1981). *Handlist of the Birds in New South Wales*. (NSW Field Ornithologists Club: Sydney.)
- NOAA (2013). *Central Pacific Hurricane Center*. Sourced 05/07/2013 from: http://www.prh.noaa.gov/cphc/HAW/storm_surge.php
- Stuart, A. (Ed.) (1994-2012). *Hunter Region of New South Wales Annual Bird Report Numbers 1 to 19* (1993-2011). (Hunter Bird Observers Club Inc.: New Lambton, NSW.)
- Stuart, A. (Ed.) (2012a). *Checklist of Birds of the Hunter Region of NSW*. <http://www.hboc.org.au/resources/documents/2011%20Hunter%20Region%20checklist.pdf>
- Sturman, A. P. and Tapper, N. J. (1996). 'The Weather and Climate of Australia and New Zealand'. (Oxford University Press, Melbourne.)
- Wikipedia (2013) *January 2013 Eastern Australia floods*. Sourced 04/07/2013 from: http://en.wikipedia.org/wiki/January_2013_Eastern_Australia_floods

Table 1. Accounts of species observed in the Hunter Region during Tropical Cyclone Oswald, January - February 2013

Species	Status in NSW / Hunter Region			Occurrence within the Hunter Region during Tropical Cyclone Oswald and Other Comments
	NSW Handlist (Morris <i>et al.</i> 1981)	Handbook of Australian, New Zealand and Antarctic Birds (Marchant & Higgins 1990, 1993; Higgins & Davies 1996)	HBOC Checklist (Stuart 2012a)	
White-tailed Tropicbird <i>Phaethon lepturus</i>	Rare. Visitor; recorded November-July. Continental shelf and pelagic waters. Recorded south to about Batemans Bay, mainly found dead or dying.	“Mostly dead or dying birds recorded from Ballina S to Bateman’s Bay” (Vol 1 Part B), suggesting that coastal records are always associated with extreme weather events (though some records have been noted from Maroubra outside of extreme weather events; D. Mitford pers. comm.).	Accidental	A single bird was sighted off Merewether Heights on the afternoon of 31 January 2013. As far as is known, no other White-tailed Tropicbirds were seen in NSW at that time.
Tahiti Petrel <i>Pseudobulweria rostrata</i>	Rare. Visitor; recorded December-April. Continental shelf and pelagic waters. First recorded 1975; all records off Coffs Harbour and Nambucca Heads, likely to occur south to about Hastings River.	“Irregular coastal and offshore sightings since 1975” (Vol 1 Part A).	Rare summer visitor	A single bird was sighted by 2 observers off Newcastle Baths on 29 January 2013. No other reports of this species were made during the Oswald event.
Lesser Frigatebird <i>Fregata ariel</i>	Rare. Visitor; recorded mainly December-March (during cyclonic weather). Found on the Continental Shelf and pelagic waters. Recorded south to about Merimbula, but mainly on the North Coast.	“Down east coast to Byron Bay, with vagrants noted farther south after exceptional weather” (Vol 1 Part B).	Accidental	It is difficult to judge accurately how many Lesser Frigatebird individuals were observed in the Hunter Region during the Oswald event. It is estimated that at least 10 individual birds were present in the Hunter Region based on sightings between 29 January and 3 February. Two birds together were seen on multiple occasions and analysis of photographs allowed a number birds to be individually identified, including immature, adult male and adult female birds. Up to 2006 there were 46 reports in NSW, most from the Far North Coast, but some reports referred to multiple birds. An estimated total of 85 birds were reported in NSW during Oswald (Birding NSW 2013).
Red-footed Booby <i>Sula sula</i>	One record: single bird found beach-washed at Ballina January 1976.	No mention of NSW records, apart from a beachcast bird at Ballina 13 Jan 1976. Said to not stray far from breeding grounds (Vol 1 Part B).	Accidental	A single bird was seen sheltering during the early evening of the 28 January. This species is on the review list of the NSW Ornithological Records Appraisal Committee (ORAC). This bird was accepted as the 12th confirmed record for NSW (NSW ORAC) and the 4th for the Hunter Region. A beachcast Red-footed Booby was found dead at South West Rocks on 29 January (Birdline NSW).

Table 1. Accounts of species observed in the Hunter Region during Tropical Cyclone Oswald, January - February 2013 (cont.)

Species	Status in NSW / Hunter Region			HBOC Checklist (Stuart 2012a)	Occurrence within the Hunter Region during Cyclone Oswald and Other Comments
	NSW Handlist (Morris <i>et al.</i> 1981)	Handbook of Australian, New Zealand and Antarctic Birds (Marchant & Higgins 1990, 1993; Higgins & Davies 1996)			
Black Noddy <i>Anous minutus</i>	Five records: live birds captured Terrigal March 1969; Forster 1972; Toronto March 1978. Sight records Long Reef February 1967; Coffs Harbour May 1977.	“Rare visitor” (Vol 3).	Accidental	It is difficult to be certain, but it is likely that there was more than one Black Noddy present. Some sightings were made of a bird that had an orange “object” dangling from one of its legs (photographed), whilst other photographed birds did not. Several Black Noddies were reported along the NSW coast during Oswald, the most southerly being at Jervis Bay (Birdline NSW). This is only the 2 nd record for this species within the Hunter Region.	
Sooty Tern <i>Onychoprion fuscata</i>	Scarce. Visitor; recorded all months, mainly August-March (found beachwashed mainly February). Continental shelf and pelagic waters. Recorded south to about Bermagui.	“Uncommon but widespread on coast, from Qld border S to waters off Cape Dromedary, near Bermagui, mainly after strong winds” (Vol 3).	Rare summer migrant	The numbers of Sooty Terns off the Hunter Coastline would have been in the hundreds, probably thousands. Birds were observed inland, over the city of Newcastle, making landfall, and there were several reports of 50+ and some of 100+ birds seen on the ocean. Furthermore, reports came from several parts of the Hunter coastline. The numbers of Sooty Terns dwindled markedly from the afternoon of 30 January. Not surprisingly, similar trends in the reports of Sooty Terns were seen along the NSW coastline, and the numbers of birds present in NSW waters at the time must have been staggering.	
Bridled Tern <i>Onychoprion anaethetus</i>	No records	No mention of NSW records at all in Vol 3 (though records for SA and Tasmania discussed).	This is the first recorded for the Hunter Region	A single bird was first sighted from Fort Drive on the afternoon of 30 January. A Bridled Tern was seen about 90 minutes later from the end of Nobbys Breakwall, assumed to be the same bird. The last report was from Nobbys Breakwall on the afternoon of 31 January. This species is on the review list of the NSW Ornithological Records Appraisal Committee (ORAC). This bird was accepted as the 14 th confirmed record for NSW (NSW ORAC) and the 1 st for the Hunter Region. Elsewhere in NSW, a remarkable 31 Bridled Terns came to roost on the evening of 30 January at Flat Rock, near Ballina (Birdline NSW; record yet to be assessed by NSW ORAC). There were no other reports in NSW.	

Flagged and colour-banded Bar-tailed Godwit in the Hunter Estuary

Liz Crawford and Chris Herbert

17 The Quarterdeck, Carey Bay NSW 2283, Australia
chrisliz@internode.on.net

Regular systematic observation of flagged and colour-banded Bar-tailed Godwit *Limosa lapponica* in the Hunter Estuary during two non-breeding seasons (September 2011 to March 2012 and September 2012 to March 2013) identified birds that had been caught previously in New South Wales, Victoria, New Zealand, China and Alaska. The majority of flagged birds (14 in 2011/12 and 18 in 2012/13) were passage birds, staying only for short periods (minimum of 1 to 17 days) before continuing their southward migration. Approximately 2% of the Bar-tailed Godwit in the Hunter Estuary were individually marked with uniquely notched or alphanumeric-engraved leg flags. Bar-tailed Godwit returning to their non-breeding sites in Victoria dominated the passage birds in 2011. However, in 2012 approximately equal proportions of flagged passage birds were destined for Victoria and New Zealand. One colour-banded and three flagged birds stayed in the estuary for both the 2011/12 and 2012/13 non-breeding seasons. These birds had been caught in the Hunter Estuary in 2004 and displayed strong site-fidelity. No mature flagged godwits appeared in the Hunter Estuary during the northward migration period (March - April).

INTRODUCTION

The foundations of modern scientific bird banding were laid in Denmark in 1899 when Christian Mortensen placed aluminium bands, stamped with numbers, on the legs of 162 young starlings (Purchase 1969). The technique was rapidly adopted elsewhere. In Australia the first bands stamped with unique series of numbers were used in 1912 (Purchase 1969). Recovery of band numbers both in Australia and overseas has greatly assisted in clarifying migration routes. However, birds had to be re-caught or found dead for the bands to be read. Since 1990, coloured leg flags have been used on migratory shorebirds in Australia, in addition to metal bands (Australasian Wader Studies Group website 2012). Leg flags are small plastic bands with a tab on the end making them readily visible in the field by observers using binoculars or telescopes. The flagging program is international with different coloured flags or combinations of flags unique to particular countries or banding sites. This has revolutionised shorebird migration studies as it is not necessary for birds to be caught to work out where the birds have been banded. More recently, leg flags engraved with an alpha-numeric code have been used to individually mark birds.

Australian sightings of colour-banded or flagged shorebirds are reported to the Australasian Wader

Study Group (AWSG), which maintains a database and regularly publishes summaries of flag sightings, indicating general migration routes throughout the East Asian-Australasian Flyway (EAAF) (e.g. Minton *et al.* 2006). Similarly, the New Zealand Wader Study Group (NZWSG) maintains a database of banded and flagged birds. Based on this data, Riegen (1999) proposed two southward migration routes for Bar-tailed Godwit *Limosa lapponica* from Alaska to New Zealand: one directly across the Pacific Ocean, the other via Kamchatka Peninsula, the Yellow Sea and the Gulf of Carpentaria. Subsequently, satellite tracking of several Bar-tailed Godwit from New Zealand and several from Alaska provided amazing details of their migration routes (Battley *et al.* 2012, Gill *et al.* 2009). It is now known that Bar-tailed Godwit coming to eastern Australia and New Zealand are mainly the subspecies *Limosa lapponica baueri*, that breed in Alaska between late May and early August (Woodley 2009). After breeding, the birds fly south, non-stop, directly across the Pacific to eastern Australia and New Zealand (Battley *et al.* 2012), where they spend the non-breeding season (from September to March). Towards the end of March and into April, the birds fly north to stage in the Yellow Sea for about a month before flying on to their breeding grounds in May.

During the non-breeding season, mature Bar-tailed Godwit are known to be site-faithful, whereas

immature Bar-tailed Godwit are known to wander between non-breeding areas, only becoming site-faithful after making their first breeding migration (C.D.T. Minton pers. comm.; Battley *et al.* 2011). First-year Bar-tailed Godwit do not breed and spend the entire year in the southern hemisphere. During their second year, partial northward migration (April to May) may take place, but it is not until their third year that migration to the breeding grounds occurs (C.D.T. Minton pers. comm.). Consequently, Bar-tailed Godwit spending the months from April to August in the Hunter Estuary will be predominantly immature birds that are yet to make a complete northward migration. Some, however, may be old or injured birds that are no longer capable of the endurance required to complete the >20,000km round trip to and from the breeding grounds (Riegen 2013).

During May 2004, 15 Bar-tailed Godwit were caught and colour-banded in the Hunter Estuary to study the behaviour and movements of what were considered to be over-wintering immature birds (Richardson 2004). These birds were colour-banded with orange-over-green bands. During November 2004, another 15 Bar-tailed Godwit were caught in the estuary and *flagged* with individually notched orange-over-green flags (Foate 2005). These were mostly mature birds recently arrived after breeding. Radio transmitters were glued to the backs of these birds so that their behaviour and movement throughout the estuary could be studied. Five of the transmitters were preened off within 65 days (Foate 2005) and the others would have been shed when the birds moulted.

For many years, flagged and colour-banded birds were noted occasionally in the Hunter Estuary, but systematic searches for flagged or colour-banded birds were not carried out. We commenced regular monitoring in September 2011 and continued through the non-breeding season until April 2012. Monitoring was repeated during the 2012/13 non-breeding season. It revealed that most flagged Bar-tailed Godwit passed through the estuary on southward migration between late September and late October, while a few flagged birds stayed for the whole non-breeding season. Because some birds were individually marked, it was possible to estimate the time they spent in the estuary before moving on.

Although the advent of satellite tracking has recently confirmed migration routes for nine Bar-tailed Godwit from New Zealand and eight from Alaska (Battley *et al.* 2012), there is still much to

be learnt from observations of flagged and colour-banded birds: Are they always site-faithful? How long do they spend at stop-over sites during southward migration? Do they regularly use the same stop-over sites? Where is their final non-breeding season destination? Do they stop-over in the Hunter Estuary on northward migration? Where do they stop-over on northward migration? Where do the Hunter Estuary site-faithful godwits breed?

Observations of Bar-tailed Godwit bearing coloured flags or bands in the Hunter Estuary during the 2011/12 and 2012/13 non-breeding seasons provide answers to some of these questions.

METHODS

During high-tide periods, most shorebirds in the Hunter Estuary roost on the Kooragang Dykes (32°52'30" S 151°46'00" E) and Stockton Sandspit (32°53'56" S 151°47'26" E) (**Figure 1**). Kooragang Dykes is accessible only by boat, but Stockton Sandspit is easily monitored on foot. Roosting flocks on the Kooragang Dykes were scanned using binoculars (Swarovski 10x42) from a small motorboat and photographed with a digital camera (Canon 550D, 400mm lens) to confirm or clarify leg-flag sightings. With care, birds could be approached to within approximately 10 metres while observers remained in the boat. At Stockton Sandspit roosting and foraging birds were scanned using a telescope (Swarovski HD 80mm x30) from distances of approximately 20 to 70 metres and photographed to confirm or clarify observations.

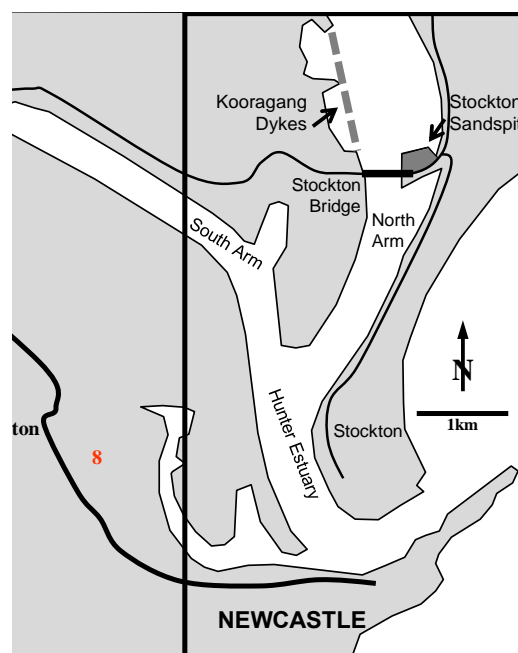


Figure 1. Shorebird roost sites at Kooragang Dykes and Stockton Sandspit (arrows) where band and flag searches were conducted.

It was difficult to detect flagged birds among roosting shorebirds because they often stood on one leg and crowded together. Although the front row was readily visible, those behind were largely obscured. However, as the tide fell, birds began to move about to preen, bathe and begin foraging, particularly at Stockton Sandspit where the falling tide exposed mudflats adjacent to the roost site. The optimum time for scanning shorebirds at Stockton Sandspit, when the birds were resting on the beach on the northern side of the Sandspit, was about two to four hours after high-tide. Disturbance by raptors or fishermen moving close to the roost sites also provided opportunities for leg-flag observations as the birds lowered their tucked-up legs and moved in response to the intrusion. Repeated scanning of the flock was necessary to find all the flagged birds present.

Observations of roosting shorebirds at Stockton Sandspit commenced on 1 September 2011 and were carried out every week during September, every two to three days during October and weekly from November 2011 to early April 2012. Similar observations were made from 1 September 2012 until 13 March 2013. No observations were made from 14 March to mid April 2013 during the main period of northward migration due to the authors' absence. Less frequent weekly observations were made at Kooragang Dykes owing to the difficulty of access. Fortunately, most Bar-tailed Godwit present in the estuary were visible at Stockton Sandspit, as those roosting on Kooragang Dykes would often fly to Stockton Sandspit as the tide fell and mudflats were exposed.

Leg-flag observations were reported to AWSG, which supplied banding locations and dates. In previous years, searches for flagged and colour-banded birds were less systematic. However, a number of valuable observations were recorded and drawn on where appropriate for an understanding of the 2011/12 and 2012/13 sightings. Plain-coloured flags indicate where shorebirds were caught and banded. International protocol determines colour combinations for each region: orange flags were placed on birds caught in Victoria; orange-over-green flags in NSW; white or red flags in New Zealand; green-over-orange flags in China; and black flags in Alaska.

Although plain-coloured flags do not identify individual birds, frequent thorough observations of flocks revealed discrete periods when one, two or three of the same plain-colour-flagged birds were present in the estuary and periods when they were absent. Consistent numbers of plain-colour-flagged birds over a particular time period were assumed to be the same birds. A change in numbers indicated that new birds arrived or that birds departed from the estuary. In addition, individual birds were identified by notches cut into the flags, by alphanumeric codes engraved on the flags, or by additional coloured leg bands in unique combinations (**Figure 2**).



(a)



(b)



(c)

Figure 2. (a) Bar-tailed Godwit with orange-over-green flags, both notched underneath (caught and flagged at Stockton Sandspit, Hunter Estuary, NSW); (b) Bar-tailed Godwit with orange flag with a notch (caught and flagged at Stockton Sandspit, Hunter Estuary, NSW and originally flagged with orange-over-green flags; green flag lost before October 2009); and (c) Bar-tailed Godwit with orange flag engraved KS (caught and flagged at Corner Inlet, Victoria). Photos by Chris Herbert.

RESULTS

Sightings revealed three categories of birds: first, passage birds that stage for a short time in the Hunter Estuary during southward migration (September to December); secondly, birds which had reached their final destination and stayed throughout the entire non-breeding period (September to March); and thirdly, a young bird on partial northward migration (March to April). We observed 18 flagged and colour-banded birds in 2011/12 and 23 in 2012/13 (**Figure 3**). Of these, 14 were passage birds in 2011/12 and 18 in 2012/13 (**Tables 1** and **2**). Also, four flagged birds stayed for the entire non-breeding season – the same four birds in 2011/12 and 2012/13. One young bird (less than one year old) arrived in the Hunter from Victoria in March 2013 on what was likely to be partial northward migration.

Passage birds

An increase above the usual number of over-wintering Bar-tailed Godwit in the Hunter Estuary was recorded on 15 September 2011 and 15 September 2012, indicating the first arrivals on southward migration for the non-breeding seasons 2011/12 and 2012/13 respectively (**Table 3**). However, *flagged* Bar-tailed Godwits were not seen in the estuary until 27 September 2011 and 26 September 2012. In 2011 ten Bar-tailed Godwit flagged in Victoria (orange flags), two flagged in New Zealand (white or red flags), one flagged in Alaska (black flag) and one flagged in China (green-over-orange flags) passed through the Hunter Estuary (**Table 1**). In 2012 eight Bar-tailed Godwit flagged in Victoria (orange flags), eight flagged in New Zealand (white flags) and two flagged in China (green-over-orange flags) passed through the Hunter Estuary on southward migration (**Table 2**).

Three individually marked birds have made repeat visits to the Hunter Estuary while on southward migration (**Table 4**). One consistently staged in the first half of October (orange flag engraved 59) while the timing of the other has been less consistent (orange flag engraved SS). The third bird (white flag engraved BLN) was first recorded in the estuary in October 2009 while on southward migration. However, in 2012 it arrived much later, on 23 December, with only one foot. It stayed until 2 January 2013 before moving on.

Passage of flagged Bar-tailed Godwits ended on or shortly after 1 November 2011 and 31 October 2012 respectively, except for the disabled godwit (white flag engraved BLN) that arrived on 23 December 2012.

Birds that stayed in the Hunter Estuary for the non-breeding season

The same three orange-over-green flagged and one colour-banded Bar-tailed Godwit stayed in the Hunter Estuary for both the 2011/12 and 2012/13 non-breeding seasons, with observed durations ranging from 148 to 178 days in 2011/12 and 158 to 169 days in 2012/13 (**Tables 1** and **2**, **Figure 3**). One of these godwit was caught and colour-banded in the estuary as an immature bird in May 2004 (Richardson 2004); and three were flagged in the estuary as adult birds in November 2004 (Foate 2005).

At the end of the 2011/12 non-breeding season, Bar-tailed Godwit departed from the Hunter Estuary on northward migration from early March to 5 April 2012, when an over-wintering flock of 171 birds remained (**Table 3**). On 26 March 2012, the last observations of flagged Bar-tailed Godwit were made in the Hunter Estuary - by 28 March 2012 no flagged birds remained. Departure of birds on northward migration at the end of the 2012/13 non-breeding season was not observed owing to the absence of the authors from the estuary.

Birds on partial northwards migration

One Victorian-flagged bird arrived on 9 March 2013, probably on partial northward migration as it was less than one year old (orange flag engraved ALL - see **Table 2**). This bird stayed in the Hunter Estuary for the entire winter of 2013 and was still in the estuary in September 2013 when birds arrived on southward migration from the breeding grounds.

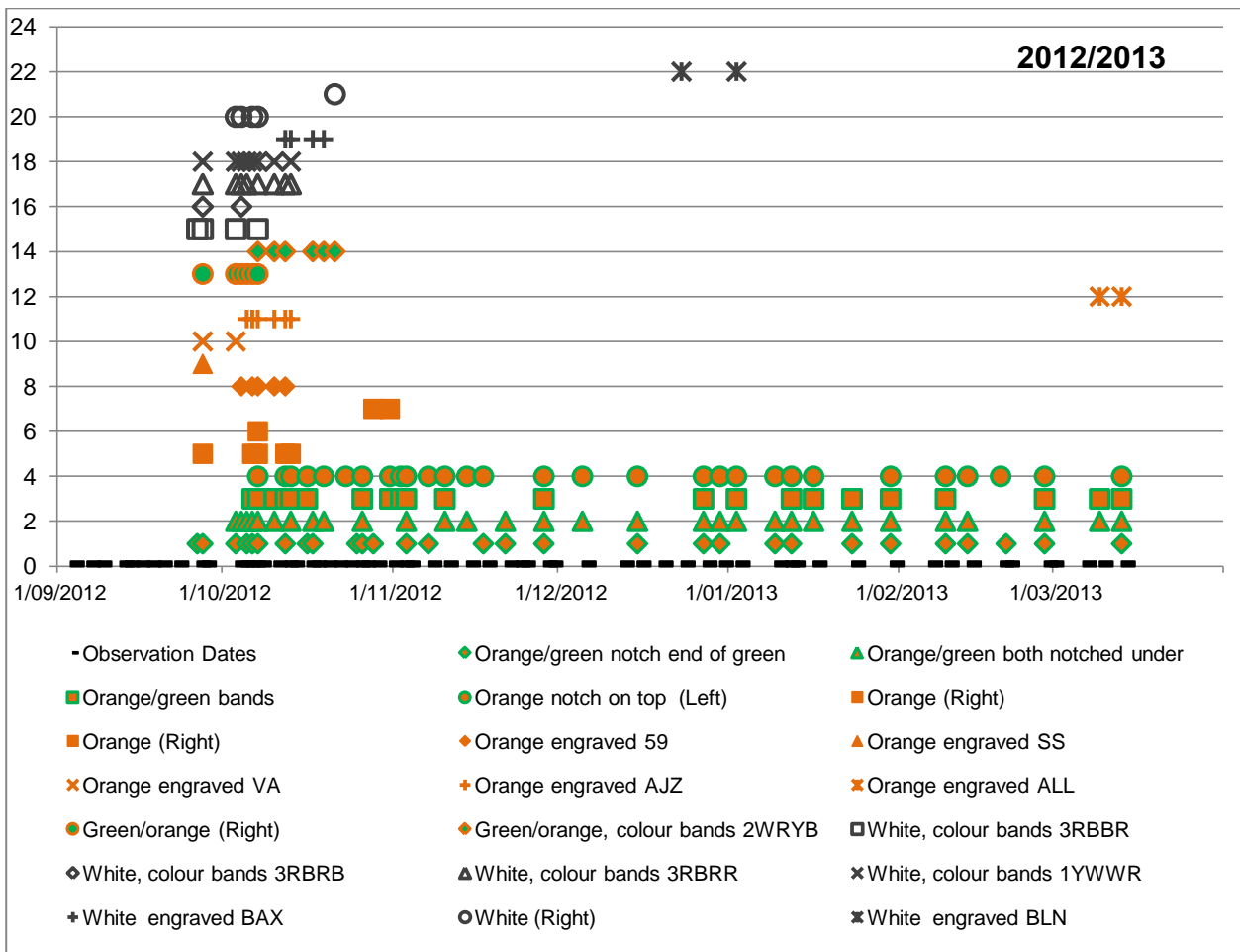
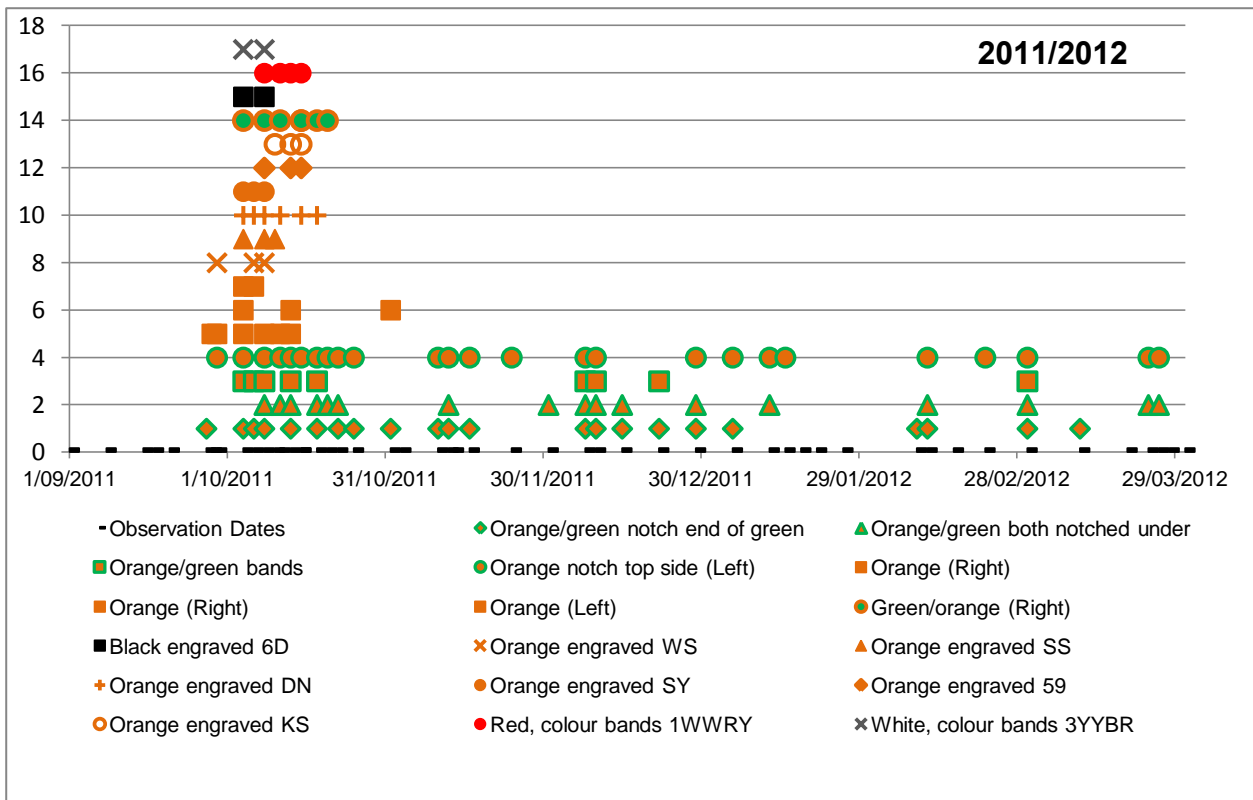


Figure 3. Flagged and colour-banded Bar-tailed Godwit sighted in the Hunter Estuary during the 2011/12 and 2012/13 non-breeding seasons. The y-axis shows cumulative total of flagged and colour-banded godwit. See footnote 4 on **Table 1** for explanation of colour-band naming convention.

Table 1. Flagged and colour-banded Bar-tailed Godwit in the Hunter Estuary during the 2011/12 non-breeding season

Flags (unless stated otherwise)	Flag Position on Leg	Banding Location	Date Banded	Metal Band No.	Age at banding	Age in April 2012	First Observation	Last Observation	Minimum Days in Estuary
Orange-over-green BANDS ¹	Right upper	Hunter Estuary, NSW	2/05/2004		1+	9+	4/10/2011	1/03/2012	148
Orange-over-green (notch in end of green flag) ²	Left upper	Hunter Estuary, NSW	14/11/2004				27/09/2011	11/03/2012	165
Orange-over-green (both flags notched underside) ²	Right upper	Hunter Estuary, NSW	14/11/2004				8/10/2011	26/03/2012	169
Orange (notch on top edge) ³ (originally banded with orange-over-green flags)	Left upper	Hunter Estuary, NSW	14/11/2004	072-69361	2+	9+	29/09/2011	26/03/2012	178
Orange	Right upper	Victoria	since 1990				28/09/2011	13/10/2011	16
Orange	Right upper	Victoria	since 1990				4/10/2011	13/10/2011	10
Orange	Right upper	Victoria	since 1990				1/11/2011	1/11/2011	1
Orange	Left upper	Victoria	since 1990				4/10/2011	6/10/2011	3
Orange engraved WS	Right upper	Corner Inlet, Vic	1/02/2011	07363792	3+	3+	29/09/2011	8/10/2011	10
Orange engraved DN	Right upper	Corner Inlet, Vic	26/06/2010	07359576	1+	2+	4/10/2011	18/10/2011	15
Orange engraved SS	Right upper	Barwon Heads, Vic	18/01/2011	07363762	3+	3+	4/10/2011	10/10/2011	7
Orange engraved SY	Right upper	Barwon Heads, Vic	18/01/2011	07324195	3+	3+	4/10/2011	8/10/2011	5
Orange engraved 59	Right upper	Corner Inlet, Vic	7/02/2009	07336876	2+	5+	8/10/2011	15/10/2011	8
Orange engraved KS	Right upper	Corner Inlet, Vic	26/06/2010	07363809	1+	2+	10/10/2011	15/10/2011	6
Green-over-orange	Right upper	Yalu Jiang, China	24 - 28/04/2002		2+	12+	4/10/2011	20/10/2011	17
Black engraved 6D	Right upper	Colville River, North Slope, Alaska	4/07/2009	86403735	2+	5+	4/10/2011	8/10/2011	5
Red with coloured bands R1WWR ⁴	Left upper	Waimea Estuary, South Is, NZ	20/10/2009	Y12324	3+	5+	8/10/2011	15/10/2011	8
White with coloured bands W3YYBR ⁴	Left lower	Farewell Spit, South Is, NZ	2/02/2006	Y12406	3+	5+	4/10/2011	8/10/2011	5

¹ Bar-tailed Godwits with orange-over-green bands were banded in the Hunter Estuary as part of a Bachelor of Environmental Science Honours Thesis (Richardson 2004).

² Bar-tailed Godwits fitted with radio transmitters at the time of banding, as part of a Bachelor of Environmental Science Honours Thesis (Foate 2005). Various notches cut in the orange and/or green flags allowed identification of individuals. Unfortunately, there is no record of metal band numbers corresponding to the notched flags.

³ The metal band on this Bar-tailed Godwit was read from digital photographs of the bird in the wild. The bird was flagged in the Hunter Estuary originally with orange-over-green flags. The green flag was lost sometime between March 2005 and October 2009.

⁴ Convention for describing colour flags and bands. R = Red, W = White, Y = Yellow and B = Blue. The first letter is the flag colour, followed by a numeral giving the position of the flag relative to the colour bands and legs. The next two letters describe the colour bands on the left leg, followed by two letters describing the colour bands on the right leg. The flag position is given the numeral 1 when the flag is above the colour bands on the left leg; 2 when the flag is above the colour bands on the right leg; 3 when the flag is between the colour bands on the left leg; and 4 when the flag is between the colour bands on the right leg.

Table 2. Flagged and colour-banded Bar-tailed Godwit in the Hunter Estuary during the 2012/13 non-breeding season

Flags (unless stated otherwise)	Flag Position on Leg	Banding Location	Date Banded	Metal Band No.	Age at banding	Age in April 2013	First Observation	Last Observation	Minimum Days in Estuary
Orange-over-green BANDS	Right upper	Hunter Estuary, NSW	2/05/2004		1+	10+	6/10/2012	13/03/2013 ¹	159
Orange-over-green (notch in end of green flag)	Left upper	Hunter Estuary, NSW	14/11/2004				26/09/2012	13/03/2013 ¹	169
Orange-over-green (both flags notched underside)	Right upper	Hunter Estuary, NSW	14/11/2004				3/10/2012	13/03/2013 ¹	162
Orange (notch on top edge) (originally banded with orange-over-green flags)	Left upper	Hunter Estuary, NSW	14/11/2004	072-69361	2+	10+	7/10/2012	13/03/2013 ¹	158
Orange	Right upper	Victoria	since 1990				27/09/2012	27/09/2012	1
Orange	Right upper	Victoria	since 1990				6/10/2012	13/10/2012	8
Orange	Right upper	Victoria	since 1990				7/10/2012	7/10/2012	1
Orange	Right upper	Victoria	since 1990				28/10/2012	31/10/2012	4
Orange engraved SS	Right upper	Barwon Heads, Vic	18/01/2011	07363762	3+	4+	27/09/2012	27/09/2012	1
Orange engraved VA	Right upper	Barwon Heads, Vic	18/01/2011	07301642	3+	4+	27/09/2012	3/10/2012	7
Orange engraved 59	Right upper	Corner Inlet, Vic	7/02/2009	07336876	2+	6+	4/10/2012	12/10/2012	9
Orange engraved AJZ	Right upper	Rhyll, Phillip Is, Victoria	11/02/2012	07364151	3+	4+	5/10/2012	13/10/2012	9
Orange engraved ALL ²	Right upper	Barwon Heads, Victoria	18/12/2012	07370305	1	1	9/03/2013	11/05/2013	64
Green over orange	Right upper	Yalu Jiang, China	24 - 28/04/2002		2+	13+	27/09/2012	7/10/2012	11
Green-over-orange with coloured bands GO2WRYB	Right upper	Yalu Jiang, China	2/04/2012	G09-4641	NR		7/10/2012	21/10/2012	15
White with coloured bands W3RBBR	Lower left	Christchurch, New Zealand	20/11/2009	Y12354	3+		26/09/2012	7/10/2012	12
White with coloured bands W3RBRB	Lower left	Christchurch, New Zealand	20/11/2009	Y12348	3+		27/09/2012	4/10/2012	8
White with coloured bands W3RBRR	Lower left	Christchurch, New Zealand	20/11/2009	Y12347	2+		27/09/2012	13/10/2012	17
White with coloured bands W1YWWR	Upper left	Golden Bay, New Zealand	13/12/2004	Y11257	1		27/09/2012	13/10/2012	17
White engraved BAX	Right upper	Miranda, Firth of Thames, NZ	21/11/2009	Y6640	3+	6+	12/10/2012	19/10/2012	8
White	Right upper	New Zealand	since Dec 1991				3/10/2012	7/10/2012	5
White	Right upper	New Zealand	since Dec 1991				21/10/2012	21/10/2012	1
White engraved BLN ³	Right upper	Miranda, Firth of Thames, NZ	14/02/2009	Y8698	3+	7+	23/12/2012	2/01/2013	11

¹ The last observation on 13 March 2013 was prior to departure of these birds on northward migration, so residence time in the Hunter Estuary may have been longer.

² This Bar-tailed Godwit (orange engraved ALL) may be wandering between non-breeding sites before making its first migration to the northern hemisphere breeding grounds in 2014.

³ This Bar-tailed Godwit (white engraved BLN) arrived much later than the usual influx of birds on southward migration. However, it had lost a foot and this disability may have delayed its migration.

Table 3. Counts of Bar-tailed Godwit flock and coincident numbers of flagged and colour-banded Bar-tailed Godwit at Stockton Sandspit, Hunter Estuary during the 2011/12 non-breeding season.

Survey Date	Southward migration (September to December)												Northward migration (March-April)				
	1/09/2011	15/09/2011	29/09/2011	4/10/2011	8/10/2011	11/10/2011	15/10/2011	20/10/2011	22/10/2011	25/10/2011	1/11/2011	3/11/2011	12/11/2011	26/03/2012	28/03/2012	31/03/2012	5/04/2012
No. of Flagged Bar-tailed Godwits	0	0	4	12	14	10	9	5	4	4	5	4	4	2	0	0	0
Bar-tailed Godwit Count	201 ¹	269	342	-500	475	846	909	546	750	714	779	674	785	538	507	337	171 ²
% Flagged of count	0	0	1.2	2.6	3.2	1.2	1.0	0.9	0.5	0.6	0.6	0.6	0.5	0.4	0	0	0

Note: ¹ Average of over-wintering counts (May to August 2011) for Bar-tailed Godwit in the Hunter Estuary.
² Over-wintering population of Bar-tailed Godwit.

Table 4. Repeat sightings of individually flagged Bar-tailed Godwit in the Hunter Estuary.

Flag	Date & Place Flagged	Sightings in Hunter Estuary			
		2009/10	2010/11 ¹	2011/12	2012/13
Orange engraved 59	7/02/2009 Victoria	9 to 17/10/2009		8 to 15/10/2011	4 to 12/10/2012
Orange engraved SS	18/01/2011 Victoria			4 to 10/10/2011	27/09/2012
White engraved BLN	14/02/2009 New Zealand	2/10/2009			23/12/2012 - 2/01/2013 ²

Note: ¹ No observations were made from late September to mid-October 2010, the period of southward migration.
² This bird lost its left foot sometime since October 2009.

DISCUSSION

Flagging and banding studies of shorebirds in Australia and New Zealand indicate a range of possible behaviours for Bar-tailed Godwit that can be related to the observations presented above:

- *Immature* birds banded in the Hunter Estuary during winter *may or may not be site faithful*;
- *Adult* birds banded in the Hunter Estuary after their first breeding attempt and subsequent southward migration *are likely to be site faithful* to the Hunter Estuary and remain throughout the non-breeding season (October to March);
- *Immature* birds banded in Victoria or New Zealand are not necessarily site faithful and therefore may or may not return to their banding sites after their first migration north to breed;
- *Adult* birds banded in Victoria or New Zealand are likely to be faithful to those banding locations and will only be observed in the Hunter Estuary for short periods as they pass through during southward migration. These birds will not visit the Hunter Estuary during northward migration; and
- *Adult* birds banded in the northern hemisphere that are seen in the Hunter Estuary are most likely to be passage birds because the population in the Hunter in the non-breeding season is a very small proportion of the total population occurring in the East Asian-Australasian Flyway [less than 1% of Bar-tailed Godwit stay in the Hunter Estuary - approximately 800 birds out of 155,000 Bar-tailed Godwit that spend the non-breeding season in southeast Australia and New Zealand (Bamford *et al.* 2008; Woodley 2009)].

In the following discussion we examine our results for evidence of these behaviours.

Peak passage of Bar-tailed Godwit through the Hunter Estuary

As indicated in **Tables 1** and **2** and **Figure 3**, the number of flagged Bar-tailed Godwit observed was highest in early October. Fourteen of the 18 flagged and colour-banded birds present in September-October 2011 and 18 of the 22 flagged and colour-banded birds present in September-October 2012 were passage birds, suggesting that the number of godwits passing through the estuary also peaked at that time. Higgins & Davies (1996, p.87) noted that Bar-tailed Godwit arrive in eastern Queensland by early August, with temporary influxes on the east coast till November, suggesting birds move south down the coast; numbers at most sites in south-eastern Australia increase in late September. The observations of flagged birds present in the Hunter Estuary during September/October support this assessment.

An interesting exception to this pattern was a Bar-tailed Godwit flagged in New Zealand in February 2009 with a white flag engraved BLN. This bird had staged in the Hunter Estuary in October 2009, during the usual peak passage time. However in 2012 it arrived very late - on 23 December - and stayed for at least 11 days before moving on, presumably to New Zealand. Unfortunately, the bird had lost its left foot. This disability may have reduced its foraging success and consequently delayed its departure on southward migration.

Site infidelity of immature Bar-tailed Godwit

In a study of Bar-tailed Godwit movements in New Zealand, Battley *et al.* (2011, p. 35) found that young godwits "... may wander widely around New Zealand before settling on a non-breeding site (which may or may not be where the bird was caught and banded)." Bar-tailed Godwits usually make their first migration to the northern hemisphere breeding grounds when they are more than two years old (C.D.T. Minton pers. comm.).

One Bar-tailed Godwit with orange-over-green bands stayed in the Hunter Estuary for both the 2011/12 and 2012/13 non-breeding seasons. This bird was one of fifteen caught in the Hunter Estuary in May 2004 from an over-wintering flock of immature Bar-tailed Godwit (Richardson 2004). In the summer of 2004/05 immediately following banding, one orange-over-green banded Bar-tailed

Godwit was seen in the North Island of New Zealand (AWSG database) and one was seen in the Hunter Estuary. In the summer of 2007/08 up to two birds were seen in New Zealand and one was seen in the Hunter Estuary. In the summer of 2009/10 one bird was seen in New Zealand and two in the Hunter Estuary, where one stayed for the entire non-breeding season while the other bird passed through, being seen only in October 2009. Only one orange-over-green banded bird has been seen in the Hunter Estuary since October 2011. This bird appears to be atypical of other birds in the banded cohort that have not returned. It is likely that several of these birds have adopted New Zealand as their preferred non-breeding area. Indeed, it appears that all but one godwit from the fifteen immature birds caught in the estuary in 2004 have either died or relocated elsewhere. This is consistent with Battley *et al.*'s (2011) observation that immature Bar-tailed Godwits wander widely from site to site before settling on a non-breeding area when mature.

Site fidelity of mature Bar-tailed Godwit flagged in the Hunter Estuary

Mature Bar-tailed Godwits are known to be highly site-faithful. Battley *et al.* (2011, p.35) found that: "Overall, adult godwits can be characterised as highly site-faithful birds that apparently only infrequently venture far from their 'usual' non-breeding site. They are highly likely to return to the same non-breeding site year after year." Passage through the Hunter Estuary of all Victorian-flagged and all New Zealand-flagged godwits on southward migration supports this, particularly when subsequent sightings of these birds were made at their original flagging sites.

On 14 November 2004, 15 presumed mature Bar-tailed Godwit were caught and flagged in the Hunter Estuary. Uniquely notched flags were placed on each bird so that they could be individually identified in the field using a telescope (Foate 2005) (**Figure 2**). Three of these birds spent both the 2011/12 and 2012/13 non-breeding seasons in the Hunter Estuary, demonstrating their site fidelity.

Six orange-over-green flagged birds (presumably mature when flagged in November 2004) returned to the estuary in the following 2005/06 non-breeding season and again in the 2007/08 non-breeding season, indicating continued site fidelity (no specific flag searches were conducted in 2006/07). Only four birds were present in the 2008/09 and 2009/10 non-breeding seasons, but

during the 2011/12 and 2012/13 non-breeding seasons, only three were present. Assuming these birds were site-faithful, it is possible that we have been recording natural attrition over the nine-year period since the birds were flagged.

It is interesting to note that in the year following the catching and flagging, two orange-over-green flagged Bar-tailed Godwit were seen in New Zealand in the 2005/06 non-breeding season (one in the North Island and one in the South Island) and two were recorded together in the North Island in the 2010/11 non-breeding season. These birds may not have been full adults as presumed when caught in the Hunter Estuary and may have made their first breeding migration after being flagged in November 2004 and then subsequently relocated to New Zealand as mature birds in the 2005/06 non-breeding season.

In addition, a single orange-over-green flagged Bar-tailed Godwit was sighted in Queensland on 10 October 2006 and 16 November 2006 (AWSG database). As flagged Bar-tailed Godwit were observed to pass through the Hunter Estuary before the end of October, it is likely that movement of Bar-tailed Godwit down the coast from Queensland would have been completed earlier than mid-November. Thus it seems likely that this bird had adopted Queensland as its non-breeding site for 2006/07.

Staging and breeding sites

Single orange-over-green *banded* birds have been recorded on northward migration in South Korea (2 May 2005) and Japan (21 April 2008 and 10 April 2009) and on the Alaskan breeding grounds (18 June 2010) (AWSG database). Single orange-over-green *flagged* birds have also been sighted on northward migration in South Korea (April 2006, May 2007, May 2008 and April 2012) and have been recorded in Alaska at the end of the breeding season (13 August 2005 and 20 August 2006) (AWSG database). These sightings confirm that Bar-tailed Godwit from the Hunter Estuary use the Yellow Sea area as a stop-over site during northward migration and also that they breed in Alaska. A Bar-tailed Godwit with a black leg flag engraved 6D, caught on the breeding ground in Alaska in 2009, stayed for a minimum of five days in the Hunter Estuary in October 2011 before moving on (**Table 1**). This is direct confirmation that Bar-tailed Godwit staging in the Hunter Estuary breed in Alaska.

Further evidence of birds staging in the Yellow Sea on northward migration comes from observations of a Bar-tailed Godwit with green-over-orange flags, which had been caught in Yalu Jiang, China, on northward migration in April 2002. This bird subsequently staged in the Hunter Estuary from 4 to 20 October 2011 on southward migration. A similarly flagged bird staged in the Hunter Estuary from 27 September to 7 October 2012 before moving on. A Yalu Jiang-flagged godwit had also been seen previously on 19 September 2008 (M. Roderick pers. comm.). Without individual identification marks, it is not possible to know whether these are repeat visits by the same bird or visits by three different birds. However, an individually marked godwit caught at Yalu Jiang on 2 April 2012 staged in the Hunter Estuary from 7 to 24 October 2012 (green-over-orange flags with colour bands - see **Table 2**). We will be searching for this bird in October 2013 to determine if it habitually stages in the Hunter Estuary.

Lack of sightings in Asia during southward migration correlates with the results of satellite-tracking, which showed Bar-tailed Godwit were migrating directly across the Pacific Ocean to southeast Australia and New Zealand from their Alaskan breeding grounds (Battley *et al.* 2012).

Bar-tailed Godwit flagged in Victoria

All Victorian-flagged birds (10 in the 2011/12 and 8 in the 2012/13 non-breeding seasons) passed through the Hunter Estuary during southward migration, spending up to 17 days in the estuary before presumably continuing their southward migration to Victoria.

One individually marked bird (orange flag engraved 59) has been seen in the Hunter Estuary in the first half of October in 2009, 2011 and 2012 (**Table 4**), suggesting that it regularly stages in the Hunter Estuary on southward migration.

In March 2013, during northward migration, a Bar-tailed Godwit flagged in Victoria in December 2012 (orange flag engraved ALL) as a first-year bird, arrived in the Hunter Estuary (**Table 2**). This young bird lacked breeding plumage and had not laid on fat reserves in preparation for migration (Woodley 2009). It was still present in the Hunter Estuary on 11 May 2013, as part of the overwintering godwit flock. It appeared to be an example of an immature bird wandering between sites before making its first full migration to the breeding grounds.

Bar-tailed Godwit flagged in New Zealand

Only 2 of the 18 flagged Bar-tailed Godwit (11%) observed in the Hunter Estuary in 2011/12 were caught previously in New Zealand; however, 8 out of the 23 flagged birds (35%) observed in the Hunter Estuary in 2012/13 had been caught previously in New Zealand (**Tables 1 and 2**). Five of these birds (two from 2011 and three from 2012) with distinctive colour-band combinations were subsequently seen at their original banding sites in New Zealand, confirming that they had completed their southward migration to their non-breeding sites (**Table 5**).

Satellite-tracking of Bar-tailed Godwit from New Zealand showed that these birds flew north to stage in the Yellow Sea, then flew to Alaskan breeding grounds and, after breeding, flew back to New Zealand directly across the Pacific Ocean (Gill *et al.* 2009; Battley *et al.* 2012). So it is not surpris-

ing that relatively few godwits flagged in New Zealand appear in New South Wales, as was the case in 2011/12. However, it has been suggested that if the birds encounter adverse weather conditions on their southward flight from the breeding grounds, they may divert to eastern Australia (Gill *et al.* 2009). It is possible that adverse weather conditions affected a significant number of migrating godwits in late September 2012, resulting in the arrival of four New Zealand-flagged birds on or about 26 September 2012. However, weather maps around the time of southward migration did not display particularly adverse winds prior to 26 September and it may be that, due to the prevailing strong south-easterly trade winds north of New Zealand, the birds simply drift off course to the west during migration and stage in the Hunter Estuary for a relatively short time before making the final flight across the Tasman Sea to New Zealand.

Table 5. Re-sighting records for New Zealand-flagged birds seen in the Hunter Estuary (NZWSG database)

NZ Flag and Colour bands	Banding Date	Banding Location in New Zealand	Sighted in Hunter Estuary	Sighted in New Zealand	Sighting Location in New Zealand
White flag W3YYBR ¹	2/02/2006	Farewell Spit, South Island	4/10/2011 - 8/10/2011	10/01/2012	Golden Bay
Red flag R1WWRY	20/10/2009	Waimea Estuary, South Island	8/10/2011 - 15/10/2011	29/11/2011; 14/03/2012	Waimea Estuary
White flag W3RBBR	20/11/2009	Christchurch	26/09/2012 - 7/10/2012	17/10/2012	Christchurch
White flag W3RBRB	20/11/2009	Christchurch	27/09/2012 - 4/10/2012	18/10/2012	Christchurch
White flag W3RBRR	20/11/2009	Christchurch	27/09/2012 - 13/10/2012	18/10/2012	Christchurch

Note: ¹ W = White; Y = Yellow; B = Blue; R = Red. The first letter is the flag colour; the first numeral is the position of the flag relative to the colour bands and legs; the next two letters are the colour bands on the left leg; the last two letters are the colour bands on the right leg.

CONCLUSIONS

Flagged and colour-banded Bar-tailed Godwit observed in the Hunter Estuary during the 2011/12 and 2012/13 non-breeding seasons show that Bar-tailed Godwit on southward migration stage in the Hunter Estuary for periods ranging from a minimum of 1 to 17 days. Staging occurs mainly from late September to late October, when hundreds of Bar-tailed Godwit may use the estuary as an important re-fuelling site on southward migration. Repeat visits indicate that some godwits en route to Victoria regularly use the Hunter Estuary as a staging site on southward migration. Bar-tailed Godwit destined for New Zealand may be diverted to the east coast of Australia by adverse weather conditions during

their trans-Pacific flight from the Alaskan breeding grounds, or they may simply drift off-course due to the persistent southeast trade winds north of New Zealand. After staging, these birds depart the Hunter Estuary to continue their migration to New Zealand.

The estuary is also an important site for Bar-tailed Godwit to stay for the non-breeding season, with approximately 780 birds in 2011/12 and 800 birds in 2012/13. The same three flagged and one colour-banded godwit demonstrated site-fidelity to the Hunter Estuary over both non-breeding seasons.

Most Bar-tailed Godwit colour-banded as immature birds in the Hunter Estuary adopted

other sites for the non-breeding season following their initial migrations. The propensity of immature Bar-tailed Godwit to wander between sites until their first breeding migration has been demonstrated by an individually marked bird flagged in Victoria in December 2012, in its first year. It appeared in the Hunter Estuary during the northward migration period in March 2013 and has joined the over-wintering group of around 210 Bar-tailed Godwit still present at the end of April 2013.

Birds preparing for northward migration from southern parts of Australia lay on fat stores that make them capable of long-distance migration, with the Yellow Sea the most likely first landfall (Battley *et al.* 2011). Our observations confirm that mature birds migrating from further south have no need to stage in the Hunter Estuary on northward migration.

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REFERENCES

- Australasian Wader Studies Group website (2012). <http://www.awsg.org.au/flagging.php> Accessed 9 November 2012.
- Bamford, M., Watkins, D., Bancroft, W., Tischler, G. and Wahl, J. (2008). Migratory Shorebirds of the East Asian - Australasian Flyway Population Estimates and Internationally Important Sites. (Wetlands International - Oceania: Canberra, Australia.)
- Battley, P.F., Schuckard, R. and Melville, D.S. (2011). Movements of bar-tailed godwits and red knots within New Zealand. *Science for Conservation* **315**. (Department of Conservation, Wellington, New Zealand.)
- Battley, P.F., Warnock, N., Tibbitts, T.L., Gill Jr, R.E., Piersma, T., Hassell, C., Douglas, D.C., Mulcahy, D.M., Gartell, B.D., Schuckard, R., Melville, D.S. and Riegen, A.C. (2012). Contrasting extreme long-distance migration patterns in bar-tailed godwits *Limosa lapponica*. *Journal of Avian Biology* **43**: 1-12.
- Foate, M.A. (2005). Summer distribution and movement of Bar-tailed Godwit (*Limosa lapponica*) in the Hunter Estuary, and their behavioural responses to disturbances at diurnal roost sites. Bachelor of Environmental Science Honours Thesis, University of Newcastle, Newcastle, NSW.
- Gill, R.E., Tibbitts, T.L., Douglas, D.C., Handel, C.M., Mulcahy, D.M., Gottschalck, J.C., Warnock, N., McCaffery, B.J., Battley, P.F. and Piersma, T. (2009). Extreme endurance flights by landbirds crossing the Pacific Ocean: ecological corridor rather than barrier? *Proceedings of the Royal Society B - Biology* **276**: 447-457.
- Herbert, C. (2007). Distribution, Abundance and Status of Birds in the Hunter Estuary. Hunter Bird Observers Club Special Report No. 4. (Hunter Bird Observers Club Inc.: New Lambton, NSW.)
- Higgins, P.J. and Davies, S.J.J.F. (Eds) (1996). 'Handbook of Australian, New Zealand & Antarctic Birds. Volume 3: Snipe to Pigeons'. (Oxford University Press: Melbourne.)
- Minton, C. (2005). What Have We Learned from Banding and Flagging Waders in Australia? In 'Status and Conservation of Shorebirds in the East Asian-Australasian Flyway; Proceedings of the Australasian Shorebird Conference 13-15 December 2003, Canberra, Australia.' (Ed. P. Straw). pp. 116-142. (Australasian Wader Studies Group and Wetlands International - Oceania.)
- Minton, C., Wahl, J., Jessop, R., Hassell, C., Collins, P., and Gibbs, H. (2006). Migration Routes of Waders which spend the Non-Breeding Season in Australia. *Stilt* **50**: 135-157.
- Purchase, D. (1969). History of Bird Banding. *Australian Natural History* **16** (6): 183-188.
- Richardson, A.L. (2004). Ecological Niche of the Bar-tailed Godwit (*Limosa lapponica*) in the Hunter River Estuary: Behavioural Use of Different Habitats. Bachelor of Environmental Science Honours Thesis, University of Newcastle, Newcastle, NSW.
- Riegen, A.C. (1999). Movements of banded Arctic waders to and from New Zealand. *Notornis: Ornithological Society of New Zealand* **46**: 123-142.
- Riegen, A.C. (2013). E7, Long Haul Champion Godwit. *Tattler* **27**: 4 (Newsletter Australasian Wader Study Group - see www.awsg.org.au)
- Stuart, A. (Ed.) (2000 - 2012). Hunter Region Annual Bird Reports 1999 to 2011, numbers **7** to **19**. (Hunter Bird Observers Club Inc., New Lambton, NSW.)
- Stuart, A. (Ed.) (in prep.). Hunter Region Annual Bird Report 2012, No. **20**. (Hunter Bird Observers Club Inc., New Lambton, NSW.)
- Woodley, K. (2009). 'Godwits. Long-haul champions'. (Penguin Group: New Zealand.)

Early Hunter Region avian records Part 2. 1926-1950 articles in *The Emu*

Alan Stuart

81 Queens Road, New Lambton, NSW 2305, Australia
almarosa@bigpond.com

Articles about 1926-1950 Hunter Region birdlife appearing in *The Emu* are reviewed. A full bibliography is included, and the birds of six nominal sub-areas within the Region - Upper Hunter, Lower Hunter, Gloucester/Comboyne, Port Stephens, Great Lakes/Taree, and Offshore - are discussed separately. 256 species are documented to have been present in the Region in 1926-1950, with breeding records for 146.

The distribution/abundance of species in 1926-1950 is compared with the current situation and apparent changes are noted. The families Ducks, Grebes, Egrets, and Spoonbills were uncommon in 1926-1950, with some exceptions. Nankeen Night-Herons *Nycticorax caledonicus* were present in large numbers in Port Stephens and the Lower Hunter. Little Tern *Sternula albifrons* was common both at Port Stephens and around the Hunter Estuary. Some small shorebirds, such as Red-capped Plover *Charadrius ruficapillus* and Lesser Sand Plover *Charadrius mongolus* were numerous in the Hunter Estuary and at Port Stephens, as were godwits (in the Hunter Estuary) and Eastern Curlew *Numenius madagascariensis* and Sharp-tailed Sandpiper *Calidris acuminata* (at Port Stephens). However, several other shorebird species, recorded regularly now in low to moderate numbers, were not mentioned in 1926-1950 literature.

Reports of Hooded Plover *Thinornis rubricollis* at Port Stephens in 1928 and 1931 are critiqued, and some other rare and unusual records are discussed. A number of probable misidentifications in the 1926-1950 literature are also discussed.

Reports of introduced species had begun to increase, but several native species had yet to arrive in the Region. The Rufous Scrub-bird *Atrichornis rufescens* was recorded in the upper part of the Chichester Valley, implying that a range contraction has since occurred.

INTRODUCTION

In keeping with the long history of ornithology in the Hunter Region, which formally began with the visit by John Gould and his party in 1839-40 (Albrecht & Albrecht 1992), the journal *The Emu*, published by the former Royal Australasian Ornithologists Union (RAOU, more recently Birds Australia, now BirdLife Australia) has contained many papers and short notes dealing with aspects of ornithology in the Region. Since its publication commenced in 1901, *The Emu* has been a collection house for new knowledge about Australasian ornithology, and by extension, about our local birdlife¹.

Part 1 of this series (Stuart 2009) reviewed those articles published in *The Emu*, which relate to the period 1901-1925 and were connected with the Hunter Region. This paper covers the period 1926-

1950. A future paper will deal with the journal's post-1950 articles. Suggestions from readers for other sources of early Hunter Region avian records, particularly those from the latter part of the 19th Century and the first half of the 20th Century, are welcomed.

Approach Taken

In keeping with the approach taken for Part 1, articles about five main parts or districts of the Hunter Region - Upper Hunter, Lower Hunter, Gloucester/Comboyne, Port Stephens, Great Lakes/Taree - have been grouped for discussion purposes, and all seabird records including those in articles about Port Stephens, are discussed under the heading Offshore. The geographic limits for these six nominal sub-areas are indicated in **Figure 1**. The boundaries are arbitrary but convenient.

¹ Tables of Contents for every issue of *The Emu* can be accessed at www.publish.csiro.au/nid/97.htm.

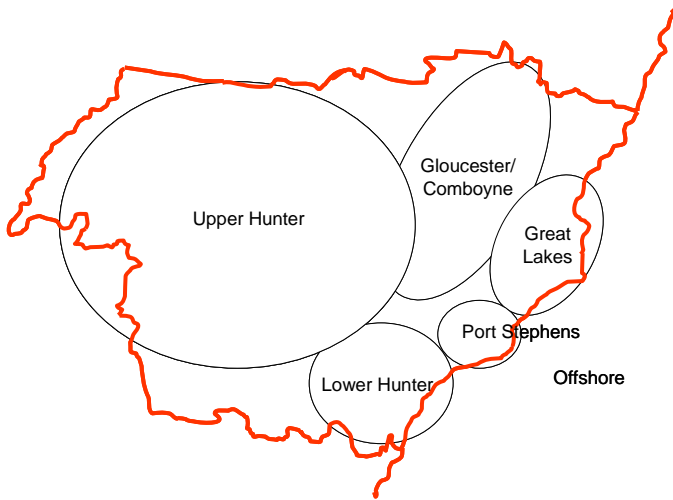


Figure 1. Nominal sub-areas of the Hunter Region

Nomenclature

This paper uses the Christidis & Boles (2008) nomenclature, with appropriate amendment to the names used in the original articles. Leading up to 1925, much work had been done by the RAOU to rationalise the confusing array of nomenclature (for both the scientific and common names) in use around Australia. This culminated in publication of a new Checklist (Cleland 1927, Dickison 1951)². Consequently, the common names for Australian birds became not very dissimilar to those that are familiar to us now. By 1950 the alignment had become even closer, albeit without some controversy along the way including calls for the adoption of “popular” names such as Leatherhead, Bottle Swallow, Tang, Common Grass Parrot (Boss-Walker 1932). Perhaps fortunately for us, such proposals did not attract a groundswell of support.

Scientific names change as new understandings about individual species emerge. Thus, when reading articles from the period 1926-1950, the scientific names often are different to those presently in use (particularly, the genus) but the common names usually are recognisable, albeit sometimes with minor differences involving hyphens and/or capital letters. There are occasional exceptions, where the common name is now unfamiliar to us, occurring in articles between 1926 and the mid 1930s.

² RAOU members were able to purchase a copy of the new Checklist for the sum of 12s 8d (about \$1.27).

THE 1926-1950 LITERATURE

Upper Hunter

The driving forces of Upper Hunter ornithology had been H.L. White and his specimen collector S.W. Jackson (Stuart 2009). White’s death in May 1927 (Anon. 1927) ended the era. There were no substantive articles specifically about the Upper Hunter in *The Emu* over 1926-1950. A few short notes to do with breeding records appeared. For example, De Warren (1926b) gave records for 12 species in the Dungog area, including one of a Superb Fairy-wren *Malurus cyaneus* hosting a Horsfield’s Bronze-Cuckoo *Chalcites basalus*. His list of breeding birds included Yellow-plumed Honeyeater *Lichenostomus ornatus* (De Warren 1926b), which seems surprising, and probably misreports a breeding record for White-plumed Honeyeater *L. penicillatus*.

Thompson (1926) provided a breeding record for White-backed Swallow *Cheramoeca leucosterna* in the Upper Hunter. A review of the status of that species in Australia (Hindwood 1941) detailed many sightings from around Singleton, including more breeding records, and also noted several Lower Hunter (Maitland) reports. Hindwood also reviewed the status of the Rockwarbler *Origma solitaria* (Hindwood 1926); the distribution map clearly indicates their presence in the Upper Hunter although this point was not specifically discussed in the text.

A review of the status of the Turquoise Parrot *Neophema pulchella* (Morse & Sullivan 1930) implied that it was no longer found in the Hunter Region. It had become very rare throughout its former Australian range.

Lower Hunter

Much of our understanding about the Lower Hunter over the period 1926-1950 comes from the writings of three prominent ornithologists based in Maitland and Newcastle: A.F. D’Ombrian, W.J. Enright and A.J. Gwynne.

In the early 1930s, as Newcastle was being developed industrially, the dredging operations in the Hunter River created many sandflats which became favoured nest sites for Red-capped Plovers *Charadrius ruficapillus* (Gwynne 1932a). This was also favourable for Little Terns *Sternula albifrons*, with >100 birds in the Hunter Estuary and several pairs breeding (Gwynne 1932b).

Shorebirds in the Estuary received scant mention in any other articles in *The Emu*. Mention is made of “flocks” of Lesser Sand Plover *Charadrius mongolus* “scattered over the flats” (McGill & Keast 1945). Towards the end of an account of individuals of Bar-tailed Godwit *Limosa lapponica* and Pacific Golden Plover *Pluvialis fulva* having been rescued from urban locations, D’Ombraïn (1945c) noted that large flocks of these and some other waders were found at Stockton and the upper reaches of Newcastle Harbour. He also referred to the problem of migratory shorebirds being killed through striking overhead power lines – an issue that still has not been properly addressed!

The Black-necked Stork *Ephippiorhynchus asiaticus* was unknown in the Lower Hunter area for >50 years until a pair became resident on Eskdale Swamp near Seaham for 18 months from 1930 (Enright 1933). There is a tragic ending as a hunter shot dead one bird and the other disappeared soon after. Enright also reported a pair of Comb-crested Jacana *Irediparra gallinacea* successfully breeding near East Maitland, and that this was the first known record of the species in the area (Enright 1936). The arrival at East Maitland seems to be linked with a southerly dispersal as far as Sydney in the 1930s, of a species that previously was not known south of the Clarence River (Hindwood 1939). In Enright’s article he also discussed Spotted Harrier *Circus assimilis* leaving the impression that this was not uncommon in the Lower Hunter at the time. Three years later he noted that Bush Stone-curlew *Burhinus grallarius* had returned to Maitland and that, coincidentally, most waterbirds had departed (Enright 1939).

Ducks of any kind received little mention in any of *The Emu* papers of the era, but at least 80 Pacific Black Duck *Anas superciliosa* were reported killed at Rutherford in 1937 during a severe thunderstorm (D’Ombraïn 1938). The author described this as a loss that the district could ill-afford, which supports the conclusion that waterfowl were not abundant locally in that era. D’Ombraïn also reported some arrival dates for migrating species (in Campbell 1938). The Pallid Cuckoo *Cacomantis pallidus* had returned to the Maitland area by mid August in 1937, which would be considered a somewhat early arrival date now.

Nankeen Night-Herons *Nycticorax caledonicus* established a new day roost (of >100 birds) in Maitland in late 1945 and also used it the following summer (D’Ombraïn 1947). D’Ombraïn speculated that the birds had relocated from colonies at either Snapper Island (in Port Stephens)

or Paterson River (due to disturbance by military activities and bushfire, respectively).

During the 1940s, D’Ombraïn studied several species in captivity including Australian Painted Snipe *Rostratula australis*, which he noted issued a soft call during defensive aggression (D’Ombraïn 1944b). The species is generally considered to have no known calls (Marchant & Higgins 1993).

Gloucester/Comboyne

This part of the Region was very well documented in the period 1926-1950, largely from the writings of H.L. Hyem who took up residence at a property “Mernot” near the headwaters of the Manning River (around its tributaries Curricabark Creek and Barnard River) in about 1926. Coincidentally, the very first article relating to Gloucester/Comboyne was published that year (Enright & Hopson 1926), describing a 1925 journey from Gloucester to Cobark station (on the Barrington River) via Rawdon Vale. It named some birds seen along the way (most notably, large flocks of Red-browed Finch *Neochmia temporalis* and Diamond Firetail *Stagonopleura guttata*), and documented 45 species on the Cobark property. Enright and Hopson were three days there but much of their time was spent attempting to climb to the Dilgery Valley and so their Cobark list seems unlikely to have been definitive. They recorded nothing unusual by modern standards.

The RAOU had a week-long camp-out alongside the Williams River in October 1926, attended by 32 members. Two papers about the camp-out were produced – one of them (Bettington 1926) had an annotated list of the 82 species recorded in the week; the other (Barrett 1926) describes both the camp and some of the sightings more intimately. Apart from one probable misidentification, discussed below, the two papers are very informative, particularly where Bettington speculated on reasons for the absence of some species (such as Spectacled Monarch *Symphoricarphus trivirgatus* and Olive Whistler *Pachycephala olivacea*) that the party had expectations of finding. Yellow-throated Scrubwrens *Sericornis citreogularis* were having a successful season and the party found more than 100 of their nests, mostly along the river. Oddly, from a modern perspective, Australian King-Parrot *Alisterus scapularis* and Dollarbird *Eurystomus orientalis* were both found to be rare in the area.

The RAOU camp-out also included an expedition to higher country to search for the Rufous Scrub-

bird *Atrichornis rufescens*. Although this was not successful, the sighting of a Paradise Riflebird *Ptiloris paradiseus* in the Tops at ~1000m altitude was considered to be good compensation. Interestingly, the location targeted for the Rufous Scrub-bird search was “the Chichester Valley” (presumably, the higher slopes of it): Bettington noted that a specimen had been collected “at the head of the Chichester River” in 1922. This indicates that a range contraction has since occurred.

Red-tailed Black-Cockatoo *Calyptorhynchus banksii* appears on the list, based on sightings of seven birds (some were noted to be immature) in three groups always close together. Barrett states they were “closely observed”. The birds were always seen feeding in Casuarinas (*Casuarina* spp) which is consistent with Glossy Black-Cockatoo *C. lathami*. The latter seems a much more plausible species for the area and is one which the party did not record. Most likely, a misidentification occurred.

An important source of information about the Gloucester / Comboyne area is a two-part series of papers by Hyem (1936b, 1936c). He reported 184 species from ten years of observations at his property “Mernot”. Importantly, in his notes about each species, he describes its relative abundance. Among other interesting side points it is mentioned that the property was very degraded when Hyem took possession, and that he put a lot of effort into restoring it. Also, he (along with all private egg collectors) was forced to forfeit his collection in the 1930s. He was somewhat bitter about that (Hyem 1936b).

Highlights from Hyem’s two papers include: breeding record for King Quail *Excalfactoria chinensis* (now very rarely recorded, with no recent breeding records); records for Barking *Ninox connivens*, Powerful *N. strenua*, Masked *Tyto novaehollandiae* and Sooty Owl *T. tenebricosa*; Ground Cuckoo-shrike *Coracina maxima* (12km from “Mernot”); Regent Honeyeater *Anthochaera phrygia*; Plum-headed Finch *Neochmia modesta*; Australasian Bittern *Botaurus poiciloptilus* and Pacific Baza *Aviceda subcristata*; and breeding records for Topknot Pigeon *Lopholaimus antarcticus* and White-headed Pigeon *Columba leucomela* (for neither of which are there any recent breeding records). Other comments of his indicate that Galahs *Eolophus roseicapillus* were rare (only one sighting, of a single bird which he speculated was an escapee; similarly for a single record of Budgerigar *Melopsittacus undulatus*).

Bush Stone-curlews were under severe pressure from foxes, and Eastern Koels *Eudynamis orientalis* passed through only occasionally, whereas Channel-billed Cuckoos *Scythrops novaehollandiae* remained over September-January. The two papers are a rich source of information about the local birdlife of the time – including some introduced species: Common Starlings *Sturnus vulgaris* were abundant, having much increased in numbers over the ten years; small flocks of European Goldfinch *Carduelis carduelis* were present and breeding; and he shot House Sparrows *Passer domesticus* on sight.

He reported that Painted Button-quail *Turnix varius* were fairly well distributed on “Mernot”. Also, there was a second *Turnix* species, with a breeding record. Hyem gives reasonably good evidence for it being Red-backed Button-quail *T. maculosus* (Hyem 1936b). The latter remains a rare resident of the Region with no modern breeding records.

Hyem reported that Australian Raven *Corvus coronoides* was present as the only corvid on “Mernot” (Hyem 1936c). But he was puzzled by his observation that some birds had a white base to their feathers while others had a grey base. We can recognise now that Torresian Crows *C. orru* also occurred on his property. This highlights the value of thoroughly documenting records, so that others can re-evaluate in the light of new knowledge.

Hyem’s list of 184 species is a remarkable tally by modern standards. Only one species would be considered unusual – a single record of a Striated Heron *Butorides striata*. The bird was present for several days and Hyem was aware it was anomalous; he commented that he was familiar with the species from a recent visit to Wallis Lake.

From 1930 onwards, Hyem published several short notes about various observations, including breeding records from “Mernot”. In August 1936, whilst writing his two major papers, he also submitted a brief note naming 47 species that had bred within 100 yards (~60 metres) of his house (Hyem 1936a). It was indeed a rich country for birds where he lived.

When Chisholm (1934) described the birds of the Comboyne Plateau, his area of interest partly overlapped with the Hunter Region north of Upper Lansdowne. His paper therefore provides useful insights although he did not usually indicate where the individual species had been recorded. He did specifically mention the Bush Stone-curlew as

occurring on the southern side of the Plateau (i.e. in the Hunter). He was pessimistic about its future because of predation by foxes and dingoes.

Chisholm detailed one fascinating record: a White-gaped Honeyeater *Lichenostomus unicolor* in February 1927. The record, although for a bird >1,000 km out of normal range, appears genuine; the identification of the bird (presumably after it had been shot) was confirmed by the Australian Museum, and a detailed account was published in *The Australian Zoologist* (paper not sighted by this author). As the record was from Chisholm's home in Comboyne, outside the Region, we can regard it as an interesting curiosity and nothing more.

Port Stephens

Some members of the RAOU visited the Port Stephens area in November 1928 and January 1931 (Chisholm & Cayley 1928, Horden & Horden 1931). In both cases, they also recorded birds in the Myall River and around Myall Lake, and made visits to offshore islands. The duration of the 1928 visit was "a few days". In 1931 the "large party" of visitors spent three weeks in the Port Stephens area. Aside from three days on offshore islands (discussed later), they were based firstly at Nelson Bay, then Tea Gardens and finally at Legges Camp (in what is now Myall Lakes NP). In the reports in *The Emu* for both visits, comprehensive annotated bird lists were provided (130 and 109 species were recorded, respectively). However, it is not always clear in which sub-area of the Region the birds were recorded. For simplicity, all but the obvious offshore records are discussed in this section.

There was a very large breeding colony of Nankeen Night-Heron on Snapper Island (the first mention of the colony in *The Emu* was in 1910). Two hundred breeding pairs were present in 1928 with the nests containing eggs and young in all stages. The colony was continuing to prosper when the group visited in 1931. During World War II, Snapper Island suffered disturbance from smoke bombs; the consequences for the Night-Heron colony were not known (D'Ombra 1947).

Many pigeon and dove species were present in 1928 but far fewer of them in the lengthier 1931 visit. Brush Bronzewing *Phaps elegans*, described as fairly common in 1928 (and nesting), was not recorded in 1931. The Black Swan *Cygnus atratus*, Australasian Darter *Anhinga novaehollandiae* and all four local cormorant species were very common, but there were very few Australian Pelican *Pelecanus conspicillatus* present either

time. In 1931, Pacific Black Duck was very common but a solitary Musk Duck *Biziura lobata* was the only other duck species recorded. No ducks were present in 1928, and there were no grebes, ibis or white egrets recorded on either visit. These absences echo the surprising dearth of waterbirds in the period 1901-1925 (Stuart 2009).

Many shorebird species were found on both visits, with the two reports reasonably consistent about numbers, including noting that large flocks of Eastern Curlew *Numenius madagascariensis* were present. However the Bar-tailed Godwit, now very common in Port Stephens in summer (Stuart 2011), was not recorded by either group. Both papers noted the presence of small numbers of Little Curlew *Numenius minutus* and Eastern Reef Egret *Egretta sacra*. The former is an accidental visitor here now and the latter is uncommon (in 1931, only the white phase was seen, there are no modern records of this phase in the Region).

On both visits small numbers of Hooded Plover *Thinornis rubricollis* were reported, which is remarkable given the species' restricted range today. McAllan (2001) concluded that these were misidentifications; he noted the difficulties in distinguishing birds in non-breeding plumage from some other small shorebirds. His comment overlooks the fact that, in January 1931 and perhaps also in November 1928, Hooded Plovers would very likely be in breeding plumage and therefore much more readily identified. This is an important point, because if Hooded Plovers (now an Endangered species in NSW) were present in the Hunter Region in the 1920s and 1930s they have since undergone a considerable contraction in range. Nevertheless, in light of the several other apparent misidentifications made in the two visits (discussed below), the Port Stephens records are uncertain.

Several species of tern were recorded; for instance, a small flock of Fairy Tern *Sternula nereis* was reported in 1928 and they were described as "very common" in 1931. Presumably this is a misidentification of Little Tern *S. albifrons* (which itself could hardly be described as a common species now). Sharland (1938) has discussed the problems of separating Fairy and Little Tern in the field. He concluded that the RAOU observers most likely were mistaken. Also, Singing Honeyeater *Lichenostomus virescens* was described as "fairly common" on both visits. McAllan (2001) has commented that books of the era had a flawed illustration, such that Yellow-faced Honeyeater *L. chrysops* and Singing Honeyeater mis-

identifications could occur. That may account for what is a very unusual record by modern standards.

The Spiny-cheeked Honeyeater *Acanthagenys rufogularis* was described as “fairly common” in 1931 but not recorded in 1928. Much the same happened for Budgerigar, of which a few small flocks were reported present in 1931. Conversely, Chestnut-rumped Heathwren *Hylacola pyrrhopygia*, Brown Treecreeper *Climacteris picumnus* and Speckled Warbler *Chthonicola sagittata* were reported in 1928 (with the Heathwren described as “fairly plentiful”), but were not recorded in 1931. All these species are now considered to be uncommon and all but the Heathwren are only expected in the central and west of the Region (the Budgerigar is an accidental visitor).

The above analysis suggests that several mis-identifications may have occurred during the 1928 and 1931 visits. However, some dry country birds, such as Speckled Warbler, were also reported at Wallis Lake in 1921 (Stuart 2009). It may be that conditions near the coast were much drier than they are now, and hence more suitable for the species reported.

Members of the 1928 RAOU expedition searched for but did not find any Ground Parrots *Pezoporus wallicus* (Chisholm & Cayley 1928). One of them, W.J. Enright, continued to search the general area in the ensuing years and finally found some near “Tanilbah” (presumably he was referring to Tanilba Bay). Also, a local birdwatcher told him of seeing a flock closer to the coast (Enright 1932b).

The 1928 expedition recorded several flocks of White-fronted Chat *Epthianura albifrons* in cleared areas between Newcastle and Nelson Bay. They also saw a Forest Kingfisher *Todiramphus macleayi* during the same trip (Chisholm & Cayley 1928).

Great Lakes/Taree

Enright (1928) noted some coastal Emu *Dromaius novaehollandiae* records over 1926-1928 from the area around Myall River and Mungo Brush, including a record of six birds in early 1928. In 1935, he reported that some were still present but he was pessimistic about their prospects (Enright 1936). In the same article, Enright also reported that a walker had flushed a pair of Ground Parrot east of Myall Lake in November 1935. There are no known reports of any more recent sightings of Ground Parrot in the Region.

Chaffer (1932) reported on Regent Bowerbirds *Sericulus chrysocephalus* nesting at Wallis Lake, while McGill (1944) was surprised to find many Striped Honeyeaters *Plectorhyncha lanceolata* at Harrington, not having recorded them there on six previous visits. McGill also reported on a 1945 observation of one Striped Honeyeater at Raymond Terrace; he considered this unusual, commenting about the absence of the species between Gosford and Wallis Lake (McGill 1947).

Offshore

MacGillivray (1927) reported on a sea voyage from South Australia to New South Wales. He was offshore of the Hunter Region probably on 18 November 1926³, after departing from Sydney that morning. The locations for many of his records that day are uncertain. However Black-browed Albatross *Thalassarche melanophris* and Short-tailed *Ardenna tenuirostris* and/or Wedge-tailed Shearwater *A. pacifica*, were plentiful everywhere, with several Wandering Albatross *Diomedea exulans* also seen. A surprising record was a Sooty Albatross *Phoebastria fusca* off Port Stephens – this species now is exclusive to the southern oceans and it is very unusual for it to range so far north. As he also reported another Sooty Albatross further north off Smoky Cape the following day, it may be that these were cases of mis-identification.

RAOU members visited Cabbage Tree Island in 1928 and 1931, and Broughton Island in 1928 (Chisholm & Cayley 1928, Horden & Horden 1931). Large numbers of Little Penguin *Eudyptula minor* and Wedge-tailed Shearwater were breeding on Cabbage Tree Island; the latter species also had a large colony on Broughton Island in 1928. The Gould’s Petrel *Pterodroma leucoptera* colony on Cabbage Tree Island was much studied by both groups; unusually, in 1928 some of the birds had laid their eggs out in the open. Some White-faced Storm-Petrels *Pelagodroma marina* were found on Cabbage Tree Island in 1931 but there was no mention about them breeding.

Interesting land birds on Cabbage Tree Island in 1928 included Emerald Dove *Chalcophaps indica*, Buff-banded Rail *Gallirallus philippensis* and an unidentified button-quail (Chisholm & Cayley 1928). None of these was recorded in 1931. Hindwood (1948a) mentioned that the Rose-

³ MacGillivray gives the date as 18 September. Earlier though he states he did not depart from South Australia until mid October.

crowned Fruit-Dove *Ptilinopus regina* could be found there.

The importance of Cabbage Tree Island for Gould's Petrel began to attract more attention in the 1940s, resulting in several papers (Hindwood & Serventy 1941, 1943, D'Ombrain 1943, Hindwood 1948a). Little wonder that the Royal Zoological Society was quick to intervene when it was discovered that the Island was being used by the Army for artillery practice! (Hindwood 1943).

In their 1941 paper, Hindwood and Serventy summarised all the prior visits to Cabbage Tree Island. All visitors struggled to quantify how many breeding pairs of Gould's Petrel were present. Some estimates were of less than 100 pairs, while Hindwood and Serventy thought that at most there were 200-300 pairs. There was a lot of evidence of egg predation occurring. These observations, depressing though they are, serve to highlight the success of the modern recovery program whereby 800-1000 pairs now breed each year on the Island (Priddel & Carlile 2007).

Hindwood (1948a) discussed seabirds breeding at near-coastal islands off NSW. He detailed five species which were known to breed on one or more of seven islands off Port Stephens: Little Penguin, White-faced Storm-Petrel, Gould's Petrel, Wedge-tailed and Sooty Shearwater *A. grisea*. Only the Wedge-tailed Shearwater bred on all seven islands.

In a review of the White-fronted Tern *Sterna striata* in Australia, Hindwood (1946a) commented that there had been no records of the species from between Diamond Head (the northern extremity of the Region) and the Sydney area. It must be a modern phenomenon to have flocks of 10-20 birds roosting in both the Manning and Hunter Estuaries in winter/spring.

DISCUSSION

Species List

The list in **Table 1** is a composite prepared from *The Emu* articles relating to the Hunter Region in 1926-1950. For completeness, all 256 cited species are listed, including some that perhaps were misidentifications. There were breeding records reported for 146 species (indicated in the Table). The supplementary list shows four additional species recorded at Comboyne (Chisholm 1934) and at sea north of Sydney (Hindwood 1945). All

four species may reasonably be expected to have also been present in the Region from time to time.

The modern checklist for the Region has 438 species (Stuart 2012). However, that list includes many accidental and rare visitors to the Region, and ~30 pelagic seabirds which are unlikely to be recorded close to the coast. About 330 species in the modern list are considered resident or frequent visitors to the Region. Comparing with this subset of the modern checklist, there are some notable absences in 1926-1950. In a few cases the reason lies in the more recent advances in knowledge – for example the genera *Corvus* and *Zoothera* had not been split into the sets of species we now recognise. Most of the differences though are due to species known but not reported in 1926-1950. The missing waterfowl include Magpie Goose *Anseranas semipalmata*, Chestnut Teal *Anas castanea*, Australasian Shoveler *Anas rhynchos*, Hoary-headed Grebe *Poliiocephalus poliocephalus*, white egrets except for Eastern Great Egret *Ardea modesta*⁴, Australian White Ibis *Threskiornis molucca*, and both spoonbills. No crakes or rails, other than Buff-banded Rail, appear in the 1926-1950 list. Several shorebirds, recorded regularly now in low to moderate numbers, were not mentioned in the 1926-1950 literature – for example Common Greenshank *Tringa nebularia*, Grey-tailed Tattler *T. brevipes*, Ruddy Turnstone *Arenaria interpres*, Double-banded Plover *Charadrius bicinctus*, both knots, and several species of sandpiper. Two honeyeaters – Yellow-tufted *Lichenostomus melanops* and Black-chinned *Melithreptus gularis* – were notably absent, as were Golden-headed Cisticola *Cisticola exilis*, Tawny Grassbird *Megalurus timoriensis*, and Chestnut-breasted Mannikin *Lonchura castaneothorax*.

The species named above also did not appear in the 1901-1925 list of birds recorded in the Region (Stuart 2009). It is a matter of conjecture as to whether they were absent in the first half of the 20th Century, or overlooked.

Also not recorded in 1926-1950 were Mangrove Gerygone *Gerygone levigaster*, Western Gerygone *G. fusca*, and White-breasted Woodswallow *Artamus leucorhynchus*. Their arrival dates in the Region will be discussed in a future Part of this series.

⁴ Cattle Egret *Ardea ibis* did not occur in NSW at the time and Little Egret *Egretta garzetta* was rare (McGill 1955).

Changes in Distribution & Abundance

In the first 25 years of *The Emu* from 1901, there were relatively few reports of waterfowl (Stuart 2009). By and large the pattern continued from 1926-1950 but with some species being reported in greater numbers. Hyem noted Australian Wood Duck *Chenonetta jubata* was present in good numbers around the Barnard and Pigna Barney Rivers but mentioned very few other waterfowl in his comprehensive articles (Hyem 1936b, 1936c). In the Port Stephens / Myall Lakes area, only the four local cormorants and White-faced Heron *Egretta novaehollandiae* were recorded in any numbers in 1928 (all were common). The 1931 RAOU expedition added Black Swan, Pacific Black Duck and Australasian Darter to the list of common waterfowl. Both expeditions reported small numbers of some waterbirds but, importantly, no grebes, ibis or white egrets were recorded on either visit (Chisholm & Cayley 1928, Horden & Horden 1931). In similar vein, waterfowl apparently were uncommon in the Lower Hunter (D’Ombraïn 1938). The Grey Teal *Anas gracilis* is scarcely mentioned in any 1926-1950 article and Chestnut Teal not at all. The Lower Hunter is now an important national stronghold for the latter (Lindsey & Roderick 2011). Chisholm (1934) mentions that ducks were very wary because of hunters. Perhaps this explains the general absence of waterfowl records for the Region.

Some small shorebirds were abundant in 1926-1950. Lesser Sand Plover and Red-capped Plover *Charadrius ruficapillus* were in large numbers in the Hunter Estuary, as were “godwits, stints and sandpipers” (Gwynne 1932a, 1932b, D’Ombraïn 1945c). Red-capped Plover was also common at Port Stephens, as was Sharp-tailed Sandpiper *Calidris acuminata* (Chisholm & Cayley 1928). Large flocks of Eastern Curlew were at Port Stephens but Bar-tailed Godwit was not recorded there. Port Stephens is now a site of international importance for Eastern Curlew (Bamford *et al.* 2008). Probably that was the case in the 1920s and 1930s too.

Little Tern (not always correctly identified) was common in both Port Stephens and the Hunter Estuary, and breeding at the latter location. There were no reports of other tern species, except Crested Tern *Thalasseus bergii* and a few Caspian Tern *Hydroprogne caspia* (Chisholm & Cayley 1928, Horden & Horden 1931, Gwynne 1932b).

The Turquoise Parrot had been relatively common in the Upper Hunter early in the century (Stuart 2009). By the 1930s it was no longer being recorded in the Region. It had become rare throughout its former Australian range (Morse & Sullivan 1930). Nowadays it is found in small numbers in the west of the Region and in Myall Lakes National Park.

The Common Myna *Sturnus tristis* and Red-whiskered Bulbul *Pycnonotus jocosus* were not found north of Sydney in NSW (Chisholm 1950, Tarr 1950). Despite this, there was more mention of introduced species over 1926-1950 compared to the previous 25-year period (for which there were almost no reports).

Eleven species were recorded in 1901-1925 but not recorded in 1926-1950. These are listed in **Table 2**. Some of them are rare or only locally common even now and their absence is not a great surprise. D’Ombraïn (1945c) referred to large flocks of godwits in the Hunter Estuary but he did not specifically mention Black-tailed Godwit *Limosa limosa* and therefore we cannot be certain about its status then. The lack of records for Scaly-breasted Lorikeet *Trichoglossus chlorolepidotus* is a surprise. It is a common species now around Port Stephens but was not recorded in two extended visits by RAOU members in 1928 and 1931.

Table 2. Birds recorded 1901-1925 and not recorded 1926-1950

Great Crested Grebe <i>Podiceps cristatus</i>
Australian Little Bittern <i>Ixobrychus dubius</i>
Black-tailed Godwit <i>Limosa limosa</i>
Cockatiel <i>Nymphicus hollandicus</i>
Scaly-breasted Lorikeet <i>Trichoglossus chlorolepidotus</i>
Turquoise Parrot <i>Neophema pulchella</i>
Black-eared Cuckoo <i>Chalcites osculans</i>
Eastern Bristlebird <i>Dasyornis brachypterus</i>
Varied Triller <i>Lalage leucomela</i>
Satin Flycatcher <i>Myiagra cyanoleuca</i>
Spectacled Monarch <i>Symposiarchus trivirgatus</i>

Rare and Unusual Records

Some of the species listed below are considered rare or accidental visitors to the Hunter Region. The other species (indicated with #) do not appear on the modern Hunter Region checklist (Stuart 2012) because their validity is uncertain. Perhaps one day the doubtful species will be reported again and can become confirmed additions to the checklist:

- Emu: birds were still present around Myall River / Mungo Brush until at least 1935.
- King Quail: reported to be breeding near Curricabark in 1935.
- Sooty Albatross[#]: a bird was reported off Port Stephens in November 1926.
- Hooded Plover[#]: a few birds were reported to be in the Port Stephens area in 1928 and 1931.
- Little Curlew: a few birds were reported to be in the Port Stephens area in 1928 and 1931.
- Red-backed Button-quail: reported to be a rare breeding resident at “Mernot” near Curricabark.
- Fairy Tern[#]: reported to be common in the Port Stephens area in 1931, also reported in 1928.
- Red-tailed Black-Cockatoo[#]: seven birds were reported to have been at Upper Williams River in October 1926.
- Ground Parrot: a pair east of Myall Lake in November 1935, and some earlier records.
- Budgerigar: a few small flocks were reported to be in the Port Stephens area in 1931.
- Barking Owl: reported twice at “Mernot” near Curricabark, dates not given (Hyem 1936b).
- Forest Kingfisher: a bird was reported from between Newcastle and Nelson Bay in 1928.
- Singing Honeyeater: reported to have been common in the Port Stephens area in 1928 and 1931.
- Spiny-cheeked Honeyeater: reported to have been common in the Port Stephens area in 1931.
- Yellow-plumed Honeyeater[#]: reported to be breeding near Dungog in 1926.
- Ground Cuckoo-shrike: a group of six birds was reported present at Barnard River near “Mernot” in winter 1933.

CONCLUSIONS

The birds of the Hunter Region continued to be well documented in *The Emu* over 1926-1950. There were breeding records reported for 146 species. 256 species were mentioned at least once – this is around 80% of the resident species and frequent visitors in the modern checklist for the Region. It is also ~25% larger than the list developed for 1901-1925 (Stuart 2009). These two points, in combination, tell us that understandings about the Region’s birdlife increased substantially in the second quarter of the 20th Century and were beginning to approach the level of our current understandings.

There have been changes to the documented distribution and/or abundance of some species since 1926-1950. The families Ducks, Grebes, Egrets, and Spoonbills were uncommon then, with some exceptions. Some small shorebirds were present in large numbers, as were godwits (in the Hunter Estuary) and Eastern Curlew (in Port Stephens). However, several now-common shorebirds and bush birds were not reported. Reports of introduced species had begun to increase, although some of them, such as Common Myna, were yet to reach the Region.

Nankeen Night-Herons were present in large numbers in Port Stephens and the Lower Hunter. Rufous Scrub-bird had recently been recorded in the Chichester Valley. This implies that a range contraction has since occurred. However, species such as Cattle Egret *Ardea ibis*, Common Tern *Sterna hirundo*, White-breasted Woodswallow, and Mangrove Gerygone were yet to arrive in the Region.

The majority of articles in *The Emu* continued to be accounts of the birds of a local area or descriptions of some unusual or interesting behaviour which had been observed. However, there was a trend for more papers reviewing the overall status of individual species. This could be described as a shift in focus for *The Emu*, from birdwatching to ornithology.

By the late 1920s, a degree of conformity had emerged in the use of bird names (both scientific and common names). In general, the species lists of 1926-1950 are recognisable to modern readers.

BIBLIOGRAPHY

Some of the articles listed below were specifically cited; the others helped to generate the overall impression of what the Hunter Region was like at the time.

- Albrecht, G. and Albrecht, J. (1992). The Goulds in the Hunter Region of NSW 1839-1840. *Naturae* 2. Museum of Victoria.
- Anon. (1927). Obituary H.L. White. *The Emu*, 27: 59-60.
- Bamford, M., Watkins, D., Bancroft, W., Tischler, G. and Wahl, J. (2008). Migratory Shorebirds of the East Asian – Australasian Flyway: Population Estimates and Internationally Important Sites. (Wetlands International – Oceania: Canberra, Australia.)
- Barrett, C. (1926). The Williams River Camp. *The Emu*, 26: 184-187.
- Bettington, B.C.J. (1926). Birds Recorded near RAOU Camp, Upper Williams River, NSW: October, 1926. *The Emu*, 26: 188-192.
- Boss-Walker, H.B. (1932). A Plea for the Adoption of Popular Bird Names. *The Emu*, 32: 309-311.
- Campbell, A.J. (1926). The Belltrees Oological Collection. *The Emu*, 26: 300-301.
- Campbell, A.J. (1927). The Ornithology of H.L. White. *The Emu*, 27: 198-200.
- Campbell, A.G. (1938). Charting Bird Movements. *The Emu*, 38: 317-322.
- Chaffer, N. (1932). The Regent Bird. *The Emu*, 32: 8-11.
- Chisholm, A.H. (1950). Birds introduced into Australia. *The Emu*, 50: 97-100.
- Chisholm, A.H. and Cayley N.W. (1928). The Birds of Port Stephens. *The Emu*, 28: 243-251.
- Chisholm, E.C. (1934). Birds of the Comboyne Plateau, 1923-1934. *The Emu*, 34: 8-23.
- Christidis, L. and Boles, W.E. (2008). 'Systematics and Taxonomy of Australian Birds'. (CSIRO Publishing: Collingwood, Victoria).
- Cleland, J.B. (1927). The New Official Checklist of the Birds of Australia. *The Emu*, 27: 197-201.
- De Warren, J.J. (1926a). A Brown Hawk's Record. *The Emu*, 26: 13.
- De Warren, J.J. (1926b). Five Nests in Five Months. *The Emu*, 26: 78.
- Dickison, D.J. (1951). The First Fifty Years of the Royal Australasian Ornithologists Union. *The Emu*, 51: 184-284.
- D'Ombraïn, A.F. (1938). Destruction of Birds by Hail. *The Emu*, 38: 59.
- D'Ombraïn, A.F. (1940a). Nests of Magpie-Larks. *The Emu*, 40: 323.
- D'Ombraïn, A.F. (1940b). Vicissitudes of a Dove's Egg. *The Emu*, 40: 323-324.
- D'Ombraïn, A.F. (1943). The Cabbage Tree Island Colony in the 1941-42 Season. *The Emu*, 42: 156-159.
- D'Ombraïn, A.F. (1944a). The Black Duck in Captivity. *The Emu*, 44: 8-32.
- D'Ombraïn, A.F. (1944b). Behaviour of Painted Snipe in Captivity. *The Emu*, 43, 247-248.
- D'Ombraïn, A.F. (1945a). Notes on Young of Plumed Tree Duck. *The Emu*, 44: 324-327.
- D'Ombraïn, A.F. (1945b). Nesting Notes on Plumed Tree Ducks. *The Emu*, 45: 80-82.
- D'Ombraïn, A.F. (1945c). Migratory Birds and Overhead Wires. *The Emu*, 45: 173-174.
- D'Ombraïn, A.F. (1947). Nankeen Night-Herons 'come to town'. *The Emu*, 47: 65-66.
- Enright, W.J. (1928). Emus on the Myall River. *The Emu*, 28: 242.
- Enright, W.J. (1932a). Musk-Duck. *The Emu*, 32: 206.
- Enright, W.J. (1932b). Ground Parrot. *The Emu*, 32: 224.
- Enright, W.J. (1933). The Jabiru. *The Emu*, 32: 226.
- Enright, W.J. (1936). Random Notes. *The Emu*, 36: 55-56.
- Enright, W.J. (1939). West Maitland Notes. *The Emu*, 38: 413.
- Enright, W.J. (1944). Black Swamp-Pheasant. *The Emu*, 44: 182.
- Enright, W.J. (1948). The White Fulica. *The Emu*, 48: 160-161.
- Enright, W.J. & Hopson, J. (1926). Birds of Cobark NSW. *The Emu*, 26: 135-136.
- Gilbert, P.A. (1934a). The Seasonal Movements and Migrations of Birds in Eastern New South Wales. Part I. *The Emu*, 34: 101-105.
- Gilbert, P.A. (1934b). The Seasonal Movements and Migrations of Birds in Eastern New South Wales. Part II. *The Emu*, 34: 200-209.
- Gilbert, P.A. (1935). The Seasonal Movements and Migrations of Birds in Eastern New South Wales. Part III. *The Emu*, 35: 17-27.
- Gilbert, P.A. (1937). Field Notes from New South Wales. *The Emu*, 37: 28-31.
- Gwynne, A.J. (1930). The White-browed Scrub-Wren. *The Emu*, 30: 109-110.
- Gwynne, A.J. (1931). The White-browed Scrub-Wren. *The Emu*, 31: 279.
- Gwynne, A.J. (1932a). Notes on the Red-capped Dotterel and the Period of Incubation of its Eggs. *The Emu*, 32: 117-118.
- Gwynne, A.J. (1932b). Notes on the Little Tern. *The Emu*, 32: 307-309.
- Gwynne, A.J. (1934). The Striated Thornbill. *The Emu*, 34: 234-235.
- Gwynne, A.J. (1948). Notes on the Brown Honeyeater. *The Emu*, 47: 162-164.
- Higgins, P.J. (Ed.) (1999). 'Handbook of Australian, New Zealand and Antarctic Birds Volume 4: Parrots to Dollarbird'. (Oxford University Press: Melbourne.)
- Hindwood, K.A. (1926). The Rock Warbler: A Monograph. *The Emu*, 26: 14-24.
- Hindwood, K.A. (1932). The Ground Parrot. *The Emu*, 32: 241-246.
- Hindwood, K.A. (1939). Notes on the Distribution and Habits of the Jacana or Lotus-bird. *The Emu*, 39: 261-267.
- Hindwood, K.A. (1941). The White-backed Swallow in Coastal New South Wales and Queensland. *The Emu*, 40: 304 – 307.

- Hindwood, K.A. (1943). Cabbage Tree Island as an Artillery Target. *The Emu*, **43**: 220.
- Hindwood, K.A. (1945). The Fleshy-footed Shearwater (*Puffinus carneipes*). *The Emu*, **44**: 241-248.
- Hindwood, K.A. (1946a). The White-fronted Tern (*Sterna striata*) in Australia. *The Emu*, **45**: 179-200.
- Hindwood, K.A. (1946b). Obituary. *The Emu*, **45**: 255-256.
- Hindwood, K.A. (1946c). The Mangrove Warbler - Extension in Range. *The Emu*, **45**: 311-314.
- Hindwood, K.A. (1948a). Notes on sea-birds breeding on the coastal islands of New South Wales. *The Emu*, **48**: 73-81.
- Hindwood, K.A. (1948b). Mortality among Prions. *The Emu*, **48**: 167-168.
- Hindwood, K.A. (1951). Grey-crowned Babbler and Pied Butcher-bird near Sydney. *The Emu*, **50**: 209-210.
- Hindwood, K.A. and Serventy, D.L. (1941). The Gould Petrel of Cabbage Tree Island. *The Emu*, **41**: 1-20.
- Hindwood, K.A. and Serventy, D.L. (1943). Further Notes on *Pterodroma leucoptera*. *The Emu*, **42**: 153-155.
- Hordern, H.E. & Hordern H.M. (1931). Birds of Port Stephens. *The Emu*, **31**: 21-26.
- Hyem, E.L. (1929a). Nesting Lyrebird. *The Emu*, **29**: 192.
- Hyem, E.L. (1929b). Blue Wren's Strange Meal. *The Emu*, **29**: 227.
- Hyem, E.L. (1929c). Yellow Robin's Eggs. *The Emu*, **29**, 277.
- Hyem, E.L. (1929d). Yellow-throated Scrub-Wren's Eggs. *The Emu*, **29**: 288.
- Hyem, E.L. (1929e). Birds Nesting Together. *The Emu*, **29**: 291.
- Hyem, E.L. (1929f). Thornbill's Double Nest. *The Emu*, **29**: 303.
- Howe, F.E. (1930a). Cuckoo Combinations. *The Emu*, **30**: 32.
- Hyem, E.L. (1930b). Notes on Hawks. *The Emu*, **30**: 250-251.
- Hyem, E.L. (1931a). The Grey Goshawk in Captivity. *The Emu*, **31**: 27-29.
- Hyem, E.L. (1931b). Whistling Eagle's Prey. *The Emu*, **31**: 36.
- Hyem, E.L. (1931c). "Visiting" Blue Wren. *The Emu*, **31**: 40.
- Hyem, E.L. (1932a). A Wagtail's devotion to "duty". *The Emu*, **32**: 66-67.
- Hyem, E.L. (1932b). Wild and semi-tame Goshawks mate. *The Emu*, **32**: 71.
- Hyem, E.L. (1933). Glossy Black Cockatoo. *The Emu*, **33**: 56-58.
- Hyem, E.L. (1936a). Birds Around a Country House. *The Emu*, **36**: 102.
- Hyem, E.L. (1936b). Notes on the Birds of "Mernot" Barrington NSW Part 1. *The Emu*, **36**: 109-127.
- Hyem, E.L. (1936c). Notes on the Birds of "Mernot" Barrington NSW Part 2. *The Emu*, **36**: 262-272.
- Keast, J.A. and McGill, A.R. (1947). The Sooty Shearwater in Australia. *The Emu*, **47**: 199-202.
- Lindsey, A. and Roderick, M. (2011). Chestnut Teal count – March 2011. *The Whistler* **5**: 51-52
- Macarthur, A.J. (1930). Bird Notes from Terrigal, N.S.W. *The Emu*, **30**: 143.
- MacGillivray, W. (1927). Birds from a Coastal Boat. *The Emu*, **27**: 92-94.
- Marchant, S. and Higgins, P.J. (Eds) (1993). 'Handbook of Australian, New Zealand and Antarctic Birds Volume 2: Raptors to Lapwings'. (Oxford University Press: Melbourne.)
- McAllan, I.A.W. (2001). Comments on Northern Reports of the Hooded Plover. *Australian Bird Watcher* **19**: 121-126.
- McGill, A.R. (1944). Striped Honeyeater. *The Emu*, **44**: 47.
- McGill, A.R. (1947). The Striped Honeyeater. *The Emu*, **46**: 232.
- McGill, A.R. (1951). An Australian Review of the Sanderling. *The Emu*, **50**: 197-206.
- McGill, A.R. (1955). The Little Egret. *The Emu*, **55**: 75-76.
- McGill, A.R. and Keast, J.A. (1945). The Mongolian Sand-Dotterel in Australia. *The Emu*, **44**: 202-216.
- Morse, B.S. and Sullivan, C. (1930). The Turquoise Parrot. *The Emu*, **29**: 289-291.
- Priddel, D. and Carlile, N. (2007). Population size and breeding success of Gould's Petrel *Pterodroma leucoptera leucoptera* on Cabbage Tree Island, New South Wales: 1996-97 to 2005-06. *Corella* **31**: 79-82.
- Robin, L. (2001). 'The Flight of The Emu. A Hundred Years of Australian Ornithology 1901-2001'. (Melbourne University Press: Melbourne.)
- Serventy, D.L. (1942). A Burrowing Variation among Wedge-tailed Shearwaters. *The Emu*, **41**: 243-244.
- Sharland, M.S.R. (1938). Two Small Terns. *The Emu*, **38**: 1-6.
- Stuart, A. (2009). Early Hunter Region avian records. Part 1. 1901-1925 Articles in The Emu. *The Whistler* **3**: 40-51.
- Stuart, A. (Ed.) (2012). Hunter Region Annual Bird Report Number 19 (2011). (Hunter Bird Observers Club Inc.: New Lambton, NSW.)
- Stuart, A. (2011). Shorebird Surveys at Port Stephens, New South Wales, 2004-2011 and Comparisons with Results from Previous Surveys. *Stilt*, **60**: 14-21.
- Tarr, H.E. (1950). The Distribution of Foreign Birds in Australia. *The Emu*, **49**: 189-198.
- Thompson, M. (1926). White-backed Swallow. *The Emu*, **26**: 71.

Table 1. Birds Recorded in the Hunter Region 1926-1950 (Species confirmed breeding are indicated in **Bold**)

Emu <i>Dromaius novaehollandiae</i>	Straw-necked Ibis <i>Threskiornis spinicollis</i>
Australian Brush-turkey <i>Alectura lathami</i>	Black-shouldered Kite <i>Elanus axillaris</i>
Stubble Quail <i>Coturnix pectoralis</i>	Pacific Baza <i>Aviceda subcristata</i>
Brown Quail <i>Coturnix ypsilophora</i>	White-bellied Sea-Eagle <i>Haliaeetus leucogaster</i>
King Quail <i>Excalfactoria chinensis</i>	Whistling Kite <i>Haliastur sphenurus</i>
Plumed Whistling-Duck <i>Dendrocygna eytoni</i>	Brown Goshawk <i>Accipiter fasciatus</i>
Musk Duck <i>Biziura lobata</i>	Collared Sparrowhawk <i>Accipiter cirrocephalus</i>
Black Swan <i>Cygnus atratus</i>	Grey Goshawk <i>Accipiter novaehollandiae</i>
Australian Wood Duck <i>Chenonetta jubata</i>	Spotted Harrier <i>Circus assimilis</i>
Grey Teal <i>Anas gracilis</i>	Swamp Harrier <i>Circus approximans</i>
Northern Mallard <i>Anas platyrhynchos</i>	Wedge-tailed Eagle <i>Aquila audax</i>
Pacific Black Duck <i>Anas superciliosa</i>	Nankeen Kestrel <i>Falco cenchroides</i>
Hardhead <i>Aythya australis</i>	Brown Falcon <i>Falco berigora</i>
Australasian Grebe <i>Tachybaptus novaehollandiae</i>	Black Falcon <i>Falco subniger</i>
Rock Dove <i>Columba livia</i>	Peregrine Falcon <i>Falco peregrinus</i>
White-headed Pigeon <i>Columba leucomela</i>	Purple Swamphen <i>Porphyrio porphyrio</i>
Spotted Dove <i>Streptopelia chinensis</i>	Buff-banded Rail <i>Gallirallus philippensis</i>
Brown Cuckoo-Dove <i>Macropygia amboinensis</i>	Dusky Moorhen <i>Gallinula tenebrosa</i>
Emerald Dove <i>Chalcophaps indica</i>	Eurasian Coot <i>Fulica atra</i>
Common Bronzewing <i>Phaps chalcoptera</i>	Bush Stone-curlew <i>Burhinus grallarius</i>
Brush Bronzewing <i>Phaps elegans</i>	Australian Pied Oystercatcher <i>Haematopus longirostris</i>
Peaceful Dove <i>Geopelia striata</i>	Sooty Oystercatcher <i>Haematopus fuliginosus</i>
Wonga Pigeon <i>Leucosarcia picata</i>	Black-winged Stilt <i>Himantopus himantopus</i>
Wompoo Fruit-Dove <i>Ptilinopus magnificus</i>	Pacific Golden Plover <i>Pluvialis fulva</i>
Rose-crowned Fruit-Dove <i>Ptilinopus regina</i>	Red-capped Plover <i>Charadrius ruficapillus</i>
Topknot Pigeon <i>Lopholaimus antarcticus</i>	Lesser Sand Plover <i>Charadrius mongolus</i>
Tawny Frogmouth <i>Podargus strigoides</i>	Black-fronted Dotterel <i>Elsayornis melanops</i>
White-throated Nightjar <i>Eurostodopus mystacalis</i>	Hooded Plover <i>Thinornis rubricollis</i>
Australian Owllet-nightjar <i>Aegotheles cristatus</i>	Banded Lapwing <i>Vanellus tricolor</i>
White-throated Needletail <i>Hirundapus caudacutus</i>	Masked Lapwing <i>Vanellus miles</i>
White-faced Storm-Petrel <i>Pelagodroma marina</i>	Comb-crested Jacana <i>Irediparra gallinacea</i>
Wandering Albatross <i>Diomedea exulans</i>	Australian Painted Snipe <i>Rostratula australis</i>
Black-browed Albatross <i>Thalassarche melanophris</i>	Latham's Snipe <i>Gallinago hardwickii</i>
Sooty Albatross <i>Phoebastria fusca</i>	Bar-tailed Godwit <i>Limosa lapponica</i>
Fairy Prion <i>Pachyptila turtur</i>	Little Curlew <i>Numenius minutus</i>
Wedge-tailed Shearwater <i>Ardenna pacifica</i>	Whimbrel <i>Numenius phaeopus</i>
Flesh-footed Shearwater <i>Ardenna carneipes</i>	Eastern Curlew <i>Numenius madagascariensis</i>
Sooty Shearwater <i>Ardenna grisea</i>	Common Sandpiper <i>Actitis hypoleucos</i>
Gould's Petrel <i>Pterodroma leucoptera</i>	Red-necked Stint <i>Calidris ruficollis</i>
Little Penguin <i>Eudyptula minor</i>	Sharp-tailed Sandpiper <i>Calidris acuminata</i>
Australasian Gannet <i>Morus serrator</i>	Curlew Sandpiper <i>Calidris ferruginea</i>
Australasian Darter <i>Anhinga novaehollandiae</i>	Red-backed Button-quail <i>Turnix maculosus</i>
Little Pied Cormorant <i>Microcarbo melanoleucos</i>	Painted Button-quail <i>Turnix varius</i>
Great Cormorant <i>Phalacrocorax carbo</i>	Brown Skua <i>Stercorarius antarcticus</i>
Little Black Cormorant <i>Phalacrocorax sulcirostris</i>	Little Tern <i>Sternula albifrons</i>
Pied Cormorant <i>Phalacrocorax varius</i>	Fairy Tern <i>Sternula nereis</i>
Australian Pelican <i>Pelecanus conspicillatus</i>	Caspian Tern <i>Hydroprogne caspia</i>
Black-necked Stork <i>Ephippiorhynchus asiaticus</i>	Crested Tern <i>Thalasseus bergii</i>
Australasian Bittern <i>Botaurus poiciloptilus</i>	Silver Gull <i>Larus novaehollandiae</i>
Black Bittern <i>Ixobrychus flavicollis</i>	Red-tailed Black-Cockatoo <i>Calyptorhynchus banksii</i>
White-necked Heron <i>Ardea pacifica</i>	Glossy Black-Cockatoo <i>Calyptorhynchus lathami</i>
Eastern Great Egret <i>Ardea modesta</i>	Yellow-tailed Black-Cockatoo <i>Calyptorhynchus funereus</i>
Striated Heron <i>Butorides striata</i>	Galah <i>Eolophus roseicapillus</i>
White-faced Heron <i>Egretta novaehollandiae</i>	Sulphur-crested Cockatoo <i>Cacatua galerita</i>
Eastern Reef Egret <i>Egretta sacra</i>	Rainbow Lorikeet <i>Trichoglossus haematodus</i>
Nankeen Night-Heron <i>Nycticorax caledonicus</i>	Musk Lorikeet <i>Glossopsitta concinna</i>

Table 1. Birds Recorded in the Hunter Region 1926-1950 (Species confirmed breeding are indicated in **Bold**) (cont.)

Little Lorikeet <i>Glossopsitta pusilla</i>	Eastern Spinebill <i>Acanthorhynchus tenuirostris</i>
Australian King-Parrot <i>Alisterus scapularis</i>	Lewin's Honeyeater <i>Meliphaga lewinii</i>
Crimson Rosella <i>Platycercus elegans</i>	Yellow-faced Honeyeater <i>Lichenostomus chrysops</i>
Eastern Rosella <i>Platycercus eximius</i>	Singing Honeyeater <i>Lichenostomus virescens</i>
Red-rumped Parrot <i>Psephotus haematonotus</i>	White-eared Honeyeater <i>Lichenostomus leucotis</i>
Budgerigar <i>Melopsittacus undulatus</i>	Fuscous Honeyeater <i>Lichenostomus fuscus</i>
Ground Parrot <i>Pezoporus wallicus</i>	Yellow-plumed Honeyeater <i>Lichenostomus ornatus</i>
Pheasant Coucal <i>Centropus phasianinus</i>	White-plumed Honeyeater <i>Lichenostomus penicillatus</i>
Eastern Koel <i>Eudynamis orientalis</i>	Bell Miner <i>Manorina melanophrys</i>
Channel-billed Cuckoo <i>Scythrops novaehollandiae</i>	Noisy Miner <i>Manorina melanocephala</i>
Horsfield's Bronze-Cuckoo <i>Chalcites basalıs</i>	Spiny-cheeked Honeyeater <i>Acanthagenys rufogularis</i>
Shining Bronze-Cuckoo <i>Chalcites lucidus</i>	Little Wattlebird <i>Anthochaera chrysoptera</i>
Pallid Cuckoo <i>Cacomantis pallidus</i>	Regent Honeyeater <i>Anthochaera phrygia</i>
Fan-tailed Cuckoo <i>Cacomantis flabelliformis</i>	Red Wattlebird <i>Anthochaera carunculata</i>
Brush Cuckoo <i>Cacomantis variolosus</i>	White-fronted Chat <i>Epthianura albifrons</i>
Powerful Owl <i>Ninox strenua</i>	Scarlet Honeyeater <i>Myzomela sanguinolenta</i>
Barking Owl <i>Ninox connivens</i>	Tawny-crowned Honeyeater <i>Glyciphila melanops</i>
Southern Boobook <i>Ninox novaeseelandiae</i>	Brown Honeyeater <i>Lichmera indistincta</i>
Sooty Owl <i>Tyto tenebricosa</i>	New Holland Honeyeater <i>Phylidonyris novaehollandiae</i>
Masked Owl <i>Tyto novaehollandiae</i>	White-cheeked Honeyeater <i>Phylidonyris niger</i>
Eastern Barn Owl <i>Tyto javanica</i>	Brown-headed Honeyeater <i>Melithreptus brevirostris</i>
Azure Kingfisher <i>Ceyx azureus</i>	White-naped Honeyeater <i>Melithreptus lunatus</i>
Laughing Kookaburra <i>Dacelo novaeguineae</i>	Blue-faced Honeyeater <i>Entomyzon cyanotis</i>
Forest Kingfisher <i>Todiramphus macleayii</i>	Noisy Friarbird <i>Philemon corniculatus</i>
Sacred Kingfisher <i>Todiramphus sanctus</i>	Striped Honeyeater <i>Plectorhyncha lanceolata</i>
Rainbow Bee-eater <i>Merops ornatus</i>	Painted Honeyeater <i>Grantiella picta</i>
Dollarbird <i>Eurystomus orientalis</i>	Grey-crowned Babbler <i>Pomatostomus temporalis</i>
Superb Lyrebird <i>Menura novaehollandiae</i>	Australian Logrunner <i>Orthonyx temminckii</i>
Rufous Scrub-bird <i>Atrichornis rufescens</i>	Spotted Quail-thrush <i>Cinclosoma punctatum</i>
White-throated Treecreeper <i>Cormobates leucophaea</i>	Eastern Whipbird <i>Psophodes olivaceus</i>
Red-browed Treecreeper <i>Climacteris erythroptus</i>	Varied Sittella <i>Daphoenositta chrysoptera</i>
Brown Treecreeper <i>Climacteris picumnus</i>	Ground Cuckoo-shrike <i>Coracina maxima</i>
Green Catbird <i>Ailuroedus crassirostris</i>	Black-faced Cuckoo-shrike <i>Coracina novaehollandiae</i>
Regent Bowerbird <i>Sericulus chrysocephalus</i>	White-bellied Cuckoo-shrike <i>Coracina papuensis</i>
Satin Bowerbird <i>Ptilonorhynchus violaceus</i>	Cicadabird <i>Coracina tenuirostris</i>
Superb Fairy-wren <i>Malurus cyaneus</i>	White-winged Triller <i>Lalage sueurii</i>
Variegated Fairy-wren <i>Malurus lamberti</i>	Crested Shrike-tit <i>Falcunculus frontatus</i>
Southern Emu-wren <i>Stipiturus malachurus</i>	Golden Whistler <i>Pachycephala pectoralis</i>
Rockwarbler <i>Origma solitaria</i>	Rufous Whistler <i>Pachycephala rufiventris</i>
Yellow-throated Scrubwren <i>Sericornis citreogularis</i>	Grey Shrike-thrush <i>Colluricincla harmonica</i>
White-browed Scrubwren <i>Sericornis frontalis</i>	Australasian Figbird <i>Sphecotheres vieilloti</i>
Large-billed Scrubwren <i>Sericornis magnirostra</i>	Olive-backed Oriole <i>Oriolus sagittatus</i>
Chestnut-rumped Heathwren <i>Hylacola pyrrhopygia</i>	Masked Woodswallow <i>Artamus personatus</i>
Speckled Warbler <i>Chthonicola sagittata</i>	White-browed Woodswallow <i>Artamus superciliosus</i>
Weebill <i>Smicrornis brevirostris</i>	Dusky Woodswallow <i>Artamus cyanopterus</i>
Brown Gerygone <i>Gerygone mouki</i>	Grey Butcherbird <i>Cracticus torquatus</i>
White-throated Gerygone <i>Gerygone albogularis</i>	Pied Butcherbird <i>Cracticus nigrogularis</i>
Striated Thornbill <i>Acanthiza lineata</i>	Australian Magpie <i>Cracticus tibicen</i>
Yellow Thornbill <i>Acanthiza nana</i>	Pied Currawong <i>Strepera graculina</i>
Yellow-rumped Thornbill <i>Acanthiza chrysorrhoa</i>	Rufous Fantail <i>Rhipidura rufifrons</i>
Buff-rumped Thornbill <i>Acanthiza reguloides</i>	Grey Fantail <i>Rhipidura albiscapa</i>
Brown Thornbill <i>Acanthiza pusilla</i>	Willie Wagtail <i>Rhipidura leucophrys</i>
Southern Whiteface <i>Aphelocephala leucopsis</i>	Australian Raven <i>Corvus coronoides</i>
Spotted Pardalote <i>Pardalotus punctatus</i>	Torresian Crow <i>Corvus orru</i>
Striated Pardalote <i>Pardalotus striatus</i>	Leaden Flycatcher <i>Myiagra rubecula</i>

Table 1. Birds Recorded in the Hunter Region 1926-1950 (Species confirmed breeding are indicated in **Bold**) (cont.)

Restless Flycatcher <i>Myiagra inquieta</i>
Black-faced Monarch <i>Monarcha melanopsis</i>
Magpie-lark <i>Grallina cyanoleuca</i>
White-winged Chough <i>Corcorax melanorhamphos</i>
Paradise Riflebird <i>Ptiloris paradiseus</i>
Jacky Winter <i>Microeca fascians</i>
Scarlet Robin <i>Petroica boodang</i>
Red-capped Robin <i>Petroica goodenovii</i>
Flame Robin <i>Petroica phoenicea</i>
Rose Robin <i>Petroica rosea</i>
Hooded Robin <i>Melanodryas cucullata</i>
Pale-yellow Robin <i>Tregellasia capito</i>
Eastern Yellow Robin <i>Eopsaltria australis</i>
Horsfield's Bushlark <i>Mirafrja javanica</i>
Australian Reed-Warbler <i>Acrocephalus australis</i>
Little Grassbird <i>Megalurus gramineus</i>
Rufous Songlark <i>Cincloramphus mathewsi</i>
Brown Songlark <i>Cincloramphus cruralis</i>
Silvereve <i>Zosterops lateralis</i>
White-backed Swallow <i>Cheramoeca leucosterna</i>

Welcome Swallow <i>Hirundo neoxena</i>
Fairy Martin <i>Petrochelidon ariel</i>
Tree Martin <i>Petrochelidon nigricans</i>
Ground Thrush <i>Zoothera spp</i>
Common Starling <i>Sturnus vulgaris</i>
Mistletoebird <i>Dicaeum hirundinaceum</i>
Zebra Finch <i>Taeniopygia guttata</i>
Double-barred Finch <i>Taeniopygia bichenovii</i>
Plum-headed Finch <i>Neochmia modesta</i>
Red-browed Finch <i>Neochmia temporalis</i>
Diamond Firetail <i>Stagonopleura guttata</i>
House Sparrow <i>Passer domesticus</i>
Australasian Pipit <i>Anthus novaeseelandiae</i>
European Goldfinch <i>Carduelis carduelis</i>
SUPPLEMENTARY LIST (BIRDS RECORDED NEARBY)
Fork-tailed Swift <i>Apus pacificus</i> (at Comboyne)
Fluttering Shearwater <i>Puffinus gavia</i> (at sea)
Pomarine Jaeger <i>Stercorarius pomarinus</i> (at sea)
Spangled Drongo <i>Dicrurus bracteatus</i> (at Comboyne)

The status of Bassian and Russet-tailed Thrushes in the Hunter Region

Daniel Williams

4 Mawson Street, Shortland, NSW 2307, Australia
sychthrops@yahoo.com.au

Both species of Australian ground thrush occur within the Hunter Region. Being species that are both cryptic and secretive they often go unrecorded. Although there is a generally accepted view of their distribution and movements within the Hunter Region, to date no formal analysis has been undertaken. Within this study thrush records from three different sources have been combined and a simple analysis of the spatial distribution of records undertaken. The analysis indicates probable seasonal movements, albeit with some bias of observer preference for lower altitude areas during the winter months. Although there appears to be a general trend for Bassian Thrush to move to lower elevations during winter, there are a number of sites with records year-round, highlighting more complex movements than a simple altitudinal migration. There are too few records of Russet-tailed Thrush, which has a limited distribution in the Hunter Region, for meaningful conclusions regarding seasonal movements to be drawn. More research and targeted systematic surveys are required to better understand the movements of the ground thrush species within the Hunter Region.

INTRODUCTION

The Bassian Thrush *Zoothera lunulata* and Russet-tailed Thrush *Z. heinei* are the only two species of thrush native to Australia. They are secretive, ground-dwelling birds that feed on moist ground, typically in areas of substantial leaf litter. Both have a rich brown plumage with cryptic scaled patterning and their voice is serene and melodious. They occur in the Hunter Region, but their distribution and movements are not well known. Neither species is frequently recorded due to a combination of the following factors:

- they are typically secretive in nature and can be difficult to observe;
- they usually call at dawn but remain quiet for most of the day;
- the rainforest habitat in which they predominantly reside is often remote and difficult to access;
- they can be difficult to identify from each other and so observations are recorded as 'ground thrush sp.'; and
- until as recently as the early 1980s they were regarded as a single species and so records prior to their splitting could relate to either species.

The Handbook of Australian, New Zealand and Antarctic Birds (HANZAB) indicates that Bassian Thrush occurs along the east coast of Australia and

throughout the Great Dividing Range from south-east Queensland to Tasmania (Higgins *et al.* 2006: 1823-1825). Separate populations also exist around Adelaide in South Australia and the Atherton region of Queensland. The distribution of Russet-tailed Thrush is more coastal (Higgins *et al.* 2006: 1838-1839) than that of Bassian Thrush. It occurs from the Atherton region of Queensland, south to the Hunter Valley of NSW. Where the ranges of the two species overlap, the Bassian Thrush typically occupies habitats of higher altitude than the Russet-tailed, although they are known to co-exist in some areas. Little is understood of the movements of either species, but they are generally regarded as being sedentary with some seasonal altitudinal movements being observed. Much of the information regarding the occurrence of the two species in the region of overlap and their seasonal movements, relates to populations in Queensland and northern NSW. The HBOC Annual Bird Report describes the status of both species in the Hunter Region as 'resident'.

METHOD

Available records of both species in the Hunter Region were obtained from the following sources:

- BirdLife Australia Bird Atlas records from 1998 to the present, courtesy of Andrew Silcocks;

- NSW Government Office of Environment and Heritage Atlas of NSW Wildlife records from 1952 to 2010; and
- Hunter Bird Observers Club Annual Bird Report records from 1993 to 2010.

This data collation exercise yielded a total of 663 records of ground thrushes in the Hunter Region. This is a relatively small dataset, especially for Russet-tailed Thrush for which there were only 141 records. There are also a number of issues relating to data quality that compromise analysis, including:

- many records are duplicated within the three data sources;
- the relatively recent splitting of the ground thrush species and the difficulty in positively identifying them creates a bias to recording Bassian Thrush; and
- the Russet-tailed Thrush is typically only recorded when heard around dawn and dusk – times when observers are rarely located at high altitude and thus introducing a bias towards its observation at lower altitude locations.

Taking into account the limitations of the data I restricted my analysis to simple approaches.

Firstly I conducted a spatial analysis which allowed possible differences in distribution of the two species to be identified. Multiple records from a single location were mapped as a single point, giving an indication of distribution rather than abundance. While this approach does not address the bias of survey effort in remote areas and misidentification, it does eliminate the issue of duplication of records between databases.

Secondly I conducted a qualitative analysis of thrush records, to test the belief that they are seasonal altitudinal migrants. For example, Bassian Thrushes are observed in Newcastle and lowland areas of the Lower Hunter in winter, but rarely in summer. To assess the validity of this generally accepted movement, Bassian Thrush records were separated into summer (December - February) and winter (June - August) classifications and mapped to identify spatial differences in seasonal distribution. A similar analysis was undertaken for Russet-tailed Thrush records.

RESULTS

Figure 1 shows the spatial distribution of ground thrush records in the Hunter Region.

It can be seen that the Bassian Thrush has been recorded within most of the extensive 'wet forest' habitat throughout the Hunter Region, often in areas of higher altitude. The lower-lying dry forested areas of the Hunter Valley and coastal region show a much sparser distribution of records. The Russet-tailed Thrush is much more restricted in its range, being recorded predominantly in the Barrington Tops and the forested regions of Great Lakes and Greater Taree. It does not occur as far south as Port Stephens, or west of the Barrington Tops area, where it is recorded predominantly on the eastern slopes. The patterns observed in the spatial distribution of both species match the general descriptions provided by HANZAB.

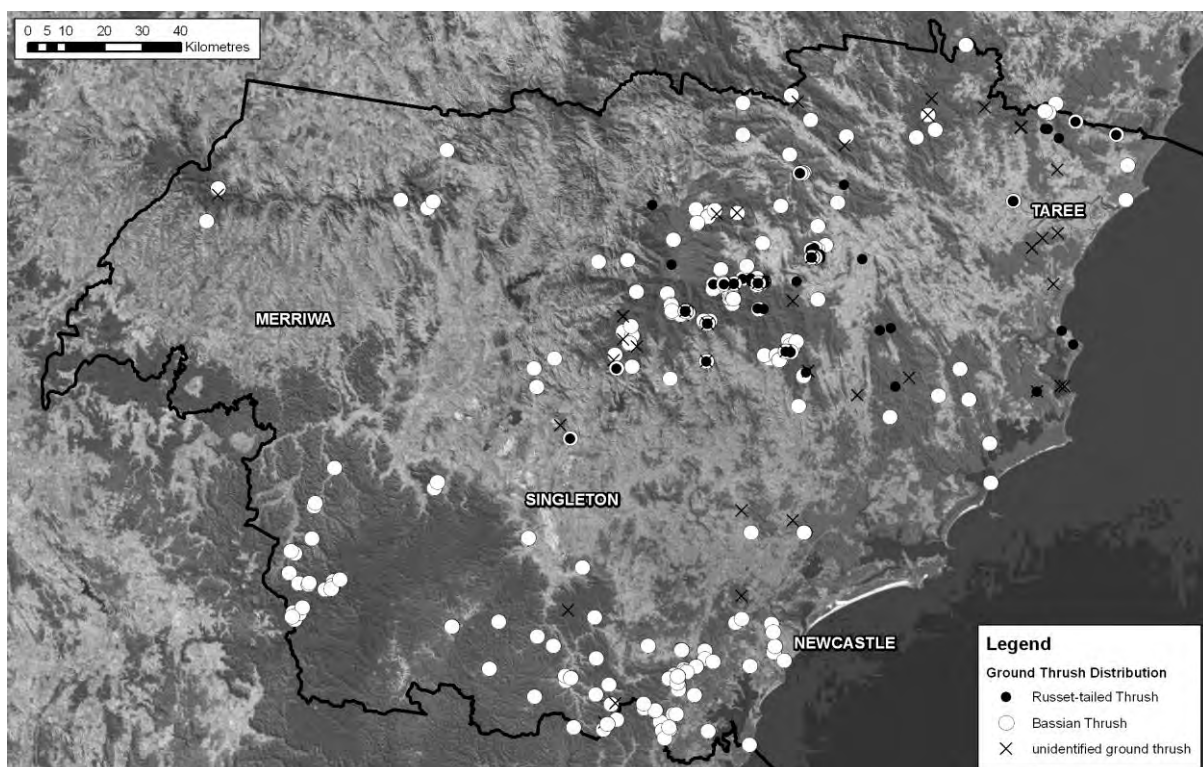


Figure 1. Spatial distribution of ground thrush records in the Hunter Region.

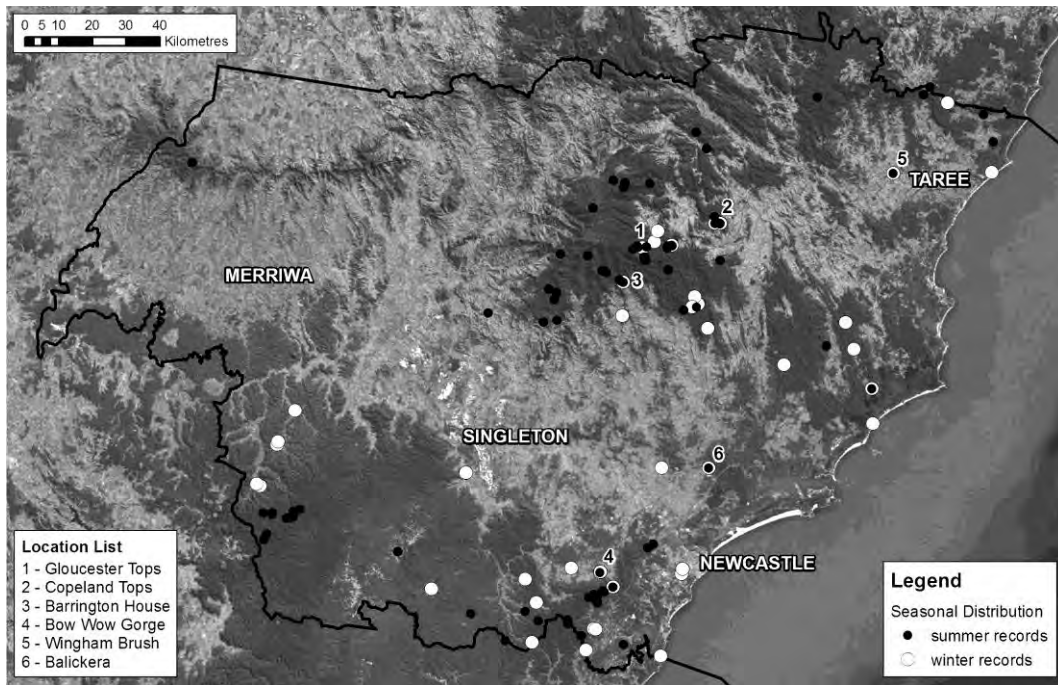


Figure 2. Seasonal analysis of spatial distribution of Bassian Thrush in the Hunter Region.

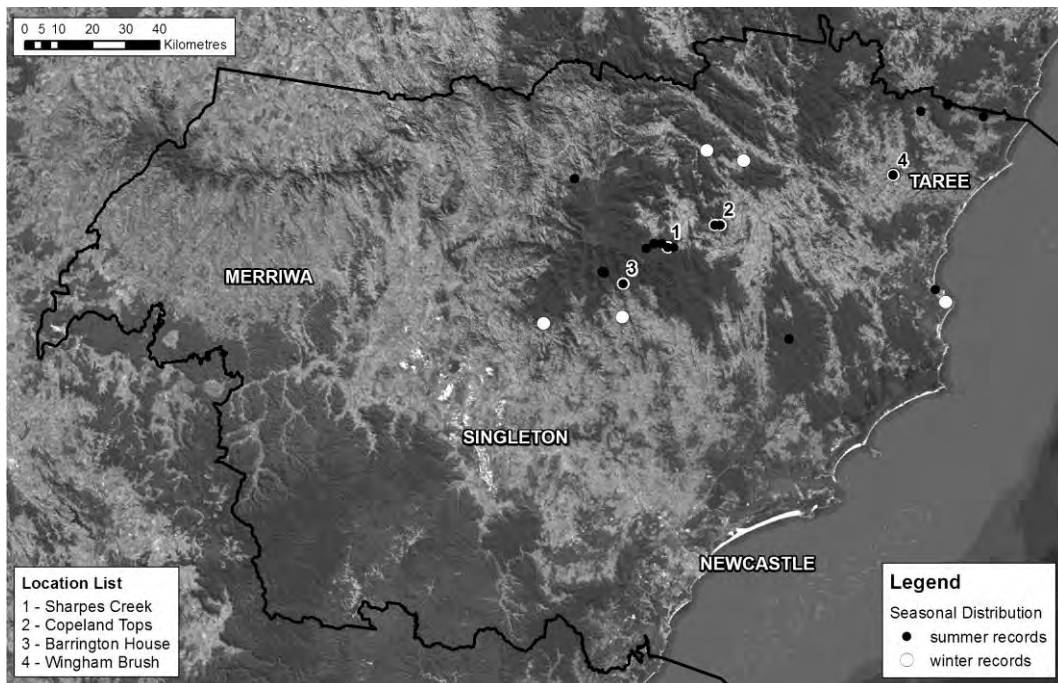


Figure 3. Seasonal analysis of spatial distribution of Russet-tailed Thrush in the Hunter Region.

Bassian Thrush

Figure 2 presents the results of the seasonal analysis of Bassian Thrush records.

The summer records are predominantly from the higher forested areas, with winter records located both coastally and along the perimeters of the

upland forested areas. This is particularly noticeable when looking at winter records located in Newcastle, near Harrington on the coast and in the Widden and Baerami valleys of Wollemi National Park.

However, although **Figure 2** portrays an apparent pattern of seasonal movement, variations in

distribution may be distorted by differences in observer effort. Firstly, there are a greater number of surveys from the mountainous areas (>1000m), such as the Barrington Tops, in summer than there are in winter (70 against 19), due to the inclement conditions. This means that records of ground thrushes from the higher altitude areas are far more likely in summer than they are in winter, providing a distorted indication of preference for higher altitude locations in summer. Secondly, there are a number of locations at which Bassian Thrush is recorded in both summer and winter, with no clear pattern of altitude. These locations include: Gloucester Tops (~1000m), Copeland Tops (~500m), Barrington House (~350m), Bow Wow Gorge (<100m), Wingham Brush (<20m) and Balickera (<20m). However, at other low altitude locations (such as Harrington and Blackbutt Reserve) the Bassian Thrush is only recorded in winter. This suggests that Bassian Thrushes are entirely absent neither from high altitude locations in winter nor from more coastal locations in summer.

Russet-tailed Thrush

The evidence for seasonal movement of Russet-tailed Thrushes (**Figure 3**) is less convincing than that for the Bassian Thrush presented in **Figure 2**. This may be due to the more restricted range of Russet-tailed Thrush and the smaller number of records of this species. The records at the southern limits of the greater Barrington Tops area provide an indication of seasonal altitudinal movement, but this is not conclusive. As with Bassian Thrush there are a number of locations at which Russet-tailed Thrush is recorded in both summer and winter. These locations include: Sharpes Creek (~500m), Copeland Tops (~500m), Barrington House (~350m) and Wingham Brush (<20m).

DISCUSSION

The distribution maps suggest a seasonal movement of Bassian Thrush from higher altitude areas in summer to lower altitude areas in winter. This conclusion is supported by records from a number of lowland sites at which Bassian Thrush is recorded in winter but never in summer. Conversely however, there are also a number of sites that support both species throughout the year. This would suggest that the seasonal movement is more complex than a simple altitudinal migration. This could relate to a number of other potential factors, including habitat quality, climate, availability of food source and dispersal of first

year individuals. It is also a possibility that adult birds may hold established territories and immature birds may migrate after the breeding season to establish new territories. The data that is available is not sufficient to draw conclusions about these or other potential hypotheses. More survey data is required in order to better understand the apparent seasonal migration of the Bassian Thrush in the Hunter Region.

Evidence for seasonal movement of Russet-tailed Thrush in the Hunter Region is tenuous and is more likely due to a bias in observer effort during winter and summer than of an actual pattern of seasonal movement. The requirement for more survey data of the Russet-tailed Thrush is even more pronounced than for that of Bassian Thrush, if a better understanding of any potential seasonal movement is to be gained.

CONCLUSION

In summary, the distribution of the ground thrush species in the Hunter Region appears at least superficially to be well understood, with descriptions of species distribution in HANZAB (Higgins *et al.* 2006) being confirmed by the available records. However, the seasonal movements are much less certain, with a lack of data making conclusions difficult to draw. More research into the *Zoothera* genus, for instance, involving systematic surveys targeted at capturing altitudinal movements of the ground thrush species, would provide a suitable dataset from which a robust statistical analysis could be undertaken.

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REFERENCES

- Higgins, P.J., Peter, J.M. and Cowling, S. J. (Eds). (2006) 'Handbook of Australian, New Zealand and Antarctic Birds. Volume 7: Boatbill to Starlings'. (Oxford University Press: Melbourne.)
- Stuart, A. (Ed.) (1994 – 2011). Hunter Region of New South Wales Annual Bird Report Numbers **1** to **18** (1993 – 2010). (Hunter Bird Observers Club Inc.: New Lambton, NSW.)

Initial findings from a study of Grey-tailed Tattlers in Port Stephens

Lois Wooding¹ and Alan Stuart²

¹14/4 Muller Street, Salamander Bay NSW 2317, Australia wooding@nelsonbay.com

²81 Queens Road New Lambton NSW 2305, Australia almarosa@bigpond.com

Past records of the Grey-tailed Tattler *Tringa brevipes* in the Hunter Region are reviewed. The largest numbers have been recorded in Port Stephens. The Hunter Estuary is another important site whereas only small numbers of birds have been recorded at other locations within the region. Regular surveys in Port Stephens in 2012-13 revealed the presence of up to 124 birds during the non-breeding period and up to 14 birds over-wintering. Port Stephens has been confirmed to be the most important area in New South Wales for Grey-tailed Tattler. Six locations were identified as the main high-tide roosting sites in the non-breeding period and one additional site for over-wintering birds. These sites are analysed for their common characteristics, which include mangroves *Aegiceras corniculatum* and *Avicennia marina* and proximal seagrasses *Zostera* sp. Some feeding and agonistic behavioural observations are also reported.

INTRODUCTION

The Grey-tailed Tattler *Tringa brevipes* is a medium-sized shorebird with shortish yellow legs, evenly shaded grey and white plumage, straight black-brown bill and a white eye-stripe extending beyond the eye. For a long time, it was considered to be conspecific with the Wandering Tattler *Tringa incana*. The difficulty in distinguishing the two species in the field was often mentioned (see Bunkport (1995) and Andrews (1995) for excellent discussions about the key field differentiators). Field identification problems contributed to the delay in achieving a full understanding of the global distribution and movements of the Grey-tailed Tattler¹.

Port Stephens is an important site for Grey-tailed Tattlers in NSW (Stuart 2011b) but very little is known about how they utilise the local ecosystem. Also, Port Stephens provides relatively accessible sites such that a long term behavioural study is feasible. In January 2012 we commenced such a study. This paper presents preliminary findings, to the end of the 2012-13 non-breeding period.

¹ Over time it has collected a host of common names: Eastern Grey Sandpiper; Grey-tailed Sandpiper; Short-legged Sandpiper; Grey-rumped Sandpiper; Ashen Tringine Sandpiper; Polynesian Tattler; Siberian Tattler; Eurasian Tattler; Asiatic or Asian Tattler; Grey-rumped Tattler; Grey-tailed Tattler. Those are only the English names. Previous scientific names used include *Totanus griseopygius*, *Totanus (Heteractitis) brevipes* and *Heteroscelis brevipes*.

Species Overview

The Grey-tailed Tattler is confined to the East Asian-Australasian Flyway, with an estimated population of 50,000 birds (Bamford *et al.* 2008). It breeds in north-eastern Siberia during May-September (Neufeldt *et al.* 1961). The northward and southward migrations are focussed through Japan and Taiwan (Bamford *et al.* 2008, Branson *et al.* 2010). For this reason, its numbers are less affected by the loss of habitat at migration staging grounds around the Yellow Sea, which has depleted the populations of many other shorebird species (Branson *et al.* 2010).

In the non-breeding period, the majority of important sites, and over 90% of the population, are in Australia. Lesser numbers of Grey-tailed Tattlers migrate to Indonesia, the Philippines and New Guinea (Bamford *et al.* 2008).

Although the Grey-tailed Tattler was long suspected to breed in north-eastern Siberia, the breeding grounds were not confirmed until 1930 when E.V. Koslova, of the Academy of Sciences in the Zoological Museum of Leningrad found “young ... with down on the head and neck and with half-grown wings” in the Verkoyansk Ranges (Mathews 1933). It was another 29 years before the first nest and eggs were located. The main breeding territory was identified to be the Putorana Plateau, a short distance north of the Verkoyansk Ranges (Neufeldt *et al.* 1961). Birds

arrived on the Plateau in late May / early June and departed early September (Neufeldt *et al.* 1961).

Australian Distribution

The presence of the Grey-tailed Tattler in Australia was first noted by Gould, who described the species in Volume 6 of *The Birds of Australia* (Gould 1840-1848). Initially its range was thought to be restricted to the northern parts of Australia. The 1912 Checklist noted some NSW records but described them as extra-limital (Campbell *et al.* 1913). The 1926 Checklist still gave the range as “northern Australia, south Queensland and Western Australia” (Bryant 1933, Keast 1949). However, by 1933 the species was recognised to be regularly in NSW (Bryant 1933). Hindwood (1942) noted some were usually present at Long Reef in Sydney including over-wintering birds. The first record for SW Australia was in 1931 and for Victoria 1933 (Jenkins 1931, Bryant 1933).

Although BirdLife Australia lists the conservation status of the Grey-tailed Tattler as “Secure”, it has been declared “Critically Endangered” in Victoria (Lyon & Dennett 2008). It is not listed as threatened in Tasmania or South Australia.

Despite southern records, northern Australia is the stronghold for the species. There are many sites in WA and Queensland with maximum counts of several thousand birds (Bamford *et al.* 2008). In NSW, no sites have recorded >250 birds. Smith (1991) reported 1970-90 peak counts to be: Clarence Estuary (205 birds, 1983), Richmond Estuary (160 birds, 1988). Port Stephens (235 birds, 1980), Hunter Estuary (100 birds, year not given) and Botany Bay (150 birds, 1979).

Prior Hunter Region Records

The two main locations for Grey-tailed Tattler are Port Stephens and the Hunter Estuary. From the Annual Bird Reports (Stuart 1994-2012), the maximum counts at any other locations in the Hunter Region have been 12 birds at Swansea in 1996 and 3 birds in the Manning Estuary in 1997. Records from either site are irregular and usually of <5 birds. There are no known records from any other areas in the region where shorebirds occur.

The first published record for the Hunter Estuary (and the region) was of up to 34 birds at Throsby Creek during 1943-44 (Keast 1949). Keast was advised of their presence by a local birdwatcher, A.J. Gwynne, who reported that he had found them “on certain Hunter River mudflats ... over a

number of years”. Keast made several important behavioural observations of the Throsby Creek birds, some of which are discussed later.

In the Hunter Estuary, Kendall and van Gessel (1972) had a maximum count of 19 birds over 1969-72, with birds present in 39% of their surveys. Gosper (1981) surveying monthly over 1970-73 had a peak count of 55 birds and noted they were recorded in all months. Stuart (unpublished), reviewing all available Hunter Estuary data, reported a peak count of 96 birds in February 1984, and 80 birds in both January 1992 and March 1997. Smith (1991) reported a peak of 100 birds over 1970-90 but gave no details. Since Hunter Bird Observers Club (HBOC) commenced regular monthly surveys (April 1999) the peak count is 52 birds in January 2008 (Stuart 2009). Only 7 of the >160 HBOC surveys have recorded >35 birds.

The first known record for Port Stephens remains the highest count for any site in NSW. Pegler (1984) reported 235 birds feeding and roosting around Pindimar Bay in January 1980 and also found 10 birds at Corrie Island 4 weeks earlier. Potentially at least 245 birds were present and Pegler did not visit all the roosting sites identified in the present work.

During 1982-84 a few Port Stephens locations (but not Pindimar Bay) were visited as part of the Australasian Wader Studies Group (AWSG) national summer and winter surveys. The peak counts were 50-80 birds (Stuart 2005b). HBOC members started monthly surveys of Gir-um-bit National Park / Swan Bay in September 2000, recording Grey-tailed Tattlers frequently at Swan Bay in counts of up to ~20 birds and peak count of 40 birds in September 2008. In 2004, one of us (AS) became aware of past Pindimar Bay counts and surveyed the western side in December, finding 75+ birds. Also in 2004, HBOC commenced boat-based surveys of Port Stephens in partnership with the National Parks and Wildlife Service. The surveys have had a peak count of 100 Grey-tailed Tattlers (February 2007) with summer and winter average counts of 39 birds and 8 birds respectively (Stuart 2011b). Grey-tailed Tattler numbers are under-estimated by the boat-based survey method, as boats cannot approach close enough to many of the potential roost sites for the birds to be seen amid rocks or in/under mangroves.

Over 2007-11, one of us (LW) identified all the potential shorebird roost sites in Port Stephens and then made monthly surveys of them. That resulted

in several counts of 40-50+ Grey-tailed Tattlers (Stuart 2008-2012) but with uncertainty about actual numbers. The site visits were spaced over 2-3 weeks and movement of birds between sites was a potential factor. The information gathered became the foundation for the present investigation.

METHODS

Our main counts were made approximately monthly at a mutually convenient day/time. We avoided weekends when human disturbance was more likely to affect the survey outcomes. Most of the counts were at high tide when birds were roosting. Roost sites with no public access or restricted high-tide access were surveyed ~2 hours after the high tide when birds had first started to forage. We partitioned the sites into southern-eastern and northern-western sectors taking one sector each (and for consistency, doing the same sector each time). This made it feasible to survey all identified sites in the same high-tide event. For some early surveys, we co-opted others to check a specific site. We later made adjustments to our routes/schedules so we could cover all the sites ourselves.

To make foraging and behavioural observations we also surveyed some sites at low tide or between tides. These were done opportunistically.

In all the surveys, birds were observed from land using binoculars and telescopes. Photographs were taken on

many occasions. Information on numbers, plumage, behaviour and the presence of other shorebirds was recorded, along with any disturbance due to raptors, human activity, or weather. Incidental sightings occurring between survey dates either by the authors or knowledgeable local residents were also noted.

RESULTS

We surveyed at 14 sites around Port Stephens, identifying seven of them as regular high-tide roost sites. The usual flock size per site is relatively small (5-20 birds). Occasionally, larger flocks are encountered, including some during the over-wintering period. The monthly counts are detailed in **Table 1**. Six main sites were used for roosting during the non-breeding period: Winda Woppa (south-west Hawks Nest); Pindimar; Carrington; Swan Bay; Lemon Tree Passage and Salamander Bay. At Pindimar, birds were mostly around the main village but sometimes were found at Upper Pindimar village. In winter, Tanilba Bay had 5-6 birds present but it was rarely used in the rest of the year. No Grey-tailed Tattlers were found at three sites for which there are past records: Cromarty Bay, Soldiers Point and Karuah. At three other sites, Oyster Cove, Little Swan Bay and Tilligerry Creek, we found birds on only 1-2 occasions and in low numbers.

Table 1. Results of monthly Grey-tailed Tattler counts in Port Stephens in 2012-13

Year	Month	WW	Pindimar Bay		Carr	Swan Bay	LTP	Tan Bay	Sal Bay	Other	Total
			Pind	Upper P							
2012	January				9	1	11	2	10	2 ¹	35
	February	9	23			32	15				79
	March	7	26				1				34
	April	16				22	15		10		63
	May	1						6			7
	June							5			5
	July	1			8			5			14
	August	1	3			5		5		1 ¹	15
	September					8		5			13
	October	9	3	1	4	2	13		7		39
	November	17		7			8		7	3 ²	42
	December	8	29		7	2	6		8		60
2013	January				9	1	11	2	10	2 ¹	35
	February					21	18			2 ¹ 15 ²	56
	March	18	34	7	8	19	14	3	12	5 ¹ 4 ²	124
	April	23	16	4	7	12	6	1	13	8 ³	90

Note: ¹At Tilligerry Creek; ²At Little Swan Bay; ³At Oyster Cove

WW: Winda Woppa (Hawks Nest); Pind: Pindimar village; Upper P: Upper Pindimar; Carr: Carrington; LTP: Lemon Tree Passage; Tan Bay: Tanilba Bay; Sal Bay: Salamander Bay

DISCUSSION

Our maximum count for Grey-tailed Tattlers in Port Stephens was 124 birds, in March 2013. The most recent data available for all NSW sites are the 2010 counts (Scholten *et al.* 2012, Stuart 2011). Peak counts at the main Grey-tailed Tattler sites (excluding Port Stephens) were: Botany Bay 34 birds, Hunter Estuary 35 birds, Brunswick Estuary 13 birds. Port Stephens clearly is the most important site for Grey-tailed Tattler in NSW.

In the non-breeding period, there was month-to-month inconsistency in the counts at individual sites. This suggests that birds moved around in response to changing conditions. An alternative is that in unfavourable conditions (such as strong wind) they roosted in more sheltered places e.g. in mangroves, and thus escaped detection.

We found it unprofitable to attempt counts at low tide. Although Finn *et al.* (2002) found good correlation between high and low tide counts of Eastern Curlew *Numenius madagascariensis* in Moreton Bay, this was not the case with Grey-tailed Tattlers in Port Stephens. Although birds do not move great distances from the roost site, they are dispersed and very difficult to spot amidst the rocks and vegetation where they forage. Also, many potential foraging areas are not readily accessed. As an example of the difficulties, after finding 18 birds roosting at Hawks Nest we attempted to track the birds after they departed. Almost immediately, four birds disappeared and were not relocated. The others fed together amidst mangrove pneumatophores for 10-15 minutes, less than 50m from the roost site. Individuals often disappeared behind rocks or vegetation. It was not

easy to achieve a reproducible count even from ~20m. A disturbance then occurred and they flew a further 50-80m away, splitting into three smaller groups. After this, it would have been almost impossible to achieve an accurate count.

Characteristics of the Roost Sites

Figure 1 shows the locations of the main roosting sites. Creese *et al.* (2009) have mapped the marine and estuarine vegetation of Port Stephens. We note that all roost sites occur in areas where mangroves *Aegiceras corniculatum*, *Avicennia marina* are abundant. Also common to all sites is a muddy, substrate surface with proximal patches of seagrass *Zostera* sp.. The required presence of both mangroves and seagrass for Grey-tailed Tattlers in NSW has been briefly noted previously (Pegler 1981).

The width and length of exposed intertidal feeding zones vary. Most roost sites also offer alternative perches on rocky outcrops, rock retaining walls or rocky breakwaters. In good conditions Grey-tailed Tattlers prefer loafing on rock structures at high tide. During exceptionally high tides, inclement weather or periods of high disturbance, they retreat to the shelter of the mangroves. Some sites are subject to considerable human disturbance and all areas are regularly patrolled by raptors.

Our low-tide observations indicate that birds often feed reasonably close to their roosting sites. This corresponds with Pegler's observation that birds feeding in Pindimar only moved into the nearby mangroves to roost (Pegler 1984). Movement between roost sites and feeding grounds requires minimal expenditure of time and energy.

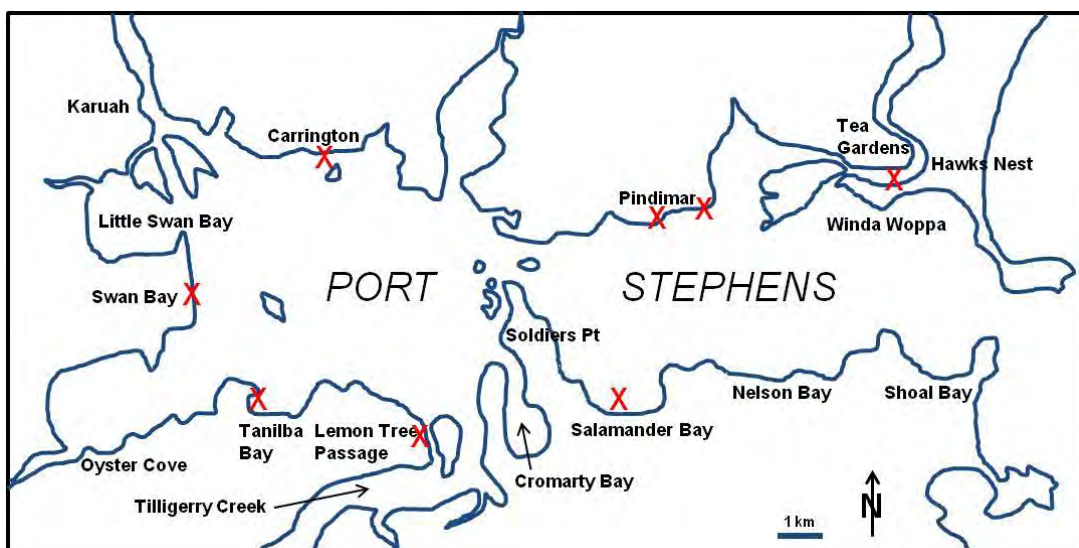


Figure 1. Main Grey-tailed Tattler roost sites in Port Stephens

Behavioural Observations

Flocks tended to disperse when feeding. Our observations agree with previous reports that foraging often occurs around small pools and channels or along the tidal edge (Domm & Recher 1973). When hunting, Grey-tailed Tattlers seem totally focused; they walk steadily, occasionally run and may then stand completely immobile and give the appearance of listening intently. Their tails bob constantly as they probe the mud in search of food.

Keast (1949) and Andrew (1962) noticed that in the lead-up to their northern migration, Grey-tailed Tattlers changed their diet from worms (Keast) and fish (Andrew) to crustaceans such as crabs. Both speculated that this might be a strategy to maximise fat intake to fuel their long migratory flight. Both Keast and Andrew detailed their method of catching, washing and removing the legs of larger crabs before eating them (smaller crabs were eaten whole). We have observed the same behaviour with both small and larger crabs. However, we have observed them eating crabs in mid-February i.e. considerably before the migration departure date. We intend to pursue observations about diet and dietary changes as part of our ongoing study.

There is little information available about social interactions or pre-breeding behaviour (Higgins & Davies 1996, P. Tomkovich private comm.). One of us has observed possible courtship or pair bonding behaviour in Port Stephens (Wooding 2013). We have also observed acts of aggression. When one bird intrudes too closely on the feeding space of another bird, aggression usually involves the bird in residence running at the intruder. At roost sites, we have sometimes observed birds adopt an erect stance and thrust forward their chest towards another bird which then backs away conceding the favoured roost position.

With care, Grey-tailed Tattlers can be approached quite closely. They seem confident in the camouflage provided by their small size and cryptic colouration. When flushed they usually fly out over the water in a wide arc before landing 100-200m further down the beach where they immediately resume feeding.

CONCLUSIONS

Port Stephens has been confirmed to be the most important site in NSW for Grey-tailed Tattler. We

consider that our present method involving land-based surveys at high tide generates more reliable counts of Grey-tailed Tattler numbers than boat-based surveys. The latter are appropriate for most shorebirds but the Grey-tailed Tattler's habit of roosting on rockwalls, on beaches near mangroves, or in mangroves, requires a different approach. The land-based surveys also allow more opportunity for behavioural observations. Birds roosting in mangroves can be over-looked by either method. All counts potentially under-estimate the Grey-tailed Tattler population.

We have not found Grey-tailed Tattlers in the high numbers of the 1980 survey of Port Stephens nor in the numbers at Pindimar Bay in 2004. Probably there has been a decline in numbers, and the decline may be substantial. However, the 2012-13 counts compare well with most others from the past decade. The current population may be stable. In the past decade Port Stephens has experienced substantial development and loss of habitat and increased amount of disturbance (Stuart 2011b). Therefore we plan a longer-term study of Grey-tailed Tattlers in Port Stephens in order to monitor population trends and the health of high-tide roosting sites and feeding areas and to make further behavioural observations.

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REFERENCES

- Andrew, I.G. (1962). Observations on a Tattler at Waikanae Estuary. *Notornis* **10**: 67-72.
- Andrew, D. (1995). More on Tattlers. *Australian Birding* **2**(2): 7.
- Anon. (2007) Victorian Department of Sustainability and Environment Advisory List of Threatened Vertebrate Fauna in Victoria. (Department of Sustainability and Environment, East Melbourne: Victoria.)
- Bamford, M., Watkins, D., Bancroft W., Tischler G. and Wahl, J. (2008). Migratory Shorebirds of the East Asian - Australasian Flyway: Population Estimates and Internationally Important Sites. (Wetlands International – Oceania. Canberra: Australia.)
- Branson, N.J.B.A., Yoshimitsu, S., Chiang, C.Y. and Minton, C.D.T. (2010). Movements of Grey-tailed Tattlers and Terek Sandpipers in the East Asian/Australasian Flyway. *Stilt* **57**: 50-58.

- Bryant, C.E. (1933). The Range of the Tattlers in Australia – and a Victorian Record of *Tringa brevipes*. *The Emu* **32**: 294-297.
- Bunkport, K. (1995). Little Aussie Tattlers. *Australian Birding* **2**(1): 17-20.
- Campbell, A.J., Milligan, A.W., Legge, W.V., Mellor, J.W., Basset Hull, A.F. and Hall, R. (1913). Official Check-List of the Birds of Australia, Supplement to Vol 12 of *The Emu*.
- Creese, R.G., Glasby, T.M., West, G. and Gallen, C. (2009). Mapping the habitats of NSW estuaries. Fisheries Final Report Series No. 113 ISSN 1837-2112. (Department of Industry & Investment NSW.)
- Domm, S. and Recher, H.F. (1973). The birds of One Tree Island with notes on their yearly cycle and feeding ecology. *Sunbird* **4**: 63-86.
- Finn, P.G., Driscoll, P.V. and Catterall, C.P. (2002). Eastern Curlew numbers at high-tide roosts versus low-tide feeding grounds: a comparison at three spatial scales. *The Emu* **102**: 233-239.
- Gosper, D.G. (1981). Survey of Birds on Floodplain-estuarine Wetlands on the Hunter and Richmond Rivers in Northern N.S.W. *Corella* **5**: 1-18.
- Gould, J. (1840-48). 'The Birds of Australia, Vol 6'. (London.)
- Higgins, P.J. and Davies, S.J.J.F. (Eds) (1996). 'Handbook of Australian, New Zealand and Antarctic Birds Volume 3: Snipe to Pigeons'. (Oxford University Press: Melbourne.)
- Hindwood, K.A. (1942). The Birds of Long Reef, New South Wales. *Proc. Royal Zool. Soc. NSW*: 14-33.
- Hindwood, K.A. and Hoskin, E.S. (1954). The Waders of Sydney (County of Cumberland), New South Wales. *The Emu* **54**: 217-255.
- Jenkins, C.F.H. (1931). A New Record for South-western Australia. *The Emu* **31**: 278-279.
- Keast, J.A. (1949). Field notes on the Grey-tailed Tattler. *Records of the Australian Museum* **22**: 207-211.
- Kendall, T. and van Gessel, F. (1972). The Birds of Kooragang Island. Preliminary Report. *Hunter Natural History* **4**(2): 79-93.
- Lyon, R.H. and Dennett, X. (2008). Waterbirds of Western Port. *The State of Australia's Birds. Supplement to Wingspan* **18**(4): 25.
- Neufeldt, I., Krechmar, A.V. and Ivanov, A.I. (1961). Studies of less familiar birds. Grey-rumped Sandpiper. *British Birds* **54**: 30-33.
- Pegler, J. (1981). A Comparison of Wader Distribution in Botany Bay and Port Stephens. *Stilt* **1**: 2.
- Pegler, J. (1984). A Wader Survey of the Northern Shores of Port Stephens and the Lower Myall River. *Australian Birds* **14**: 68-73.
- Mathews, G.M. (1933). Notes on Some Australian Migrants. *The Emu* **32**: 287-292.
- Scholten, S., Costello, L., Milton, D. and Maurer, G. (2012). Report on Australian Shorebird Population Counts Winter 2009 and Summer 2009-10. *Stilt* **62**: 33-53.
- Smith, P. (1991). The Biology and Management of Waders (Suborder Charadrii) in NSW. National Parks and Wildlife Service. Species Management Report number **9**. (NSW National Parks & Wildlife Service.)
- Stuart, A. (Ed.) (1994-2012). Hunter Region of New South Wales Annual Bird Report Numbers **1** to **19** (1993-2011). (Hunter Bird Observers Club Inc.: New Lambton, NSW.)
- Stuart, A. (2005b). Survey of the Shorebirds of Port Stephens, February 2004. *Stilt* **47**: 20-25.
- Stuart, A. (2011b). Shorebird Surveys at Port Stephens, New South Wales 2004-2011 and Comparisons with Results from Previous Surveys. *Stilt* **60**: 14-21.
- Stuart, A. Shorebird Records of the Hunter Estuary Prior to April 1999, unpublished report for HBOC.
- Wooding, L. (2013). Unusual behaviour between Grey-tailed Tattlers. *The Whistler* **7**: 56.

Opportunistic response of birds to wildfire in saltmarsh, Ash Island, NSW

Rob Kyte¹ and Mike Newman²

¹ 22 Madison Drive, Adamstown Heights, NSW 2289, Australia robertkyte@bigpond.com

² 7 Glenurie Close, Woodville, NSW 2321, Australia omgnewman@bigpond.com

Fire modifies bird habitat by altering vegetation structure and increasing the availability of some food resources (e.g. seeds). Following a wildfire in saltmarsh at Ash Island in the Hunter Estuary in January 2012, bird monitoring indicated that five bird species benefited during the following year. Black-fronted Dotterels and Magpie-larks responded rapidly, but were only present during the first three months. White-fronted Chats and Australasian Pipits showed a similar immediate response, which persisted throughout the year. However, in the case of chats there was some evidence of seasonal fluctuations, with winter favoured. Stubble Quail, a species rare in the area, were present for several months, first arriving eight months after the fire. The attraction of these species to the burnt area is consistent with their preference for relatively open habitat and their ground-feeding preferences.

INTRODUCTION

Saltmarsh offers a unique environment for many species of birds. It is one of the most biologically productive habitats supporting a wide variety of insects, invertebrates and fish. It is dominated by salt tolerant plants, such as grass and shrubs and offers an extensive food source at either end of the tidal range. Australian saltmarsh habitat has been studied closely over the past decade (Saintilan 2009).

On 22 January 2012 a wildfire occurred in the northern section of Ash Island. The fire burnt over 26.3ha, including 7.7ha of saltmarsh and 17.4ha of kikuyu pasture. Fires in saltmarsh are a rare occurrence and the opportunity arose to examine the effect wildfire had on bird assemblages and the way these changed over time as the saltmarsh recovered.

Ash Island is part of the Hunter River estuary and is the western section of the much larger Kooragang Island (32°52' S 151°44' E). The Hunter Bird Observers Club was invited by NSW National Parks and Wildlife Service to conduct a bird monitoring program, following the 2012 wildfire. The main objectives of the study were to measure the changes in bird populations in regenerating burnt saltmarsh; compare populations of regenerating saltmarsh to control areas of mature

unburnt saltmarsh and to collate this information to inform future management of fires within saltmarsh. A secondary objective was to measure the diversity of the bird population in the area immediately surrounding the surveyed saltmarsh habitat.

Fires often create new foraging opportunities, which are rapidly exploited by birds (Woinarski & Recher 1997), as occurred in this study. This paper provides a summary of the results obtained in the 12 month period immediately after the fire, with a focus on species which opportunistically exploited conditions created by the fire. These species were the Black-fronted Dotterel *Elseyornis melanops*, Magpie-lark *Grallina cyanoleuca*, White-fronted Chat *Epthianura albifrons*, Australasian Pipit *Anthus novaeseelandiae* and Stubble Quail *Coturnix pectoralis*.

METHODS

Four irregularly shaped 2ha survey sites were used (**Figure 1**). Two sites, red (32°50'19"S, 151°43'18"E) and white (32°50'30"S, 151°43'20"E) were at opposite ends of the burnt area. The two other sites, yellow (32°50'31"S, 151°43'33"E) and blue (32°50'19"S, 151°43'32"E) were used as controls in areas of unburnt saltmarsh.

Each total survey involved recording data from within all the 2ha sites and also within a 500 metre radius of the centre of the sites. This included the area covered while walking between sites. A standard BirdLife Australia survey method was used, where each 2ha site was monitored for 20 minutes. The typical overall survey time was between 2 and 2.5 hours. Most surveys commenced 0.5–1.5 hours after sunrise to minimise the impact of variation in diurnal temperature. Only one set of surveys was conducted on any day, usually involving two observers. Results were collated in five lists, one for each of the 2ha sites and one covering the total survey area. Surveys commenced approximately one month after the fire; the delay being associated with the time required to establish the project after the fire occurred.



Figure 1. Survey sites in saltmarsh at Ash Island, Hunter Wetlands National Park

RESULTS

This analysis covers the first 12 months of the study (March 2012 to February 2013) and involves 37 surveys, during which 69 bird species were recorded. The average number of species seen per visit was 16. Reporting rates (the frequency species were observed) and mean numbers for each species during the total survey are shown in **Table 1**. Reporting rates for the total survey (RR_T) reflect the presence of bird species at all sites and the surrounding area and unless the species was seen exclusively at one 2ha site, RR_T values were higher than the reporting rates for individual sites (RR).

The most obvious initial impact of the fire was to create large areas of bare ground, except for stumps of burnt *Juncus* (mainly *Juncus acutus*). These bare areas immediately provided ideal feeding habitat for the four species which are the primary focus of this paper. Comparison between the occurrence of these species in the burnt and unburnt areas (**Figure 2**) indicates the fire was beneficial to all four species. Differences in RRs between burnt and unburnt sites were highly significant statistically for White-fronted Chats and Australasian Pipits (χ^2 test; $p < 0.01$). Reporting rates were of insufficient magnitude to test the other two species. The chronology of species occurrence and the mean number of birds/survey at the burnt sites is shown in **Figure 3**.

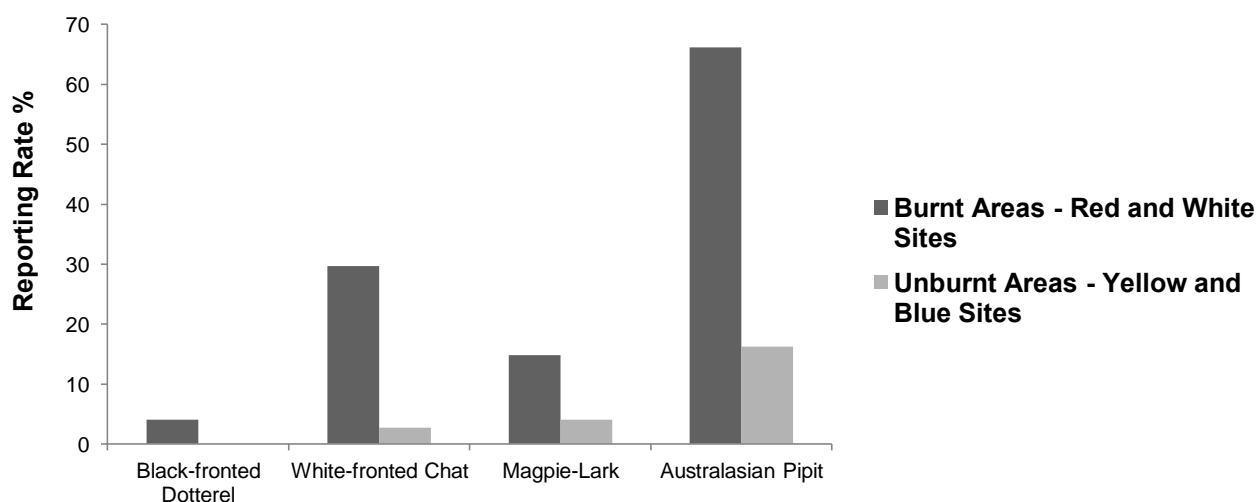


Figure 2. Comparison of the occurrence of four bird species at burnt and unburnt saltmarsh survey sites between March 2012 and February 2013.

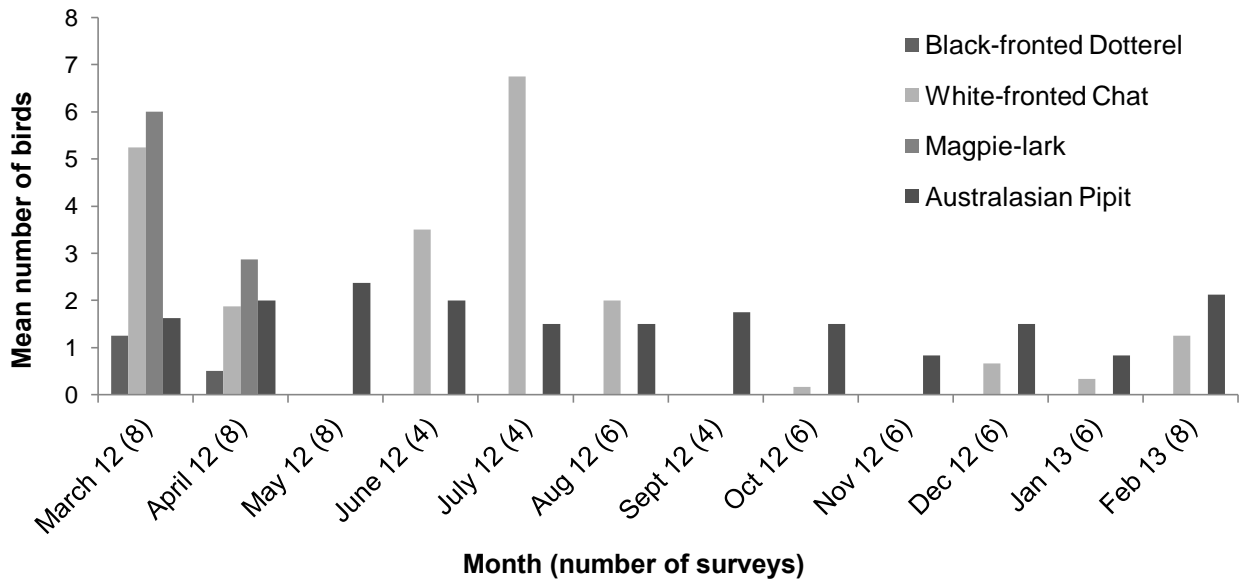


Figure 3. The mean numbers of birds present per survey and the timing of occurrence of the four species opportunistically exploiting the burnt sites.

Black-fronted Dotterels were only recorded at the burnt red site (RR 8%), with a maximum of 9 birds present. All records of this species were during the first two months after the wildfire. The ground was wet with pools of water.

Magpie-larks were the dominant species present during inspections of the area to select the survey sites before formal monitoring commenced. During the surveys they were intermittently present (RR_T 38%) and recorded at all four sites, but most of the records occurred during the first three months after the fires, when up to 38 birds occurred as flocks in the burnt areas. Subsequently, they were recorded infrequently in small numbers (<6) and were absent from the burnt areas (**Figure 3**).

White-fronted Chats (RR_T 45.9%) were frequently seen in the burnt red (RR 27%) and white (RR 32%) sites. Occasional birds were seen in the two unburnt control zones (**Figure 4**). Chats were most frequently seen and most numerous during the first three months after the fire and during winter between June and August (**Figure 3**), when flocks of up to 12 birds were present.

The omnipresent Australasian Pipit (RR_T 100%) benefited most from the fire, occurring in the burnt red (RR 41%) and white (RR 92%) sites in every month. An interesting point to note is the occurrence of pipits in the unburnt areas (**Figure 5**), where they were primarily seen at the yellow site on a track and in an area of bare ground. Pipits were not associated with the unburnt saltmarsh vegetation. While usually less numerous than

White-fronted Chats (**Figure 3**), a maximum count of 18 suggested pipits occasionally flock.

The occurrence of a fifth species, the Stubble Quail, is also attributed to the fire. A single bird of this species was first seen on 30 August and was subsequently recorded regularly (RR_T 24%) over the next four months with up to four individuals present. All records were in or immediately adjacent to the burnt sites, with the white (RR 14%) preferred to the red (RR 3%) site.

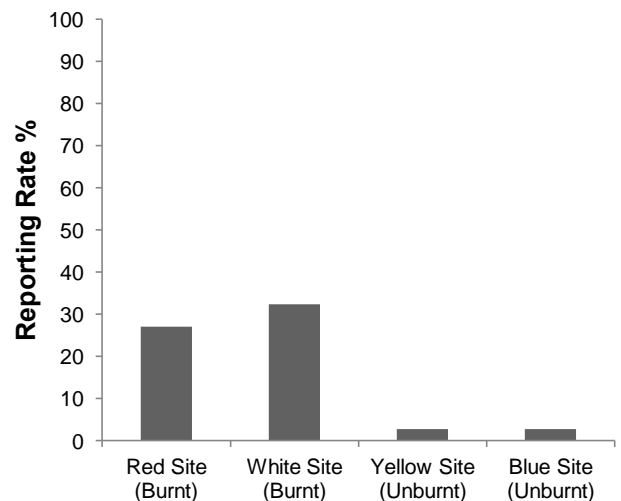


Figure 4. Comparison of reporting rates for White-fronted Chats at burnt and unburnt saltmarsh sites.

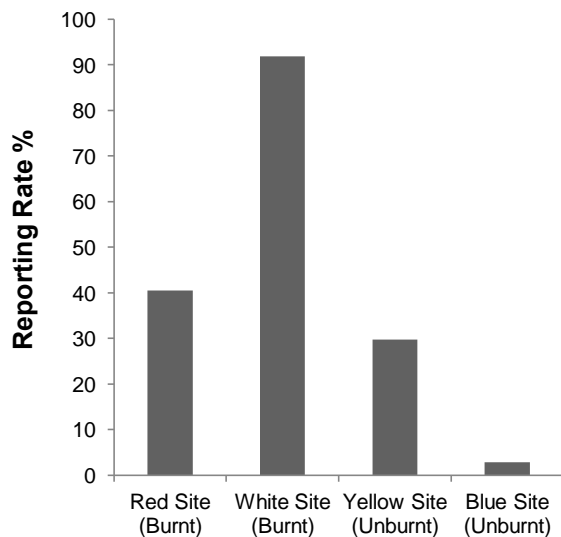


Figure 5. Comparison of reporting rates for Australasian Pipits at burnt and unburnt saltmarsh sites.

DISCUSSION

Fires change the structure of vegetation and make food resources like dead insects and seeds available to opportunistic bird species (Woinarski & Recher 1997). This can result in short-term occupation of an area after fires by species which would normally find an area unattractive. Decreased ground cover attracts species favouring open country and increased seed availability is beneficial to specialist feeders like finches and quail (Woinarski & Recher 1997). Potential advantages for the five species which apparently benefited are discussed below.

The occurrence of Black-fronted Dotterel was unexpected and of short duration. Although it is possible the dotterels were only using the area to roost, they probably also fed in the area. Black-fronted Dotterels feed on small molluscs, aquatic and terrestrial insects, and thrive in open environments similar to that created by the fire; though normally around fresh water (the extent to which the water pools were brackish following heavy rainfall is uncertain). The removal of vegetation in the fire potentially benefited the bird's method of actively foraging and running in search of prey (BirdLife Australia 2013). It is not understood why the red site was favoured over the white site.

Like the dotterel, Magpie-larks also prefer open ground to feed, where they can move easily to locate insects, larvae and invertebrates. Their

occurrence in the burnt areas after the fire was similar to the Black-fronted Dotterel; predominantly involving presence of flocks during the first three months, followed by lack of sightings once the vegetation began to regenerate.

The White-fronted Chat has undergone widespread decline in NSW, particularly in the highly urbanised coastal zone (Jenner *et al.* 2011), and has been listed as a threatened species with vulnerable status in NSW (Roderick & Stuart 2010). Chats found the burnt areas very attractive, not only immediately after the fire, but throughout the year, particularly during the winter months. The White-fronted Chat is more suited to marsh areas with low vegetation (BirdLife Australia 2013) and was rarely seen away from such habitat in this study (i.e. mature saltmarsh dominated by *Juncus* tussocks appeared unsuitable). The burnt areas obviously offered exceptional opportunities for feeding on small insects etc. with the white site preferred to the red, possibly because vegetation regeneration was more advanced at the latter, reducing open areas. Though regarded as mostly sedentary, these results suggest chats are locally opportunistic when foraging.

The Australasian Pipit is an open country species, which benefited from the structural changes to vegetation caused by the fire. Its attraction to the burnt area is consistent with other studies (Woinarski & Recher 1997). While it occurs regularly on Ash Island, it is usually associated with open ground rather than the *Juncus* dominated mature saltmarsh of the control sites (e.g. showed preference for the tracks and clear areas of the yellow site). The white site proved to be more favourable (**Figure 5**) with the maximum number of birds reported in one survey being 10 in February 2013. Other surveys of the white site reported flocks of between 5 and 6 birds between April 2012 and June 2012. The Australasian Pipit feeds on insects, their larvae and seeds making it ideally placed to take advantage of the effects of the fire, both immediately after and during the regeneration period.

Quail are known to be attracted to burnt areas so their presence was not unexpected. However, the first Stubble Quail was not recorded until eight months after the fire and involved a species which is considered locally uncommon. The status of the Stubble Quail is uncertain in the Hunter Region and it may be irruptive (Stuart 2012), explaining the delayed response to the changed conditions at Ash Island, a well watched area where it has only been recorded on two previous occasions (Stuart

pers. comm.). The Brown Quail *Coturnix ypsilophora* is common on Ash Island, and was subsequently recorded during these surveys (**Table 1**), but not as frequently as the Stubble Quail nor exclusively in burnt areas.

The advantage gained by the invading species came at the expense of several saltmarsh specialist species like the Golden-headed Cisticola *Cisticola exilis* and the Tawny Grassbird *Megalurus timoriensis*, which were absent or scarce at the burnt sites compared with the unburnt control saltmarsh sites (**Table 1**). Discussion of the displaced species and the timing of their re-colonisation of the burnt sites will be the subject of a subsequent paper.

One year after the fire the burnt areas were rapidly re-vegetating. Fires often provide nutrients, which promote rapid growth of ground cover vegetation, particularly herbs and grasses (Woinarski & Recher 1997). The composition and structure of regrowth vegetation may, like the bird species described in this paper, involve an initial transition phase. It is important to monitor the continuing changes, in both bird populations and vegetation, as the burnt areas transition to a mature state. The invasive bird species, favouring bare ground, are expected to be progressively lost as the vegetation density increases. There is a risk that the ultimate outcome in terms of both vegetation and bird population will be different from the habitat destroyed by fire (Clarke 2008).

In summary the immediate impact of the saltmarsh fire appeared to create a habitat that was clearly beneficial to a number of bird species. Such a fire has not been recorded on Ash Island in the past. Many of the species, which took advantage of the burnt areas, inhabit other areas of Ash Island and this 'new habitat' extended their opportunities for food and so their local range. Further study over a longer period of time is required to evaluate the full impact of the saltmarsh fire and the impact on the bird population. It is important that monitoring continues because of the unique opportunity to study an important ecological event with an uncertain outcome.

CONCLUSIONS

Bird monitoring during the year following the fire proved a number of species of birds, most notably ground-feeding species, such as the Black-fronted Dotterel, Magpie-lark and White-fronted Chat, Australian Pipit and Stubble Quail benefited from vegetation removal. Regeneration of the saltmarsh has proved to be slow, with some weeds seemingly taking advantage of the clear areas in the first year of the study. Only further research through regular surveys will help understand the full impact of the fire and firm conclusions cannot be drawn until the areas of burnt saltmarsh have matured.

ACKNOWLEDGEMENTS

We thank Doug Beckers of NSW National Parks and Wildlife Service for the invitation and encouragement to make this study, his facilitation in defining the scope of the study and in measuring and marking the survey sites. Alan Stuart, Jim Smart, Lorna Mee, Grahame Feletti, Win Filewood, and Joy Nicholls were all regular members of survey teams. They are thanked for their dedication, as the terrain and conditions were sometimes difficult, particularly when survey sites were inundated by high tides and access tracks overgrown.

REFERENCES

- BirdLife Australia. (2013). www.birdsinbackyards.net
- Clarke, M. (2008). Catering for the needs of fauna in fire management: science or just wishful thinking? *Wild Life Research* **35**: 385-394.
- Jenner, B., French, K., Oxenham, K., and Major, R.E. (2011). Population decline of the White-fronted Chat (*Epthianura albifrons*) in New South Wales, Australia. *Emu* **111**: 84-91.
- Roderick, M. and Stuart, A. (2010). The status of threatened species in the Hunter Region. *The Whistler* **4**: 1-28.
- Saintilan, N. (2009). 'Australian Saltmarsh Ecology'. (Collingwood, Victoria: CSIRO Publishing)
- Stuart, A. (2012). Hunter Region of New South Wales Annual Bird Report Number **19** (2011). (Hunter Bird Observers Club Inc. : New Lambton, NSW.)
- Woinarski, J.C.Z. and Recher, H. F. (1997). Impact and response: a review of the effects of fire on the Australian avifauna. *Pacific Conservation Biology* **3**: 183-205.

Table 1. Summary of bird species recorded during saltmarsh surveys: March 2012 - February 2013.

Common Name	Scientific Name	Total Survey RR%	Mean Number	Maximum Number	Red Site RR%	White Site RR%	Yellow Site RR%	Blue Site RR%
Stubble Quail	<i>Coturnix pectoralis</i>	24.3	1.8	4.0	2.7	13.5		
Brown Quail	<i>Coturnix ypsilophora</i>	10.8	3.0	7.0	2.7			2.8
Black Swan	<i>Cygnus atratus</i>	5.4	2.0	3.0	10.8		2.7	
Chestnut Teal	<i>Anas castanea</i>	2.7	2.0	2.0				
Pacific Black Duck	<i>Anas superciliosa</i>	18.9	2.9	8.0			2.7	
Fork-tailed Swift	<i>Apus pacificus</i>	2.7	5.0	5.0		2.7		2.8
Little Pied Cormorant	<i>Microcarbo melanoleucos</i>	13.5	1.0	1.0				8.3
Little Black Cormorant	<i>Phalacrocorax sulcirostris</i>	2.7	1.0	1.0				
Pied Cormorant	<i>Phalacrocorax varius</i>	2.7	3.0	3.0			2.7	
Australian Pelican	<i>Pelecanus conspicillatus</i>	13.5	9.0	25.0				2.8
Australasian Bittern	<i>Botaurus poiciloptilus</i>	2.7	1.0	1.0				
White-necked Heron	<i>Ardea pacifica</i>	5.4	2.5	4.0				
Eastern Great Egret	<i>Ardea modesta</i>	18.9	1.6	4.0	2.7		5.4	
Intermediate Egret	<i>Ardea intermedia</i>	2.7	2.0	2.0	5.4	2.7		
Cattle Egret	<i>Ardea ibis</i>	10.8	1.5	2.0	2.7			
White-faced Heron	<i>Egretta novaehollandiae</i>	56.8	2.6	12.0	8.1	13.3	10.8	5.6
Australian White Ibis	<i>Threskiornis molucca</i>	59.5	14.0	74.0	13.5	5.4	18.9	25
Eastern Osprey	<i>Pandion cristatus</i>	5.4	1.0	1.0		2.7	5.4	2.8
Black-shouldered Kite	<i>Elanus axillaris</i>	16.2	1.3	2.0	16.2			
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	35.1	1.2	2.0		2.7		5.6
Whistling Kite	<i>Haliastur sphenurus</i>	24.3	1.1	2.0	5.4		2.7	2.8
Swamp Harrier	<i>Circus approximans</i>	48.6	1.4	3.0	2.7		5.4	5.6
Nankeen Kestrel	<i>Falco cenchroides</i>	8.1	1.0	1.0	2.7			
Australian Hobby	<i>Falco longipennis</i>	5.4	1.5	2.0		2.7		2.8
Black-fronted Dotterel	<i>Elseyornis melanops</i>	8.1	4.7	9.0	8.1			
Masked Lapwing	<i>Vanellus miles</i>	27.0	1.9	2.0	13.5			
Latham's Snipe	<i>Gallinago hardwickii</i>	2.7	1.0	1.0				
Yellow-tailed Black-Cockatoo	<i>Calyptorhynchus funereus</i>	8.1	6.0	15.0				2.8
Eastern Rosella	<i>Platycercus eximius</i>	27.0	2.8	6.0		5.4	2.7	2.8
Eastern Koel	<i>Eudynamis orientalis</i>	10.8	1.0	1.0				
Channel-billed Cuckoo	<i>Scythrops novaehollandiae</i>	5.4	1.0	1.0				
Horsfield's Bronze-Cuckoo	<i>Chalcites basalis</i>	5.4	2.0	3.0				
Black-eared Cuckoo	<i>Chalcites osculans</i>	2.7	1.0	1.0				
Shining Bronze-Cuckoo	<i>Chalcites lucidus</i>	2.7	1.0	1.0				
Fan-tailed Cuckoo	<i>Cacomantis flabelliformis</i>	5.4	1.0	1.0				
Laughing Kookaburra	<i>Dacelo novaeguineae</i>	16.2	1.8	4.0				2.8
Sacred Kingfisher	<i>Todiramphus sanctus</i>	2.7	1.0	1.0				
Superb Fairy-wren	<i>Malurus cyaneus</i>	97.3	13.6	28.0	48.6	73	75.7	44
Variiegated Fairy-wren	<i>Malurus lamberti</i>	2.7	5.0	5.0				
Mangrove Gerygone	<i>Gerygone levigaster</i>	27.0	1.1	2.0			2.7	
Yellow Thornbill	<i>Acanthiza nana</i>	29.7	3.0	6.0			2.7	
Brown Thornbill	<i>Acanthiza pusilla</i>	2.7	2.0	2.0				
Eastern Spinebill	<i>Acanthorhynchus tenuirostris</i>	2.7	1.0	1.0				
Yellow-faced Honeyeater	<i>Lichenostomus chrysops</i>	5.4	13.0	25.0		2.7		
White-fronted Chat	<i>Epthianura albifrons</i>	45.9	7.6	24.0	27	32.4	2.7	2.8
Brown Honeyeater	<i>Lichmera indistincta</i>	2.7	1.0	1.0				
White-naped Honeyeater	<i>Meliphreptus lunatus</i>	2.7	25.0	25.0		2.7		
Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>	40.5	2.7	6.0		2.7	2.7	11.1
Golden Whistler	<i>Pachycephala pectoralis</i>	2.7	1.0	1.0				
Rufous Whistler	<i>Pachycephala rufiventris</i>	5.4	1.0	1.0				
Grey Shrike-thrush	<i>Colluricincla harmonica</i>	10.8	1.0	1.0			2.7	
White-breasted Woodswallow	<i>Artamus leucorhynchus</i>	24.3	5.3	14.0		5.4	13.5	2.8
Grey Butcherbird	<i>Cracticus torquatus</i>	10.8	1.3	2.0		2.7	2.7	2.8
Pied Butcherbird	<i>Cracticus nigrogularis</i>	5.4	4.5	6.0				
Australian Magpie	<i>Cracticus tibicen</i>	48.6	1.7	3.0		5.4		
Grey Fantail	<i>Rhipidura albiscapa</i>	59.5	2.2	8.0			13.5	8.3
Willie Wagtail	<i>Rhipidura leucophrys</i>	45.9	2.5	7.0		29.7		2.8
Australian Raven	<i>Corvus coronoides</i>	94.6	3.3	9.0		21.6	27	30.6
Magpie-lark	<i>Grallina cyanoleuca</i>	37.8	8.1	38.0		10.8	2.7	5.6
Golden-headed Cisticola	<i>Cisticola exilis</i>	91.9	8.4	23.0	45.9	45.9	59.5	75
Tawny Grassbird	<i>Megalurus timoriensis</i>	94.6	3.9	9.0	5.4	2.7	45.9	77.8
Little Grassbird	<i>Megalurus gramineus</i>	70.3	3.1	6.0	2.7	8.1	35.1	30.6
Brown Songlark	<i>Cincloramphus cruralis</i>	2.7	1.0	1.0				
Silvereye	<i>Zosterops lateralis</i>	37.8	3.1	8.0		2.7	5.4	5.6
Welcome Swallow	<i>Hirundo neoxena</i>	54.1	10.9	50.0	13.5	24.3	29.7	19.4
Fairy Martin	<i>Petrochelidon ariel</i>	5.4	3.0	5.0			5.4	
Tree Martin	<i>Petrochelidon nigricans</i>	5.4	1.5	2.0		2.7		2.8
Red-browed Finch	<i>Neochmia temporalis</i>	2.7	2.0	2.0				
Australasian Pipit	<i>Anthus novaeseelandiae</i>	100.0	4.4	18.0	40.5	91.9	29.7	2.8
Total Number of Species		69			26	27	28	30

Dollarbird departure from the Hunter Region in 2013

Mike Newman

7 Glenurie Close, Woodville, NSW 2321, Australia
omgnewman@bigpond.com

Observations provided by members of the Hunter Bird Observers Club were evaluated to determine the timing of post-breeding departure of Dollarbirds *Eurystomus orientalis* from the Hunter Region. In 2013 the main departure occurred in the first half of February. However, a number of birds, both juvenile and adult, delayed departure for up to a further month and two stragglers were recorded a further six weeks later at the end of April. These results are generally consistent with the prior literature, but some interesting differences and intriguing migration-related behaviours are discussed.

INTRODUCTION

First arrivals and last departures of migrants, particularly the large cuckoos and Dollarbirds, attract the attention of Hunter Bird Observers Club (HBOC) members and are a feature of newsletter observations and Annual Bird Report species accounts (Stuart 2012).

Dollarbirds *Eurystomus orientalis* are widely and regularly recorded in the Hunter Region between September and March (Stuart 2012). The last birds to leave in autumn are juveniles (Fry *et al.* 1992), but these may leave only a few days after adults (Higgins 1999). Hunter Region departure dates (n=9) ranged from 24 February to 18 March (Higgins 1999). Migration of Dollarbirds from eastern Australia involves movement in a north-westerly direction with most birds appearing to winter overseas (Griffioen & Clarke 2002). The analysis of BirdLife Australia Atlas data by these authors indicates that the northward movement is a protracted event spread over two quarters compared with a more synchronised southern migration. A recent paper provides evidence that many migrant bird species now arrive earlier in eastern Australia than they did thirty years ago (Smith & Smith 2012). Changes in the timing of departure and length of stay have also been identified, but no significant trends were found for either arrival or departure of Dollarbirds at Blaxland west of Sydney (Smith & Smith 2012).

The purpose of this note is to determine whether Hunter Bird Observers Club observations could yield new information concerning the migration patterns of Dollarbirds, in this instance departure dates. This objective immediately poses questions

concerning what we are attempting to measure. Is it the departure of the last Dollarbird or the date when the majority of Dollarbirds leave? Do Dollarbirds depart individually or as families? Do the departure dates vary between different locations in the Hunter Region? In the following analysis we provide some insights to these and related questions.

METHODS

Reports of Dollarbirds submitted to Hunterbirding, an online information forum, between February and June 2013 were reviewed. Key contributors were approached and asked to monitor individual Dollarbirds to establish an exact date of departure and where possible to find whether the birds were adult or juvenile.

RESULTS

Dollarbirds spend much of their day statuesque on prominent perches (Higgins 1999). An example was an adult bird habitually perched on wires crossing the Paterson River at Woodville, which was monitored daily by driving over the bridge. Not all Dollarbirds are this easily detected, and juveniles in particular are elusive, favouring less exposed perches. However, they are more active at dusk and occasional calls aid their detection. Unfortunately, random opportunistic observations of Dollarbirds provide more limited insights into the timing of departure. Below I summarise the observations and comments submitted to Hunterbirding and document the departure of Dollarbirds from localities which were watched systematically; ideally on a daily basis during the critical departure period.

Bateau Bay area (Alan Morris): Once the chicks at Bateau Bay (2 sites) fledged, within a few days the parents moved them elsewhere: they don't stay in the breeding territory. Generally speaking the juveniles fledge during the week between Christmas and New Year and by the second week of January they are nowhere to be seen. During the first week of January 2013, the number of Dollarbirds sitting on the power lines along Henry Parry Drive from The Entrance to Budgewoi Road (which, for most of the distance, passes through Wyrabalong National Park and the littoral rainforest patches at Lakes Beach near Norahville and north Budgewoi), rapidly increases from about 2 to 24-30 birds until about the first week in February! Then the numbers drop away once the first southerly in February passes through. This year (2013) 26 Dollarbirds were seen along approximately 14 km on 1 February and by the 6 February, after a southerly change had passed through, numbers had decreased to 17 indicating the commencement of migration of the bulk of the local population.

Ash Island (Liz Crawford): A single adult Dollarbird was observed on powerlines on 13 February and subsequently a single juvenile was observed on 13 March.

Bonnells Bay (Eula McKane): Dollarbirds were regularly observed throughout January with five overhead on the 20th, but no records after the first of February.

Carey Bay, Lake Macquarie (Liz Crawford): Dollarbirds nested in a tree hollow at Carey Bay, frequently perching on a TV aerial nearby. An adult with juvenile was present on 18 January, with all the birds leaving simultaneously around the end of the month.

A single Dollarbird perching on powerlines at Carey Bay was seen regularly until 11 February and not seen thereafter. Single juvenile Dollarbirds were seen perching on powerlines at Teralba on occasions from 9 to 27 February and later, on 11 and 13 March.

Croudace Bay, Lake Macquarie (Gavin Ayre): One Dollarbird, age unknown, was heard and seen on 28th April during late afternoon in trees along a creek line. This is one of two records six weeks later than other Hunter Region records.

Nelsons Plains (Dick Jenkin): The third last Hunter Region record involved a bird, age unknown, on power lines at Nelsons Plains on 16 March.

Myall Lakes Ferry (Simon Gorta): One on 29 April: this was the last record for the Hunter Region, six weeks after all but one other record.

Port Stephens (Trevor Murray and Adam Fawcett): 2 or 3 were reported until 24 February.

Singleton (Peter Alexander): Dollarbirds were present daily at two locations, Allan Bull Reserve (maximum of five birds) and Maison Dieu Industrial Area (maximum of four birds) between 6 October 2012 and 26 January 2013 after which there were no records.

Wingen and Scone (Greg Newling): Up to four Dollarbirds, thought to be a family group (Newling 2013), were regularly present, favouring four perch sites. After a period of absence between 15 and 18 February, the adults finally departed on the 21 February. A juvenile, presumed to be from the family, subsequently used the perch sites intermittently between 23 February and 6 March.

A number of Dollarbirds were seen regularly along a 17 km stretch of road between Wingen and Scone in early February but all had departed by the end of the third week of February 2013.

Woodville and Paterson (Mike Newman and Paul Baird): Dollarbirds are abundant in summer in the Woodville, Paterson, and Brandy Hill areas. Throughout the first half of February 2013 they remained plentiful (e.g. 5 at Tocal on 9 February and 3 perched on wires along Brandy Hill Drive on 10 February). Subsequently, numbers observed while travelling along roads in these areas fell off, although 3 separate birds were seen near the Paterson River at Woodville on 21 February. Subsequent to that date the only three Dollarbirds seen were as detailed below.

Dollarbirds breed around my property at Woodville (MN) allowing regular observation. A weakly flying juvenile was seen on the ground by the dam in January and assumed to have recently fledged. Adults and young were present on 10 February. Two were on wires at the end of the dam, a regular perch, on 14 February when daily observations of this territory commenced. Since that date Dollarbird records have involved one bird, a juvenile, which was elusive and seldom used exposed perches. It was recorded every two or three days, often at dusk, with the last record on 9 March; the first observation for 6 days.

An adult Dollarbird was observed daily perched on wires adjacent to the bridge crossing the Paterson

River at Woodville. It was seen throughout the day and was only absent on one occasion until the afternoon of 1 March. On 2 March it was present in the morning at which time heavy rain had commenced causing the Paterson River to flood. It was subsequently absent until 6 March when it was seen about 100m away on a side road in the company of a juvenile with a yellow bill. The adult was seen again on 7 and 9 March, but only used its habitual perch intermittently (MN). It was not seen after that date despite daily visits (PB).

DISCUSSION

The discussion of Dollarbird migration on Hunterbirding was triggered by a comment that most of the birds have left the Singleton area by the beginning of February (PA). The subsequent focus of comment and data was on birds which departed abnormally late. However, Alan Morris, based on long-term observations at Bateau Bay about 30km south of the Hunter Region, suggests most young are fledged by early January at which time they move from breeding territories forming loose aggregations in localities where feeding conditions are favourable (e.g. above littoral rainforest where there are few trees with hollows). In 2013 in the Bateau Bay area the bulk of the migration commenced at the end of the first week of February following a southerly change in wind direction. Observations at Bonnells Bay (EM) follow this pattern including a small build up in numbers until departure at the beginning of February, a timing which is very similar to that reported for the Singleton birds (PA). The main departure from the Wingen/ Scone area was a little later but essentially complete by mid-February.

The number of Dollarbird observations posted on Hunterbirding after 15 February 2013 progressively decreased until the sighting on 16 March at Nelsons Plains (DJ). The final two records at Croudace Bay and Myall Lakes on 28 and 29 April respectively, six weeks later, appear anomalous.

In several cases it was possible to monitor daily the presence of individual birds using habitual perches and establish approximate departure dates assuming these birds did not move to a staging post as observed by AM for the bulk departure of Dollarbirds from the Bateau Bay area. If so, why do these birds remain after the main departure has taken place? The observations at the Paterson River on 6 March give a possible explanation; the adult bird perched above the river may have been

tending a late-fledged juvenile, possibly from a second clutch.

Adult birds at Woodville favoured perches near water, one over the river and the other at the end of a dam. Perhaps these are optimal foraging locations, which are often favoured by other insectivorous species like the Welcome Swallow *Hirundo neoxena*. It is also possible that there is less need to move from such territories to more favourable foraging areas to build up fat reserves for migration, as was observed at Bateau Bay.

The impression was gained that the bulk departure of Dollarbirds was earlier and the number of late-departing birds fewer in areas away from the coast like Singleton, Scone and Gloucester compared with coastal areas like Port Stephens.

Timing of departure may be determined by local weather systems as evidenced by the Bateau Bay birds leaving following a southerly change. In contrast the Paterson River bird remained until a sequence of east coast systems bringing torrential rain to the Hunter Region had cleared.

Perhaps inevitably the interpretation of information collated from diverse sources, often involving unstructured observations, poses as many questions as it answers. For instance in 2013 most Dollarbirds in the Hunter Region and areas to the immediate south had left in the first half of February, slightly later than 20 January, the mean date of departure from Blaxland west of Sydney during the last thirty years (Smith & Smith 2012) and earlier than the range of Hunter Region departure dates (24 February – 18 March) published in the Handbook of Australian, New Zealand and Antarctic Birds (Higgins 1999). The latter comparison could suggest that Dollarbirds now depart earlier from the Hunter Region, but it may be a consequence of historical records reflecting the tendency to report the abnormal (i.e. late departures), exacerbated by the fact that it requires a conscious effort to record the absence of a bird, whereas a highly vocal arriving migrant heralds its presence in a memorable manner. There were several instances of pre-migratory flocks forming before departure, for which there is only limited literature evidence (Higgins 1999). However, the formation of collaborative feeding groups of Dollarbirds does not occur exclusively immediately before migration. The author and Mick Roderick (pers. comm.) have both seen this occur when fronts are coming through, including instances of a dozen or more Dollarbirds hawking insects with White-throated Needletails

Hirundapus caudacutus at Woodville. After the front passes the Dollarbirds disperse and return to their territories. Alan Morris has suggested the pre-migratory movement to areas of littoral rainforest is because these areas have a good insect supply but few tall trees with hollows suitable for nesting. Thus a picture emerges in which Dollarbirds are highly territorial (Higgins 1999), aggressively defending nest sites (Newling 2013), but also capable of switching to cooperative group behaviour, when this is advantageous.

CONCLUSIONS

The Hunterbirding forum provided insights into the behaviour of departing Dollarbirds. However, the most important observations concerning the timing of main departure came from observers regularly monitoring individual territories and Dollarbird abundance along frequently driven roads. I recommended this approach for generating annual data suitable for temporal analysis based on main departure dates, rather than the timing of last regional observations.

In general the findings are consistent with the prior literature including support for the protracted period of northward migration described by Griffioen & Clarke (2002). However there are discrepancies, for instance the timing of the main departure is earlier than historical records, but this may be a consequence of differences in data acquisition.

This collaborative investigation provided several examples of poorly known behaviours, including differences in the perching habits of adult and

juvenile Dollarbirds, the difficulty of detecting juvenile birds and the tendency of Dollarbirds to form cooperative feeding flocks, particularly immediately before migration. Late-departing birds are not exclusively juvenile.

ACKNOWLEDGEMENTS

I thank all those who contributed to this note (see text) by providing their observations and sharing their knowledge.

REFERENCES

- Fry, C.H., Fry, K. and Harris, A. (1996). 'Kingfishers, Bee-eaters and Rollers A Handbook'. (Christopher Helm Ltd: London.)
- Higgins, P.J. (Ed.) (1999). 'Handbook of Australian, New Zealand and Antarctic Birds Volume 4: Parrots to Dollarbird'. (Oxford University Press: Melbourne.)
- Griffioen, P.A. and Clarke, M.F. (2002). Large-scale bird-movement patterns evident in eastern Australian atlas data. *Emu* **102**: 99-125.
- Newling, G. (2013). Angry Dollarbirds. *The Whistler* **7**: 60.
- Smith, P. and Smith, J. (2012). Climate change and bird migration in south-eastern Australia. *Emu* **112**: 333-342.
- Stuart, A. (Ed.) (2012). Hunter Region of New South Wales Annual Bird Report Number **19** (2011). (Hunter Bird Observers Club Inc.: New Lambton, NSW.)

Sunning behaviour in Noisy Miners

Rob Kyte

PO Box 396, Hamilton, NSW 2303, Australia robertkyte@bigpond.com

In December 2010 at about 12.30pm a Noisy Miner *Manorina melanocephala* was observed near the end of Ridgeway Road in Blackbutt Reserve, New Lambton. When first seen from a distance of about 20 metres, it was lying on its back on the path, with both wings outstretched and bill wide open. Initially it was thought to be dead. A second bird was then noticed lying nearby in a chest down position; its tail was fanned out and wings spread wide either side. This bird was visibly panting and appeared to be gasping for air. Both birds were then observed through binoculars from a distance of about 10 metres. At this time the possibility of a mid-air collision between the two birds was mooted. The birds stayed in these positions for several minutes until one bird got up and flew to a tree branch, ruffled its feathers before flying back to the path and resuming its former prostrate position. This behaviour continued for around 10 minutes until the birds were disturbed and flew off into the trees.

Initial thoughts were that the birds were anting or dusting as a way of controlling parasites. However, inspection of the area of track where they had lain dispelled this idea. The aggregate surface was in full sun and quite hot to the touch, with the temperature at that time around 29° C. The track did not appear to be dusty and no ants or other insects were observed. The Noisy Miners may have been using the hot aggregate as a parasite deterrent, but this remains unclear.

Research found only one other reference to this behaviour in Noisy Miners. This was recorded by Larry Dunis in Brisbane in 2009 (**Figures 1 and 2**). His detailed description of that event is comparable with what was observed by the author. Dunis' conclusion was that this behaviour leant toward control of lice or mites. D. Dow (pers. comm.) has also observed Noisy Miners exhibiting similar behaviour, which he attributes to "sunning", a poorly understood plumage conditioning strategy similar to anting and dust bathing.

A Dictionary of Birds (Campbell & Lack 1984), discusses two types of "sunning" behaviour termed sun-basking and sun-exposure. Sun-basking is mainly a form of thermoregulatory behaviour while sun-exposure is suggested to be a method of feather maintenance where sunning increases the flow of preen-oils and encourages ectoparasites to become more active or to disperse from areas of the plumage that are less accessible with the bill. It is also suggested that the effect of the sun's rays on the plumage is beneficial by acting on the lipids for the synthesis of Vitamin D. The latter explanation involving sun-exposure appears relevant to the present observations.



Figures 1 and 2. Noisy Miners "sunning" themselves in Brisbane. (Photos: Larry Dunis, published with permission of Vik Dunis)

REFERENCES

- Dunis, L. (2009). Larry's Gallery: Noisy Miner <http://www.bushpea.com/bd/pg/laz/n/noisy%20miner%2007.html> Permission of Vik Dunis.
- Campbell, B. and Lack, E. (1985). 'A Dictionary of Birds'. (T & AD Poyser: Bath, Great Britain.)

Association between breeding Noisy Miners and Grey Butcherbirds and the adverse impact of understorey

Mike Newman

7 Glenurie Close, Woodville, NSW 2321, Australia
omgnewman@bigpond.com

When I commenced monthly surveys in an area of lightly grazed regrowth woodland at Green Wattle Creek, Butterwick (32°40'S, 151°39'E) in 1996 (Newman 2009) there were two colonies of Noisy Miners *Manorina melanocephala*. The colonies were located at the edge on opposite sides of the wood near land which had been cleared. Between 1997 and 2004 Noisy Miners were numerous and seen on almost every survey (**Figure 1**). Each survey lasted approximately four hours and involved counting all species of birds (Newman 2009). Initially 10 to 20 individuals were seen during surveys, but after 2000 numbers were lower. Most miners were recorded in the vicinity of the two colonies. As shown in **Figure 1**, post 2004 there was a progressive decline in the reporting rate (frequency birds were recorded during a survey). The numbers of birds seen on each survey also decreased. By 2010 both of the colonies had been abandoned. In both 2011 and 2012 there were no records of Noisy Miners during the surveys, which involved 48 hours of field observations annually.

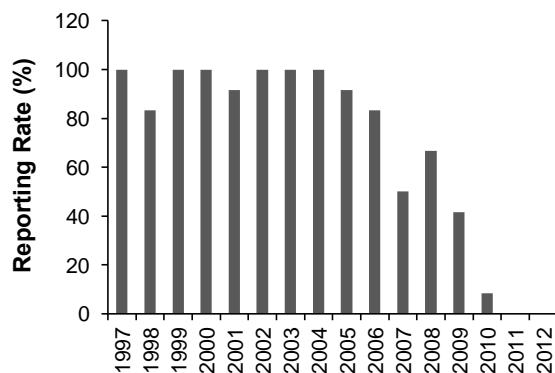


Figure 1. Annual Reporting Rate (%) of Noisy Miners in woodland at Green Wattle Creek during 180 monthly surveys between 1997 and 2011.

It is well known that Noisy Miners prefer dry open eucalypt forests and woodlands without understorey shrubs (Higgins *et al.* 2001: 627).

Hence the decline and eventual elimination of the Noisy Miners from the Green Wattle Creek woodland is attributed to the gradual increase of understorey vegetation following the removal of cattle from the woodland at the start of surveys in 1997.

At both colonies a pair of Grey Butcherbirds *Cracticus torquatus* had established breeding territories which were abandoned when the Noisy Miners left. While few bird species are tolerated as neighbours by Noisy Miners I had previously noted an association between Noisy Miners, Eastern Rosellas *Platycercus eximius* and Grey Butcherbirds in Tasmania, suggesting that the Eastern Rosellas benefitted from the Noisy Miners driving out the Common Starling *Sturnus vulgaris*, which competed for nesting hollows (Blakers *et al.* 1984: 514). Butcherbirds are known to join with Noisy Miners in mobbing other species (Higgins *et al.* 2001: 637). The benefit of an association between Noisy Miners and breeding Grey Butcherbirds is less obvious. One possibility is that the butcherbirds can forage more efficiently in an area where other avian species have been driven out by Noisy Miners (D. Dow, pers. comm.). I have only seen this association with Grey Butcherbirds, but it may well occur with Pied Butcherbirds *Cracticus nigrogularis* as implied by the literature (Higgins *et al.* 2001: 637).

REFERENCES

- Blakers, M., Davies, S.J.J.F. and Reilly, P.N. (1984). 'The Atlas of Australian Birds'. (Melbourne University Press: Melbourne.)
- Higgins, P. J., Peter, J.M. and Steele W.K. (Eds). (2001). 'Handbook of Australian, New Zealand and Antarctic Birds. Volume 5: Tyrant-flycatchers to Chats'. (Oxford University Press: Melbourne.)
- Newman, M. (2009). Birds of Green Wattle Creek – monthly surveys 1996-2009. *The Whistler* 3: 14-29.

Unusual behaviour between Grey-tailed Tattlers

Lois Wooding

14/4 Muller Street, Salamander Bay, NSW 2317, Australia

A repetitive behaviour between two Grey-tailed Tattlers *Heteroscelus brevipes* was witnessed at Hawks Nest, 29 March 2012. When first observed the birds, both displaying well advanced breeding plumage, were feeding along the water's edge approximately 15m from the observation point. The bird on the left stopped feeding and appeared to make visual contact with the bird on the right which also stopped feeding. Both birds remained motionless then, in perfect synchrony, turned their heads first to the left and paused, then to the right and paused before elongating their necks and returning to their original position.

The routine, which had the appearance of being choreographed, took approximately one minute to complete and was repeated several times at 2-3 minute intervals over a 25-30 minute period. It was discontinued when the tide rose and the birds flew off.

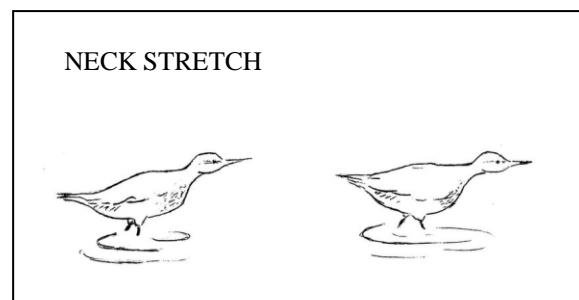
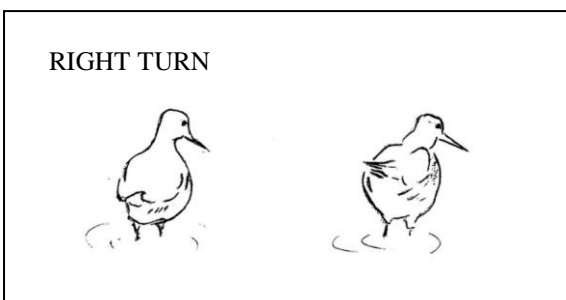
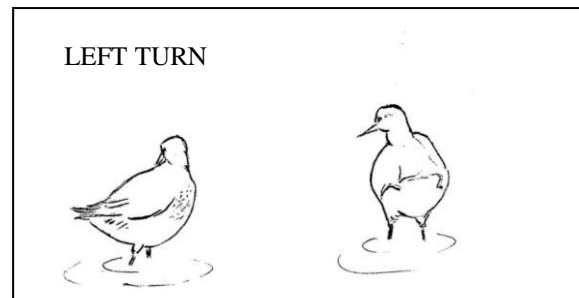
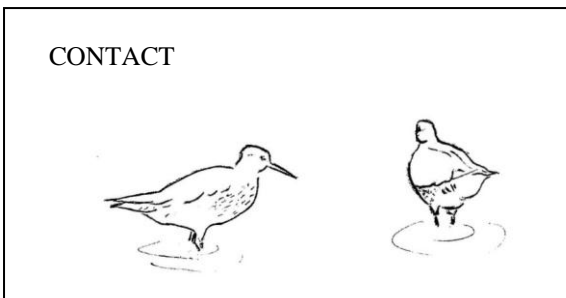
The action was always instigated by the bird on the left and the distance between the birds remained constant. Although the behaviour was suggestive of courtship the pre-migratory date and southern hemisphere location would seem to contradict that assumption. A search of the literature (Higgins & Davies 1996) has so far failed to reveal any mention of this behaviour.



Grey-tailed Tattlers at Hawks Nest
(Photo Bob Rech)

REFERENCE

Higgins, P.J. and Davies, S.J.J.F. (Eds) (1996). 'Handbook of Australian, New Zealand and Antarctic Birds Volume 3: Snipe to Pigeons'. (Oxford University Press: Melbourne.)



Scarlet Honeyeaters taking shelter

Alan Stuart

81 Queens Road, New Lambton, NSW 2305, Australia
almarosa@bigpond.com

The Scarlet Honeyeater *Myzomela sanguinolenta* is a breeding resident of the Hunter Region (Stuart 2012). In summer, small flocks are often recorded. They occur in larger numbers (20-50 birds) where blossom is abundant. There are fewer records in winter when birds are less vocal and some may have migrated north.

At 9:45am on 29 January 2013 I arrived at the Harrington Breakwater to survey shorebirds on nearby sandbars. The weather had been rough (strong winds, heavy rain) for the previous ~48h from the effects of ex-cyclone Oswald moving south. About an hour before I arrived, the rain stopped and the wind eased although gusty conditions continued. A group of six Scarlet Honeyeaters flew over me while I was getting gear from the car. As I walked to my survey point, more birds flew by, either as single birds or in small flocks. This continued for the ~40 minutes of my survey, with 5-10 birds/minute passing for much of the time. The maximum flock size seen was ~10 birds, and the frequency dropped towards the end. Conservatively, 200-300 Scarlet Honeyeaters flew past, and probably many more.

Initially I was unsure from where they were coming. Then I noticed birds were emerging from the breakwater. On close inspection it contains numerous cavities that would provide shelter for small birds in the harsh conditions of the previous days. I saw a female Scarlet Honeyeater land on the breakwater and disappear into it. Another female landed at my feet (initially on my shoe) and rested for about a minute. She appeared to be in a weak state, perhaps from exhaustion or lack of food.

It is rare that I record more than 20 Scarlet Honeyeaters in the Harrington environs during my regular visits. The migration period for southern birds is March-April in an eastern coastal pattern (Higgins *et al.* 2001, Griffioen & Clarke 2002) hence it is unlikely that this was a migration-related event. The presence of such high numbers is unusual. Perhaps birds from a wide range were sheltering within the breakwater during the adverse conditions or perhaps the cyclone brought them in. HANZAB does not cite any use by Scarlet Honeyeaters of anthropogenic structures for shelter (Higgins *et al.* 2001).

REFERENCES

- Griffioen, P.A. and Clarke, M.F. (2002). Large-scale bird-movement patterns evident in eastern Australian atlas data. *The Emu* **102**: 99-125.
- Higgins, P.J., Peter, J.M. and Steele, W.K. (Eds) (2001). 'Handbook of Australian, New Zealand and Antarctic Birds Volume 5: Tyrant-flycatchers to Chats'. (Oxford University Press: Melbourne.)
- Stuart, A. (Ed.) (2012). Hunter Region of New South Wales Annual Bird Report Number **19** (2011). (Hunter Bird Observers Club Inc.: New Lambton, NSW.)

Changes in Cattle Egret breeding at Gloucester in response to drought during 2012

Penny Drake-Brockman

20 Manning Street, Gloucester, NSW 2422, Australia penny@pennydb.org

After successful breeding seasons in 2010/11 and 2011/12 on the south-west corner of Gloucester's industrial estate (Drake-Brockman 2011 and 2012) the Cattle Egret *Ardea ibis* colony was forced to relocate. The willows in the small dam used previously were dead and the dam dry after six months of minimal rain. It looked as if the Cattle Egret would give Gloucester a miss this season. However, some good rain in early January 2013 filled a nearby small dam (used as a roosting site in past seasons) that is additionally filled by run-off from the cattle sale yards. By the second week in January egrets had taken up residence. This dam is very small with a tiny central island on which there is one willow, several small wild tobacco trees *Solanum mauritianum* and some *Canna* sp. lilies: not the most propitious spot for several hundred egrets to nest.

By 15 January 2013 there were at least 30 nests with around 80 birds perched or nest building in trees on the island and others roosting in nearby tall eucalypts or foraging in the paddocks. Most egrets were in full breeding plumage, including some all-white birds also nest building. None appeared to be incubating at this stage.

As I was away from Gloucester many times during the next three months regular records were not kept. On 24 January I counted approximately 60 nests with adults incubating and others foraging nearby. The open structure of the tobacco trees made counting easy but the willow's thick foliage with many nests built so close they intertwined made counting inspired guesswork. On 11 February I could see a few small chicks poking their downy heads above the nests and estimated there were over 100 nests.

On return to Gloucester on 12 April, activity had cooled down considerably and only 32 chicks remained on site. On my approach most flew to nearby trees, leaving about six too immature to fly. Before the end of the month the site had been abandoned with the willow tree bedraggled and

tobacco trees collapsed. Hundreds of egrets were foraging in the valleys between Barrington and Gloucester, with lower numbers south to Stroud Road. There is a much larger dam with big willow trees on a central island nearby in the Avon Valley, in which egrets have previously roosted and in which darters and cormorants have bred. It seems odd that they did not choose to breed here this season, as it would have been much more commodious.

This season's event was considerably smaller than the 2012 season when the number of nests was estimated at over 217 with a subsequent increase in number of chicks fledged - in excess of 450. This season commenced late (early January) due to drought conditions during the previous six months, and occupied a much smaller site although it was vacated at much the same time as previously. The first Gloucester breeding event in 2011 held over 70 nests and fledged more than 300 chicks. The number of chicks fledged this season can only be estimated based on a rough count of nests (100) as no observations were taken during the main fledging period; perhaps in excess of 240 fledged if productivity rates were similar to previous seasons.

REFERENCES

- Drake-Brockman, P. (2011). A New Cattle Egret breeding colony at Gloucester, NSW. *The Whistler* 5: 8-9.
- Drake-Brockman, P. (2012). Cattle Egret breeding at Gloucester, NSW sustained at increased level in 2011/2012. *The Whistler* 6: 54-55.

Association between feeding Hardheads and Hoary-headed Grebes

Michael Roderick¹ and Mike Newman²

¹ 3 Alderson Street, Shortland, NSW, Australia 2307 mickhnb@yahoo.com.au

² 7 Glenurie Close, Woodville, NSW, Australia 2321 omgnewman@bigpond.com

The Hardhead *Aythya australis* feeds on a mixture of aquatic plants and animals, mostly obtained by diving, with birds leaping forward and submerging with little disturbance to the surface (Marchant & Higgins 1990: page 1354). Hoary-headed Grebes *Poliiocephalus poliocephalus* feed chiefly on aquatic arthropods, obtained chiefly (90%) by deep diving, sometimes associated with feeding herbivorous waterbirds (Marchant & Higgins 1990: page 103).

On 21 June 2013 one of us (MR), while conducting a bird survey at Deep Pond (32°52'10"S 151°43'36"E) noted an association between these two species in which an individual Hardhead was consistently accompanied by a Hoary-headed Grebe. Each time the Hardhead dived, the Hoary-headed Grebe threw itself into the air and plunged into the centre of the ripples left by the submerged Hardhead. The two birds would then be seen to surface close to each other, suggesting that the "tailing" behaviour was continued underwater. This process was repeated a number of times until the Hardhead ceased feeding. Moments after noting this behaviour and when the Hardhead began feeding again, a second Hoary-headed Grebe hurriedly approached the Hardhead. Although it did not perform the same "tailing" behaviour, the grebe was very deliberate in its reaching the Hardhead, suggesting that a feeding opportunity may have tempted the grebe to approach. Soon after this, the original grebe began the "tailing" behaviour as earlier.

Subsequently, MN observed a similar association between a lone Hardhead and three Hoary-headed Grebes on a dam at Tocal (32°37'20"S 151°35'17"E) on 11 July 2013. Again one of the grebes repeatedly dived into the ripple left by the Hardhead. The other two grebes showed interest in the activity, but it was always the same grebe which dived with the Hardhead.

Although we have observed Australasian Grebes *Tachybaptus novaehollandiae* in the presence of Hardheads we have not seen evidence of this association involving synchronised diving. Australasian Grebes are known to follow other species like Eurasian Coots *Fulica atra*, Dusky Moorhens *Gallinula tenebrosa* and Pacific Black Ducks *Anas superciliosa* in weedy areas, apparently eating arthropods disturbed by the larger birds (Marchant & Higgins 1990: page 94).

Our observations relate to a unique synergy between two specialist diving species feeding in open water. Previous descriptions of feeding interactions between feeding waterbirds and small grebes often relate to surface feeding species (e.g. up-ended ducks) and surface vegetation.

REFERENCE

Marchant, S. M., and Higgins, P. J. (Eds). (1990). 'Handbook of Australian, New Zealand and Antarctic Birds, Volume 1: Ratites to Ducks'. (Oxford University Press: Melbourne.)

Angry Dollarbird attacking Brown Goshawks

Greg Newling

P.O. Box 24, Scone, NSW 2337, Australia gregnewling@yahoo.com.au

On the morning of 7 January 2013 I went outside my house at Wingen (31°53'50"S 150°52'41"E) to investigate alarm calls from the local birds and found a male Brown Goshawk *Accipiter fasciatus* circling overhead. The goshawk was being very aggressively attacked by a Dollarbird *Eurystomus orientalis*, which was continually swooping at the goshawk, showing great speed and agility. At first glance I thought the aggressor was another hawk; such was the display of speed and determination to drive off the intruder. The attacks continued until

the Brown Goshawk left the area. I was surprised by the ferocity of the attack, which apparently involved territory rather than nest defence. I have seen no evidence of the resident Dollarbirds having a nest or feeding dependent young.

On 22 January I observed the same behaviour, but this time the "victim" was a female Brown Goshawk. I think the goshawks may have had a nest nearby, because the male appears regularly in the mornings and the female in late afternoon.

Do adult and juvenile Horsfield's Bronze-Cuckoos interact?

Greg Newling

P.O. Box 24, Scone, NSW 2337, Australia gregnewling@yahoo.com.au

I observed two adult and one juvenile Horsfield's Bronze-Cuckoos *Chrysococcyx basalis* in the front yard of my property at Wingen, NSW (31°53'50"S 150°52'41"E) on 18 January 2012. The juvenile cuckoo appeared to be begging from the adults. The adults flew off and a Yellow-rumped Thornbill *Acanthiza chrysorrhoa*, a known host of the Horsfield's Bronze-Cuckoo (Higgins 1999; Hoskin 1989), flew in and fed the juvenile cuckoo.

The only evidence that adult Horsfield's Bronze-Cuckoos have any interaction with juveniles relates to observations made by Hoskin at Centennial Park in Sydney, NSW, in 1985 (Hoskin 1989). When Hoskin imitated the call of an adult Horsfield's Bronze-Cuckoo, in the vicinity of a dependent fledged juvenile being fed by Superb Fairy-wrens *Malurus cyaneus*, the juvenile flew towards him and attempted to land on his head. Each time Hoskin repeated an imitation of the adult cuckoo,

the juvenile flew towards him in an excited manner continuously uttering a trisyllabic fledgling begging call before flying back to its foster parents. My observation provides support to Hoskin's (1989) suggestion that the assumption concerning the lack of interaction between adult and juvenile Horsfield's Bronze-Cuckoos may be subject to challenge.

REFERENCES

- Higgins, P.J. (Ed.) (1999). 'Handbook of Australian, New Zealand and Antarctic Birds Volume 4: Parrots to Dollarbirds'. (Oxford University Press: Melbourne).
- Hoskin, E.S. (1989). Response of a juvenile Horsfield's Bronze-Cuckoo to human imitation of an adult's call. *Australian Birds* 23: 23.

The *Whistler* – Instructions to Authors

The *Whistler* is an occasional publication of the Hunter Bird Observers Club Inc. (HBOC), which is based in Newcastle. HBOC members are active in observing birds and monitoring bird populations in the Hunter Region. This journal-style publication is a venue for publishing these regionally significant observations and findings. The journal publishes three types of articles:

1. **Contributed Papers**
2. **Short Notes**
3. **Book Reviews**

Authors should consider the appropriateness of their study to this publication. The publication is suitable for studies either geographically limited to the Hunter Region or with obvious relevance to it. Papers attempting to address data and issues of a broader nature should be directed to other journals, such as *Corella*, *Australian Field Ornithology* and *Emu*. Contributed papers should include analyses of the results of detailed ecological or behavioural studies, or syntheses of the results of bird monitoring studies. These may include comprehensive annotated species lists of important bird areas and habitats. Such data would then be available for reference or further analysis in the many important issues of bird conservation facing the Hunter Region.

Communication of short notes on significant bird behaviour is also encouraged as a contribution to extending knowledge of bird habits and habitat requirements generally. Reviews of bird books are also solicited, with the intention of providing a guide for other readers on their usefulness regionally and more broadly.

General Instructions for Submission

Manuscripts should be submitted electronically; please attach your manuscript to an email as a Microsoft Word document. Charts should be submitted as an Excel file. Authors should adhere to the instructions for each type of submission:

Contributed Papers

- Manuscripts should be up to 12 pages in length (longer in exceptional circumstances) and of factual style.

- They should include a summary of approximately 250 words.
- An 'Introduction' or 'Background' section introduces the aims of and rationale for the study and cites any other work considered essential for comparison with the study.
- A section on 'Methods' describes the location of the study, citing map co-ordinates or including a map, and describing how observations were made and data were collected and analysed.
- A section on 'Results' includes description and/or analysis of data highlighting trends in the results; this may be divided into subsections if more than one body of data is presented; use of photos, drawings, graphs and tables to illustrate these is encouraged.
- A section headed 'Discussion' should attempt to set the results in a wider context, indicating their significance locally and/or regionally; comparison with national and international work is optional, as is the discussion of possible alternative conclusions and caveats; suggestions for future extension of the work are encouraged.
- A final section headed 'Conclusion[s]' gives a concise summary of findings, usually without introducing any new data or arguments.
- Appendices of raw data and annotated lists of bird species and habitats can be included in tabular form at the end of the article.
- References should be cited in brief within the text of the article, and full references should be listed at the end of the text after any Acknowledgements and before Appendices and Annotated Lists. References should be formatted as per the formatting instructions below.

Short Notes

- Should be no more than 4 pages of descriptive or prosaic style.
- Should provide an adequate description of the location of observations, a brief rationale for documenting the observations, and a cogent description of observations; similar relevant observations should be cited with references if appropriate.
- References should be cited and listed as for contributed papers.

Book Reviews

- Should be approximately 2 pages of critical assessment and/or appreciation.
- Should introduce the topics and aims of the book as the reviewer understands them, comment on the thoroughness and rigour of content, and conclude with comments on the effectiveness and originality of the book in meeting its aims, particularly for birdwatchers in the Hunter Region area if appropriate.
- References should be cited and listed as for contributed papers.

Formatting Instructions

Although not necessary, it may assist if authors format their manuscripts as follows:

1. A4 size page, portrait layout except for large tables or figures;
2. Margins 2 cm top, bottom, left and right;
3. Title in bold 16pt Arial font, centred;
4. Authors names in 12pt Arial font, centred;
5. Affiliations or addresses of authors, including email addresses, in Arial font, 10 pt size, centred;
6. Section headings capitalized in bold Arial font, 12 pt size, left justified;
7. Sub-section headings not capitalized in bold Arial font, 12 pt size, left justified;
8. First line of each paragraph should not be indented and one line should be left between paragraphs;
9. Typescript should be Times New Roman, 11 pt, except methods, acknowledgements and references which are 10 pt;
10. Figures and Tables to be included at the end of the document in Times New Roman font, 10 pt minimum size, title left justified, below figures and above tables with “**Figure x.**” or “**Table y.**” heading the title;
11. Nomenclature and classification of bird species should follow BirdLife Australia's "Working List of Australian Birds" which can be downloaded from: <http://birdlife.org.au/conservation/science/taxonomy>. The scientific names of all bird species should be shown in italics after the first mention of their English name in the text. Scientific names should also be included after the first mention of the bird in the summary.
12. References to be cited in the text in parenthesis as close as possible to the information taken from the paper: for one author (Smith 2000), two authors (Smith

& Jones 2001b) and more than two authors (Smith *et al.* 2002) with the authors listed in the order they are listed on the original paper;

13. References should be listed in alphabetical order and secondarily by year of publication; if published in the same year then in alphabetical order with an a, b, or c after the year to indicate which paper is being cited in the text (see below); each reference should form a separate paragraph.

Reference Format

Journal articles:

Jones, D.N. and Wieneke, J. (2000a). The suburban bird community of Townsville revisited: changes over 16 years. *Corella* **24**: 53-60.

Edited book Chapters:

Lodge, D.M. (1993). Species invasions and deletions: community effects and responses to climate and habitat change. In ‘Biotic interactions and Global change’ (Eds. P.M. Kareiva, J.G. Kingsolver and R.B. Huey) Pp. 367-387. (Sinauer Associates, Sutherland, MA.)

Books:

Caughley, G. and Sinclair, A.R.E. (1994). ‘Wildlife Ecology and Management’. (Blackwell, Cambridge, MA.)

Theses:

Green, R. (1980). ‘Ecology of native and exotic birds in the suburban habitat’. Ph.D. Thesis, Monash University, Victoria.

Reports:

Twyford, K.L., Humphrey, P.G., Nunn, R.P. and Willoughby, L. (2000). Investigations into the effects of introduced plants and animals on the nature conservation values of Gabo Island. (Dept. of Conservation & Natural Resources, Orbst Region, Orbst.)

NB:

If these examples are not sufficient, please refer to the references given in this issue or in earlier issues.

Please submit all manuscripts to:

Joint Editors,
Mike Newman omgnewman@bigpond.com
Harold Tarrant haroldandjudith@virginmedia.com

CONTENTS

Editorial.....	i - ii
Tropical seabirds off the Hunter coastline as a result of ex-Tropical Cyclone Oswald Jan-Feb 2013..... <i>Michael Roderick and Allan Richardson</i>	1 - 7
Flagged and colour-banded Bar-tailed Godwits in the Hunter Estuary..... <i>Liz Crawford and Chris Herbert</i>	8 - 19
Early Hunter Region avian records. Part 2. 1926-1950 articles in <i>The Emu</i> <i>Alan Stuart</i>	20 - 33
The status of Bassian and Russet-tailed Thrushes in the Hunter Region..... <i>Daniel Williams</i>	34 - 37
Initial findings from a study of Grey-tailed Tattlers in Port Stephens..... <i>Lois Wooding and Alan Stuart</i>	38 - 43
Opportunistic response of bird species to a wildfire in saltmarsh at Ash Island, NSW..... <i>Rob Kyte and Mike Newman</i>	44 - 49
Dollarbird departure from the Hunter Region in 2013..... <i>Mike Newman</i>	50 - 53
Sunning behaviour in Noisy Miners..... <i>Rob Kyte</i>	54
Association between breeding Noisy Miners and Grey Butcherbirds and the adverse impact of understorey..... <i>Mike Newman</i>	55
Unusual behaviour between Grey-tailed Tattlers..... <i>Lois Wooding</i>	56
Scarlet Honeyeaters taking shelter..... <i>Alan Stuart</i>	57
Changes in Cattle Egret breeding at Gloucester in response to drought during 2012..... <i>Penny Drake-Brockman</i>	58
Association between feeding Hardheads and Hoary-headed Grebes..... <i>Michael Roderick and Mike Newman</i>	59
Angry Dollarbirds attacking Brown Goshawks..... <i>Greg Newling</i>	60
Do adult and juvenile Horsfield's Bronze-Cuckoos interact?..... <i>Greg Newling</i>	60
Instructions to Authors.....	61 - 62

