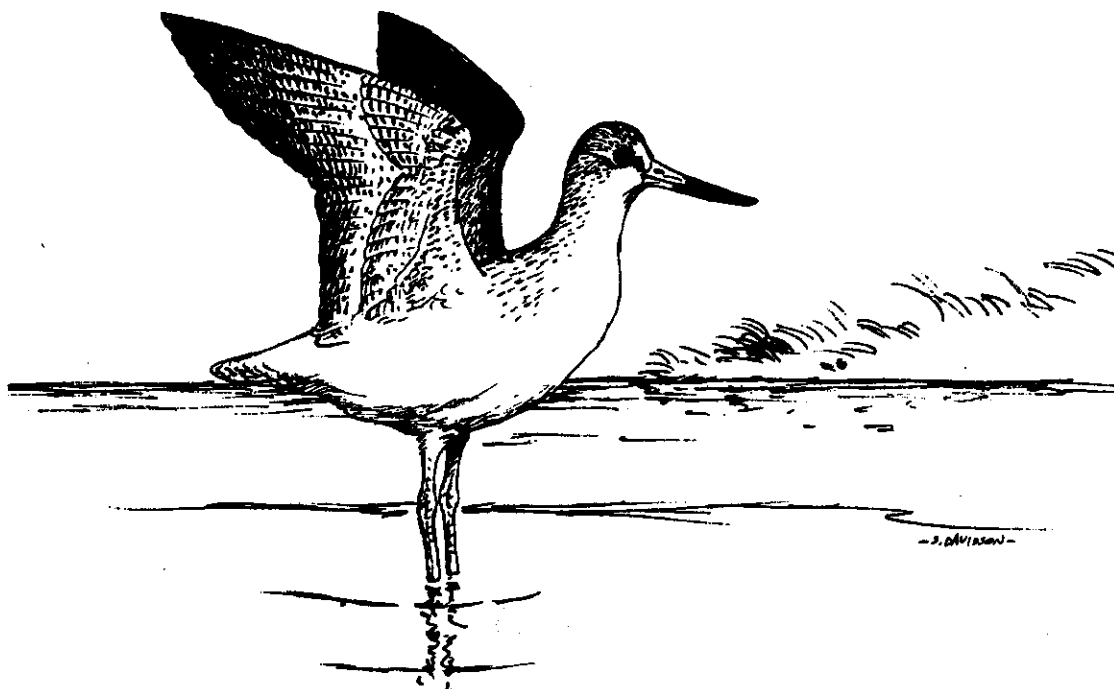
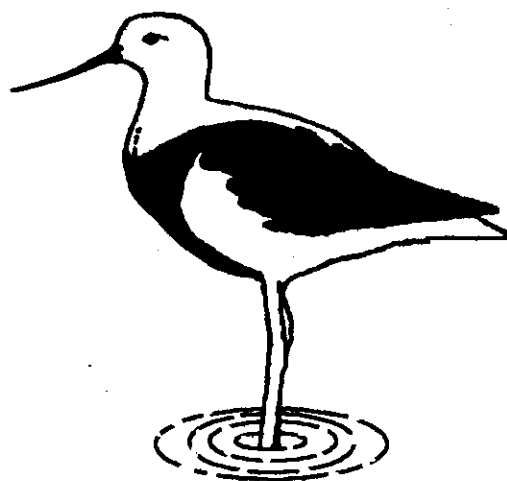


The Stilt

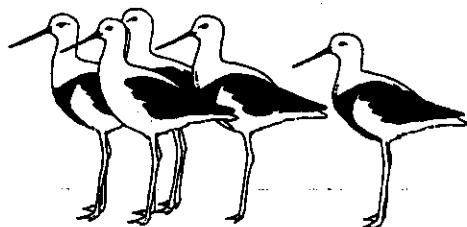
The Bulletin of the East
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Australasian
Wader
Studies
Group

A special interest group of
Birds Australia

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MISSION STATEMENT

To ensure the future of waders and their habitats in Australia through research and conservation programmes and to encourage and assist similar programmes in the rest of the East Asian-Australasian Flyway.

OBJECTIVES

- To monitor wader populations through a programme of counting and banding in order to collect data on changes on a local, national and international basis.
- To study the migrations of waders through a programme of counting, banding, colour flagging and collection of biometric data.
- To instigate and encourage other scientific studies of waders such as feeding and breeding studies.
- To communicate the results of these studies to a wide audience through the *Stilt*, the *Tattler*, other journals, the internet, the media, conferences and lectures.
- To formulate and promote policies for the conservation of waders and their habitat, and to make available information to local and national governmental conservation bodies and other organisations to encourage and assist them in pursuing this objective.

To encourage and promote the involvement of a large band of amateurs, as well as professionals, to achieve these objectives.

OFFICE BEARERS

Chairperson: Rosalind Jessop, PO Box 97, Cowes, Phillip Island, 3922. Vic., AUSTRALIA. Ph: 03-59521857 (H), fax: 03-59568394.

Vice Chairperson: Phil Straw, 15 Kings Rd, Brighton-Le-Sands, 2216. NSW, AUSTRALIA. Ph and fax: 02-9597 7765.

Chair of Research Committee: Jim Wilson (details as above).

Editorial: see inside back cover.

Liaison Officer: Hugo Phillipps, Communications Coordinator, Birds Australia, 415 Riversdale Rd, Hawthorn East, 3123. Vic., AUSTRALIA. Ph: 03-98822622. Fax: 03-98822677. Email: h.phillipps@birdsaustralia.com.au

Secretary/Treasurer: Ken Gosbell, 17 Banksia Ct, Heathmont, 3135. Vic., AUSTRALIA. Ph: 03-97295524. Email: kenbg@ozemail.com.au

Conservation Officer: Sandra Harding, 336 Prout Rd, Burbank, 4156. Qld, AUSTRALIA. Ph: 07-390 2179

STATE CONSERVATION OFFICERS

QUEENSLAND

Michelle Burford, 23 Fernbourne Road, Wellington Point 4163 Ph (07) 3822 3759

NEW SOUTH WALES

Phil Straw, PO Box 2006, Rockdale Delivery Centre, Rockdale 2216 Ph (02) 9597 7765
pstraw@optusnet.com.au

TASMANIA

Priscilla Park, 98 Nowra Road, Roches Beach 7021
p.p@trump.net.au
Ralph Cooper (North/North East Tas) 7 Beach Road Legana 7277 Ph (03) 6330 1255

SOUTH AUSTRALIA

David Close, 30 Diosma Drive, Coromandel Valley 5051
david.close@flinders.edu.au

VICTORIA

Doris Graham, 14 Falconer Street, Fitzroy 3068 Ph (03) 9482 2112

WESTERN AUSTRALIA

Mike Bamford, 23 Plover Way, Kingsley 6065 Ph (08) 9309 3671
mabce@ca.com.au

INTERNATIONAL REPRESENTATIVES

NEW ZEALAND

North Island:

Stephen Davies, Department of Philosophy, University of Auckland, Private Bag, Auckland.

South Island:

Paul Sagar, Ornithological Society of New Zealand, 38a Yardley St, Christchurch 4. Ph: 03-342-9720

ASIA

Doug Watkins, Shorebird Flyway Officer, Wetlands International - Oceania, PO Box 787, Canberra, ACT 2601 AUSTRALIA.

Ph: +61 2 6274 2780, fax: +61 2 6274 2799.

email: doug.watkins@ea.gov.au

OTHER COMMITTEE MEMBERS

Mike Bamford, Mark Barter, Phil Battley, David Close, Clive Minton, and Doug Watkins.

MEMBERSHIP OF THE AUSTRALASIAN WADER STUDIES GROUP

Membership of the AWSG is open to anyone interested in the conservation and research of waders (shorebirds) in the East Asian-Australasian Flyway. Members receive the twice yearly bulletin *The Stilt*, and the quarterly newsletter *The Tattler*. Please direct all membership enquiries to the Membership Manager at Birds Australia (RAOU) National Office, 415 Riversdale Rd, East Hawthorn, 3122. Vic., AUSTRALIA. Ph: 03-9882 2622, fax: 03-9882 2677.

Email: membership@raou.com.au

Annual Subscriptions:	Australia	A\$30.00
	New Zealand	A\$30.00
	Overseas	A\$35.00
	Institutions	A\$40.00

Cover Illustration: Stephen Davidson

EDITORIAL

This issue completes my fifth year as editor of *Stilt* and I have given the AWSG Committee notice that I think they should consider a change and introduce new blood. The annual committee meeting in June also discussed the issue of public liability of community groups like the AWSG. We had a presentation by the CEO of Birds Australia, Jim Downey, on the reasons why the rules of AWSG need to be changed to reflect a closer relationship with Birds Australia. These changes are reflected in the new rules enclosed (see below).

I am please to see new syntheses of the results of some of the long-running AWSG and VWSG cannon-netting programs. It shows the tremendous value of these studies and their value only increases with time. The increasing amounts of data being generated from the leg flagging of waders is demonstrated by the large series of recoveries reported in this issue. Scientific publications are planned or in progress for many of the species that have large percentages of their population overwintering in Australia. These are important outputs from the flagging studies, as they will provide widely accessible summaries of the large volumes of flagging and resighting data. Clive Minton has approached me to write a paper on the migration movement patterns of Grey-tailed Tattler.

In agreeing to undertake writing the paper, I am keenly aware of the desire to get these papers published and available for use in making management decisions. It is one of the reasons why I would like to step aside from being editor of *Stilt* and take a more active part in writing scientific papers on waders.

Any brave soul who enjoys reading written material on waders and feels they have the time to devote to this task should contact Ros Jessop or myself to find out more. *Stilt* has had a few editors and each brings new and interesting ideas to the task. The job is very rewarding and contributes to making the science better understood (I hope) by the readers of the bulletin. This is reflected in the increasing number of citations of *Stilt* articles in the general scientific literature. We are having an impact and new ideas can only enhance that influence.

Please keep the material coming in. We have a few papers ready for publication in the next issue, but there is still plenty of space for more articles. Most of this issue focuses on Australia and so its good to see articles like that by Andrew Crossland (this issue) and Mark Barter on other parts of the Flyway.

David Milton

NEW RULES OF THE AUSTRALASIAN WADER STUDY GROUP

In May this year (2002), Jim Downey, CEO of Birds Australia, wrote to the Committee of AWSG regarding the legal structure and relationship between Birds Australia and the AWSG. Essentially the matters for consideration concerned the legal liability of committee members and insurance. Following legal advice, Jim advised that there was a need to strengthen the formal relationship to remove any doubt that special interest groups such as AWSG were part of RAOU Ltd (Birds Australia) and hence protected to the maximum extent. The AWSG Committee considered the requested changes to the Rules and negotiated a workable compromise. The Rules as set out below have been agreed by the Council of RAOU (Birds Australia).

It will be noted that one of the consequences of these changes is that Membership of the AWSG will be available to Members of Birds Australia and that non-Members of Birds Australia may join

AWSG as 'Subscriber Members'. It will be noted that Subscription fees for 2003 are unchanged.

RULES OF AUSTRALASIAN WADER STUDIES GROUP

A special interest group within the Royal
Australasian Ornithologists Union
(ACN 004 076 475)

1 Name

The Group shall be known as the Australasian Wader Studies Group ('the group' or 'the AWSG'). The Royal Australasian Ornithologists Union (ACN 004 076 475) is called in these rules "the RAOU". The Council of the RAOU has the meaning given to it in the RAOU Constitution.

2 Mission Statement and Objectives

MISSION STATEMENT

To ensure the future of waders and their habitats in Australia through research and conservation programmes and to encourage and assist similar

programmes in the rest of the East Asian-Australasian Flyway

OBJECTIVES

- Monitor wader populations through a programme of counting and banding in order to collect data on changes on a local, national and international basis.
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- Formulate and promote policies for the conservation of waders and their habitat, and to make available information to local and national governmental conservation bodies and other organisations to encourage and assist them in pursuing this objective.
- Encourage and promote the involvement of a large band of amateurs, as well as professionals to achieve these objectives.

3 Membership

Members of the RAOU may join the AWSG. Membership of the RAOU is a pre-requisite to membership of the AWSG.

Non-Members of the RAOU may join the AWSG as 'Subscriber Members'. Subscriber Members will be entitled to all of the benefits provided by the AWSG including publications, but will have no voting rights.

4 Publication

The AWSG shall publish *The Stilt* twice per year in April and October.

5 Membership Fees

The RAOU may decide to charge an annual membership fee to members of the AWSG in addition to the subscription fees payable for membership of the RAOU. Any such annual membership fee shall be decided by the RAOU Council after receiving advice from the AWSG Committee and will be payable directly to the RAOU. Membership fees are payable on 1st January each year.

As a Special Interest Group within the RAOU, the AWSG is entitled to receive tax-deductible donations, for research programs, in the name of the RAOU. Any such programs need to be approved in advance by the CEO of the RAOU and, furthermore, such fund-raising activities need prior approval of the CEO of the RAOU in order to avoid the possibility of competition for funds.

The AWSG funds will be reported as a cost centre within the RAOU accounts and assets included in the consolidated balance sheet. The AWSG cost centre will be reported annually to the membership via the Treasures Report in the April edition of *The Stilt*. The AWSG Research Fund is incorporated within the RAOU accounts and a separate statement of this fund will be provided annually with the Treasures Report. Receipts for donations to this Fund shall be issued by the Head Office of RAOU.

All funds received shall be paid into the AWSG's cost centre but are beneficially owned by the RAOU.

6 Management and Reporting

The AWSG shall be managed by a Committee consisting of Chair, Vice-chair, Treasurer, Secretary, Editor, Scientific Committee Chair, Liaison Officer, Conservation Officer and up to eight committee members. Committee members of the AWSG must be members of the RAOU. Committee members may fill more than one office eg. Treasurer and Secretary.

The Committee may conduct its affairs in whatever manner it shall from time to time decide subject always to veto by the Council of the RAOU and subject to the Constitution of the RAOU.

State/Regional Representatives shall be appointed from the membership of the AWSG in that State/Region. Whenever possible regional representatives should be members of the Committee. If that is not possible each additional representative shall nominate a committee member as a contact.

Committee meetings shall be convened by the Chair as required and at least once every twelve months. When appropriate, meetings can be conducted electronically or by mail as well as by more conventional means to enable participation on the committee of people widely dispersed around the region.

The quorum for a Committee meeting shall consist of five elected members.

7 Election of Committee

A new committee shall take office on the 1st June of each even-dated year and shall have a term of two years.

Announcement of the committee election shall be made in the October edition of *The Stilt* of the year before the committee is to begin its term.

Written nominations for Committee positions, seconded by a Member of the AWSG, shall be sent to the Chair by 31st January in the year that the new committee is to begin its term. Notice of elections, nominations and a ballot paper shall be sent to all Members of the AWSG via the April edition of *The Stilt*, or individually by mail no later than 30th April.

If the number of nominees does not exceed the number of positions on the committee then the nominees will be elected without the distribution of ballot papers and the result published in the April edition of *The Stilt*.

8 Methods of Voting by Members of the AWSG

Votes of Members of the AWSG to elect Committee members shall be taken by secret postal ballot. Each Member is entitled to one vote (refer to Clause 3 above). If distributed, ballot papers must be returned to the secretary of the AWSG by 1700 hours EAST on 30th May.

9 Meetings

The Committee or State and Regional Representatives may convene meetings of members from time to time for any appropriate purpose.

10 Sub-Committees

The Committee may appoint sub-committees to deal with aspects of its affairs. Members of these sub-committees must be Members of the AWSG but need not be members of the Committee.

11 Reports

The Chair and Treasurer shall furnish the membership with annual reports in the April edition of *The Stilt*.

The AWSG shall report annually to the Birds Australia Research Committee in November.

Regular reports on the AWSG's activities shall be placed in the Birds Australia magazine, *Wingspan*.

12 Amendment of Rules

These rules may be amended:

- 12.1.1 by the RAOU; or
- 12.1.2 by a majority of members responding to a postal ballot provided that:
 - the RAOU has first approved the proposed amendments; and
 - notice of intention to make such amendment is given in the issue of the AWSG's newsletter preceding that in which the ballot paper will appear.

13 Financial Accounts

At the end of each financial year the RAOU, will provide a report to the AWSG on the AWSG's cost centre which will include donations made specifically to the Research Fund. These reports will also be included in the RAOU annual financial accounts.

14 Property of the Association

The AWSG may only acquire property and assets on behalf of the RAOU. Any property and assets given to or held by or held on behalf of the AWSG is the property of the RAOU.

15 Termination of the AWSG

If the AWSG is terminated under the provisions of the RAOU Constitution or otherwise, all property and assets held by or on behalf of the RAOU by the AWSG shall, after payments of outstanding liabilities, be returned to the RAOU.

Ken Gosbell
Secretary/ Treasurer

SEASONAL ABUNDANCE OF WATERBIRDS AT TANAH MERAH BEACH, A NEWLY FORMED INTER-TIDAL HABITAT ON THE EDGE OF RECLAIMED LAND IN SINGAPORE

Andrew C. Crossland

46 Frensham Cres. Christchurch 8006, NEW ZEALAND

Correspondence Address: NZIS, New Zealand High Commission, #15-05, Tower A, Ngee Ann City, 391A Orchard Rd, 238873 SINGAPORE

Email: Andrew.Crossland@nzis.dol.govt.nz

ABSTRACT

Waders and other waterbirds were counted regularly at Tanah Merah Beach, Singapore between May 2001 and July 2002. A total of 19 species were recorded, including five Charadriidae and five Scolopacidae. Peak wader numbers occurred during southward migration. The five most abundant wader species were Lesser Sand Plover, Red-necked Stint, Common Sandpiper, Malaysian Plover and Grey Plover. The newly developed intertidal habitats at Tanah Merah Beach supported a poorer, yet distinctive waterbird community compared with other shore types in Singapore.

INTRODUCTION

Singapore island is located at the southern tip of the Malay Peninsula and just north of the Riau and Lingga Archipelagos of Indonesia. It lies at the centre of a region characterised by low wave energy coastlines with extensive areas of mangroves and intertidal flats. In contrast to most neighbouring islands and parts of southern Malaysia, Singapore is highly developed and land reclamation, port development and conversion of tidal estuaries into water storage reservoirs have modified much of its original coastline.

Historically, 70% of Singapore's coastline was fringed by mangroves and mudflats, while the remainder was mainly sandy, rocky or protected by coral reefs (Briffet 1990). Today, the island is largely urbanised and in many places the coastline has been extended seaward by reclamation. Substantial areas of 'new land' have been created along the south, east and north-east coasts. One such area is the Tanah Merah peninsula, located in the south-east corner of the island. This peninsula and the adjacent Changi coastline extension were reclaimed from the sea during the 1990s. The purpose of the reclamation was to provide additional land to accommodate a third airport runway, a new naval base, a new ferry terminal, and to provide land for industrial use.

The extent of coastal habitat available to waterbirds in Singapore has shrunk considerably in the last 30 years. However, as former sites have been lost, a number of new sites have emerged through the accretion of sediment along the edges of land reclamations and the formation of new beaches and

tidal flats. This study examines the seasonal abundance of bird life using one of these sites, a beach located on the Tanah Merah peninsula, and compares the waterbird community found there with bird life inhabiting other coastal areas in Singapore.

STUDY AREA

Tanah Merah Beach (1° 19'N 103° 59'E) is positioned between the Changi Naval Base and the Tanah Merah Ferry Terminal on the southern side of the Tanah Merah peninsula and faces the Strait of Singapore (see Figure 1). The site is approximately 2.5 km long and comprises three adjacent habitats - a narrow sandy beach, 4-15 m wide at high tide; a band of intertidal mudflats, 60-80 m wide; and a rock breakwater, 4-6 m wide. The breakwater is located approximately 80 m offshore and is submerged at high tide. At low tide, it separates the beach and mudflats from the sea, forming a long, narrow lagoon. Both the beach and mudflats are of recent creation, having developed since the mid 1990's when sand fills were laid as part of the land reclamation. The shoreline is actively eroding and the retreat along different sections of beach was 2 - 6 m between April 2001 and July 2002 (pers obs.) Over this period, the mudflats continued to accrete as sediment was transferred from the edge of reclaimed land to the adjacent seabed.

The total area of beach and intertidal habitat available to waterbirds at Tanah Merah Beach is calculated at c.20 ha. Substrates are mainly sandy or firm mud, with localised softer mud. The

flattened top of the rock breakwater also constitutes an important foraging habitat, especially for Common Sandpiper (*Actitis hypoleucos*), Red-necked Stint (*Calidris ruficollis*), Lesser Sand Plover (*Charadrius mongolus*), Malaysian Plover (*Charadrius peronii*) and Striated Heron (*Butorides striatus*). Several stormwater discharges and groundwater springs contribute freshwater to an otherwise tidal environment. Prey fauna includes crabs, sea slaters (*Ligia* spp.), mudskippers (*Periophthalmus* spp.), small fish, polychaete worms and other marine invertebrates, as well as abundant insects (particularly flies, beetles, ants and centipedes) found amongst high tide debris. Besides birdlife, the site also supports a small

population of Malayan Water Monitor (*Varanus salvator*).

METHODS

Counts of waders and waterbirds at Tanah Merah Beach were made on a regular basis between 12 May 2001 and 13 July 2002. The survey method involved a single observer walking along the beach, stopping every 100-200 m to scan for feeding, loafing or roosting birds. Equipment used were 10x50 binoculars and occasionally a 25x60 spotting scope. Counts took approximately 60 to 90 minutes to complete and were conducted at low or mid tide. Counts were not made at high tide because the mudflats and breakwater were submerged and many

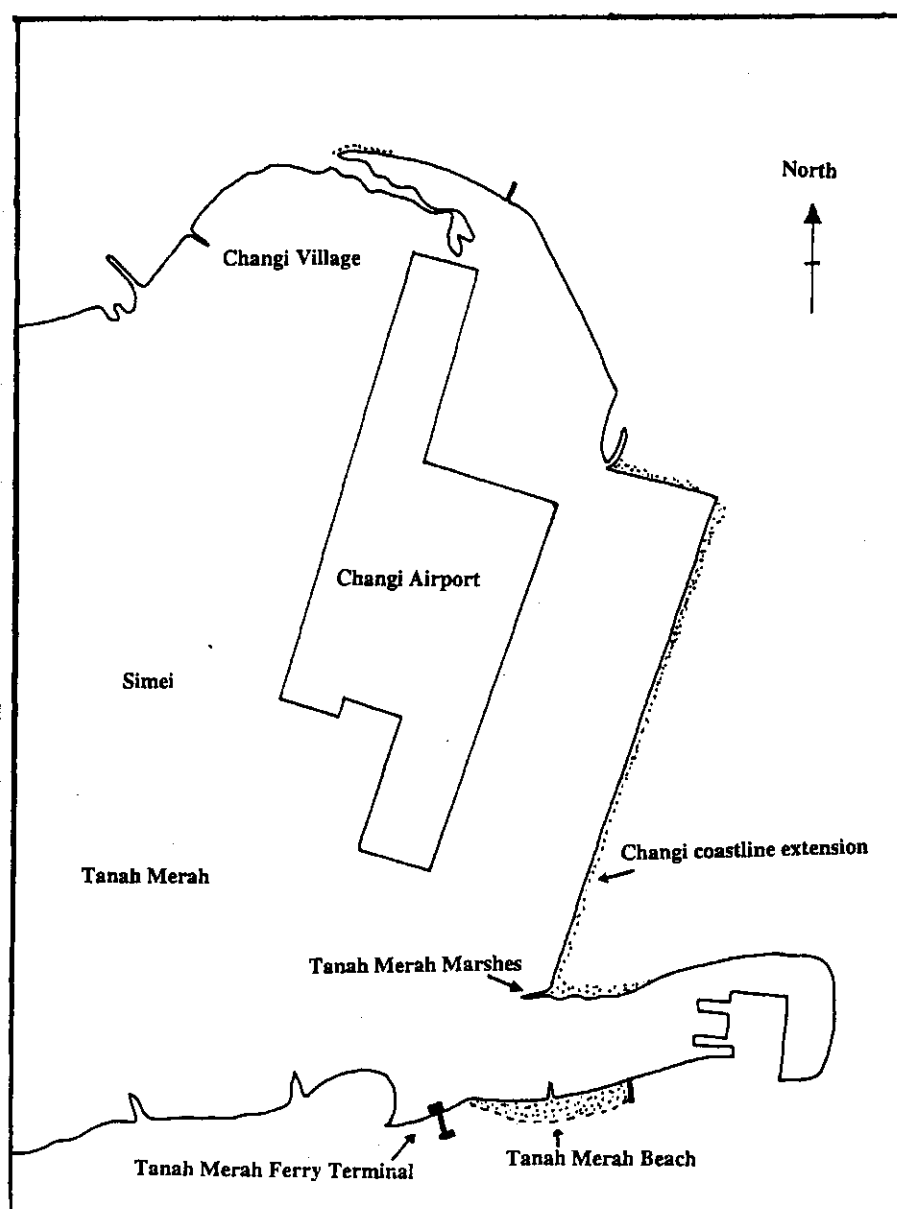


Figure 1. Location of Tanah Merah Beach in Singapore.

waterbirds left the study area for roosts elsewhere. As the surveyed area is relatively narrow (max. 100 m wide), it is likely that 90 - 100% of birds present during any given visit were located and counted.

RESULTS

A total of 19 species of waterbird were recorded during the study, comprising four Ardeidae, one Rallidae, five Charadriidae, five Scolopacidae, one Laridae and three Alcedinidae. Two species, Malaysian Plover and Striated Heron were resident at the site, while the others were seasonal or irregular visitors - presumably either from source areas in Singapore and the surrounding region (eg; herons, rails, terns and kingfishers) or from northern Asia (arctic waders) (Table 1).

Waders

Ten species of wader were recorded at Tanah Merah Beach with numbers varying from a peak of 191 in early October 2002 to lows of 6 in mid May 2001 and late June 2002. During three northern summer months (May to August), the only regular species was Malaysian Plover with 5-7 resident pairs occupying territories along the beach. A study of this breeding population of Malaysian Plover will be presented in a later paper (Crossland in prep.). The only arctic waders recorded during summer 2001 were 6 Common Greenshank (*Tringa nebularia*) on 16 June and 4 on 24 June. No arctic waders were recorded in summer 2002.

In 2001, the first returning migrants were Common Sandpipers, recorded from 21 July onwards. They probably arrived between 16 and 21 July as none were present on a visit made between formal counts on 15 July. The next arrivals were Lesser Sand Plover which appeared between 29 July and 11 August; then Grey Plover (*Pluvialis squatarola*), Whimbrel (*Numenius phaeopus*) and Red-necked Stint which all arrived between 1 September and 9 September. These were followed by Common Greenshank between 9 September and 22 September; then by Pacific Golden Plover (*Pluvialis fulva*) and a single Kentish Plover (*Charadrius alexandrinus*) which arrived between 22 September and 6 October.

The three most abundant waders during winter were Lesser Sand Plover (<104), Red-necked Stint (<42) and Common Sandpiper (<37). All three species stayed at the site throughout winter, with highest numbers of Lesser Sand Plover and Common

Sandpiper occurring during October (the southward migration period), while highest numbers of Red-necked Stint occurred during March (northward migration). A tally of Lesser Sand Plovers on 22 September 2001 found 28% juveniles and 72% adults (n = 67). The proportion of juveniles to adults in other species was not measured.

Species present at Tanah Merah Beach during both the southward and northward migration periods, but not throughout the intervening winter months, were Whimbrel (<6), Common Greenshank (<2) and Grey Plover (<11). Species recorded only during southward migration were Pacific Golden Plover (4) and a single Kentish Plover. Sanderling (*Calidris alba*) was the only species recorded solely during the northward migration period (1 individual in March and April).

The first of the migrants to depart were Lesser Sand Plover, which disappeared between 9 March and 14 April 2002. Red-necked Stint numbers peaked at 42 on 9 March, then fell to 2 on 14 April and then to 0 by 28 April. The single Sanderling departed between 14 April and 28 April. Common Sandpiper numbers were stable at 22-24 between January and late April, before all departed between 28 April and 7 May. Grey Plover also departed over this period while the last Whimbrel and Common Greenshanks disappeared after 7 May. By 18 May 2001, no arctic waders remained at Tanah Merah Beach.

During the study, there was little evidence of population interchange between Tanah Merah Beach and coastal wetlands in the north and west of Singapore. During 2001/2002, approximately 440 birds of 11 wader species were banded and colour-dyed by researchers at the Sungai Buloh Wetland Reserve, a major roosting and feeding site on the north-west coast of Singapore (Gan & Ramakrishnan 2002a). These included Mongolian Plover, Common Sandpiper and Whimbrel. None of these marked birds were seen at Tanah Merah Beach. A single Curlew Sandpiper, sighted at the nearby Tanah Merah Marshes (part of the Changi coastline extension) on 8 December 2001, was the first and so far the only resighting of a colour-dyed bird in the Tanah Merah area (J. Gan pers.comm.).

Terns

The only tern species recorded at Tanah Merah Beach was Little Tern (*Sterna albifrons*) which

Table 1. Waterbird counts at Tanah Merah beach in Singapore between May 2001 and July 2002 (nc = not counted).

Species	2001												2002														
	12/5	19/5	26/5	10/6	16/6	24/6	8/7	21/7	29/7	11/8	19/8	1/9	9/9	22/9	6/10	21/10	19/1	9/3	14/4	28/4	7/5	18/5	31/5	14/6	22/6	29/6	13/7
Grey Heron	3	-	-	-	1	1	1	-	4	-	-	-	2	1	1	1	-	-	-	1	-	1	1	-	-	6	1
Purple Heron		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
E Reef Egret	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Striated Heron	4	3	2	6	4	3	2	1	4	2	3	2	1	3	4	3	5	7	7	5	6	6	2	5	6	7	8
White-breasted Waterhen	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	2	1	-	-	-	-	-	-	-	-	-	2
Whimbrel	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	-	-	4	6	1	1	-	-	-	-	-	-
Common Greenshank	-	-	-	-	6	4	-	-	-	-	-	-	-	2	2	-	-	-	2	2	2	-	-	-	-	-	-
Common Sandpiper	-	-	-	-	-	-	-	4	1	5	3	8	15	37	34	37	22	22	24	22	-	-	-	-	-	-	-
Sanderling	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-
Red-necked Stint	-	-	-	-	-	-	-	-	-	-	-	-	2	6	27	17	nc	42	2	-	-	-	-	-	-	-	-
Grey Plover	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	3	11	2	3	-	-	-	-	-	-	-
Pacific Golden Plover	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Kentish Plover	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Malaysian Plover	6	11	12	12	13	15	10	10	7	5	7	7	9	21	18	14	5	8	8	8	6	10	7	8	6	9	9
Lesser Sand Plover	-	-	-	-	-	-	-	-	-	4	1	nc	68	67	104	70	70	79	-	-	-	-	-	-	-	-	-
Little Tern	4	1	6	4	11	6	6	3	4	6	6	5	6	5	24	6	-	7	3	6	14	45	8	4	5	11	8
Oriental Dwarf Kingfisher	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
White-throated Kingfisher	2	-	-	-	1	-	-	-	-	1	1	1	1	-	-	1	1	-	-	-	-	-	-	-	-	-	-
Collared Kingfisher	1	-	-	-	1	-	-	-	1	-	-	-	-	2	-	-	-	-	1	-	1	-	-	2	1	4	-
Total birds	21	15	20	22	37	29	19	18	21	23	21	23+	106	146	220	152	107+	181	56	49	30	63	18	19	18	39	28
Total waders	6	11	11	12	19	19	10	14	8	14	11	15+	96	134	191	138	100+	167	45	36	9	10	7	8	6	9	9

were observed on 26 of 27 counts, being absent only in the January 2002 count. Totals varied between 1 and 45 birds, with 4 to 6 being the number usually present. Little Terns generally fed over the lagoon or over adjacent inshore waters and roosted on the beach or mudflats. Courtship behaviour, including display flights and offering fish, was commonly observed in May and June. During July and August, Little Terns often arrived or departed from overland and were frequently seen carrying small fish in their bills. It is possible that they were transiting to a breeding colony located somewhere along the Changi coastline extension, immediately north of the Tanah Merah peninsula. Little Terns have been known to breed on the Changi coast regularly since 1986–87 (Briffett 1990, 1992, Strange & Jeyarajasingam 1993).

Other waterbirds

Four species of heron/egret were observed during the surveys. Striated Herons are resident at the Tanah Merah tidal flats year round and were recorded on all surveys. Numbers varied between 1 and 8 birds, with highest numbers between March and July. Family parties comprising adults with young juveniles were occasionally observed. Grey Herons (*Ardea cinerea*) were recorded as sporadic visitors with highest numbers (up to 6) in June. Purple Heron (*Ardea purpurea*) and Reef Egret (*Egretta sacra*) were rare visitors, each recorded once.

The White-breasted Waterhen (*Amaurornis phoenicurus*) is a common inhabitant of wet areas, mangroves and the edges of mudflats in Singapore (Strange & Jeyarajasingam 1993). Up to two birds were present from September 2001 to January 2002, and then again in July 2002, feeding amongst vegetation on the landward side of the beach and occasionally on the mudflats.

Three species of kingfisher were recorded: White-throated Kingfisher (*Halcyon smyrensis*) and Collared Kingfisher (*Halcyon chloris*) are common coastal birds in Singapore (Hails & Jarvis 1987) and were regular visitors to Tanah Merah Beach in small numbers. Oriental Dwarf Kingfisher (*Ceyx erithaeus*) is an uncommon non-breeding visitor to Singapore (Strange & Jeyarajasingam 1993, Robson 2000). A single individual of the rufous-backed form, presumably a straggler, was observed on 21 October 2001, fishing from the sea wall at the west end of Tanah Merah Beach.

DISCUSSION

Species richness and relative abundance of waterbirds at Tanah Merah Beach differs from most other coastal sites in Singapore, with Tanah Merah supporting a generally poorer, yet distinctive avifauna.

The birdlife observed at Tanah Merah Beach includes several waders typical of sandy shore habitats, such as Malaysian Plover, Grey Plover, Kentish Plover and Sanderling. Briffett (1990) and Hails & Jarvis (1987) noted that the range of these species in Singapore was largely restricted to the former Changi coastline. The sandy beach habitats at Changi have now been destroyed and the coastline has been extended seaward by reclamation. However, at least some of the wader species and other waterbirds displaced from Changi appear to have relocated to newly formed beaches and intertidal flats along the seaward margins of sand fills. Besides Tanah Merah Beach, new intertidal habitats have also emerged at both the southern and northern ends of the Changi coastline extension (pers. obs.). The Malaysian Plover is still largely restricted to this area, while Grey Plover, Red-necked Stint and Little Tern appear to be relatively more abundant here than elsewhere in Singapore (pers. obs.).

Notable by their absence at Tanah Merah Beach, are many waterbird species which commonly occur on muddier and softer substrates around the northern and western coastlines of Singapore. These include Common Redshank (*Tringa totanus*), Marsh Sandpiper (*Tringa stagnatilis*), Terek Sandpiper (*Xenus cinereus*), Curlew Sandpiper (*Calidris ferruginea*), Eurasian Curlew (*Numenius arquata*), Bar-tailed Godwit (*Limosa lapponica*), White-winged Black Tern (*Chlidonias leucopterus*), Great Egret (*Egretta alba*), Intermediate Egret (*Egretta intermedia*) and Little Egret (*Egretta garzetta*) (Gan & Ramakrishnan 2002b, Lopez & Mundkur 1997, Lim & Gardner 1997, Strange & Jeyarajasingam 1993, Hails & Jarvis 1987). Several other species, including Pacific Golden Plover, Whimbrel, Common Greenshank, Grey Heron and Purple Heron are also common elsewhere in Singapore but are relatively scarce at Tanah Merah.

The relatively poor waterbird community found at Tanah Merah Beach is probably due to a number of factors including the young age of the site, its isolation from Singapore's major waterbird habitats on the north and west coasts, the absence of

mangrove and marsh development, and the lack of a disturbance-free high tide roost. In addition, the diversity and abundance of prey species supported by the accreting tidal flats is possibly inferior to other sites in Singapore. The findings of this study support the observation made by Hails & Jarvis (1987) that new shorelines alongside land reclamations in Singapore tend to support lower bird numbers than other shore types. Further research could be directed to examining Hails & Jarvis' assumption that invertebrate abundance may be low on reclaimed shorelines. Further research could also improve our knowledge of the degree to which reclaimed shorelines in South East Asia are able to accommodate resident and migratory waterbird populations that have been displaced through coastal development and habitat destruction.

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WADER SURVEYS IN THE COORONG AND COASTAL LAKES OF SOUTHEASTERN SOUTH AUSTRALIA DURING FEBRUARY 2002

Ken Gosbell¹, Peter Collins² and Maureen Christie³

¹17 Banksia Court, Heathmont, 3135 Vic. AUSTRALIA
Email: kenbg@ozemail.com.au

²RMB 4009, Cowes, Victoria, 3922 Vic. AUSTRALIA
Email: moonbird@waterfront.net.au

³Carpenter Rocks, SA, 5291 Vic. AUSTRALIA
Email: twinpeppers@icisp.net.au

ABSTRACT

The number of waders in the Coorong has declined dramatically over the last 20 years. In 2001, the total number was 48,425 compared to a peak count of 234,543 in 1982. It was therefore pleasing in 2002 to observe an increase over 2001 of 114% to a total of 103,859. This increase was reflected in all the key species, Red-necked Stint, *Calidris ruficollis*, (240%), Curlew Sandpiper, *Calidris ferruginea*, (210%), Sharp-tailed Sandpiper, *Calidris acuminata*, (300%) and Banded Stilt, *Cladorrhynchus leucocephalus*, (150%). However, these totals are still much lower than those recorded in 1982. We think part of the reason for this increase is due to drier conditions in inland Australia in 2002 compared to 2000 and 2001. Many areas of western Queensland and northern South Australia were flooded in those years. The Coorong appears to act as a refuge in years when it is drier inland. The distribution of waders in 2002 was influenced by the persistent southeast winds that have the effect of increasing the numbers in the Northern Channels relative to the Hells Gate area. The species most affected were Sharp-tailed Sandpipers, Banded Stilt and Curlew Sandpipers. The wind increased the water depth in the northeast sector of the Channels and created shallows and sandbanks on the southwest side adjacent to the Younghusband Peninsula, thus providing attractive feeding areas sheltered from the strong winds.

A survey of the southeast coastal lakes between the Coorong and Lake George found variable use by waders. All these lakes have been substantially altered over time by drainage which in turn has changed the land use in many cases. However, several lakes were found to support internationally important numbers of at least one species. The most important was a flock of 60,000 Banded Stilt found on Lake George.

INTRODUCTION

The Coorong is a body of water confined by the coastal dunes of the Younghusband and Sir Richard Peninsulas and is some 140 kilometres long. The Coorong waters range from seasonally fresh water near the barrages during periods of high flow, to brackish in the Murray River mouth area and hypersaline in the southern lagoon. Changes in water level in the southern lagoon in late spring and summer exposed mud flats and shallow sandbars that are habitat for a number of species of wader. The water regime of the Coorong has been altered over a long period by reduced river flows, drainage and habitat change. More recently, both surface and ground water from adjacent agricultural areas are being drained into the southern Coorong at Salt Creek. The Coorong is designated a Wetland of International Importance under the Ramsar Convention of 1985. A Management Plan was prepared in 2000 by the Department for Environment and Heritage in consultation with community groups.

The waders in the Coorong have previously been counted in 1981, 1982, 1987, 2000 and 2001 (Jaensch & Barter 1988, Wilson 2000, 2001a). In the 1980s, the Coorong was the third most important wader site in Australia, after Eighty Mile Beach and Roebuck Bay in N.W. Australia. This is no longer the case. The recent counts have shown a reduction in the total number of waders from 141,614 in 1981 and 234,543 in 1982 to 130,483 in 1987, 68,599 in 2000 to a low of 48,425 in 2001. The magnitude of these declines are a cause for concern, and for that reason the Australasian Wader Studies Group (AWSG) was asked by the SA Department of Environment and Heritage (DEH) to count the Coorong in 2002. The total number of this count carried out in early February 2002 was 103,859. A report with the results of the 2002 count and comparing the results with previous counts for each species was prepared for SA DEH (Gosbell *et al.* 2002).

In order to assess the use by waders of the extensive lake and wetland system southeast of the Coorong, a survey was conducted between the Coorong and

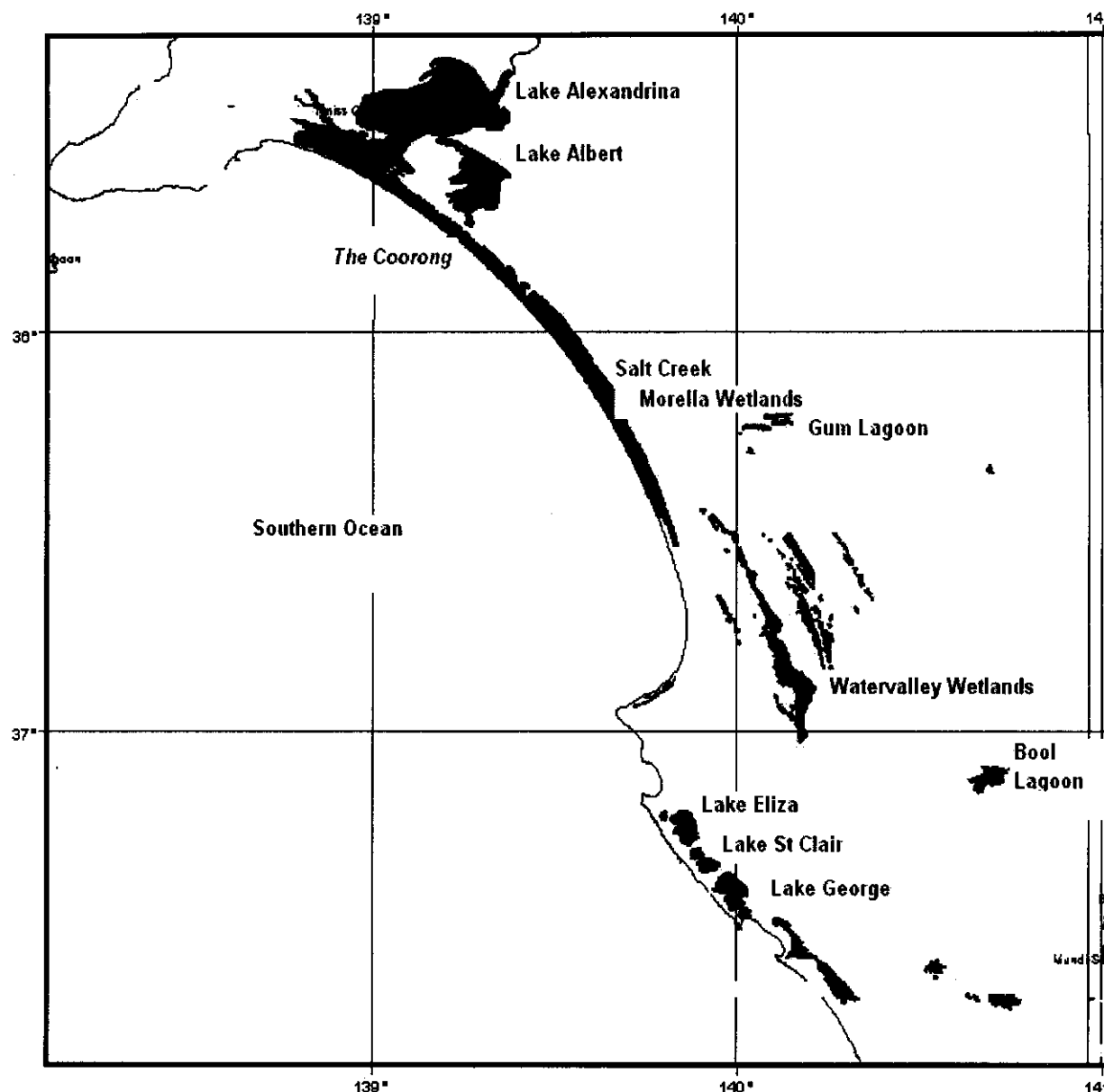


Figure 1. Map showing the Coorong and SE coastal lakes, South Australia.

Lake George (Fig. 1). A reconnaissance was carried out immediately prior to the Coorong count and followed up by counts of these wetlands after the Coorong survey was completed. This showed variable use this year although suitable habitat for waders was identified in many of these wetlands.

THE COUNT PERIOD AND COVERAGE

The Coorong was counted by the AWSG on 2 and 3 February 2002. The count sections (Fig 2) were the same as used in the 1987, 2000 and 2001 surveys (Jaensch & Barter 1988, Wilson 2000, Wilson 2001a). In 2002, all sections were counted although access to several areas on the Younghusband

Peninsula side were limited by extensive sand bars and strong SE winds.

Commencing on the morning of 2 February, four land based teams and two teams in two boats counted the southern section of the Coorong. Then, on the morning of 3 February, three land based and four teams in four boats counted the northern section of the Coorong. Late in the afternoon of 2 February, all members of the team counted the area of the Morella Basin behind Salt Creek. On 4 February, a ranger took three observers along the ocean beach from Tea Tree Crossing to the Murray Mouth to note, in particular, the numbers and locations of Pied Oystercatchers and Hooded

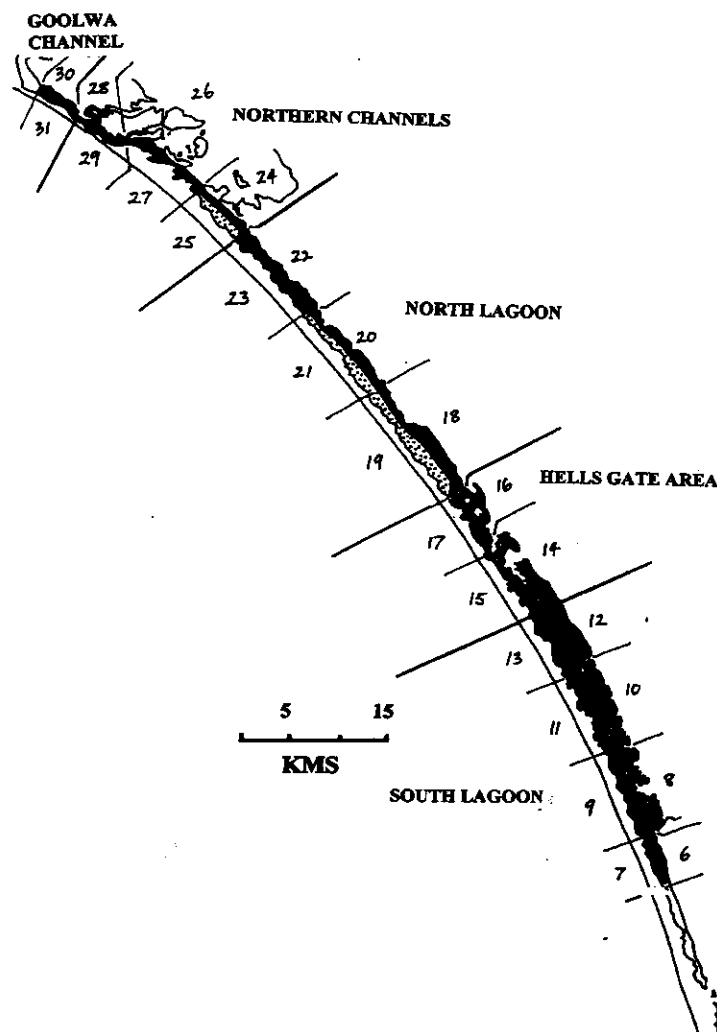


Figure 2. Map of Coorong showing the count sections used to subdivide the area for counts in 2000, 2001 and 2002.

Plovers. On 5 February, two teams surveyed several of the SE Lakes including Lake Eliza, Lake St Clair and Lake George.

Sixteen counters and two boats (one Department for Environment and Heritage and one fisherman) were involved on Day 1, while 17 people and four boats (one DEH and three fishermen) were involved with Day 2 of the count. Each team had at least one experienced counter with a telescope and all had binoculars. In general, movements of birds within and between areas were noted in order to assess any possibility for double counting.

CONDITIONS AT THE TIME OF THE COUNT

Counts were made by a team allocated a section or sections during 5-6 hours in the morning through to mid afternoon, before the wind strengthened to create difficult conditions. Both days of the count periods were cool to mild with a strong southeasterly wind, estimated to be up to 25 knots

in the afternoon. A shower of rain was experienced early on Day 1. These conditions combined with the relatively low water levels created difficulties for boats to move close inshore. It is a credit to the boatmen and team members that such an extensive survey was carried out under these adverse conditions.

The water level was recorded as 0.18 metres at the Parnka Point gauge. It should also be noted that the Murray mouth was highly silted and had very low flows, as a consequence. A sandbar to the north of the mouth prevented boat access to the Goolwa channel and caused this section to be counted from a boat launched at the Goolwa end.

RESULTS

Total counts for 1981, 1982, 1987, 2000, 2001 and 2002 in the Coorong and on the ocean beach in 1981, 1982, 2000, 2001 and 2002 are shown in Table 1 and 2, together with population estimates

from Watkins (1993). Note that more of the ocean beach was counted in 1981 and 1982 than in 2000 and 2001. The ocean beach was not counted in 1987. The distribution and numbers of waders in each section in 2002 are shown in Table 3 and in the four main areas in 1982, 1987, 2000, 2001 and 2002 in Table 4. Counts in the Morrellia Basin made in 2001 and 2002 are shown in Table 5.

Total numbers in the Coorong

The total number of waders recorded in the Coorong was 141 614 in 1981, 234 543 in 1982, 130 483 in 1987, 68 599 in 2000, 48 425 in 2001 and 103 859 in 2002 (Table 1). Figure 3 shows these counts together with numbers less Banded

Stilt and Re-necked Avocet. This indicates a gradual decline in wader numbers in the Coorong to a low in 2001 of 48 000 with an upturn in 2002 to 103 000.

While there have been some variations in the extent of the Coorong counted from year to year, Wilson (2001) showed that the adjustments required to achieve comparability were relatively small. He estimated that it would have resulted in an addition of approximately 6 600 to the 2000 count and 3 500 to the 2001 count. He also estimated that the theoretical adjustment to the 1981 total should be an addition of 15 000 waders because of the

Table 1. Total counts of wader species in the Coorong in 1981, 1982, 2000, 2001 and 2002. Summary count of Watkins (1993) are also shown.

Common name	Scientific name	Year						Importance	Watkins 1993
		1981	1982	1987	2000	2001	2002		
Black-tailed Godwit	<i>Limosa limosa</i>	133	185	105	210	115	-		150
Bar-tailed Godwit	<i>Limosa lapponica</i>	15	-	3	8	-	-		25
Eastern Curlew	<i>Numenius madagascariensis</i>	17	24	8	15	16	2		24
Marsh Sandpiper	<i>Tringa stagnatilis</i>	-	2	30	-	-	68		30
Common Greenshank	<i>Tringa nebularia</i>	600	717	596	557	305	323	N	650
Terek Sandpiper	<i>Xenus cinereus</i>	-	-	-	-	-	1		-
Common Sandpiper	<i>Actitis hypoleucos</i>	13	1	1	-	1	-		5
Ruddy Turnstone	<i>Arenaria interpres</i>	-	1	-	1	-	-		-
Great Knot	<i>Calidris tenuirostris</i>	3	4	-	1	-	-		5
Red Knot	<i>Calidris canutus</i>	57	67	-	80	-	30		100
Sanderling	<i>Calidris alba</i>	113	929	308	512	53	10	I	930
Sharp-tailed Sandpiper	<i>Calidris acuminata</i>	24871	55739	22898	10697	5718	17067	I	35000
Pectoral Sandpiper	<i>Calidris melanotos</i>	-	1	-	-	-	-		-
Red-necked Stint	<i>Calidris ruficollis</i>	54743	63794	54710	30145	18368	44544	I	60000
Curlew Sandpiper	<i>Calidris ferruginea</i>	39882	22614	22512	13124	4309	9177	I	22000
Cox's Sandpiper	<i>Calidris paramelanotos</i>	-	-	1	-	-	-		-
Pied Oystercatcher	<i>Haematopus longirostris</i>	108	297	84	92	9	208	I	630
Sooty Oystercatcher	<i>Haematopus fuliginosus</i>	-	-	3	3	3	24		18
Black-winged Stilt	<i>Himantopus himantopus</i>	238	991	291	340	183	712		600
Banded Stilt	<i>Cladorhynchus leucocephalus</i>	13782	77149	18692	11299	15611	24552	I	30000
Red-necked Avocet	<i>Recurvirostra novaehollandiae</i>	1449	5401	3589	93	260	3856	I	4500
Pacific Golden Plover	<i>Pluvialis fulva</i>	289	230	144	84	103	43		290
Grey Plover	<i>Pluvialis squatarola</i>	1	-	-	12	-	2		15
Red-capped Plover	<i>Charadrius ruficapillus</i>	4677	5152	2533	1089	1288	968	I	4000
Double-banded Plover	<i>Charadrius bicinctus</i>	-	-	1	-	-	-		150
Black-fronted Dotterel	<i>Charadrius melanops</i>	-	2	-	-	-	-		15
Lesser Sand Plover	<i>Charadrius mongolus</i>	-	-	-	-	-	2		-
Hooded Plover	<i>Charadrius rubricollis</i>	-	-	12	3	4	12	I	-
Red-kneed Dotterel	<i>Erythronyx cinctus</i>	14	17	-	-	-	1		10
Oriental Plover	<i>Charadrius veredus</i>	18	-	-	-	-	-		-
Banded Lapwing	<i>Vanellus tricolor</i>	-	248	130	-	-	-		150
Ruff	<i>Philomachus pugnax</i>	-	-	-	1	-	-		-
Masked Lapwing	<i>Vanellus miles</i>	591	978	765	233	355	337		800
Red-necked Phalarope	<i>Phalaropus lobatus</i>	-	-	3	-	-	-		-
Unidentified small		-	-	3064	-	1724	1912		-
TOTAL		141614	234543	130483	68599	48425	103851		160082
	Banded Stilt & RN Avocet	15231	82550	22281	11392	15871	28408		34500
	Total Less " " & " "	126383	151993	108202	57207	32554	75443		125582

Table 2. Counts of waders on the ocean beach in 1981, 1982, 2000, 2001 and 2002. (***) A longer section of beach was counted in 1981 and 1982 compared to 2000, 2001 and 2002. ** 865 Sanderling recorded inside the Murray Mouth in 1982).

Species	Kingston to Middleton *** 1981	Kingston to Waitpinga *** 1982	Tea Tree to Murray Mouth 2000	Tea Tree to Murray Mouth 2001	Tea Tree to Murray Mouth 2002
Bar-tailed Godwit	-	-	-	1	-
Common Sandpiper	-	2	-	-	-
Sanderling	311	**	15	161	24
Red-necked Stint	68	10	23	-	-
Pied Oystercatcher	568	334	526	432	331
Sooty Oystercatcher	18	5	13	2	1
Banded Stilt	-	-	-	5	-
Grey Plover	5	-	-	-	-
Red-capped Plover	902	529	48	52	6
Hooded Plover	102	130	25	49	18
Oriental Plover	-	6	-	-	-
Masked Lapwing	159	337	-	-	n/c
Total	2133	1353	650	702	380

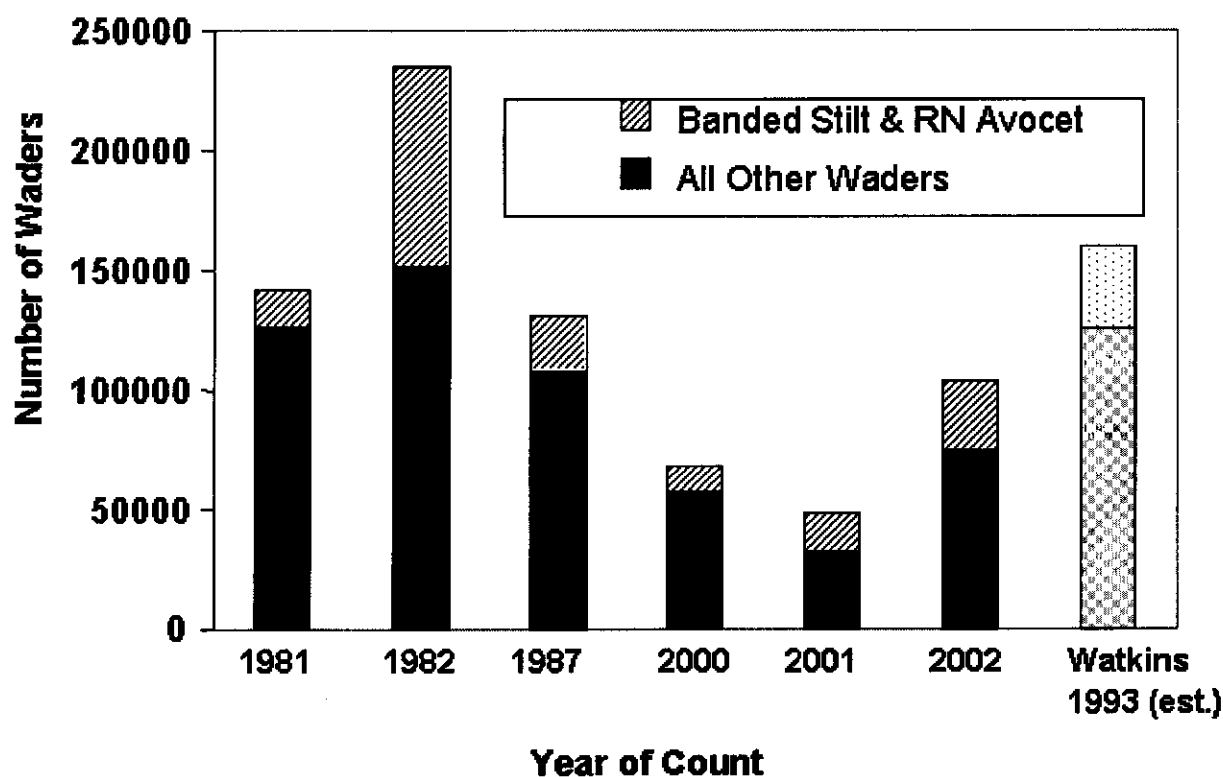


Figure 3. Changes in the total number of waders in the Coorong in years counted from 1981 to 2002.

Table 4. The distribution of waders by species in four sections of the Coorong between 1982 and 2002 and the percentage of the total count of that species.

Year	Species	Count					Percentage			
		South lagoon	Hells Gate area	North Lagoon	Northern channels	Sum	South lagoon	Hells Gate area	North Lagoon	Northern channels
1982	Black-tailed Godwit	0	0	0	185	185	0	0	0	100
1987		0	0	0	105	105	0	0	0	100
2000		0	0	0	210	210	0	0	0	100
2001		0	0	0	115	115	0	0	0	100
2002		0	0	0	0	0	0	0	0	0
	Mean distribution	0	0	0	615	615	0	0	0	100
1982	Eastern Curlew	0	0	2	15	17	0	0	12	88
1987		0	0	1	7	8	0	0	13	88
2000		0	0	0	15	15	0	0	0	100
2001		0	0	0	16	16	0	0	0	100
2002		0	0	0	2	2	0	0	0	100
	Mean distribution	0	0	3	55	58	0	0	5	95
1982	Common Greenshank	39	75	193	360	667	6	11	29	54
1987		177	62	96	182	517	34	12	19	35
2000		20	49	131	357	557	4	9	24	64
2001		24	73	8	172	277	9	26	3	62
2002		18	32	52	221	323	6	10	16	68
	Mean distribution	278	291	480	1292	2341	12	12	21	55
1982	Red Knot	0	0	27	8	35	0	0	77	23
1987		0	0	0	0	0	0	0	0	0
2000		0	0	0	80	80	0	0	0	100
2001		0	30	0	0	30	0	100	0	0
	Mean distribution	0	30	27	88	145	0	21	19	61
1982	Sanderling	0	0	0	865	865	0	0	0	100
1987		0	0	0	304	304	0	0	0	100
2000		0	0	0	512	512	0	0	0	100
2001		0	0	0	53	53	0	0	0	100
2002		0	0	0	10	10	0	0	0	100
	Mean distribution	0	0	0	1744	1744	0	0	0	100
1982	Sharp-tailed Sandpiper	4200	18726	27185	4928	55039	8	34	49	9
1987		1715	4378	11280	2414	19787	9	22	57	12
2000		51	4817	2236	3593	10697	0	45	21	34
2001		122	2240	972	2221	5555	2	40	17	40
2002		335	2691	1773	12268	17067	2	16	10	72
	Mean distribution	6423	32852	43446	25424	108145	6	30	40	24
1982	Red-necked Stint	5500	27852	13580	14358	61290	9	45	22	23
1987		5223	22932	1371	24860	54386	10	42	3	46
2000		3470	16149	3632	6894	30145	12	54	12	23
2001		2684	10040	128	7175	20027	13	50	1	36
2002		2595	12521	12483	16945	44544	6	28	28	38
	Mean distribution	19472	89494	31194	70232	210392	9	43	15	33
1982	Curlew Sandpiper	2550	10162	6816	3036	22564	11	45	30	13
1987		784	12642	1243	7839	22508	3	56	6	35
2000		0	4028	3950	5146	13124	0	31	30	39
2001		747	1188	600	1748	4283	17	28	14	41
2002		0	402	2610	6165	9177	0	4	28	67
	Mean distribution	4081	28422	15219	23934	71656	6	40	21	33

Year	Species	Count					Percentage			
		South lagoon	Hells Gate area	North Lagoon	Northern channels	Sum	South lagoon	Hells Gate area	North Lagoon	Northern channels
1982	Pied Oystercatcher	12	36	69	170	287	4	13	24	59
1987		42	17	0	25	84	50	20	0	30
2000		2	30	19	41	92	2	33	21	45
2001		2	2	0	7	11	18	18	0	64
2002		8	29	96	75	208	4	14	46	36
	Mean distribution	66	114	184	318	682	10	17	27	47
1982	Black-winged Stilt	1	11	560	319	891	0	1	63	36
1987		4	49	179	50	282	1	17	63	18
2000		0	18	66	256	340	0	5	19	75
2001		0	30	4	148	182	0	16	2	81
2002		407	44	54	207	712	57	6	8	29
	Mean distribution	412	152	863	980	2407	17	6	36	41
1982	Banded Stilt	950	30206	44899	94	76149	1	40	59	0
1987		7145	11160	387	0	18692	38	60	2	0
2000		462	10821	16	0	11299	4	96	0	0
2001		2370	13225	0	16	15611	15	85	0	0
2002		5826	11802	288	6515	24431	24	48	1	27
	Mean distribution	16753	77214	45590	6625	146182	11	53	31	5
1982	Red-necked Avocet	830	3635	482	444	5391	15	67	9	8
1987		1573	1988	7	4	3572	44	56	0	0
2000		0	93	0	0	93	0	100	0	0
2001		6	198	7	49	260	2	76	3	19
2002		694	1900	978	284	3856	18	49	25	7
	Mean distribution	3103	7814	1474	781	13172	24	59	11	6
1982	Pacific Golden Plover	0	0	1	214	215	0	0	0	100
1987		0	0	24	0	24	0	0	100	0
2000		0	0	39	45	84	0	0	46	54
2001		0	0	0	59	59	0	0	0	100
2002		0	2	19	0	21	0	10	90	0
	Mean distribution	0	2	83	318	403	0	0	21	79
1982	Red-capped Plover	1160	1886	1560	246	4852	24	39	32	5
1987		820	1141	267	565	2793	29	41	10	20
2000		140	586	287	76	1089	13	54	26	7
2001		117	881	5	316	1319	9	67	0	24
2002		127	715	44	82	968	13	74	5	8
	Mean distribution	2364	5209	2163	1285	11021	21	47	20	12
1982	Masked Lapwing	78	68	435	282	863	9	8	50	33
1987		265	48	335	62	710	37	7	47	9
2000		16	20	102	95	233	7	9	44	41
2001		38	79	14	275	406	9	19	3	68
2002		70	49	136	82	337	21	15	40	24
	Mean distribution	467	264	1022	796	2549	18	10	40	31
1982	Total wader populations	15320	92657	95809	25524	229310	7	40	42	11
1987		17748	54417	15190	36417	123772	14	44	12	29
2000		4161	36611	10478	17320	68570	6	53	15	25
2001		6110	27956	1738	12370	48174	13	58	4	26
2002		10080	30187	18533	42856	101656	10	30	18	42
	Mean distribution	53419	241828	141748	134487	571482	9	42	25	24

Table 5. Counts of waders in the Morella Basin (36° 7' 27" S 139° 40' 2" E) in 2001 and 2002.

Species	Date	
	2 Feb 2001	2 Feb 2002
Common Greenshank	28	n/c
Red-necked Stint	151	n/c
Sharp-tailed Sandpiper	565	600
Curlew Sandpiper	2	-
Black-winged Stilt	190	60
Banded Stilt	337	6000-8000
Red-necked Avocet	3	-
Red-capped Plover	29	-
Red-kneed Dotterel	3	2
Banded Lapwing	9	-
Masked Lapwing	50	30
Unidentified small wader	182	2000
Total	1549	10 692

incomplete counting of the South Lagoon, assuming that the distribution of waders was similar. Such theoretical adjustments are small compared to the changes in populations recorded during the six counts. The present count covered all areas and was probably the most extensive of the six counts undertaken to date.

The total number of waders counted in 2002 (103 000) was 114% more than those counted last year, 2001 (48 000). This increases to 131% more when the numbers of Banded Stilt and Red-necked Avocet are disregarded. It is 34% more (47% when BS and RNA disregarded) than in 2000. However it is 55% less (50% when BS and RNA disregarded) than the peak count made in 1982 and 20% (30% when BS and RNA disregarded) less than 1987.

Population changes in individual species

Population changes of individual species are discussed under the species accounts below.

Population changes in Sharp-tailed Sandpiper, Red-necked Stint, Curlew Sandpiper and Banded Stilt are also shown graphically in Figure 4.

Total numbers on the ocean beach

Conditions for observing and counting this coast were difficult this year due to several days of strong southeasterly winds and high seas. This is supported by the increase in the number of Pied Oystercatcher in the Coorong this year where it was more sheltered. The count for Red-capped Plover and Hooded Plover is not complete as it is thought they were taking shelter from the extreme conditions. The number of Sanderling observed was

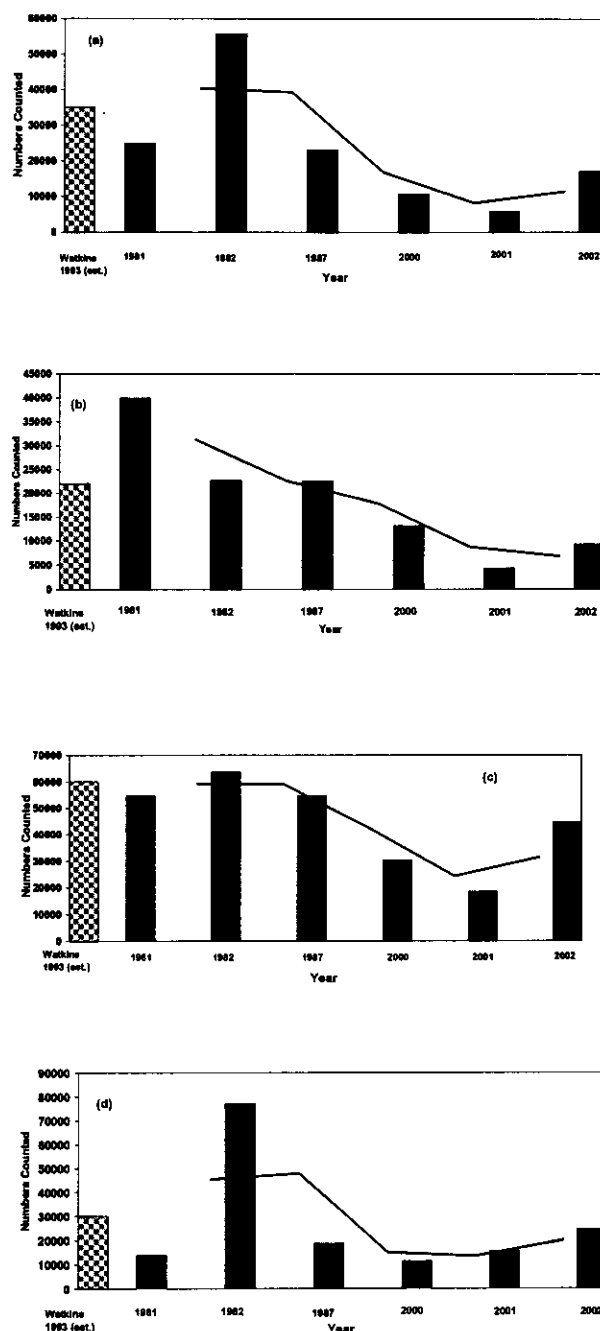


Figure 4. Changes in numbers of key species in the Coorong over the period 1981 – 2002. (a) Sharp-tailed Sandpipers, (b) Curlew Sandpipers, (c) Red-necked Stint, (d) Banded Stilt.

also low but this is a species that regularly moves along an extensive length of coast.

Comparison of the counts on the ocean beach between 1981, 1982 and 2000, 2001 and 2002 is not possible as only about 100 kms of beach was counted in 2000, 2001 and 2002 (Table 2). Of particular note, however, are the relatively low numbers of Red-capped and Hooded Plovers (see the species accounts).

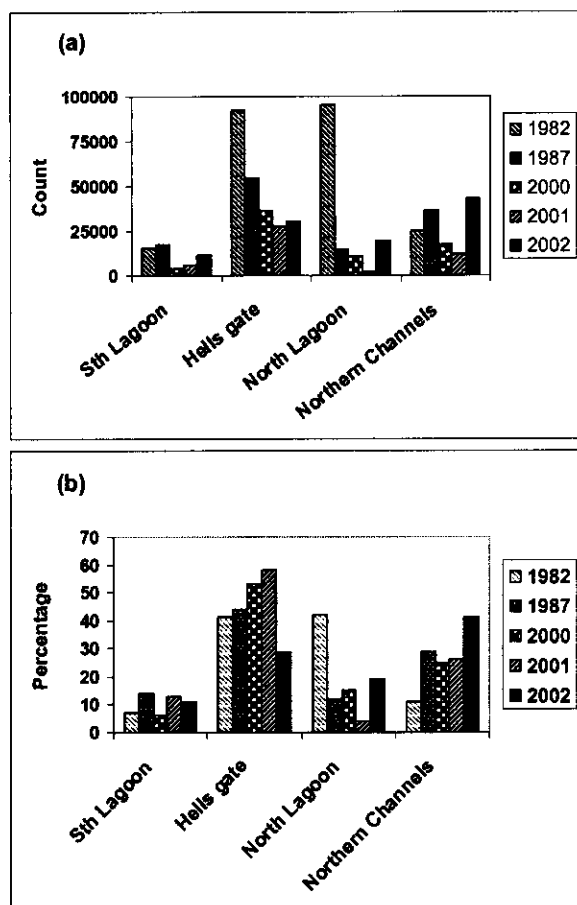


Figure 5. Variation in the distribution of waders along the length of the Coorong 1982 – 2002. (a) Count distribution. (b) Distribution by percentage of total count.

Species distribution in the Coorong

Table 3 shows the distribution in the Coorong according to count section and date. Table 4 shows the distribution of the most numerous wader species within the Coorong in 1982, 1987, 2000, 2001 and 2002 in the four main count areas. The channel north of the Murray Mouth to Goolwa barrage is included in the Northern Channels sector.

The proportion of waders in each region have shown little change over the years (Table 4), despite the total number of waders declining dramatically. Excluding 1982, when numbers in the North Lagoon were biased by the large numbers of Banded Stilt there, between 6 and 18% of the total count of the most common waders have been recorded in the South Lagoon, 40–59% in the Hells Gate area, 11–40% in the North Lagoon and 24–33% in the Northern Channels. Figure 5 shows the distribution between these main count areas. It is noted that the proportion of waders utilising the

Northern Channels has increased in 2002 (42%) with a consequent reduction in the Hells Gate area (30%). This may have been due to the consistent southeasterly winds moving waters northwards and uncovering good feeding areas.

The more marine species such as Eastern Curlew, Red Knot, Pied Oystercatcher and Sanderling mainly occurred in the Northern Channels, where there is a tidal influence. Species that prefer hypersaline conditions, such as Banded Stilt, mainly occurred from the Needles (Hells Gate area) southwards, although in 2002 significant numbers were found in the Northern Channels. Considering that birds can easily move from one section to another during a count period, and counting the Coorong is difficult, the distribution of most species is broadly similar from year to year. However, for many species there have been large variations in numbers with a downward trend in the total populations. For example, the distribution pattern of Red-necked Stint has remained remarkably consistent, although total numbers have declined from a peak of 63 794 in 1982 to 18 368 in 2001 and increased in 2002 to 44 544.

The Morella Basin

The Morella Basin is a recently formed wetland, about 3 kms inland from the Coorong. It lies behind the township of Salt Creek, which is situated on the South Lagoon. It has been formed as part of the Upper South East Dryland Salinity Drainage Scheme, one of the consequences of which is to enable more fresh (less saline) water to be channelled into the southern end of the Coorong. Whereas in 2001, the water level was high in 2002, the level had dropped to the extent that most of the waders were some distance out in the wetland, making identification difficult. However, it was evident that the wetland was being utilised by relatively large numbers of waterbirds and waders, particularly small waders. This included 600 Sharp-tailed Sandpiper and a roost of 6 000–8 000 Banded Stilt, more than two kilometres away from the observation point. There were also several thousand ducks. The Morella Basin provides suitable habitat for all these species due to the extensive mudflats and sheltered location.

SELECTED SPECIES ACCOUNTS

Common Greenshank *Tinga nebularia*

Numbers have varied between a maximum of 671 in 1982 and a minimum of 305 in 2001. There were 323 in 2002 mainly in the Northern Channels.

Sanderling *Calidris alba*

Numbers on the sandbanks in the Murray Mouth were the lowest recorded. This may have been because of strong southeasterly winds and blowing sand making the sandbanks unattractive. Sanderling are known to roam along the South Australian beaches and the low numbers observed this year is probably not significant (Gosbell, in prep.).

Sharp-tailed Sandpiper *Calidris acuminata*

Sharp-tailed Sandpiper numbers ranged from approximately 22 000 to 55 000 in the 1980's (24,871 in 1981, 55 739 in 1982 and 22 898 in 1987). In 2000, the numbers had declined to 10 697 and in 2001 there was a further decline to 5 718. However, in 2002 there was an increase of three-fold over last year with 17 067 being recorded. This is still a decline in numbers from the 1980's. (Fig. 4a).

Sharp-tailed Sandpipers are known to use ephemeral wetlands more than other species of *Calidrine* wader. As it was very wet in Queensland and northern New South Wales in 2000/2001, it is possible that many of them stopped off their migration in 2001 before they reached southern Australia. In 2001/2002, these northern Australian areas are much drier and South Australia and Victoria have experienced a wetter spring/summer, probably making these regions more attractive to this species.

The distribution of Sharp-tailed Sandpiper in the Coorong has also changed since the early surveys (Table 4). The majority of this species were found in the Northern Channels this year (72%), whereas previous counts had recorded the majority in the Hells Gate and North Lagoon areas. Whether this was due to prevailing wind conditions or other environmental factors is not known.

Red-necked Stint *Calidris ruficollis*

There were about 50 000–60 000 Red-necked Stint in the Coorong in the 1980s (54 743 in 1981, 63 794 in 1982 and 54 710 in 1987). In 2000, the numbers had declined to 30 145 and in 2001 there was a further decline to a low of 18 368. In 2002, the numbers recorded more than doubled from that counted last year to 44 544 birds (Fig. 4).

Wilson (2001) indicated that in Victoria, Red-necked Stint numbers were at their highest levels in 20 years in 2000 and 2001. It is believed that this was due to two and possibly three good successive breeding seasons (Soloviev & Tomkovich 2001).

Preliminary indications in Victoria in 2002 are that last year's breeding season was also successful. This could mean the high numbers of this species recorded in Victoria could be sustained this year (Minton *et al.* this issue). The higher count in the Coorong this year reversed the apparent decline in numbers observed last year. However, it will be important to monitor this change in future years.

The distribution pattern of Red-necked Stint within the Coorong was broadly similar in all years, although in common with several other species, there was a shift in concentration to the northern areas, probably due to the prevailing wind conditions.

Curlew Sandpiper *Calidris ferruginea*

There were about 22 000 to 40 000 Curlew Sandpiper in the Coorong in the 1980s (39 882 in 1981, 22 614 in 1982 and 22 512 in 1987). In 2000, the numbers had declined to 13 124 and in 2001 there was a further decline to 4 309. In 2002, there was an increase to 9 177, again a doubling of last years count, but still remaining at much lower levels than in the 1980s (Fig. 4c).

Curlew Sandpipers have shown a very widespread and large population decline in southern Australia since the 1980s. Wilson (2001a) states that in Victoria there were large declines since the 1980s with the lowest numbers in 20 years recorded in 2001. The changes in the populations in the Coorong followed a similar trend to that observed in Victoria. It would seem that the numbers of Curlew Sandpipers are at their lowest level in 20 years in large areas of Australia, with an overall decline of over 50%. The decline is so large and widespread that the main factors causing it probably lie outside Australia (Wilson 2001b). There is evidence from the percentage of juveniles in birds caught for banding that at least part of the reason may have been a series of poor breeding years, although no other Arctic species have been affected in the same way in recent years (Minton *et al.* this issue).

The distribution within the Coorong was different this year with two thirds of the birds being observed in the Northern Channels. Again it is considered that this was due to prevailing wind and water level conditions.

Pied Oystercatcher *Haematopus longirostris*

A total of 331 Pied Oystercatcher were counted on the ocean beach from Tea Tree crossing to the

Murray Mouth in 2002. When this count is combined with the 208 recorded in the Coorong, the total is 534 birds. Although these counts were carried out on different days, the strong SE wind conditions were similar. This strong wind resulted in a large number of oystercatchers in the sheltered bays of the Coorong. Only 13 immature birds were seen, although conditions made observation difficult. These numbers compare with counts of 443 in 2001 and 618 in 2000 (based on adding the ocean beach and Coorong figures). Thirteen Pied Oystercatchers seen on the ocean beach had been colour banded in Victoria as part of a long term study there. The majority of these birds had been banded at sites on the eastern side of Western Port Bay. There are a number of examples of these birds breeding along the Coorong and returning to Victoria in the winter.

Black-winged Stilt *Himantopus himantopus*

The number of Black-winged Stilt recorded in 2002 was 712. The maximum number recorded were 991 in 1982 and minimum numbers were 183 in 2001. The 2002 count was within the range of previous counts, suggesting little change.

Banded Stilt *Cladorhynchus leucocephalus*

The number of Banded Stilt counted in 2002 was 24 431. This is the highest count since the peak year of 1982. In addition 6 000 - 8 000 were observed on the Morella Wetlands on 2 February and 50 000 - 60 000 on Lake George on 5 February. The Coorong numbers are 150% up on 2001 and 210% up on 2000. It was suggested that in 2000, numbers were the lowest recorded because birds had moved to Lake Eyre to breed (Wilson 2000, 2001a). During this breeding event, an estimated 30 000 chicks hatched in July 2000 (Minton 2000). Comparing the 2002 figures with 1987 suggests that there has not been a dramatic change in the number of Banded Stilt using the Coorong since then (Fig. 4d).

The distribution along the Coorong changed this year with a quarter of the birds observed in the Northern Channels. This is the first time surveys have found this species in any numbers in this area.

Red-necked Avocet *Recurvirostra novaehollandiae*

Numbers of Red-necked Avocets counted in 2002 (3 856) are similar to 1987 (3 572) and lower than 1982 (5 391). Very low counts in 2000 and 2001 support the possibility (Wilson 2001b) that Red-necked Avocet had relocated to ephemeral wetlands

in northern New South Wales and southern Queensland as these were in prime condition for waders during those years. Most Red-necked Avocets occurred in the Hells Gate Area. In 1982 and 1987, and again in 2002, high counts were also recorded in the South Lagoon.

Pacific Golden Plover *Pluvialis fulva*

Numbers of Pacific Golden Plover were low in 2002 (21) compared to previous years (Table 4). This may reflect declines recorded in the larger population elsewhere in eastern and south-eastern Australia from 1986 to 1994 (Harris 1994). In the Coorong, Pacific Golden Plover only occur in the North Lagoon and Northern Channels.

Red-capped Plover *Charadrius ruficapillus*

The numbers of Red-capped Plover in 2002 (968) were 26% lower than in 2001 (1 367), which was still below the 2 533 - 4 677 recorded in the 1980s. Interestingly, there has also been a large decline in the count of Red-capped Plovers on the ocean beach since the 1980s. This suggests that the decline might be due to an increase in vehicle usage if this beach was a breeding area.

The distribution within the Coorong indicates a concentration in the Hells gate area in 2002 rather more than in previous years.

Hooded Plover *Charadrius rubricollis*

A total of 17 Hooded Plover were seen on the ocean beach between Tea Tree Crossing and the Murray Mouth with only one juvenile noted. A further 12 birds were recorded in the Coorong. This is a lower count than in 2001 (48) and similar to that counted in 2000 (25 and 4). Low numbers of the order seen this year were observed in the early 1980s (Iain Stewart pers. comm.).

DISCUSSION

The effect of wind and water levels on the distribution of waders in the Coorong

The water level at the Parnka Point gauge was 0.18 metres, which is 'normal' for this time of the year (David Dadd pers. comm.). However, as noted by (Wilson 2001b), the water levels in the Coorong are significantly affected by the strength and direction of winds. Over the period of the survey in 2002, the wind was predominantly from the southeast. The strength varied from approximately 10 knots in the mornings to a very strong 25-30 knots in the afternoon. This made observation difficult from late

morning, particularly in the exposed parts of the Coorong. As a result of the wind, the water depth varied, particularly at the northern end, where some banks on the southwest side were exposed or had shallows created. This tended to raise the water level on the northern banks to the extent that the sandbanks around the Tauwichee Barrage were covered. This meant that there were no waders in this section. It should be noted that there were low flows (or no flow) at the Murray Mouth during the survey, consequently causing the formation of sandbars.

The largest concentration of waders was on the Youngusband Peninsula side opposite Mark Point to Pelican Point and in the southwest bays almost up to the Murray Mouth. The distribution in the main four sectors each of the five years of records shows the general movement of waders to these locations over the period of the count in 2002 (Fig. 5).

Accuracy of counts

The size of the Coorong, movement of birds, heat haze and strong winds makes counting difficult. Variability in skill between observers will also affect count results, but this was thought to be minimal compared to discrepancies caused by the short-term movements of birds. All counts were made with telescopes, and where available from higher view points (especially in the Magrath Flat/Hells Gate area). Flocks were, where possible, checked for movements and the time and direction of such movements recorded.

It is interesting to compare the 2001 count (Wilson 2001b) of a total of 48 425 waders, with a count carried out in January 2001 (Paton 2001) that counted a total of 48 422 waders. Although the total number of birds counted were very similar, there were differences in the numbers of some species. Paton (2000) compared the number of 'Small waders' (13 075) counted during a count in February 2000 with those by Wilson (2000) (13 099). Although different methods and resources were used these comparisons provide some evidence of consistency between the two studies.

In 2002, boats were successfully used to obtain access to section 15, south of Hells Gate on the Youngusband Peninsula side and included the islands south of Hack Point. In addition, boats were used to get close to the Peninsula shore from Parnka Point through to opposite Camp Noonameena, a section that had previously been

difficult to access. Boats were used to count the Northern Channels in the same way as in 2000 and 2001. The use of these boats and the local knowledge of the Park Rangers and fisherman who operated the boats was invaluable to the success of the survey.

Comments on wader numbers in the Coorong

The Coorong is an important area for some 85 species of waterbirds, including waders (Carpenter 1995). The survey in 2002 recorded 21 species of waders. The region is particularly important for migratory waders such as Red-necked Stint, Sharp-tailed Sandpiper and Curlew Sandpiper. These species and other migratory waders are protected under the Japan - Australia Migratory Bird Agreement (JAMBA) and the China - Australia Migratory Bird Agreement (CAMBA). Using the 1% criteria for sites of international and national importance (Watkins 1993), the 2002 survey identified eight species that were present in numbers of international importance and another species of national importance (Table 1).

The number of waders using the Coorong in the summer varies considerably from year to year (Fig. 3). The Coorong has been thought of as a refuge in times of drought (Jaensch & Barter 1988). Numbers of many species of wader could vary significantly depending on the drought/flood conditions of the inland. This has been used to explain the very high count in 1982, when there was a drought over much of southern Australia. Similarly, it has been used to explain, to some extent, the large drop in numbers in 2000 and 2001 when many areas of western Queensland and northern South Australia were flooded (Wilson 2001a).

As most of the species of migratory and resident waders that occur in southern Australia are found on the Coorong, the state of inland wetlands could have a profound effect on the total numbers of waders using the Coorong in any given year. In addition to the possible effects of the inland drought/flood conditions, the Flyway wader populations can change quite significantly over time. Declines recorded in the Coorong might be a reflection of declines in the larger populations due to natural cycles or other causes.

In view of the large changes in numbers year on year, the significance of annual counts have to be interpreted against the information available on the state of inland wetlands and populations elsewhere. Counts are needed over several years in the

Coorong and these counts need to be linked with rainfall patterns before it can be shown to what extent the Coorong serves as a drought refuge.

The number of waders observed using the Morella wetlands in 2001 and 2002 raises the question as to the wader use of the extensive wetlands formed by the Dryland Salinity Drainage Scheme. In particular, Tilley Swamp Wetland and Water Valley Wetlands, as these are linked to the Morella basin. It is possible that these extensive wetlands may provide suitable habitat for migratory and resident waders as well as large numbers of other waterbirds, particularly in times of low water levels or changing habitats in the Coorong. The only means of monitoring this extensive and largely inaccessible area is from the air. The feasibility of this should be considered to enable regular monitoring of their use by waders and other waterbird species.

The total number of waders counted in the Coorong in 2002 reverses the steady downward trend evident from the peak of 1982. The number of small and medium waders is still well below those present in 1981 and 1982 (Fig. 3). However, the trend is a welcome one and reinforces the need to continue monitoring in the future. This will enable a better understanding of the importance of the Coorong for waders relative to climatic conditions in northern Australia and changes to the local habitat due to modified drainage regimes.

Despite large variations in populations of waders in total, there have not been any dramatic changes in the distributions throughout the Coorong, apart from effects of winds. This suggests that if environmental factors within the Coorong are causing declines, or compounding declines already occurring in the larger populations, then such factors are affecting numbers throughout the Coorong, rather than only in part of it.

SURVEY OF SOUTH EAST COASTAL WETLANDS

As part of the summer 2002 count of the Coorong, an effort was made to count the coastal lakes from the Coorong south to Lake George. These southeast coastal lakes are part of a system of lakes situated in the interdunal corridors between a series of present day and relic coastal dunes. The lakes extend from Paranki Lagoon, adjacent to the southern Coorong, to Lake Bonney, north-west of Port MacDonnell (Lands SA 1991). These lakes are

part of the nationally-important Wetlands of South Australia (Environment Australia 2001) (Fig. 6).

This series of wetlands is known to support large numbers of waterfowl. At the time of the February 2001 count of the Coorong, there was a flock of approx 10 000 Banded Stilt on Lake George. Returning from the Coorong winter count on 24 June 2001, small waders were observed feeding on the western edge of Paranki Lagoon and a flock of at least 8 000 Banded Stilts were congregated in the area around the southern causeway. This raised the issue of how many waders regularly use these areas, and if this has any effect on the numbers of waders using the Coorong.

The southern-most end of the Coorong is intermittently dry, and the area south of Tea Tree Crossing was not included in the 2000 and 2001 counts.

SITE DESCRIPTIONS AND OBSERVATIONS

The following sets out the surveys that were carried out including brief site descriptions and observations of habitat and wader counts.

Tea Tree Crossing to 42 Mile Crossing (the Coorong)

On Friday 1st February, this was dry, although small parts of it were still damp. No surface water was present.

42 Mile Crossing to The Granites (46 kms)

This site comprised a series of ephemeral swamps between the coast and the Princes Highway. On Friday 1st February, this was dry. It had the appearance of having been dry for some time.

Paranki Lagoon (Lake Nadzab, Lake Hillhouse)¹

This is located approx. 13 kms north of Kingston SE and is on the eastern side of the Princess Highway. It is a shallow, saline, seasonal lake, 5km long on its north-south axis and 1.5km across and surrounded by agricultural land (Lands SA 1991). On Friday 1st February, Paranki Lagoon was dry.

¹ These three names refer to the same ephemeral lake. Local property owner, Ian Thorpe, advises that the local name for the lake is Hillhouse, Paranki is the aboriginal name but that lately it seems to have become known by the property name, which is Nadzab. Geographical Names Board advises that the name Nadzab was approved on 6.10.83, but was renamed Paranki Lagoon on 7.12.87

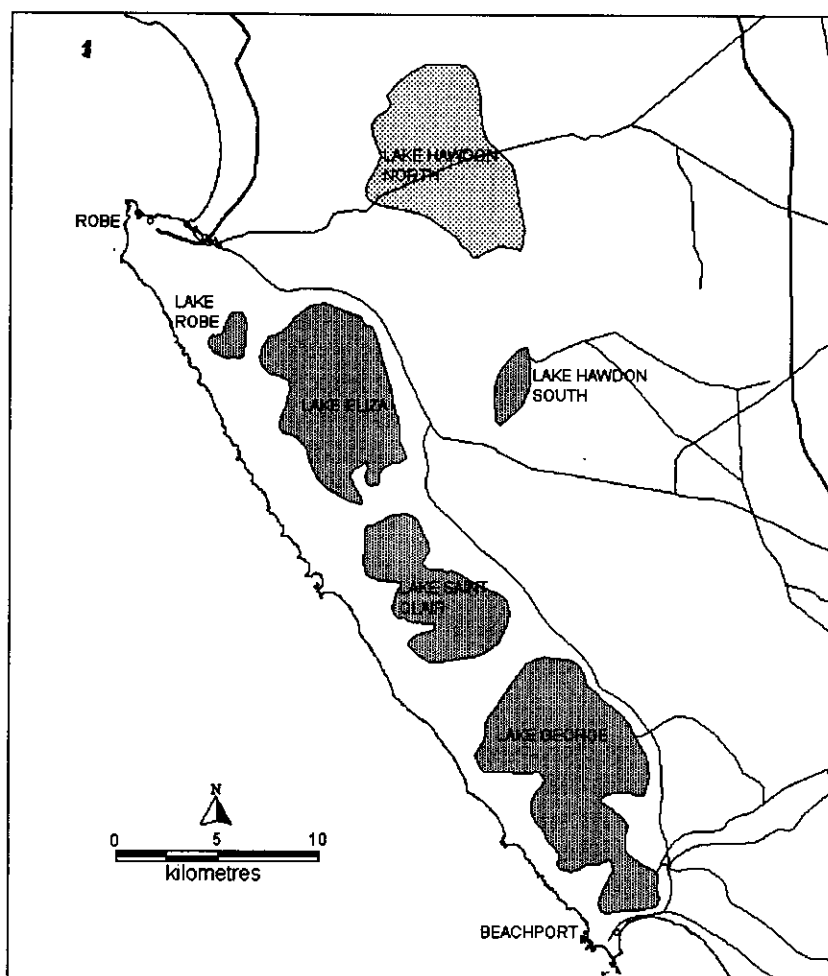


Figure 6. Map showing the S.E. coastal lakes in South Australia that were surveyed.

Lake McIntyre²

This is a shallow, saline, seasonal lake approximately one quarter the size of Paranki Lagoon. It is situated on the eastern side of the Princess Highway between Paranki Lagoon to the north and Blackford Drain to the south. On Friday 1st February, this lake still had a small amount of water in it, but no birds were seen. Large flocks of Banded Stilt use the area when there is more water (Helen & Jeff Brockhoff pers. comm.).

Blackford Drain

This drain crosses the Princess Highway some 5 kms north of Kingston SE. On 1st February, the drain was approached from the south and followed inland for approx. 3 kms. The short distance between the road and the coast was traversed on the northern bank of the drain. Standing on the highway bridge on Tues 5th February, Red-kneed Dotterel

and Black Fronted Dotterel were observed on the sandy islands in the drain.

Wright Bay

Watkins (1993) has this site listed as international important for Ruddy Turnstone and Pacific Golden Plover in the 1981 summer count. The headland at the camping area was visited twice. On 29th January at low tide the only waders seen were one Grey-tailed Tattler, one Common Sandpiper and three Red-necked Stint. A subsequent visit was made at mid tide on 1st February, when no waders were seen.

Guichen Bay (north of Robe) is listed as nationally important for Ruddy Turnstone in the 1984 summer count, and Beachport and Nora Creina as internationally important for Sanderling in the 1981 summer count (Watkins 1993). Neither of these sites was visited as part of this survey.

² The Geographical Names Board do not have this lake named. This is a local name, and this lake should not be confused with the lake of the same name in Millicent.

Lake Hawdon

Lake Hawdon is on the eastern side of the Woakwine Range and is a shallow, semi-permanent, brackish lake that is divided into northern and southern basins (Lands SA 1991). The basins are separated by higher land that carries the old Robe to Naracoorte road. The northern basin has a maximum length of 6 km and is 6 km wide; the southern basin is 9 km long and 4.5 km wide at its maximum. When full, both lakes have a maximum water depth of less than a metre. Lake Hawdon South will often retain its water until around Christmas whereas Lake Hawdon North generally dries about 6 weeks earlier (Lands SA 1991).

a) Lake Hawdon North

At the time of the survey, this lake was dry (C. Hurst pers. comm.).

b) Lake Hawdon South

In late January 2002, water could be seen in the lake from the Robe/Penola Road. Access from this direction was considered impracticable because of a wide band of cutting grass (*Ghania* sp). Access was gained along Bray Drain, which enters the Lake from the eastern side approximately one third of the way from the southern end. Water was flowing into the lake from the drain, the lower reaches of which had low islands suitable for dotterels and Common Greenshank.

On the bed of the lake, opposite the drain and to the south, there was ankle deep water that was filled with a fine waterweed. Out of the water were protruding tufa mounds – calcium carbonate mounds up to 40cm high and 50-80cms across, with a flat top (Lands SA 1991). The shallow water continued for a short distance to the north, before the bed of the lake became dry. Australian Shelduck, Black-tailed Native Hen and White-faced Heron were the most common species in this area of the lake.

Moving south, the western shoreline became muddier. The water in the lake also became clearer, with fewer weeds and fewer tufa mounds. Between one and two square kms of water was lying along the SE edge of the lake bed with tufa mounds and low rocky banks providing roosting positions. It was in this southeastern end of the lake that most water birds were congregated including a large aggregation of Grey Teal, 20+ Australasian Shovellers and Pacific Black Duck. Straw-necked, White and Glossy Ibis, Purple Swamphen, Royal Spoonbill, Black Swan, Australian Pelican and Whiskered Tern were also observed.

Waders were feeding on the muddy western shore. Disturbance caused them to fly and ultimately settle on roosting sites within the lake. Rushes come to the edge of the water at the southern most end of the lake, but the eastern shore had some suitable feeding areas. See Table 6 for wader counts. Table 7 provides a comparison with counts carried out in 1999 and 2000 and shows the importance of this lake for Sharp-tailed Sandpiper and Black-winged Stilt.

Lake Eliza

Lake Eliza is situated 7kms south-east of Robe, and is a saline, coastal lake situated below sea level. The lake is a hydrologically closed system, water coming in from rain, springs and drains, but the only losses are by evaporation. It has a maximum depth of 1.4 m and is hypersaline. Calcareous dunes form several small islands in the lake (Lands SA 1991). In the centre of the northern half of the lake there are fossil shell beds pushed up into banks that lie NW to SE and are exposed when water levels are low (Don Mount pers. comm.) Watkins (1993) identified Lake Eliza as an area of international importance for Banded Stilt, based on the 1985 summer count (5 000).

The survey of Lake Eliza was conducted over 28th and 30th January, and 5th February. The survey sites that had waders present were:

Table 6. Wader counts of the S.E. Lakes – summer 2002. (I indicates species present in numbers of international significance).

Species	Bool Lagoon	Lake Hawdon	Lake Eliza	Lake Clair	Lake George	TOTAL
Common Greenshank	12	82	-	-	10	104
Ruddy Turnstone	-	-	-	1	-	1
Red Knot	-	-	-	-	17	17
Red-necked Stint	-	660	2210	15	9000	I 11885
Sharp-tailed Sandpiper	600	2340	I -	-	1270	4210
Curlew Sandpiper	-	-	-	-	1200	1200
Black-winged Stilt	75	150	1	-	-	226
Banded Stilt	41	-	4652	I -	60000	I 64693
Red-necked Avocet	120	-	-	-	21	141
Pacific Golden Plover	-	-	-	50	62	112
Red-capped Plover	-	11	309	15	27	362
Red-kneed Dotterel	55	-	-	-	-	55
Masked Lapwing	200	55	17	12	-	284
Unidentified Small	-	-	-	-	500	500
TOTAL	1109	3318	7189	93	72107	83816

Site 1. Eastern shore of the lake opposite The Springs Road; Banded Stilt (150), Black-winged Stilt (1) and Red-capped Plover (4).

Site 4. Stockdale; Red-necked Stint (2 000), Banded Stilt (500) and Red-capped Plover (200).

Site 6. Little Dip Conservation Park; Masked Lapwing (2).

Sites 7 and 8. Southern end and eastern side of lake; Red-necked Stint (210), Banded Stilt (4 000), Red-capped Plover (105) and Masked Lapwing (15).

Lake St. Clair

Lake St. Clair is located between Lake Eliza to the north and Lake George to the south. It is a saline, coastal lake situated below sea level that has a hydrologically closed system, water coming in from rain, springs and drains, but only being removed by evaporation. It has a maximum depth of 1.4 m. Calcarene dunes form two peninsulas on the western side of the lake (Lands SA 1991). It is the most saline of the three lakes (D. Mount pers.com.)

The survey of Lake St. Clair was conducted over three days. Jan 28th was primarily checking access, whilst counting was undertaken on the 5th and 6th February. Almost all of the lake edge was either driven along or walked, except for Cabarita Point. Areas not directly covered could be observed from vantage points. Very few birds of any kind were observed, although large numbers of ducks can congregate on the lake around drain outlets and springs during dry seasons (Lands SA 1991). The survey sites that had birds present were:

Site 1. Woakwine Group land; Masked Lapwing (6).

Site 2. The western peninsulas; Red-necked Stint (5), Masked Lapwing (4).

Site 3 and 4. Eastern and Southern sides; Ruddy Turnstone (1), Red-necked Stint (10), Pacific Golden Plover (50), Red-capped Plover (15) and Masked Lapwing (2). The Ruddy Turnstone had an orange leg flag on the right tibia (originally banded in Victoria).

Lake George

Lake George is the largest of the southeastern coastal salt lakes surveyed. It lies between Lake St Clair and the town of Beachport. The lake is approximately 13km long and 8km wide at its extremities and is made up of three basins. At the northern end the basin, referred to as 'Big Lake', the water is approximately 3.5 m deep, but becomes shallower towards the southern basin, referred to as 'Little Lake' where several low islands occur. Water levels can vary by 1 to 1.5 m from winter/spring peaks to autumn lows (DEHAA 1997). At the time of the survey, 'Little Lake' was very low with extensive sandy silt flats. The management plan for the lakes points out that Lake George would have been hypersaline similar to Lake St Clair and Lake Eliza had it not been for engineering changes to water flows. Fresh water entering by Drain M and an outlet to the sea have created an estuarine environment. Lake George is listed as internationally important for Banded Stilt (50 000),

Table 7. Counts of waders on Lake Hawdon South in 1999, 2000 and 2002. (# Stewart, H.J. et al 2000. * Incomplete count.).

Species	19.11.99#	13.12.99#	17.01.00#	*05.12.00#	29.01.02
Sharp-tailed Sandpiper	1540	1800	5100	-	2340
Pectoral Sandpiper	1	1	-	-	-
Curlew Sandpiper	-	-	1	1	-
Red-necked Stint	215	50	50	-	660
Latham's Snipe	2	-	2	-	-
Common Greenshank	5	12	9	-	82
Marsh Sandpiper	-	-	14	-	20
Banded Stilt	-	-	6	-	-
Black-winged Stilt	1100	200	150	1000	150
Red-capped Plover	1	3	19	10	11
Red-kneed Dotterel	2	-	-	-	-
Black-fronted Dotterel	-	-	-	1	-
Masked Lapwing	24	1	54	10	55
Total	2890	2067	5405	1022	3318

Curlew Sandpiper (3 582) and Red-necked Stint (5 977) (Watkins 1993).

On Tuesday 5 February, counts were made at three sites. On 6 February, 'Little Lake' was surveyed from Drain M and a count was made of 'Little Lake' was also made on 2 February.

Site 1 – Northeast shore (37° 22' 3" S, 139° 59' 49"E) (Access through private property)

There were large numbers of ducks and water birds but few waders in this area due to strong southeasterly winds. A flock of 150 Blue-billed Duck were observed.

Site 2 – Northeast shore of Cockies Point (37° 26' 14" S 140° 1' 2" E) (Access via overgrown lane).

It was apparent that the strong southeasterly winds had pushed water up into 'Big Lake' exposing feeding areas for small waders. The following counts were recorded: Red-necked Stint (9 000), Sharp-tailed Sandpiper (1 270), Curlew Sandpiper (1 200) and Banded Stilt (500).

Site 3 – West side of 'Middle Lake' (37° 27' 08" S 140° 00' 46" E) (Access along shoreline)

There were initially less than 1 000 small waders feeding on the extensive mud flats in this area. Later in the afternoon they were joined by thousands of small waders flying across the lake from Site 2 above.

Site 4 – East side of 'Little Lake' at entrance of Drain M

This part of the lake was very low thus creating extensive areas of salt flats. In the middle of this lake there was a large flock of Banded Stilt that was estimated to be in excess of 60 000 birds. A count of the 'Little Lake' on 2 February showed the following (A. Boyle pers. comm.): Banded Stilt (42 000), Pacific Golden Plover (62), Sharp-tailed Sandpiper (247), Red-necked Stint (387), Red-capped Plover (23), Red Knot (17) and Masked Lapwing (8).

Table 8 summarises the counts available for Lake George from 1981 to 2002. The count this year was the highest recorded. It is particularly notable for the large numbers of Red-necked Stint and Banded Stilt. The previous record of 50 000 Banded Stilt was in 1985, when late rains assisted in maintaining sufficient water levels in the lower basin; a similar circumstance to this year.

Discussion on use of SE coastal lakes by waders

All of the SE coastal lakes surveyed have been substantially altered over time by drainage that in turn, has changed the land use. Despite these changes several of these lakes appear to be a refuge for waders and other waterbirds in summer particularly at times following a wet spring. Several lakes supported at least one species of international significance during summer 2002. These were Lake Hawdon (Sharp-tailed Sandpiper), Lake Eliza (Banded Stilt) and Lake George (Banded Stilt and Red-necked Stint).

Unfortunately, there are few previous counts, except for Lake George, where available counts are

Table 8. Summer counts of waders on Lake George in 1981, 1982, 1984, 1986, 1987, and 2002.

Species	1981	1982	1984	1985	1986	1987	2002
Common Greenshank	87	36	144	101	11	7	
Ruddy Turnstone	-	-	-	-	2	1	
Red Knot	-	86	-	-	-	-	
Red-necked Stint	2570	6101	4805	2710	5977	4200	90
Sharp-tailed Sandpiper	-	694	11	915	1758	4500	12
Curlew Sandpiper	450	292	502	31	2	2100	12
Banded Stilt	2	8	20	>50000	1967	5000	>600
Red-necked Avocet	6	160	-	-	325	35	
Pacific Golden Plover	-	-	-	-	-	6	
Grey Plover	-	1	-	-	-	-	
Red-capped Plover	570	261	174	14	47	6	
Double-banded Plover	2	-	2	-	-	-	
Lesser Sand Plover	-	-	2	-	-	-	
Black-fronted Dotterel	-	-	-	3	-	-	
Hooded Plover	-	-	21	-	-	-	
Red-kneed Dotterel	-	-	-	15	-	-	
Masked Lapwing	-	147	31	-	2	9	
Unidentified Small	-	-	-	-	-	-	5
TOTAL	3687	7786	5712	53789	10091	15864	720

provided in Table 8. This shows that 16 species of wader have been observed using this lake at some time over the last 20 years, four species occur in numbers of international importance (Banded Stilt, Red-necked Stint, Curlew Sandpiper and Sharp-tailed Sandpiper).

This survey has demonstrated that these coastal lakes are potentially significant, some years more than others, and that their inclusion in the list of nationally and internationally important wetlands is well justified.

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A SURVEY OF VICTORIAN HOODED PLOVER COUNTERS

Michael A. Weston and Steve Paton

Threatened Bird Network, Birds Australia National Office, 415 Riversdale Road, Hawthorn East, Vic. 3123. AUSTRALIA.

INTRODUCTION

In Victoria, biennial surveys of Hooded Plovers *Thinornis rubricollis* and Pied Oystercatchers *Haematopus longirostris* have been conducted since 1980. These counts have been coordinated and carried out largely by volunteers and the resources available for training and communication have been limited. Counters are being asked to collect data in increasingly rigorous and sophisticated ways. Examination of the data sheets reveals that some of the problems with recording data may be solved, either by training or simplification of the sheets. The counts rely heavily on the commitment and enthusiasm of counters, and there is a need to examine ways in which this commitment can be fostered.

One of greatest assets of the Australasian Wader Study Group (AWSG) is the people that contribute to the organisation and its monitoring projects, yet little is known of their capacity and needs. This note reports on the results of a survey of Victorian Hooded Plover counters that addressed some of these issues.

METHODS

The distribution of the report to participants for the November 2000 count (Weston & Paton 2000) provided an opportunity to survey counters. A questionnaire was posted to every participant in the count. Participants were defined as those people who provided contact details on the data sheets for the 2000 count. A cover note was included, and participants were requested to complete and return the attached survey sheet. Due to financial constraints, return postage was not provided. Responses were entered onto a spreadsheet by two volunteers in the Threatened Bird Network office (S. Paton and R. Jewell).

RESULTS AND DISCUSSION

Overall, 41 survey sheets were received (51.9% of the 79 count participants). However, sample sizes vary because not all participants completed all sections of the survey sheet.

Motivation

Of 39 respondents, 79.5% participated in the counts as volunteers, 7.7% on behalf of Parks Victoria and 12.8% on behalf of the Department of Natural Resources and Environment. It should be noted that one of the volunteers was employed by Parks Victoria, but was not paid for his/her involvement in the count. It should also be noted that departmental staff provided crucial logistic support to the count. Some staff who provided this

support were not able to participate on the count because of the extent of the logistic support they provide.

Respondents also selected options that described why they participated in the counts. They chose options that included "caring about beach conservation", "caring about species conservation", "caring about Hooded Plovers", "enjoyment of beach walking" and they were also able to add other reasons. Of 39 respondents, 59.0% chose all options. Overall, 79.5% of respondents said that they cared about beach conservation, 97.4% about species conservation, 64.1% about Hooded Plovers and 71.8% enjoyed beach walking. No additional reasons were specified.

Experience of counters

The respondents had spent 1–11 years as Hooded Plover counters (mean 3.5 years, standard deviation 2.5 years). Of 26 respondents, 61.5% indicated that they were involved in other activities relating to the Hooded Plover. These activities included lobbying (n = 7 respondents), media presentations (4), community education (1), wardening (7), data entry (6) and ecological research (2). Of those involved in other activities, 50.0% (n = 8) were involved in more than one additional activity.

In recent years, the importance of recording colour-bands on the counts has been emphasised. Of 40 respondents, 62.5% had seen colour-bands on Hooded Plovers.

Training needs

Counters were asked if they would attend a training session if one was held near where they lived. Of 38 respondents, 76.3% indicated that they would attend. Those respondents that were interested in attending a training session (n = 29) were also asked what topics they would like covered in such a session. The percentage of these counters that were interested in a particular topic were: identification of Hooded Plovers (44.8%); general shorebird identification (62.1%); using a GPS (62.1%), counting methods (72.4%); counting biases (69.0%), and results of previous counts (62.1%). Respondents were also able to nominate other topics, and these were: general bird ecology; the effects of weather and disturbance on the counts; and methods of finding nests.

Equipment needs

All respondents owned binoculars and 68.3% of counters (n = 41) owned a telescope. We were particularly interested in Global Positioning Systems (GPS), because such technology allows accurate spatial data to be recorded. Overall, 56.1% of respondents (n = 41) owned

a GPS unit and 61.0% ($n = 41$) knew how to operate it. Overall, 97.1% ($n = 35$) indicated that if they had access to a GPS unit and were trained to use it, they would happily use one on the counts. All respondents had their own transport and 56.1% ($n = 41$) had four-wheel drive vehicles, which are required to access some beaches.

Communication preferences

In total, 87.5% of respondents ($n = 40$) indicated that they would like to receive a newsletter for Hooded Plover counters. The survey also requested feedback on the desired scope of such a newsletter. Specifically, respondents were asked to indicate whether they would prefer a newsletter to contain information that was related to local, state, eastern Australian or national issues. Overall, 36 respondents provided some information on the desired scope of any newsletter. Of these, 25.0% wanted all levels covered. Overall, 50.0% were interested in local information, 47.2% in statewide information, 44.4% in eastern Australian information and 72.2% in national information.

Of 40 respondents, 65.0% had access to either e-mail or the Internet, suggesting that much of the distribution of any newsletter could occur electronically.

Adherence to methodology

With a limited capacity to communicate with counters before each count, methods were communicated in three ways: (1) by direct contact with regional organisers (e.g. by phone and e-mail); (2) by providing all counters with count instructions; and (3) by providing a data sheet that is intended to be completed during the count, and so contains brief instructions and a layout that guides data collection. An impressive 97.4% of 39 respondents reported that they had read the data sheet before the count. Despite being requested to do so, only 61.5% of these respondents filled in count sheets during the count. However, 74.4% carried the data sheet with them during the count, and so were able to refer to it.

One factor that mediates the adherence to methodology is the design of the data sheet. Of 39 respondents that rated the ease of using the 2000 data sheet, 51.3% considered it easy to use, 48.7% considered it moderately easy to use, and none considered it difficult or very difficult to use. Overall, 89.5% of respondents returned the data sheet to the address at the bottom of the data sheet — the remainder presumably sent the data sheet to the regional organiser.

Overview

All counting programs should optimise the value of their data, especially where they rely on the generous contribution of volunteers. This opportunistic survey was conducted to enable better planning and support for counters. Additionally, the survey aimed to help understand the constraints and challenges that volunteer counters face. This is a subject that has apparently been virtually unstudied, despite the heavy and growing reliance on volunteers in the field of bird conservation.

This small survey emphasises the high value of counters — they are highly experienced and motivated, relatively well equipped, and many participate in other aspects of Hooded Plover conservation. Many can be better supported through training and enhanced communication. As reported, adherence to methodology is generally good though not universal, and better training may improve this situation. Finally, the survey allowed counters to comment on, or criticise the counts. Excellent feedback was received but is difficult to summarise. It ranged from comments on count methodology (e.g., timing of counts) to ideas about general Hooded Plover conservation.

The Hooded Plover counts are one of the highly successful and long-running AWSG projects. The success of the counts is, in large part, due to the people behind them (counters and organisers). This small survey has pointed to a few ways to better support these people.

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YEAR 2001 ARCTIC BREEDING SUCCESS, AS MEASURED BY THE PERCENTAGE OF FIRST YEAR BIRDS IN WADER POPULATIONS IN AUSTRALIA IN THE 2001/02 AUSTRAL SUMMER

Clive Minton¹, Rosalind Jessop², Peter Collins³ and Chris Hassell⁴

¹Clive Minton, 165 Dalgetty Road, Beaumaris 3193 Vic. AUSTRALIA
Email: mintonc@ozemail.com.au

²Rosalind Jessop, Phillip Island Nature Park, PO Box, 97, Cowes 3922 Vic AUSTRALIA
Email: rjessop@penguins.org.au

³Peter Collins, RMB 4009, Cowes 3922 Vic. AUSTRALIA
Email: moonbird@waterfront.net.au

⁴Chris Hassell, c/o Broome Bird Observatory, PO Box 1313, Broome 6725 WA. AUSTRALIA
Email: turnstone@wn.com.au

INTRODUCTION

The Victorian Wader Study Group and the Australasian Wader Studies Group (through the Broome Bird Observatory and NW Australia Wader Study Group) continued their long term program of monitoring migrant wader populations during the 2001/02 non-breeding season in SE and NW Australia. These two locations, on opposite sides of the continent and nearly 3000 km apart, enable the study of a wide range of the wader species/populations that migrate from the Northern Hemisphere breeding grounds to Australia.

A core element of the fieldwork activities over the last 20 years has been a banding program that attempts to catch a representative sample of as many species as possible. These catches are made in each of the two regions during the period when the majority of adult and juvenile/first year birds are present. The proportion of immature birds in these catches is then used as a measure of the breeding success in the previous Arctic summer. Results for the 1999 and 2000 breeding seasons have already been published (Minton *et al.* 2000 and 2001). This paper looks at the 2001 breeding season outcomes and also reviews the data for the last four breeding seasons.

METHODS

For this year's data (and for revisions of previous years' data included in Tables 3 and 4) some adjustment has been made to the dates for which data are included. These decisions were made in the light of a refinement of the knowledge of the migration period of each species in each region.

In SE Australia, the earliest date normally used to define the resident period is 1st December (occasionally very late November) as some juvenile birds continue to arrive throughout November. The end date is normally 28 February, because adult Sharp-tailed Sandpipers and

Curlew Sandpipers commence their northward movements in early March. However, samples of Red-necked Stints, Ruddy Turnstones and Sanderling are included up to 20 March (in 1999 to the first few days of April) because these species do not leave until well into April.

In NW Australia, an earlier 'start' date is possible because birds arrive there (latitude 18° S) significantly earlier than in SE Australia (latitude 38° S). Furthermore, in the 2001/02 season no catching was undertaken in the December/January/February period because of the absence of key personnel. All catches included in Table 2 were made between 20 October and 16 November, when intensive fieldwork was undertaken by the AWSG NWA 2001 Wader and Tern Expedition. Examination of the data showed negligible variation in the proportion of juveniles in this period. This suggests that most juveniles had arrived in NW Australia by the end of the third week of October. Catches up to 20 March were used (though in most seasons the majority were in the November/February period) since visible migration studies at Broome have shown that only Eastern Curlew depart from NW Australia in significant numbers before that date.

Breeding success in a population is considered to have been poor in the proceeding breeding season when the proportion of juveniles in Australia in the subsequent austral summer is 0-10%, moderate – 10-20%, good – 20-30%, and exceptional – over 30% (Minton *et al.* 2000).

RESULTS

Tables 1 and 2 give the results of wader catches in 2001/02. The number of catches made for each species is given as an indication of the spread of samples obtained. In most of the main species in SE Australia, four to eight

catches were made (but 23 for Red-necked Stint) whilst in NW Australia the range was six to 13 catches.

South-east Australia

The species with the highest proportion of juveniles in SE Australia in 2001/02 were Red Knot (69% first year birds), Red-necked Stint (34%) and Curlew Sandpiper (27%) – the first two falling in the “exceptional” breeding success category. For Red Knot and Red-necked Stint,

these were the highest percentages ever recorded in SE Australia. The Curlew Sandpiper figure was the highest since the record, uniquely good, 45% recorded after the 1991 breeding season (a year of widespread bountiful breeding success).

In contrast, catches of other species such as Sanderling, Ruddy Turnstone, Sharp-tailed Sandpiper and Great Knot contained only modest levels of first year birds and their 2001 breeding season would be classified as moderate to

Table 1. Percentage of first year birds in wader catches in se Australia in 2001/2002. All catches were in period 1 December 2001 to 28 February 2002 except for Red-necked Stint, Sanderling and Ruddy Turnstone where catches up to 20 March 2002 are included. Figures in brackets represent catches of <20 birds.

Species	Number of catches		Total birds caught	Number of first year birds	% first year
	Large >50	Small <50			
Red-necked Stint	15	8	6351	2188	34
Sharp-tailed Sandpiper	2	4	535	42	7.8
Sanderling	4	2	483	49	10
Curlew Sandpiper	3	5	419	115	27
Red Knot	3	1	363	249	69
Bar-tailed Godwit	2	-	282	4	1.4
Ruddy Turnstone	1	3	114	10	8.8
Great Knot	1	2	61	5	8.2
Pacific Golden Plover	-	1	15	1	(6.7)
Grey Plover	-	1	12	0	(0)
Non-Arctic northern migrants					
Eastern Curlew	-	1	18	1	(5.6)

Table 2. Percentage of first year birds in wader catches in NW Australia 2001/2002. The numbers of additional species caught and their percentage juveniles (in brackets) were: Lesser Sand Plover 6 (-), Sharp-tailed Sandpiper 2 (-), Asiatic Dowitcher 1 (1), Common Sandpiper 1 (-) and Oriental Pratincole 1 (-). All catches were in the period 20 October to 16 November 2001 except for two Little Curlew catches on 26 November and 1 December 2001 (9 and 20 birds respectively). Figures in brackets represent catches of <20 birds.

Species	Number of catches		Total birds caught	Number of first year birds	% first year
	Large >50	Small <50			
Red-necked Stint	4	8	840	140	17
Great Knot	6	7	634	33	5.2
Grey-tailed Tattler	5	8	506	85	17
Bar-tailed Godwit	2	10	332	50	15
Little Curlew	2	4	315	112	36
Curlew Sandpiper	1	10	230	44	19
Red Knot	2	8	221	12	5.4
Sanderling	1	6	115	5	4.3
Whimbrel	-	2	44	5	11
Broad-billed Sandpiper	-	5	19	7	(37)
Ruddy Turnstone	-	7	16	0	(0)
Non-Arctic northern migrants					
Greater Sand Plover	9	4	943	123	13
Terek Sandpiper	3	8	380	45	12
Black-tailed Godwit	-	1	32	0	0
Eastern Curlew	-	2	33	0	0

poor.

For the Bar-tailed Godwit population that visits SE Australia, the 2001 breeding season was obviously disastrous. These birds are all from the *baueri* subspecies, which breeds in Alaska (Wilson and Minton, in press). Bob Gill, of the US Fish and Wildlife Service in Alaska, had forewarned us of this likely outcome as extremely poor weather conditions occurred in Alaska during the 2001 breeding season. They had subsequently seen very few juvenile birds at migratory departure points.

North-west Australia

In 2001, the breeding success of wader populations that spend the non-breeding season in NW Australia appears to have been more uniform across species than in SE Australia. Also most species could be classed as having moderate breeding success, with Curlew Sandpiper (19%), Red-necked Stint (17%) and Grey-tailed Tattler (17%) tending towards 'good'. However, Great Knot appear to have fared poorly.

The most interesting contrasts with SE Australia occurred in Bar-tailed Godwit and Red Knot. In both species, NW Australia results were the opposite of SE Australia figures. Thus, Bar-tailed Godwits in NW Australia, which breed in the Yakutia Region of Northern Siberia (Wilson and Minton, in press), had quite a reasonable breeding year in 2001 (15% first year birds). However, Red Knot (5.4%) had a poor year. Red Knot in NW Australia are of the newly named *piersmai* subspecies breeding in the New Siberian Islands (Tomkovich 2001). Those visiting SE Australia probably all breed in the Chukotsky Peninsula (*rogersi*).

Data on Little Curlew is included for the first time as ageing methods have now been satisfactorily developed. The figure of 30% first year birds suggests high breeding success in 2001 (but see later).

Comparisons between years

Tables 3 and 4 give the percentage first year birds for 1998/99 (newly presented data), 1999/00 and 2000/01

(Minton et al 2000 and 2001 – slightly revised) and 2001/02 (summary of data from Tables 1 and 2).

A number of conclusions can be drawn.

In SE Australia

- The 1999 breeding season was by far the best for most species during the last four years.
- Red-necked Stints have had three very good breeding seasons in the last four years [see also separate article in this issue of Stilt].
- Most species show quite a marked variation in breeding success from year to year.
- There appears to be little correlation between species, except in the good 1999 year. Bar-tailed Godwit and Red Knot seem to have the greatest tendency to depart from the norm. Red-necked Stint and Curlew Sandpiper figures that were often highly correlated in the 1980's, have not correlated well in recent years.
- When Red Knot have a successful breeding season, this is reflected in exceptionally high estimates of the percentage first year birds. There are two reasons for this. Firstly, in such years, flocks of largely juvenile birds tend to occur in habitats where they are more easily cannon-netted. Secondly, banding and flagging has shown that most juvenile birds of the flyway population tend to remain in Australia. Only in their second year do a high proportion of these birds move on to their future regular non-breeding areas in New Zealand (Minton 1996).
- More data will need to be generated and examined to see what cyclical patterns of breeding performance may be apparent in the wader species/population that visit SE Australia. These could then be assessed for possibly association with lemming/predator cycles.

In NW Australia

- The 1999 breeding season also appears to have been the best of the last four years for most species.

Table 3. Comparison of percentage of first year birds in wader catches in SE Australia between 1998/99 and 2001/02. All birds caught by cannon netting in the period late November to mid March (Sharp-tailed Sandpiper and Curlew Sandpiper to end February only). Figures in brackets represent catches of <20 birds.

Species	Year			
	98/99	99/00	00/01	01/02
Red-necked Stint	32	23	14	34
Curlew Sandpiper	4.1	20	6.8	27
Sanderling	7.8	13	2.9	10
Ruddy Turnstone	3.3	21	10	8.8
Sharp-tailed Sandpiper	12	10	17	7.8
Bar-tailed Godwit	41	19	3.6	1.4
Red Knot	2.8	38	52	69
Great Knot	-	7.5	(3.7)	8.2

Table 4. Comparison of percentage of first year birds in wader catches in NW Australia between 1998/99 and 2001/02. All birds caught by cannon netting in the period 20th October to mid March (Curlew Sandpiper to end of February only). Figures in brackets are where sample size is less than 20 birds. A dash indicates no sample.

Species	Year			
	98/99	99/00	00/01	01/02
Great Knot	2.4	4.8	18	5.2
Bar-tailed Godwit	2.0	10	4.8	15
Grey-tailed Tattler	26	(44)	17	17
Red-necked Stint	26	46	15	17
Curlew Sandpiper	9.3	22	11	19
Red Knot	3.3	14	9.6	5.4
Little Curlew	59	33	-	36
Non-Arctic northern migrants				
Greater Sand Plover	25	33	22	13
Oriental Plover	12.5	-	6.4	(0)
Terek Sandpiper	12	(0)	8.5	12

- (b) Patterns of yearly breeding success for Red-necked Stint and Curlew Sandpiper follow the same pattern as in SE Australia, though the figures differ in absolute terms.
- (c) Red Knot do not show the exceptionally high percentage of first year birds seen in SE Australia in some years. This suggests that the NW Australia Red Knot population is not affected by a comparable "New Zealand" factor like the Red Knot in SE Australia.
- (d) There is little correlation between the annual estimates of the percentage of first year Bar-tailed Godwits in NW Australia and SE Australia. This is not surprising given their widely separated breeding areas.
- (e) Greater Sand Plovers seem to show a more consistent, and on average higher, breeding success than other species. They, of course, do not breed in the Arctic region and thus may be less susceptible to variations in weather conditions and/or predator cycles.
- (f) Little Curlew populations have contained a very high (33-59%) proportion of first year birds in all three years that were sampled. It is not clear whether this is a genuine reflection of the situation for the population as a whole or whether some local timing/habitat factor is influencing the figures. This will be investigated further in the future.
- (g) As in SE Australia, there seems to be only a modest correlation between species / years with quite wide variation occurring. Great Knot seem to be most out of phase with any general trend, possibly because they nest in a markedly different habitat.

DISCUSSION AND CONCLUSION

Caution is needed in interpreting the estimated percentage of first year birds due to potential biases in the data (Minton *et al.* 2000, Tomkovich *et al.* 2000). However, it is clear that collecting these data from wader populations in their non-breeding areas is giving a

reasonable indication of the variation in breeding success between species/years. This is especially true if a number of independent samples are obtained each year. At present it is the only quantitative information available on the reproductive output of wader populations in the East Asian - Australasian Flyway. Such information is fundamental to trying to determine causes of short term variations and long term trends in population monitoring counts of waders.

Data of this type increase markedly in value if collected in a consistent manner over a prolonged period. The VWSG and AWSG fieldwork programs will continue to have the collection of the percentage of first year birds as key priorities for the foreseeable future.

Further information from previous years will be progressively amassed to extend the data set backwards in time. In the long term, such data series may well be useful also in delineating the effects of climate change on the general reproductive success of Arctic-breeding waders.

Increasing banding recoveries and flag sightings are gradually enabling the specific breeding areas of wader populations visiting SE Australia and NW Australia to be pinpointed. It should thus be increasingly possible to tie in more closely the breeding success of populations with conditions in specific regions of the Siberian Arctic each year (Soloviev & Tomkovich 1999, 2000, 2001). Such an examination is needed to explain in particular the variation between the breeding success of different species in any year.

What will the 2002 breeding season bring? If a three yearly breeding cycle is operating then, on the basis that 1999 was a very successful year, it should be another good breeding year in 2002. But surely we cannot expect another good Red-necked Stint (or Curlew Sandpiper or Red Knot) year? Only time will tell. As usual we shall be eagerly waiting in Australia for the return of the migrant waders. The adult birds arrive in

August/September and the juveniles in September/October. The catching programs monitoring the percentage juveniles in Victoria and NW Australia will commence in November.

Wilson, J.R. and C.D.T. Minton in press. Breeding origins and migration routes of Bar-tailed Godwits which spend the non-breeding season in Australia. Emu.

ACKNOWLEDGEMENTS

The very large number of people who have participated in the VWSG and NW Australia banding programs over the years are greatly thanked for their efforts. Cannon netting requires a large team effort and without such dedicated support, catches of sufficient size and quantity to produce meaningful results would not have been possible.

The Australian Bird Banding Office of Environment Australia is thanked for administrative support and for the provision of banding permits. The Departments of Natural Resources and Environment (Victoria), Conservation and Land Management (WA) and Environment and Heritage (SA) are thanked also for permits to band in their respective states.

The Broome Bird Observatory of Birds Australia is thanked for its widespread logistical support of banding activities in NW Australia.

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CURLEW SANDPIPER TRANSFERS TO THE SOUTH AFRICAN FLYWAY

Clive Minton

165 Dalgetty Rd, Beaumaris 3193 Vic AUSTRALIA

Members of the Australasian Wader Studies Group have been excited to receive news that one of the Curlew Sandpipers that they marked in northwestern Australia has been seen in South Africa.

Normally migratory waders consistently return to the same location and follow the same migration routes each year between Australia and their Siberian Arctic breeding grounds. However, this bird appears to have looked at the wrong flight schedule and/or caught the wrong plane when it left the Siberian breeding grounds last July/August! It has transferred into the African Flyway and finished up some 10,091 kilometres from where it should have been.

Around 35,000 Curlew Sandpipers have been banded in Australia over the last 30 years and some 13,000 of these have additionally been marked with a coloured plastic leg flag during the last 10 years. This is only the second Curlew Sandpiper (in fact only the second Australian wader) to subsequently have been recorded moving outside the normal East Asian-Australasian Flyway. The previous record involved a Curlew Sandpiper banded in November 1976 at the Werribee Sewage Farm near Melbourne and recaptured at Point Calimere in south-eastern India in late August 1980. The Indian Flyway has a large population of Curlew Sandpipers.

The bird seen in South Africa carried a yellow leg flag, indicating that it was one of the 4,500 Curlew Sandpipers flagged in the Broome/80 Mile Beach area of northwestern Australia. It was seen on 24th March and again on 29th March this year at Langebaan Lagoon near Cape Town. It very conveniently paraded around in the water just in front of the one of the popular observation hides and was apparently seen by several different members of the Cape Wader Study Group. Brian Vanderwalt was the person who informed everyone of the sightings. The bird was an adult in partial breeding plumage and was presumably about to take off on its northward migration back to Siberia.

In many species of birds, different sections of the population (sometimes different enough to be classed as subspecies) nest in different areas and migrate, consistently, to different non-breeding areas. They maintain this discreteness even though they sometimes use common staging areas during migration. There is a great deal of such data available from marked birds in goose and swan populations that breed in the Arctic and a considerable amount of data that also indicates that this is the norm for waders.

However, aberrant behaviour by Curlew Sandpipers changing flyways is not totally unexpected given that the populations from all the Flyways where Curlew Sandpipers are numerous have a considerable overlap in their breeding areas in Arctic Siberia. The table below shows recoveries and flag sightings of Curlew Sandpipers from each of the flyways, which can be related to specific breeding locations (Table 1). It can be seen that there is a considerable overlap in longitude (all were in latitude 67° to 76° N) between breeding locations of the birds from the four widely separated Flyways. However, there is a tendency for some correlation between breeding area longitude and non-breeding area longitude. For example, the eastern most Flyway, the East Asian-Australasian Flyway, has the easternmost range of breeding longitudes and the easternmost average longitude.

Incidentally, the Curlew Sandpiper also holds the record for the longest recorded movement of an Australian-banded wader. An adult bird banded at the Werribee Sewage Farm in January 1988 was recaptured by a Russian ornithologist (Pavel Tomkovich) beside a nest in the Tamyir Peninsula in late June 1991. This was 13,100 km from its banding location.

Great interest now lies in whether the yellow-flagged Curlew Sandpiper will return to South Africa again next season after its current visit to the breeding grounds in Siberia. Everybody will be keenly looking out for it from September/October onwards.

Table 1. The number of recoveries of Curlew Sandpipers from each of the flyways where the species occurs and the range in longitude of the breeding grounds of these birds.

Flyway	Number of breeding area recoveries/flag sightings	Range of longitudes
East Asian-Australasian	11	98 - 154 degrees E
Indian	3	80 - 135 degrees E
South African	4	86 - 135 degrees E
East Atlantic (West European)	4	76 - 98 degrees E

SIGHTINGS OF WADERS AND TERNS LEG-FLAGGED IN N.W. AUSTRALIA: REPORT NUMBER 7

Clive Minton¹, Rosalind Jessop², Peter Collins³, Chris Hassell⁴, Julie Deleyev⁵ and Lauren Beasley⁶

¹ 165 Dalgetty Road, Beaumaris, Vic 3193 AUSTRALIA

Email: mintonc@ozemail.com.au

² PO Box 97, Cowes, Vic 3922 AUSTRALIA

Email: rjessop@penguins.org.au

³ PO Box 97, Cowes, Vic 3922 AUSTRALIA

Email: moonbird@waterfront.net.au

⁴ PO Box 3089, Broome, WA 6725 AUSTRALIA

Email: turnstone@wn.com.au

⁵ 17 Mackie Road, Bentleigh East, Vic 3165 AUSTRALIA

Email: julie_deleyev@hotmail.com

⁶ Unit 4, 12 Maverston St., Glen Iris Vic 3146 AUSTRALIA

Email: lozzabeez@hotmail.com

This is the first list of sightings of yellow-flagged waders and terns since List Number 6 was prepared in August 1999 (Stilt 35, October 1999 pp. 52-58). It contains all reports which have been received since then (to June 2002) of waders and terns which have moved away from their marking areas at Broome, 80 Mile Beach and Port Hedland Saltworks in northwestern Australia. The total number of birds banded and/or leg flagged in the region are summarised in table 1.

This current leg flag list is published primarily for the interest of AWSG members and other readers of Stilt and to acknowledge those who sighted and reported flagged birds. The data will be analysed and formally published in scientific papers, often in conjunction with other AWSG data, as part of the ongoing program of writing up the results of AWSG fieldwork. Several papers in which flag sighting data is a significant component have already been published, or are at an advanced stage of preparation. The flag sighting information contained in the list below (and in previous similar lists) should therefore **not** be used or quoted in other scientific publications without first consulting the AWSG (contact Clive Minton). A further reason for

this caveat is that the records need to be fully rechecked for accuracy and completeness before being used for such a purpose.

The efforts of the very large number of people involved in flagging the birds and in sighting and reporting observations of flagged birds throughout the Flyway is greatly appreciated. Specific mention needs to be made of those who have collected, coordinated and reported large numbers of records from

Hong Kong
Japan
Taiwan
New Zealand

Paul Leader
Minoru Kashiwagi
Dr Woei-horng Fang
Adrian Riegen

ACKNOWLEDGEMENTS

We thank all who have contributed to this data generation. Environment Australia is also thanked for financial support to enable a comprehensive flag-sighting database to be developed and operated. Through this AWSG now handles, on behalf of the Australian Bird and Bat Banding Scheme, all flag sighting reports of waders (and terns) relating to Australia.

Table 1. The number of yellow leg-flagged waders banded in northwestern Australia by AWSG and the Broome Bird Observatory.

Species	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	Total
Pied Oystercatcher	43	-	36	1	3	1	19	7	16	21	147
Sooty Oystercatcher	-	-	1	-	19	-	1	-	-	14	35
Masked Lapwing	2	-	12	-	-	3	1	-	-	-	18
Grey Plover	46	3	31	-	48	15	25	-	1	3	172
Pacific Golden Plover	1	-	1	-	2	-	5	-	-	1	10
Red-kneed Dotterel	2	-	27	-	18	9	-	6	-	-	62
Lesser Sand Plover	45	10	65	-	71	-	24	-	-	12	227
Greater Sand Plover	724	20	660	39	912	10	1829	40	191	1260	5685
Oriental Plover	45	-	2	-	2	-	157	3	-	11	220
Red-capped Plover	10	-	145	4	10	1	135	3	1	40	349
Black-fronted Plover	-	-	14	-	3	7	4	15	-	4	47
Black-winged Stilt	-	7	42	-	26	-	21	9	-	1	106
Red-necked Avocet	-	-	29	-	3	-	1	-	-	-	33
Ruddy Turnstone	114	103	180	7	106	5	187	1	43	46	792
Eastern Curlew	12	5	12	-	6	-	41	-	6	48	130
Little Curlew	17	-	1	1	-	-	235	73	-	299	626
Wood Sandpiper	7	-	1	-	1	1	2	-	-	-	12
Whimbrel	-	1	13	-	42	16	87	-	15	47	221
Grey-tailed Tattler	305	157	393	33	542	30	624	44	104	1159	3391
Common Sandpiper	-	-	2	-	1	-	6	-	2	10	21
Common Greenshank	3	-	19	-	5	-	45	-	1	24	97
Common Redshank	-	-	1	-	-	-	3	-	-	-	4
Marsh Sandpiper	16	-	8	-	1	-	7	-	1	47	80
Terek Sandpiper	484	93	465	19	765	10	859	17	219	620	3551
Pin-tailed Snipe	-	-	-	-	-	-	1	-	-	-	1
Asian Dowitcher	12	15	13	10	3	-	5	-	19	11	88
Black-tailed Godwit	72	5	17	-	12	7	223	37	3	92	468
Bar-tailed Godwit	468	184	1171	249	1795	16	1283	12	281	899	6358
Red Knot	376	2	286	40	638	1	562	64	269	461	2699
Great Knot	843	63	822	198	2140	15	2217	188	807	2311	9604
Sharp-tailed Sandpiper	31	-	129	-	16	2	234	3	-	25	440
Pectoral Sandpiper	1	-	-	-	-	-	-	-	-	-	1
Broad-billed Sandpiper	84	-	102	1	138	4	86	11	13	33	472
Little Stint	-	-	1	-	-	-	-	-	-	-	1
Red-necked Stint	611	42	835	36	1355	241	2329	249	139	1556	7393
Long-toed Stint	10	-	11	-	1	-	4	2	-	-	28
Curlew Sandpiper	1018	16	474	117	453	10	1753	21	165	575	4602
Sanderling	4	-	4	-	44	-	389	-	4	131	576
Oriental Pratincole	-	-	1	-	1	-	-	-	-	49	51
Australian Pratincole	-	-	-	-	-	-	3	-	-	-	3
Red-necked Phalarope	-	-	-	-	-	-	-	-	-	22	22
Total	5406	726	6026	755	9182	404	13407	805	2300	9832	48843

Black-tailed Godwit**Overseas Sightings****KOREA**

Date Seen	No	Location seen	Finder
9/09/99	1	Mankyung Estuary, Kunsan City	Jin-Young Park
14/08/00	1	Kanghwa Island	Jin-Young Park
16/08/00	1	Namyang Bay (Unpyong-ri)	Jin-Young Park
5/05/02	1	Sosan	Kim Hyun-tae
11/05/02	1	Geum River Estuary, Chungham Province	Hansoo Lee

CHINA

Date Seen	No	Location seen	Finder
23/04/01	1	Happy Island, Hebei Province	Dave Allen, RSPB

TAIWAN

Date Seen	No	Location seen	Finder
30/04/00	1	Kang-Nan, Hsinchu City	Wen-hsiung Li, Shih-Min Mao, and Hsio-li Liu
1/05/00	1	Kang-Nan, Hsinchu City	Wen-hsiung Li, Shih-Min Mao, and Hsio-li Liu

Korea and Taiwan continue to be the favoured areas for sightings of yellow-flagged Black-tailed Godwits on their way to/from their eastern Siberian breeding grounds.

Bar-tailed Godwit**Overseas Sightings****KOREA**

Date Seen	No	Location seen	Finder
26/08/99	4	Asan Bay	Jin-Young Park
28/08/99	1	Mankyung Estuary, Kunsan City	Jin-Young Park
18/04/00	1	Hakdang, Dongjin Estuary	Jin-Young Park
19/04/00	2	Yooboo Island	Nial Moores, Jin-Young Park
19/04/00	1	Mankyung Estuary, Kunsan City	Mark Barter and Jin-Han Kim
17/05/00	1	Cheonsu Bay South	Jin-Young Park
21/04/01	1	Geum River Estuary, Chungham Province	(unknown)
6/05/01	1	Kanghwa Island	Ken Gosbell et al
8/05/01	2	Namyang Bay (Unpyong-ri)	Ken Gosbell et al
10/05/01	3	Mankyung Estuary, Kunsan City	Ken Gosbell et al
27/04/02	1	Okku Mangyeung	Nial Moores

CHINA

Date Seen	No	Location seen	Finder
21/04/01	1	Happy Island, Hebei Province	Dave Allen, RSPB
22/04/01	1	Happy Island, Hebei Province	Dave Allen, RSPB
9/05/01	1	Happy Island, Hebei Province	Dave Allen, RSPB
9/05/01	2	Funfair Island, Hebei Province	Dave Allen, RSPB
15/05/01	1	Happy Island, Hebei Province	Bjorn Johansson
26/04/02	3	Yalu Jiang National Nature Reserve	David Melville, Pete Collins

26/04/02	1	Yalu Jiang National Nature Reserve	David Melville, Pete Collins
27/04/02	4	Yalu Jiang National Nature Reserve	David Melville, Pete Collins
28/04/02	3	Yalu Jiang National Nature Reserve	David Melville, Pete Collins
11/05/02	1	Shijiutuo Dao (Happy Island), Hebei	Bjorn Johansson
15/05/02	1	Happy Island, Hebei Province	Jyrki Normaja

TAIWAN

Date Seen	No	Location seen	Finder
15/04/01	1	Chinmen Island	Mr. Li, Ching-Feng
21/04/01	1	Ta-chuang, Hsin-chu City	Mr. Mao, Shih-Min
12/04/02	2	Tseng-Wen Estuary, Tainan county	Weng Jung-Hsuan
12/04/02	2	Szu-Tsao, Tainan city	Weng Jung-Hsuan

NEW ZEALAND

Date Seen	No	Location seen	Finder
23/10/00	2	Miranda, Firth of Thames, South Auckland	B. Tyler
4/12/00	1	Miranda, Firth of Thames, South Auckland	T. Wilson
3/02/01	2	Miranda, Firth of Thames, South Auckland	Bev Woolley
11/02/01	1	Miranda Firth of Thames	C. Care
30/09/01	1	Manawatu Estuary, Manawatu, North Island	Pasi Hyvonen
18/11/01	1	Mangere Sewerage Ponds, Manukau Harbour	Gwen Pulham
16/02/02	1	Motueka Sandspit, near Nelson	David Melville

Another wonderful collection of sightings of yellow-flagged Bar-tailed Godwits on migration through Asia. They strongly support previous data. The main features are:-

- (1) Only Bar-tailed Godwits from northwestern Australia (NWA) have been seen in Taiwan
- (2) The lack of NWA-flagged Bar-tailed Godwit sightings from Japan (and Alaska)
- (3) Most records are of birds seen on northward migration though there are some on southward migration (in Korea).

The above are all consistent with the view that the majority of Bar-tailed Godwits that occur in N.W. Australia are of the *menzbieri* subspecies, breeding in the Yakutia region of Siberia. They have a slightly more

westerly northward migration route than the *baueri* subspecies from eastern Australia and New Zealand, which breeds in Alaska. On southward migration the *menzbieri* birds stage in N.E. Asia before flying direct to N.W. Australia whereas the *baueri* birds fly directly from S.W. Alaska to the coasts of eastern Australia and New Zealand.

In the context of the above the continuing scattering of sightings of yellow-flagged Bar-tailed Godwits in New Zealand is notable. The most probable explanation is that these are birds marked during southward migration through N.W. Australia, with the western fringe of the arriving *baueri* migrants extending as far west as that region. Banding recoveries or controls, where specific dates are known, are needed to confirm this.

Terek Sandpiper

Overseas Sightings

KOREA

Date Seen	No	Location seen	Finder
6/05/01	1	Kanghwa Island	Ken Gosbell et al

CHINA

Date Seen	No	Location seen	Finder
21/05/01	1	Caijiapu, near Tianjin	Ms. Yang Hong Yan

HONG KONG

Date Seen	No	Location seen	Finder
6/04/00	1	Mai Po Marshes	Arthur and Sheryl Keates

8/04/00	1	Mai Po Marshes	S. Lam
12/04/00	1	Mai Po Marshes	Geoff Carey
23/04/00	1	Mai Po Marshes	Geoff Carey
20/04/01	1	Mai Po Marshes	Mike Kilburn
23/04/01	2	Mai Po Marshes	Geoff Carey
29/04/01	1	Mai Po Marshes	Yu Yat Tung
30/04/01	1	Mai Po Marshes	Mike Kilburn
1/05/01	1	Mai Po Marshes	Yu Yat Tung
5/05/01	2	Mai Po Marshes	Geoff Carey
5/05/01	1	Mai Po Marshes	John G. Holmes

Hong Kong provided the majority of the sightings as in previous years. The active behaviour of Terek

Sandpipers maximises the chances of a flagged bird being seen.

Asian Dowitcher

Overseas Sightings

TAIWAN

Date Seen	No	Location seen	Finder
22/04/01	1	Chinshan, Taipei County	De-Ru Bird Club

This the first sighting of a leg-flagged Asian Dowitcher away from the N.W. Australia marking areas. Only 88 have so far been flagged.

Ruddy Turnstone

Overseas Sightings

JAPAN

Date Seen	No	Location seen	Finder
10/09/00	1	Kasai Seaside Park, Edogawa, Tokyo	Souhei Kusano

HONG KONG

Date Seen	No	Location seen	Finder
21/05/00	1	Mai Po Marshes	Yu Yat Tung

Sightings within Australia

Victoria

Date Seen	No	Location seen	Finder
10/02/01	1	Port Fairy	Sir Edward Woodward

The slow accumulation of flag sightings of birds on migration through Asia continues. There is also a further

example of the N.W. Australia/S.E. Australia movement, which has only become apparent in recent years.

Common Sandpiper

Overseas Sightings

HONG KONG

Date Seen	No	Location seen	Finder
29/07/00	1	Mai Po Marshes	Mike Leven

SINGAPORE

Date Seen	No	Location seen	Finder
30/09/00	1	Sungai Buloh NR Singapore Island	Andrew Crossland

These are the first sightings of flagged Common Sandpipers from N.W. Australia. Only 21 have been flagged.

The Singapore location is at the far western edge of the corridor used by waders migrating between Australia and their Northern Hemisphere breeding grounds.

Grey-tailed Tattler*Overseas Sightings*

JAPAN

Date Seen	No	Location seen	Finder
8/08/99	1	Shunkunitai, Furen Lake, Hokkaido	Mr. Matsuo Takeyoshi
22/08/99	1	Shiokawa Tidal Flat, Atsumi, Aichi	Mr. Kurahashi Yoshihiro
28/08/99	1	Shitomo River, Mikumo, Mie	Mr. Nishiura Katsuvuki
14/08/01	1	Shiokawa Tidal Flat, Atsumi, Aichi	Minoru Itami

CHINA

Date Seen	No	Location seen	Finder
16/08/01	1	Beidaihe, Qinhuangdao City, Hebei Province	Guo Yumin, Daqing Economics College

TAIWAN

Date Seen	No	Location seen	Finder
7/05/01	1	Ta-Yuan, Tao Yuan County	Mr. Tseng, Yi-Ho
22/05/01	1	HanBou (Hanpou), ChangHwa County	Chung-Yu Chiang
8/05/02	2	HanBou (Hanpou), ChangHwa County	Chung-Yu Chiang
17/05/02	3	HanBou (Hanpou), ChangHwa County	Chung-Yu Chiang

HONG KONG

Date Seen	No	Location seen	Finder
29/04/01	1	Mai Po Marshes	Yu Yat Tung

Japan is a key stopover area for Grey-tailed Tattlers on migration through Asia, particularly for birds during southward migration. It may be that the records in

Taiwan indicate that the main northward migration route lies rather further to the west of the southward route.

Great Knot*Overseas Sightings*

RUSSIA

Date Seen	No	Location seen	Finder
13/07/00	1	Kleje Strait, Chaivo Bay, NE Sakhalin Island	Andrej Blokhin

JAPAN

Date Seen	No	Location seen	Finder
1/04/01	1	Wajiro Tidal Flat, Fukuoka, Fukuoka	Masataka Hanada

KOREA

Date Seen	No	Location seen	Finder
9/09/99	1	Mankyung Estuary, Kunsan City	Jin-Young Park
17/04/00	3	Mankyung Estuary, Kunsan City	Mark Barter and Jin-Han Kim

18/08/00	2	Dongjin Estuary	Jin-Young Park
19/08/00	4	Yooboo Island	Jin-Young Park
6/05/01	2	Kanghwa Island	Ken Gosbell et al
7/05/01	1	Yongjong Island	Ken Gosbell et al
10/05/01	7	Mankyung Estuary, Kunsan City	Ken Gosbell et al

CHINA

Date Seen	No	Location seen	Finder
21/04/01	1	Happy Island, Hebei Province	Dave Allen, RSPB
15/05/01	1	Happy Island, Hebei Province	Bjorn Johansson
26/04/02	2	Yalu Jiang National Nature Reserve	David Melville, Pete Collins
26/04/02	1	Yalu Jiang National Nature Reserve	David Melville, Pete Collins
27/04/00	1	Kou-Hu, Yunlin County	Mr. Chang, Hong-Chia

TAIWAN

Date Seen	No	Location seen	Finder
27/04/00	1	Kou-Hu, Yunlin County	Mr. Chang, Hong-Chia
28/03/02	1	HanBou (Hanpou), ChangHwa County	Chung-Yu Chiang
2/04/02	1	HanBou (Hanpou), ChangHwa County	Mr. Yeh, Chih-Wei
5/04/02	1	Pachang River mouth, Chiayi county	Ms. Wu, Li-Lan

HONG KONG

Date Seen	No	Location seen	Finder
4/04/00	2	Mai Po Marshes	Geoff Carey
6/04/00	1	Mai Po Marshes	Arthur and Sheryl Keates
7/04/00	1	Mai Po Marshes	Geoff Carey
8/04/00	2	Mai Po Marshes	Geoff Carey
9/04/00	4	Mai Po Marshes	ML Chalmers
10/04/00	1	Mai Po Marshes	John G. Holmes
10/04/00	1	Mai Po Marshes	Geoff Carey
12/04/00	4	Mai Po Marshes	Geoff Carey
17/04/00	1	Mai Po Marshes	Geoff Carey
3/04/01	1	Mai Po Marshes	Geoff Carey
5/04/01	1	Mai Po Marshes	Martin Hale
5/04/01	1	Mai Po Marshes	Geoff Carey
6/04/01	2	Mai Po Marshes	Richard Lewthwaite
7/04/01	4	Mai Po Marshes	Richard Lewthwaite
8/04/01	3	Mai Po Marshes	Geoff Carey
10/04/01	2	Mai Po Marshes	Geoff Carey
12/04/01	1	Mai Po Marshes	Geoff Carey
22/04/01	1	Mai Po Marshes	Richard Lewthwaite
23/04/01	1	Mai Po Marshes	Geoff Carey
23/04/01	1	Mai Po Marshes	John G. Holmes
26/04/01	1	Mai Po Marshes	Yu Yat Tung
20/03/02	1	Mai Po Marshes	Bruce Ferry

Whilst the Chinese and the Korean parts of the Yellow Sea are obviously key migratory stopover areas on

northward migration it is notable that N.W. Australia-flagged Great Knot were also widely reported in Hong

Kong and Taiwan. Presumably, such birds failed to reach the Yellow Sea in the intended single direct flight from N.W. Australia.

As with other medium/large waders there are no sightings of flagged Great Knot on southward migration south of

Korea. It is considered that most Great Knot make a direct flight from N.E. Asia (sea of Okhotsk region or Korea) to the northern shores of Australia on southward migration.

Red Knot

Overseas Sightings

HONG KONG

Date Seen	No	Location seen	Finder
8/05/00	1	Mai Po Marshes	Yu Yat Tung
10/05/00	2	Mai Po Marshes	Yu Yat Tung
30/04/01	1	Mai Po Marshes	Mike Kilburn
13/05/01	1	Mai Po Marshes	Geoff Carey

NEW ZEALAND

Date Seen	No	Location seen	Finder
6/01/99	2	Miranda, Firth of Thames, South Auckland	Adrian Riegen
15/08/99	2	Karaka, Manukau Harbour, South Auckland	Tony Habraken
14/11/99	1	Rangipo, Firth of Thames	Will Perry
26/12/99	1	Tapora area, Kaipara Harbour, Auckland	Gwen Pulham
26/02/00	1	Taramaire, Firth of Thames, South Auckland	Tony Habraken
7/03/00	1	Limeworks, Firth of Thames	Adrian Riegen
11/03/00	1	Limeworks, Firth of Thames	Will Perry
8/04/00	1	Karaka, Manukau Harbour, South Auckland	Tony Habraken
9/09/00	1	Miranda, Firth of Thames, South Auckland	Keith Woodley
12/11/00	1	Taramaire, Firth of Thames, South Auckland	Will Perry
30/12/00	1	Miranda, Firth of Thames, South Auckland	Will Perry
11/02/01	1	Kaiaua, Firth of Thames	Tony Habraken
24/02/01	1	Karaka, Manukau Harbour, South Auckland	Tony Habraken
23/03/01	1	Karaka, Manukau Harbour, South Auckland	Tony Habraken
13/09/01	1	Miranda, Firth of Thames, South Auckland	Keith Woodley
13/10/01	1	Mangawhai Spit, North Auckland	Gavin Grant et al
14/10/01	1	Miranda, Firth of Thames, South Auckland	Tony Habraken
4/11/01	1	Thames, Firth of Thames	Tony Habraken
11/11/01	1	Takahiwai, Whangarei Harbour	G Grant/M Twyman
18/11/01	1	Mangere Sewerage Ponds, Manukau Harbour	Gwen Pulham et al
24/11/01	2	Miranda, Firth of Thames, South Auckland	Tony Habraken
1/01/02	1	Karaka, Manukau Harbour, South Auckland	Tony Habraken et al
10/02/02	1	Miranda, Firth of Thames, South Auckland	Arthur and Sheryl Keates
16/02/02	1	Motueka Sandspit, near Nelson	David Melville
17/02/02	2	Jordan's Farm, SE Kaipara Harbour, Auckland	Gwen Pulham et al
3/03/02	1	Tapora South, Kaipara Harbour, Auckland	G. Gorbey et al
14/04/02	1	Karaka, Manukau Harbour, South Auckland	David Lawrie, Tony Habraken

Sightings within Australia**Queensland**

Date Seen	No	Location seen	Finder
21/10/00	1	Maaroom, near Maryborough	Phil Cross
22/10/00	1	Maaroom, near Maryborough	Ivell and Jim Whyte

New South Wales

Date Seen	No	Location seen	Finder
22/09/01	1	Ash Island, Hunter Estuary, near Newcastle	Ann Lindsey
27/10/01	1	Kerosine Inlet (lower Tweed Estuary)	Edward Kleiber
28/10/01	1	Kerosine Inlet (lower Tweed Estuary)	Matthew Angus
28/10/01	1	Tweed River (Main Arm)	David Andrew Rohweder
28/10/01	1	Kerosine Inlet (lower Tweed Estuary)	Edward Kleiber
29/10/01	1	Kerosine Inlet (lower Tweed Estuary)	Edward Kleiber
2/11/01	1	Kerosine Inlet (lower Tweed Estuary)	Edward Kleiber
3/11/01	1	Kerosine Inlet (lower Tweed Estuary)	Edward Kleiber
3/11/01	1	Kerosine Inlet (lower Tweed Estuary)	Matthew Angus
5/11/01	1	Tony's Sand Bar, Lower Tweed Estuary	Edward Kleiber
6/11/01	1	Tony's Sand Bar, Lower Tweed Estuary	Edward Kleiber
9/11/01	1	Trutes Bay, Lower Tweed Estuary	Edward Kleiber
9/11/01	1	Kerosine Inlet (lower Tweed Estuary)	Edward Kleiber
19/12/01	1	Penrhyn Inlet in Botany Bay	Ken Gilmore

Tasmania

Date Seen	No	Location seen	Finder
2/02/02	2	Robbins Island (Bird Point)	Eric Woehler et al

In contrast to Bar-tailed Godwit and Great Knot, comparatively few leg flag sightings occur in Asia of Red Knot on migration. This is probably because, at least on northward migration, Red Knot make their stopovers in a few discreet locations on the Chinese coast – probably in the northern Yellow Sea – where few observations of flags are made.

Given that there is considered to be a N.W. Australia/Eastern Australia and New Zealand divide in Red Knot populations somewhat similar to that in Bar-tailed Godwits there are an amazing number of sightings

in New Zealand and the eastern states of yellow-flagged Red Knot from N.W. Australia. This certainly suggests that a significant portion of the eastern Australia/New Zealand *rogersii* populations must occur at certain times in N.W. Australia – probably during southward migration. Alternatively the newly named subspecies *piersmai*, breeding in the New Siberian Islands and thought to spend the non-breeding season in N.W. Australia, may have a wider range of “wintering” areas than originally hypothesised.

Sanderling**Overseas Sightings****JAPAN**

Date Seen	No	Location seen	Finder
22/08/99	2	Estuary of Ichinomiya River, Chiba	Mr. Suzuki Tozo
5/09/99	1	Shiratsuka Beach, Tsu, Mie	Mr. Nishiyama Yasunobu
18/08/00	1	Anou River Estuary, Tsu, Mie	Naoya Abe
26/08/00	1	Shimo-Arachi, Kashima, Ibaraki	Toshihiko Kawamata
4/09/01	1	Takamatsu, Ishikawa Prefecture, Kahoku-Gun	Mr. Tomio Nagakawa
5/09/01	1	Takamatsu, Ishikawa Prefecture, Kahoku-Gun	Mr. Tomio Nagakawa
7/09/01	1	Takamatsu, Ishikawa Prefecture, Kahoku-Gun	Mr. Tomio Nagakawa

9/09/01	1	Takamatsu, Ishikawa Prefecture, Kahoku-Gun	Mr. Tomio Nagakawa
10/09/01	1	Takamatsu, Ishikawa Prefecture, Kahoku-Gun	Mr. Tomio Nagakawa
14/09/01	1	Takamatsu, Ishikawa Prefecture, Kahoku-Gun	Mr. Tomio Nagakawa
15/09/01	1	Takamatsu, Ishikawa Prefecture, Kahoku-Gun	Mr. Tomio Nagakawa
16/09/01	1	Takamatsu, Ishikawa Prefecture, Kahoku-Gun	Mr. Tomio Nagakawa
28/09/01	1	Takamatsu, Ishikawa Prefecture, Kahoku-Gun	Mr. Tomio Nagakawa
30/09/01	1	Takamatsu, Ishikawa Prefecture, Kahoku-Gun	Mr. Tomio Nagakawa
6/10/01	1	Komaiko Seashore	Mr. Tomio Nagakawa

*Sightings within Australia***South Australia**

Date Seen	No	Location seen	Finder
18/10/00	1	Canunda National Park	Iain Stewart
2/02/01	1	The Coorong	Jim Wilson

Japan is clearly the main stopover location for Sanderling on southward migration back to Australia from their northern Siberian breeding grounds. The northward migration route is much less clear but is probably further to the west through Taiwan and the central Chinese coast and thence inland across China and the Siberian continent. Sanderling is the only species in which

sightings of flagged birds on southward migration exceed those of birds on northward migration.

Evidence continues to accrue that some Sanderling use N.W. Australia as the "gateway" to non-breeding areas in S.E. Australia – two more examples are given in the above list.

Red-necked Stint*Overseas Sightings***JAPAN**

Date Seen	No	Location seen	Finder
24/05/99	1	Lake Komuke, Monbetsu-Shi Hokkaido	Mr. Odate Kazuhiro
17/05/00	1	Nanko Bird Sanctuary, Suminoe, Osaka	Mr. Ishii Masaharu
5/05/01	1	Yatsu Tidal Flat, Narashino-Shi, Chiba, Tokyo Bay	Jun Matsui

CHINA

Date Seen	No	Location seen	Finder
17/05/01	1	Beidaihe, Qinhuangdao City, Hebei Province	Bjorn Johansson
22/05/02	5	Blue Sea Beach lagoons, Hebei	Stephen Andrews

TAIWAN

Date Seen	No	Location seen	Finder
17/08/99	1	Tseng-Wen Estuary, Tainan county	Mr. Fu, Yung-Tsang
28/08/99	1	Tung-Shih, Chiayi	Ms. Wu, Li-Lan et al

HONG KONG

Date Seen	No	Location seen	Finder
29/03/00	1	Mai Po Marshes	Geoff Carey
22/04/01	1	Mai Po Marshes	Richard Lewthwaite
23/04/01	1	Mai Po Marshes	John G. Holmes
9/05/01	1	Mai Po Marshes	Geoff Carey

Sightings within Australia**New South Wales**

Date Seen	No	Location seen	Finder
24/03/01	1	Tullakool	Chris Coleborn

South Australia

Date Seen	No	Location seen	Finder
8/11/00	1	Cygnets River Estuary, Nepean Bay, Kangaroo Island	Terry Dennis

Victoria

Date Seen	No	Location seen	Finder
25/11/99	1	Little River Mouth, Werribee Sewerage Farm	Rohan Clarke
21/09/01	1	Maher's Landing, Inverloch	Anthea and Jim Whitelaw
19/10/01	1	Kirk's Point, Western Treatment Plant, Werribee	Tom and Pauline Fletcher
3/11/01	1	Werribee Sewerage Farm	Danny Rogers
20/02/02	2	Werribee Sewerage Farm	Clive Minton, VWSG

A surprisingly small number of flag sightings for this species, even in Hong Kong. Sightings elsewhere in Australia confirm the well-established pattern of N.W.

Australia being used as a migratory stopover region for Red-necked Stints spending the non-breeding season in the southern half of Australia.

Sharp-tailed Sandpiper***Overseas Sightings*****HONG KONG**

Date Seen	No	Location seen	Finder
8/05/00	1	Mai Po Marshes	Yu Yat Tung

Sightings within Australia**Western Australia**

Date Seen	No	Location seen	Finder
2/09/01	1	Derby Sewage Works	Lou

Data from flag sightings (and recoveries) of Sharp-tailed Sandpipers is still too scant to form views on specific migration routes yet.

Curlew Sandpiper***Overseas Sightings*****SOUTH AFRICA**

Date Seen	No	Location seen	Finder
24/03/02	1	Langebaan Lagoon, near Cape Town, West Cape	Brian Vanderwalt
29/03/02	1	Langebaan Lagoon, near Cape Town, West Cape	Brian Vanderwalt

CHINA

Date Seen	No	Location seen	Finder
21/05/01	1	Happy Island, Hebei Province	Bjorn Johansson

TAIWAN

Date Seen	No	Location seen	Finder
22/04/00	1	Peikang River Mouth, Chiayi County	Mr. Chang, Hong-Chia

30/04/00	1	Wen-Ti, Ilan County	Wild Bird Society of Ilan
21/04/01	1	Ta-chuang, Hsin-chu City	Mr. Mao, Shih-Min

HONG KONG

Date Seen	No	Location seen	Finder
29/07/99	1	Mai Po Marshes	Geoff Carey
29/08/99	1	Mai Po Marshes	Karl Ng
4/04/00	1	Mai Po Marshes	Geoff Carey
6/04/00	1	Mai Po Marshes	Arthur and Sheryl Keates
7/04/00	1	Mai Po Marshes	S. Lam
7/04/00	1	Mai Po Marshes	Geoff Carey
12/04/00	1	Mai Po Marshes	Geoff Carey
16/04/00	2	Mai Po Marshes	Geoff Carey
23/04/00	2	Mai Po Marshes	Geoff Carey
25/04/00	2	Mai Po Marshes	Geoff Carey
27/04/00	3	Mai Po Marshes	Geoff Carey
8/05/00	2	Mai Po Marshes	Yu Yat Tung
29/07/00	1	Mai Po Marshes	Geoff Carey
12/04/01	2	Mai Po Marshes	Geoff Carey
14/04/01	1	Mai Po Marshes	John G. Holmes
26/04/01	1	Mai Po Marshes	Yu Yat Tung
29/04/01	2	Mai Po Marshes	Yu Yat Tung
30/04/01	2	Mai Po Marshes	Mike Kilburn
1/05/01	2	Mai Po Marshes	Yu Yat Tung
5/05/01	3	Mai Po Marshes	Geoff Carey
9/05/01	2	Mai Po Marshes	Geoff Carey

Sightings within Australia**Western Australia**

Date Seen	No	Location seen	Finder
7/10/01	1	Lacepede Islands	Clive Minton, AWSG

New South Wales

Date Seen	No	Location seen	Finder
1/01/02	1	Penrhyn Inlet in Botany Bay	Mark Husk

South Australia

Date Seen	No	Location seen	Finder
6/12/99	1	Price Saltfield, Upper Yorke Peninsula	Mike Carter

Victoria

Date Seen	No	Location seen	Finder
1/02/01	1	Stockyard Point, Lang Lang, Westernport	Peter Collins
8/03/01	1	Little River Mouth, Werribee Sewerage Farm	Mark Barter
13/12/01	1	Mud Islands, Port Phillip Bay	Peter Collins
23/12/01	1	Stockyard Point, Lang Lang, Westernport	Peter Collins

The sighting of a yellow-flagged Curlew Sandpiper in South Africa is the highlight of this total list of flag

sightings. Normally waders remain faithful to their flyway and pretty faithful to their non-breeding area.

This Curlew Sandpiper clearly got caught up in a flock departing from the Northern Siberian breeding grounds for their regular South (and Central) African non-breeding areas and finished up some 10,000 km west of its normal destination in N.W. Australia.

There has been one previous instance of a Curlew Sandpiper from Australia getting into a different Flyway. This was a bird banded near Melbourne, S.E. Australia, and subsequently recaptured in southern India (where substantial numbers of Curlew Sandpipers spend the non-breeding season).

Other Curlew Sandpipers listed were, as usual, mainly seen in Hong Kong and Taiwan. The migration route of this species is further to the west than many other waders and few marked Curlew Sandpipers are ever reported from Korea, Japan and even the northern parts of the Chinese Yellow Sea.

As with Red-necked Stint some Curlew Sandpipers pass through N.W. Australia on their way to/from non-breeding areas in the southern half of Australia.

Grey Plover

Overseas Sightings

JAPAN

Date Seen	No	Location seen	Finder
11/10/01	1	Yatsu Tidal Flat, Narashino-Shi, Chiba, Tokyo Bay	Hideo Hayashi

CHINA

Date Seen	No	Location seen	Finder
26/04/02	1	Yalu Jiang National Nature Reserve	David Melville, Pete Collins

These are only the second and third overseas flag sightings of Grey Plover flagged in N.W. Australia. The previous report was from Korea. 172 have been flagged.

Greater Sand Plover

Overseas Sightings

TAIWAN

Date Seen	No	Location seen	Finder
15/04/02	1	HanBou (Hanpou), ChangHwa County	Chung-Yu Chiang

HONG KONG

Date Seen	No	Location seen	Finder
5/04/00	2	Mai Po Marshes	Geoff Carey
7/04/00	1	Mai Po Marshes	Phil Cross
8/04/00	2	Mai Po Marshes	Geoff Carey
10/04/00	1	Mai Po Marshes	Geoff Carey
21/04/00	1	Mai Po Marshes	Richard Lewthwaite
22/04/00	1	Mai Po Marshes	Karl Ng
23/04/00	1	Mai Po Marshes	B-E Sjolinder
24/04/00	1	Mai Po Marshes	B-E Sjolinder
5/05/00	1	Mai Po Marshes	Yu Yat Tung
2/04/01	1	Mai Po Marshes	Geoff Carey
5/04/01	1	Mai Po Marshes	Geoff Carey
10/04/01	1	Mai Po Marshes	Geoff Carey
12/04/01	1	Mai Po Marshes	Geoff Carey
22/04/01	1	Mai Po Marshes	Richard Lewthwaite
1/05/01	1	Mai Po Marshes	Yu Yat Tung

Sightings within Australia**Western Australia**

Date Seen	No	Location seen	Finder
22/11/01	1	Woodman's Point, Cockburn Sound	Colin Davis

This species has a more northwesterly destination and migration route in Asia than other waders from Australia. Sightings of flagged birds are common in Hong Kong,

and to a lesser extent in Taiwan, but there are no sightings further east than this.

Little Tern***Overseas Sightings*****TAIWAN**

Date Seen	No	Location seen	Finder
13/05/02	1	Fu-Pao wetland, Changhwa County	Mr. Tsai, Chih-Yuan

This is the first sighting from Taiwan of a Little Tern flagged in N.W. Australia. The significant population of Little Terns, which spend their non-breeding season in

N.W. Australia, probably comes from a wide range of breeding areas in the Northern Hemisphere – Taiwan, China, Japan and Korea.

Silver Gull***Sightings within Australia*****Western Australia**

Date Seen	No	Location seen	Finder
10/06/01	1	West Island, Lacepede Islands	Adrian Boyle

Silver Gulls have been flagged, as a Broome Bird Observatory project, on Roebuck Bay since January 2001. This one had moved 100km up the coast to the Lacepede Islands, where it was molesting breeding seabirds.

The Stilt 42 (2002)

Reports

Sightings within Australia

Western Australia

Date Seen	No.	Location seen	Finder
29/09/01	1	80 Mile Beach	Julie Deleyev et al
10/02/02	1	Lake Herschel (West), Rottnest Island	Liz Walker, Rolf Gensen

South Australia

Date Seen	No.	Location seen	Finder
31/01/01	1	Woodswell, Coorong	Maureen Christie
11/02/01	1	Penrice Saltfields St Kilda Adelaide	David Close
25/02/01	1	Price Saltfield, Upper Yorke Peninsula	David Close
7/05/01	1	Coorong National Park	Philip Griffin

Victoria

Date Seen	No.	Location seen	Finder
13/03/01	1	South Woorinen Lake, N of Swan Hill	Simon Kennedy
27/12/01	1	Werribee Sewerage Farm	Stephanie and Lindsay Tyler
5/02/02	1	Killarney Beach	Barbara Garrett

The sighting off the north coast of Siberia is unprecedented. It was seen in company with an orange-flagged Red-necked Stint from Victoria (see Orange flag list).

One is always a little concerned with a sighting in the Perth area of Western Australia where Yellow/Orange is the flag combination used on Red-necked Stints. Was the

flag combination put on upside down or did the person making the observation write it down incorrectly – making it really only a local bird? Everything however suggests that the Rottnest Island record was a genuine movement of a South Australian-flagged bird, and there has been a similar movement into South Australia of a flagged Red-necked Stint from Perth.

Curlew Sandpiper

Sightings within Australia

Western Australia

Date Seen	No.	Location seen	Finder
19/04/02	1	Wader Beach, Roebuck Bay, Broome	Adrian Boyle
6/05/02	1	Broome Sewerage Works	Adrian Boyle
18/05/02	2	Wader Beach, Roebuck Bay, Broome	Adrian Boyle
17/06/02	1	Stilt Viewing, Roebuck Bay, Broome	Adrian Boyle

All these records refer to Curlew Sandpipers in non-breeding plumage. They are clearly first year birds that have made a partial northward movement for the winter.

Sanderling

Overseas Sightings

JAPAN

Date Seen	No.	Location seen	Finder
6/08/00	1	Hasaki, Kashima, Ibaraki	I. Tanabe
12/08/00	1	Hasaki, Kashima, Ibaraki	Naoki Katsura
18/08/00	1	Anou River Estuary, Tsu, Mie	Naoya Abe
24/08/00	1	Shimo-Arachi, Kashima, Ibaraki	Toshihiko Kawamata
26/08/00	1	Ichinomiya River Estuary, Chosei, Chiba	Kenzo Tomiya
5/08/01	1	Tama River Mouth, Tokyo	Hiroshi Yukawa
19/08/01	1	Ichinomiya River Estuary, Chosei, Chiba	Tozo Suzuki
25/08/01	3	Ichinomiya River Estuary, Chosei, Chiba	Tozo Suzuki

28/08/01	1	Takamatsu, Ishikawa Prefecture, Kahoku-Gun	Mr. Tomio Nagakawa
30/08/01	1	Takamatsu, Ishikawa Prefecture, Kahoku-Gun	Kenji Hirano
2/09/01	2	Kujukuri, Sanbu, Chiba	Kenzo Tomiya
2/09/01	1	Takamatsu, Ishikawa Prefecture, Kahoku-Gun	Mr. Tomio Nagakawa
3/09/01	1	Takamatsu, Ishikawa Prefecture, Kahoku-Gun	Mr. Tomio Nagakawa
4/09/01	1	Takamatsu, Ishikawa Prefecture, Kahoku-Gun	Mr. Tomio Nagakawa
5/09/01	2	Takamatsu, Ishikawa Prefecture, Kahoku-Gun	Mr. Tomio Nagakawa
7/09/01	2	Takamatsu, Ishikawa Prefecture, Kahoku-Gun	Mr. Tomio Nagakawa

Sightings within Australia**Queensland**

Date Seen	No	Location seen	Finder
12/04/02	1	Mirapool, Moreton Island	Ivell Whyte and John Olds

Western Australia

Date Seen	No	Location seen	Finder
18/09/01	1	Kanidal Beach	Helen and Paul Evans
18/09/01	2	Bush Point, south Roebuck Bay, near Broome	Peter Collins
29/09/01	1	80 Mile Beach	Ken Gosbell
30/10/01	1	Coconut Wells near Broome	Maureen Christie

New South Wales

Date Seen	No	Location seen	Finder
8/12/01	1	South Beach in Ballina	Bo Totterman
15/12/01	1	South Beach in Ballina	Bo Totterman
10/03/02	1	Flat Rock between Lennox Head and Ballina	June Harris

South Australia

Date Seen	No	Location seen	Finder
18/11/98	1	Murray River Mouth	Iain Stewart
19/11/98	1	Murray River Mouth	Iain Stewart
9/02/00	5	Murray Mouth, Goolwa	Peter Collins et al
3/01/02	1	Hindmarsh Island, opposite Murray Mouth, Coorong	Andrew Black
17/02/02	2	Murray Mouth, Goolwa	David Lawrie

Victoria

Date Seen	No	Location seen	Finder
14/10/01	1	Sandy Point, Shallow Inlet	Ken Gosbell et al
5/02/02	4	Killarney Beach	Barbara Garrett
16/02/02	1	Sandy Point, near Wilson's Promontory	Ros Jessop, Peter Collins

As always, Sanderlings produce a mass of flag sightings in Japan and at other locations within Australia. It is notable that all the Japanese sightings in this list were of birds on southward migration, as are the sightings of Victorian-flagged Sanderling,

The sightings around Australia contain both birds that were on migration back to South Australia and others that had changed their non-breeding area.

ACKNOWLEDGEMENTS

Thanks are due to all those people throughout the flyway who took the trouble to search for, record and submit leg flag sightings. Thanks are also due to the Australian Bird and Bat Banding Scheme for sightings reported through them.

SIGHTINGS OF WADERS LEG-FLAGGED IN VICTORIA: REPORT NUMBER 9

Clive Minton¹, Rosalind Jessop², Peter Collins³, Julie Deleyev¹ and Lauren Beasley¹¹165 Dalgetty Road, Beaumaris 3193 Vic. AUSTRALIA
Email: mintonso@ozemail.com.au²Phillip Island Nature Park, PO Box 97, Cowes 3922 Vic. AUSTRALIA
Email: rjessop@penguins.org.au³RMB 4009, Cowes 3922 Vic. AUSTRALIA
Email: moonbird@waterfront.net.au.

Most resident and migratory waders caught in Victoria since December 1990 have had an orange plastic leg-flag placed on the right tibia (upper leg). Up to the end of 2001, 48,740 individual birds (see separate table) have been colour marked in this way (and a further c. 7500 since then up to the end of June 2002).

While the exact date and place of banding of a flagged bird cannot be determined exactly from observation of the bird in the field, the broad origin (coastal Victoria) of any orange-flagged bird seen away from the flagging locations can be determined. As a result of the introduction of flagging, the rate of generation of information on wader movements, both within Australia and overseas, has increased ten-fold (or more).

The list below covers all sightings of orange-flagged birds which have been reported since those listed in *Stilt* 39 (pp. 48-60). While most of these records refer to 2001 and the first half of 2002, some unpublished records from earlier years, which have only just become available, have been included. Sightings are listed in an approximate north to south geographic order, and within each country/state in date of sighting order. The person who made the actual sighting is generally recorded,

though in many cases the actual sightings were reported to us through another party (e.g. a national bird banding scheme, or a flag-sightings coordinator). Everyone who contributed to these records is greatly thanked for their efforts.

The leg flag sightings listed below are primarily for the interest of AWSG members and to acknowledge those who sighted and reported flagged birds. They will be analysed and formally published in scientific papers, often in conjunction with Victorian Wader Study Group (VWSG) and AWSG data, as part of the ongoing program of writing up the results of fieldwork. Several papers in which flag sighting data is a significant component have already been published, or are at an advanced stage of preparation. The flag sighting information contained in the list below (and in previous similar lists) should therefore not be used or quoted in other scientific publications without first consulting the VWSG (contact Clive Minton). A further reason for this caveat is that the records need to be fully rechecked for accuracy and completeness before being used for such a purpose.

Bar-tailed Godwit**Overseas Sightings****USA**

Date Seen	No	Site	Observer
13/05/01	1	St. Paul, Pribilof Islands, Alaska	Pavel Tomkovich
16/05/01	1	St. Paul, Pribilof Islands, Alaska	Pavel Tomkovich
19/06/01	1	Central Seward Peninsula, Alaska	David Tracy
17/06/01	1	Cape Espenberg, 70km S of Kotzebue	John Pearce
24/06/01	1	Cape Espenberg, 70km S of Kotzebue	John Pearce
1/07/01	1	Cape Espenberg, 70km S of Kotzebue	John Pearce
5/09/01	2	Tern Mountain, Village of Chefnak, Yukon Delta	Daniel Ruthrauff
6/09/01	6	Tern Mountain, Village of Chefnak, Yukon Delta	D. Ruthrauff, Fred Broerman
7/09/01	4	Tern Mountain, Village of Chefnak, Yukon Delta	Daniel Ruthrauff

JAPAN

Date Seen	No	Site	Observer
22/04/00	1	Sone Shinden, Kokura-Minami-Ku	Japan Banding Office
29/04/00	1	Tori-No-Umi, Watari-Machi, Miyagi	Jun Hosoya
14/04/01	1	Gan-No-Su, Higashi-Ku, Fukuoka-Shi	Kazuhisa Oue
14/04/01	1	Gan-No-Su, Higashi-Ku, Fukuoka-Shi	Yukinori Kurihara
14/04/01	1	Gan-No-Su, Higashi-Ku, Fukuoka-Shi	Masataka Hanada
12/05/01	1	Oose Beach, Ooshima, Kagoshima	Nobutaka Iwamoto

KOREA

Date Seen	No	Site	Observer
7/05/01	1	Yongjong Island	Ken Gosbell et al
8/05/01	3	Namyang Bay (Unpyong-ri)	Ken Gosbell et al
14/04/02	1	Sosan Tidal Flats	Han Jong-hyun
27-28/04/02	2	Aphaedo, Mokpo	Lee Jeong-sik
4/05/02	2	Aphaedo, Mokpo	Lee Jeong-sik
18/05/02	1	Aphaedo, Mokpo	Lee Jeong-sik

CHINA

Date Seen	No	Site	Observer
17/04/01	1	Happy Island, Hebei Province	Dave Allen, RSPB
22/04/01	1	Happy Island, Hebei Province	Dave Allen, RSPB
7/05/01	1	Happy Island, Hebei Province	Dave Allen, RSPB
25/04/02	2	Yalu Jiang National Nature Reserve	David Melville, Pete Collins
26/04/02	4	Yalu Jiang National Nature Reserve	David Melville, Pete Collins
27/04/02	2	Yalu Jiang National Nature Reserve	David Melville, Pete Collins
28/04/02	4	Yalu Jiang National Nature Reserve	David Melville, Pete Collins

NEW ZEALAND

Date Seen	No	Site	Observer
14/01/01	2	Tapora Wildlife Refuge, Kaipara	G Grant/M Twyman
15/01/01	1	Ohiwa Harbour, Bay of Plenty	Will Perry
9/02/01	1	Waimea Inlet, Mapua Estuary, Nelson	Willy Cook
24/02/01	2	Karaka, Manukau Harbour, South Auckland	Tony Habraken
25/02/01	1	Walker Island, Kaipara Harbour	Gwen Pulham et al
13/03/01	1	Tauranga Harbour, North Island	John Heaphy
25/03/01	1	Walker Island, Kaipara Harbour	Gwen Pulham et al
6/05/01	1	Waimea Inlet, Mapua Estuary, Nelson	Willy Cook
20/05/01	1	Miranda, Firth of Thames, South Auckland	Betty Seddon
6/06/01	1	Ohiwa Harbour, Bay of Plenty	Rosemary Tully
23/06/01	1	Gobi, Farewell Spit	Rob Schuckard
23/06/01	1	Tapora area, Kaipara Harbour, Auckland	Gwen Pulham
24/06/01	2	Mudflat near Mullet, Farewell Spit	W. Cook
24/06/01	1	Banana Pan, Farewell Spit	W. Cook
4/08/01	1	Karaka, Manukau Harbour, South Auckland	Tony Habraken
5/08/01	1	Miranda Firth of Thames	Tony Habraken
19/08/01	1	Tapora area, Kaipara Harbour, Auckland	Gillian Vaughan
9/09/01	2	Karaka, Manukau Harbour, South Auckland	Tony Habraken
20/09/01	1	Parengarenga Harbour, Far North Cape, North Island	Tony Habraken et al
21/09/01	1	Parengarenga Harbour, Far North Cape, North Island	Tony Habraken et al
6/10/01	1	Karaka, Manukau Harbour, South Auckland	Tony Habraken
14/10/01	3	Karaka, Manukau Harbour, South Auckland	Tony Habraken
4/11/01	2	Thames, Firth of Thames	Tony Habraken

11/11/01	1	Takahiwi, Whangarei Harbour	Gavin Grant et al
17/11/01	2	Papakanui Spit, Kaipara Harbour, Auckland	Tony Habraken
18/11/01	1	Mangere Sewerage Ponds, Manukau Harbour	Gwen Pulham
22/11/01	3	Kiwi Esplanade, Manukau Harbour	Gillian Vaughan
10/12/01	1	Manawatu Estuary, Manawatu, North Island	Simon Fordham
30/12/01	1	Kiwi Esplanade, Manukau Harbour	Adrian Riegen
1/01/02	1	Karaka, Manukau Harbour, South Auckland	Tony Habraken et al
12/01/02	1	Manawatu Estuary, Manawatu, North Island	Sav Saville
13/01/02	4	Walker Island, Kaipara Harbour	Gwen Pulham et al
4/02/02	1	Waimea Inlet, Best Island, near Nelson	Willy Cook
14/02/02	1	Manawatu Estuary, Manawatu, North Island	Arthur and Sheryl Keates
16/02/02	2	Farewell Spit, Gobi, near Nelson, South Island	Rob Schuckard
17/02/02	1	Farewell Spit, Bay Flat, near Nelson	R. Stocker
25/02/02	1	Farewell Spit, Bay Flat, near Nelson	Rob Schuckard
26/02/02	5	Farewell Spit, Bay Flat, near Nelson	R. Schuckard, D. Melville
27/02/02	3	Farewell Spit, Bay Flat, near Nelson	Phil Battley
28/02/02	1	Farewell Spit, Bay Flat, near Nelson	David Melville
3/03/02	1	Tapora South, Kaipara Harbour, Auckland	G. Gorbey et al
16/03/02	1	Papakanui Spit, Kaipara Harbour, Auckland	Gwen Pulham et al
13/04/02	3	Walker Island, Kaipara Harbour	Tony Habraken et al
3/06/02	4	Miranda, Firth of Thames, South Auckland	Tony Habraken

Sightings within Australia**Queensland**

Date Seen	No	Site	Observer
7/10/01	1	Wynnum	Arthur and Sheryl Keates

Northwest Australia

Date Seen	No	Site	Observer
5/05/01	1	Broome Bird Observatory 18km E of Broome	Adrian Boyle
22/05/01	1	Broome Bird Observatory 18km E of Broome	Adrian Boyle
13/06/01	1	Broome Bird Observatory 18km E of Broome	Adrian Boyle
4/07/01	1	Beaches Crab Ck Rd Roebuck Bay Broome	Jonny Schoenjahn
5/07/01	1	Beaches Crab Ck Rd Roebuck Bay Broome	Jonny Schoenjahn
7/08/01	1	Roebuck Bay, Broome	Matthew Angus
8/09/01	1	Roebuck Bay, Broome	BBO Staff

New South Wales

Date Seen	No	Site	Observer
23/09/01	1	Shell Point, Botany Bay	Phil Straw
26/09/01	1	Woolooware Wader Lagoon, Botany Bay	Ken Gilmore
14/10/01	1	South Beach in Ballina	Bo Totterman

Another mammoth list of flag-sightings. We have made more progress on delineating the migration routes of this species than any other in the last few years, purely because of the volume of leg-flag sightings.

Further sightings in Alaska, including some on the breeding grounds as well as birds at migratory staging areas in south-west Alaska on both northward and southward migrations further confirm that this is the

breeding area of virtually all the Bar-tailed Godwits which occur in Victoria.

The other very clear pattern, to which the listed sightings in Japan/Korea/China provide further evidence, is that Victorian Bar-tailed Godwits use these areas of the Asian coastline on northward migration, but totally avoid such areas on the return journey. This all supports the growing evidence that Bar-tailed Godwits departing south-west Alaska in the first half of September fly approximately

10,000km non-stop across the ocean to make their first landfall on the northern coast of Australia (and New Zealand). This is the longest known single flight migration of any bird species. It is thought that this huge non-stop journey is facilitated by regularly occurring, extremely strong, northerly winds in that part of the Northern Hemisphere at that time of year.

Another feature of the flag sightings above is the continuing accumulating evidence of the strong link between the Bar-tailed Godwits of Victoria and those in

New Zealand. Whilst previous listings have mainly been of birds seen in North Island New Zealand, there is now an increasing number in the Farewell Spit/Nelson area of the South Island as a result of the growing team of wader experts residing in that area.

Some of the sightings within Australia refer to birds on migration back to Victoria. However, the ones at Broome in Northwest Australia seem to refer to a bird that moved over there for an extended period.

Red-necked Stint

Overseas Sightings

RUSSIA

Date Seen	No	Site	Observer
30/07/01	1	Babaryna-Belkeye Island, Lena Delta	Sergei Kharitonov

JAPAN

Date Seen	No	Site	Observer
21/05/00	1	Fujimae Tidal Flat, Nagoya, Aichi	Tsuguo Ohta
3/09/00	1	Nanko Bird Sanctuary, Suminoe, Osaka	Takada et al.
11/10/00	1	Yatsu Tidal Flat, Narashino, Chiba, Tokyo Bay	Yatsu Nature Observatory
16/05/01	1	Shiokuchi, Minami-akita, Akita	Hitoshi Sasaki
4/08/01	1	Tama River Mouth, Tokyo	Hiroshi Yukawa
12/08/01	1	Rokujo Tidal Flat, Toyohashi	Yasutoshi Ooba
13/08/01	1	Rokujo Tidal Flat, Toyohashi	Yasutoshi Ooba
16/08/01	1	Sone, Futtsu, Chiba	Kikuo Ishitsubo

KOREA

Date Seen	No	Site	Observer
10/05/01	1	Mankyung Estuary, Kunsan City	Ken Gosbell et al
12/08/01	1	Siwha Lake, Kyunggi Province	Hansoo Lee

CHINA

Date Seen	No	Site	Observer
17/05/01	1	Beidaihe, Qinhuangdao City, Hebei Province	Bjorn Johansson
21/05/01	1	Caijiapu, near Tianjin	Ms. Yang Hong Yan
24/05/02	2	Blue Sea Beach lagoons, Hebei	Stephen Andrews

TAIWAN

Date Seen	No	Site	Observer
12/05/99	1	Wu-Chiang-Hsi Estuary, Chin-Men	Mr. Yeh, Chih-Wei
17/05/01	1	Tayuan, Taoyuan County	Ms. Pan, Ming-Li
17/05/01	1	Tayuan, Taoyuan County	Ms. Pan, Ming-Li
22/05/01	1	HanBou (Hanpou), ChangHwa County	Chung-Yu Chiang
4/08/01	1	Hsin-Wen Salt Pan, Chiayi County	Ms. Wu, Li-Lan
6/08/01	1	Szu-Tsao, Tainan city	Mr. Fu, Yung-Tsang
8/08/01	1	Tseng-Wen Estuary, Tainan county	Mr. Fu, Yung-Tsang
11/08/01	1	Hsin-Wen Salt Pan, Chiayi County	Ms. Wu, Li-Lan
17/05/02	1	HanBou (Hanpou), ChangHwa County	Chung-Yu Chiang
19/05/02	1	Fubou, Chang Hwa County	Ms. Shih, Yueh-Ying
20/05/02	2	An-Nan, Tainan City	Mr. Fu, Yung-Tsang

20/05/02	3	HanBou (Hanpou), ChangHwa County	Chung-Yu Chiang
21/05/02	3	Szu-Tsao, Tainan city	Mr. Fu, Yung-Tsang

HONG KONG

Date Seen	No	Site	Observer
21/04/01	1	Mai Po Marshes	John G. Holmes
1/05/01	2	Mai Po Marshes	Yu Yat Tung
5/05/01	1	Mai Po Marshes	Geoff Carey
9/05/01	1	Mai Po Marshes	Geoff Carey

Sightings within Australia**Western Australia**

Date Seen	No	Site	Observer
11/03/01	1	Lake McLarty, Shire of Murray	Colin Davis
29/07/01	1	Lake McLarty, Shire of Murray	Colin Davis et al
18/08/01	1	Broome Sewerage Works	Adrian Boyle
29/08/01	2	Kidney Bean Clay Pan, near Broome	Adrian Boyle
29/08/01	1	Eyre Bird Observatory	Paul Evans
5/09/01	1	Kidney Bean Clay Pan, near Broome	Chris Hassell
13/09/01	1	Kidney Bean Clay Pan, near Broome	Chris Hassell
18/09/01	3	Bush Point, south Roebuck Bay, near Broome	Pete Collins et al
29/09/01	1	80 Mile Beach	Pete Collins et al
4/10/01	1	80 Mile Beach	Pete Collins et al
5/10/01	1	80 Mile Beach	Pete Collins et al
20/10/01	1	80 Mile Beach	Pete Collins et al
2/11/01	1	Roebuck Bay, Broome	Adrian Boyle
10/02/02	1	Lake Serpentine, Rottnest Island	Richard and Lorraine Chyne
19/03/02	1	Rottnest Island	Klaus Uhlenhut
14/04/02	1	Barkers Inlet (small lake), near Esperance	Allan Rose
23/04/02	1	Serpentine River Reserve in Mandurah	Marcus Singor

Queensland

Date Seen	No	Site	Observer
31/03/01	1	Koorngal, Moreton Island	Ian Bunce

New South Wales

Date Seen	No	Site	Observer
15/01/01	2	Lake Wollumboola Culburra	David Hair
16/01/01	2	Lake Wollumboola Culburra	David Hair
25/01/01	1	Lake Wollumboola Culburra	David Hair
3/02/01	6	Tullakool	Chris Coleborn
24/03/01	4	Tullakool	Chris Coleborn
25/08/01	1	Kurnell mudflats in Botany Bay	Ken Gilmore
8/09/01	1	Ash Island, Hunter Estuary, near Newcastle	Alan Morris
10/09/01	1	Batemans Bay	Mike Crowley
10/09/01	1	Ash Island, Hunter Estuary, near Newcastle	Alan Morris
17/11/01	1	Kurnell Boat Harbour, Botany Bay	Ken Gilmore
12/01/02	1	Swan Bay, near Port Stephens	Sue Hamonet

South Australia

Date Seen	No	Site	Observer
1/03/00	1	West of Nene Valley	Maureen Christie
16/04/00	1	Bucks Bay	Maureen Christie
25/06/00	1	Stoney Drain (east of Green Point)	Maureen Christie
3/08/00	1	Nene Valley	Maureen Christie
17/08/00	1	Pelican Point, near Mt Gambier	Maureen Christie
20/10/00	1	Livingstones	Maureen Christie
17/01/01	6	Penrice Saltfields St Kilda Adelaide	David Close
5/02/01	1	Hindmarsh Island, opposite Murray Mouth, Coorong	Lys Muirhead
5/02/01	1	Swan Point, NW of Murray Mouth	Mark Ziembicki
6/02/01	1	Hindmarsh Island, opposite Murray Mouth, Coorong	Lys Muirhead
4/11/01	1	Penrice Saltfields St Kilda Adelaide	Lysbeth Muirhead
15/12/01	2	Pelican Point, near Mt Gambier	Maureen Christie
20/12/01	1	Pelican Point, near Mt Gambier	Maureen Christie
18/01/02	1	Port Rickaby, York Peninsula	Kent Treloar
2/02/02	2	Lake George, near Beachport	Adrian Boyle
14/02/02	1	Cape Banks Lighthouse	Maureen Christie
14/03/02	5	Lake George, near Beachport	Adrian Boyle
9/04/02	1	Panka Point, The Coorong	Margaret Dadd

Victoria

Date Seen	No	Site	Observer
22/02/01	6	Lake Murdeduke, near Winchelsea	Margaret Cameron
22/02/01	9	Victoria Lagoon, Gippsland Lakes	Lynn Turner
12/03/01	2	Woodvale Saltworks, NW of Bendigo	Simon Kennedy
9/04/01	7	Lake Kelly, near Kerang	Chris Coleborn
11/04/02	1	Woodvale Saltworks, NW of Bendigo	Roger Standen
3/05/02	4	Lake Ranfurly, near Mildura	Alex Hawtin

Tasmania

Date Seen	No	Site	Observer
14/01/01	1	Pipe Clay Lagoon, Hobart	Tim Reid
30/01/01	1	Cape Portland	Ralph Cooper
3/02/01	1	Pipe Clay Lagoon, Hobart	Tim Reid
30/03/01	1	Cape Portland	Ralph Cooper
16/04/01	1	South Arm	Priscilla Park
10/11/01	1	Narawntupa National Park (NE Arm)	Peter and Hazel Britton
9/12/01	1	Cape Portland	Ralph Cooper
9/02/02	1	Barilla Bay, near Hobart Airport	Alan Wiltshire, Sheryl Hamilton
29/03/02	1	King Island (6.5km North of Currie)	Sarah Lloyd
27/04/02	1	Cape Portland	Ralph Cooper

The last year has produced a nice selection of overseas sightings of orange-flagged Red-necked Stints, especially from Taiwan and Japan. However, pride of place must go to one seen on an island off the north coast of Siberia, opposite the delta of the Lena River. This was at 74 degrees north and over 12,500km from the Victorian coast where it was originally flagged. It was fascinating that a Red-necked Stint flagged in South Australia was

seen in the same place at the same time by the same observer! This must be the northernmost limit of the species' range.

Sightings within Australia show both migration routes of birds on their way to/from Victoria and also a number of birds that have clearly changed their non-breeding area away from Victoria. It is possible that this mobility/ lack

of site faithfulness may have increased in Red-necked Stint in the last two or three years as a result of the exceptionally high population levels.

Red Knot

Overseas Sightings

TAIWAN

Date Seen	No	Site	Observer
21/04/01	1	Ta-chuang, Hsin-chu City	Mr. Mao, Shih-Min

NEW ZEALAND

Date Seen	No	Site	Observer
6/11/91	1	Miranda, Firth of Thames, South Auckland	G. Ella
20/07/92	1	Manawatu Estuary, Manawatu, North Island	R. Slack
16/10/93	1	Waipu Estuary, Northland	Pam Agnew
22/11/93	1	Waipu Estuary, Northland	Stephen Davies
1/01/98	2	Waipu Estuary, Northland	K. Hansen
5/10/98	1	Pautanui Inlet, Wairarapa	R. Morrison
28/10/99	1	Miranda, Firth of Thames, South Auckland	T. Crocker
29/12/99	1	Miranda, Firth of Thames, South Auckland	Betty Seddon
30/10/00	5	Miranda, Firth of Thames, South Auckland	P & J Morrin
12/11/00	3	Taramaire, Firth of Thames, South Auckland	Will Perry
28/12/00	1	Taramaire, Firth of Thames, South Auckland	Will Perry
30/12/00	2	Miranda, Firth of Thames, South Auckland	Will Perry
31/12/00	2	Taramaire, Firth of Thames, South Auckland	Bev Woolley
5/01/01	1	Taramaire, Firth of Thames, South Auckland	T. Wilson
10/01/01	5	Miranda, Firth of Thames, South Auckland	Dick Veitch
14/01/01	4	Tapora area, Kaipara Harbour, Auckland	G. Grant, M. Twyman
3/02/01	2	Miranda, Firth of Thames, South Auckland	Bev Woolley
4/02/01	2	Miranda, Firth of Thames, South Auckland	Bev Woolley
9/02/01	1	Farewell Spit, between Gobi and Puponga	Rob Schuckard
10/02/01	2	Mudflat near Mullet, Farewell Spit	Rob Schuckard
11/02/01	2	Kaiaua, Firth of Thames	Tony Habraken
17/02/01	1	Parengarenga Harbour, Far North Cape, North Island	Gavin Grant et al
18/02/01	5	Taramaire, Firth of Thames, South Auckland	Tony Habraken
24/02/01	5	Karaka, Manukau Harbour, South Auckland	Tony Habraken
25/02/01	2	Walker Island, Kaipara Harbour	Gwen Pulham et al
3/03/01	1	Miranda, Firth of Thames, South Auckland	Betty Seddon
12/03/01	2	Miranda, Firth of Thames, South Auckland	J. Groom
23/03/01	6	Karaka, Manukau Harbour, South Auckland	Tony Habraken
24/03/01	1	Miranda, Firth of Thames, South Auckland	N. Milius, W. Hare
25/03/01	1	Walker Island, Kaipara Harbour	Gwen Pulham et al
26/03/01	1	Motueka Sandspit, near Nelson	Rob Schuckard
19/08/01	1	Tapora area, Kaipara Harbour, Auckland	Gillian Vaughan
9/09/01	2	Karaka, Manukau Harbour, South Auckland	Tony Habraken
13/09/01	1	Miranda, Firth of Thames, South Auckland	Keith Woodley
20/09/01	2	Parengarenga Harbour, Far North Cape, North Island	Tony Habraken et al
21/09/01	1	Farewell Spit, Gobi, near Nelson, South Island	Steve Wood
21/09/01	4	Parengarenga Harbour, Far North Cape, North Island	Tony Habraken et al
7/10/01	2	Miranda, Firth of Thames, South Auckland	Tony Habraken

14/10/01	3	Miranda, Firth of Thames, South Auckland	Tony Habraken
4/11/01	5	Miranda, Firth of Thames, South Auckland	David Lawrie
4/11/01	16	Thames, Firth of Thames	Tony Habraken
11/11/01	4	Takahiwai, Whangarei Harbour	G. Grant, M. Twyman
17/11/01	5	Tapora South, Kaipara Harbour, Auckland	Gavin Grant et al
17/11/01	3	Mudflat near Mullet, Farewell Spit	Rob Schuckard
18/11/01	3	Mangere Sewerage Ponds, Manukau Harbour	Gwen Pulham et al
22/11/01	4	Kiwi Esplanade, Manukau Harbour	Gillian Vaughan
24/11/01	12	Miranda, Firth of Thames, South Auckland	Tony Habraken
30/11/01	1	Walker Island, Kaipara Harbour	Gwen Pulham et al
20/12/01	1	Kiwi Esplanade, Manukau Harbour	Tony Habraken et al
30/12/01	1	Lake Ellesmere, South Island	Colin Hill, Steve Wratten
13/01/02	1	Walker Island, Kaipara Harbour	Gwen Pulham et al
4/02/02	2	Waimea Inlet, Best Island, near Nelson	Willy Cook
11/02/02	2	Miranda, Firth of Thames, South Auckland	Arthur and Sheryl Keates
17/02/02	1	Farewell Spit, Bay Flat, near Nelson	R. Stocker
17/02/02	1	Lagoon, Farewell Spit	Willy Cook
17/02/02	7	Jordan's Farm, SE Kaipara Harbour, Auckland	Gwen Pulham et al
25/02/02	2	Farewell Spit, Bay Flat, near Nelson	David Melville
26/02/02	2	Farewell Spit, Bay Flat, near Nelson	David Melville
27/02/02	8	Farewell Spit, Bay Flat, near Nelson	Phil Battley
28/02/02	2	Farewell Spit, Bay Flat, near Nelson	David Melville
28/02/02	1	Farewell Spit, Bay Flat, near Nelson	Rob Schuckard
3/03/02	1	Tapora South, Kaipara Harbour, Auckland	G. Gorbey et al
8/03/02	1	Waimea Inlet, Best Island, near Nelson	Willy Cook
24/03/02	3	Miranda, Firth of Thames, South Auckland	Tony Habraken
13/04/02	1	Walker Island, Kaipara Harbour	Tony Habraken et al
14/04/02	1	Miranda, Firth of Thames, South Auckland	Will Perry
14/04/02	4	Karaka, Manukau Harbour, South Auckland	David Lawrie, Tony Habraken
20/04/02	4	Karaka, Manukau Harbour, South Auckland	David Lawrie, Tony Habraken
26/05/02	1	Mangere Sewerage Ponds, Manukau Harbour	Ted Wnorowski et al

Sightings within Australia**Western Australia**

Date Seen	No	Site	Observer
18/05/02	1	Stilt Viewing, Roebuck Bay, Broome	Adrian Boyle

Queensland

Date Seen	No	Site	Observer
20/11/99	1	The Oaks, S of the Norman River mouth	Peter Driscoll
16/08/01	1	Caloundra Sandbanks	Bo Totterman
27/08/01	1	Toorbul, near Bribie Island	Dennis Stanbridge
28/08/01	1	Toorbul, near Bribie Island	Dennis Stanbridge
30/08/01	2	Nudgee Beach, Moreton Bay	Ivell and Jim Whyte
1/09/01	1	Manly Boat Harbour, Moreton Bay	Arthur and Sheryl Keates
1/09/01	1	Toorbul, near Bribie Island	Phil Cross, QWSG
8/09/01	2	Toorbul, near Bribie Island	Arthur and Sheryl Keates
9/09/01	1	Manly Boat Harbour, Moreton Bay	Arthur and Sheryl Keates
22/09/01	2	Toorbul, near Bribie Island	Dennis Stanbridge

23/09/01	1	Toorbul, near Bribie Island	Dennis Stanbridge
26/09/01	2	Toorbul, near Bribie Island	Dennis Stanbridge
4/11/01	1	Boonooroo near Maryborough	Arthur Keates, David Connolly
8/11/01	1	Boonooroo near Maryborough	Chris Barnes
17/11/01	1	Boonooroo near Maryborough	Chris Barnes
23/02/02	1	Toorbul, near Bribie Island	Gavin Goodyear
2/03/02	1	Toorbul Point	Bob James, Karyll Butler
4/03/02	1	Toorbul Point	Dennis Stanbridge
5/03/02	1	Toorbul Point	Dennis Stanbridge
6/03/02	1	Toorbul Point	Dennis Stanbridge
17/03/02	1	Toorbul Point	QWSG Members
18/03/02	1	Toorbul Point	Dennis Stanbridge
23/03/02	1	Toorbul Point	Gavin Goodyear
13/04/02	1	Toorbul Point	Jean Corney
1/05/02	1	Toorbul Point	Linda Cross

New South Wales

Date Seen	No	Site	Observer
10/09/01	1	Stockton Sandspit, Hunter Estuary, near Newcastle	Ann Lindsey
22/09/01	4	Ash Island, Hunter Estuary, near Newcastle	Ann Lindsey
28/09/01	1	Penrhyn Inlet in Botany Bay	Ken Gilmore

South Australia

Date Seen	No	Site	Observer
16/04/02	1	Penrice Saltfields St Kilda Adelaide	Bill Allcock, SAOA

Red Knots continue to be a great disappointment as far as overseas sightings of leg-flagged birds (except in New Zealand) are concerned. There is only one flag sighting in Asia in the above list, contrasting markedly with the situation for Bar-tailed Godwit, and for the much fewer number of Great Knot flagged in Victoria. There is still not one single flag sighting or recovery of a Victorian Red Knot in Russia to indicate where the breeding grounds of our birds lie.

In contrast, the assiduousness of the New Zealand wader watchers is apparent in a record list of sightings of orange-flagged Red Knot there. On one day alone (24th November 2001) twelve different orange-flagged Red Knot were found at Miranda, Firth of Thames, by Tony Habraken.

The pattern of sightings again probably mainly derives from birds that spent their first, immature, year in Australia and then subsequently transferred as a second

year or adult bird to New Zealand citizenship! Whilst such a pattern cannot be established from flag sightings it is certainly clearly apparent from recoveries and recaptures of banded Red Knot. Only occasionally do Red Knot, which have been recorded in Australia in the main non-breeding season as adult birds turn up later in New Zealand. Overall there seems to be an even greater link between Australian and New Zealand Red Knot than there is between Australian and New Zealand Bar-tailed Godwits.

Adrian Riegen, the coordinator of the New Zealand Wader Study Group, is especially thanked for his enormous efforts in collecting together the huge number of leg-flag sightings in New Zealand and routing them through to us.

Most of the sightings within Australia relate to birds on migration to/from Victoria, via Queensland. However, a few birds appear to have permanently moved interstate.

Curlew Sandpiper**Overseas Sightings****JAPAN**

Date Seen	No	Location seen	Finder
16/05/01	1	Shimo-tomita, Koyu, Miyazaki	Naotaka Suzuki

CHINA

Date Seen	No	Location seen	Finder
20/05/01	1	Caijiapu, near Tianjin	Ms. Yang Hong Yan
24/05/02	1	Blue Sea Beach lagoons, Hebei	Stephen Andrews

TAIWAN

Date Seen	No	Location seen	Finder
24/04/01	1	Szu-Tsao, Tainan city	Mr. Hsu, Sheng-Fa
27/04/01	1	HanBou (Hanpou), ChangHwa County	Chung-Yu Chiang
28/04/01	1	Putai, Chiayi County	Ms. Wu, Li-Lan et al
6/08/01	1	Szu-Tsao, Tainan city	Mr. Fu, Yung-Tsang
28/04/02	1	HanBou (Hanpou), ChangHwa County	Mr. Li, Tsung Jung
8/05/02	1	HanBou (Hanpou), ChangHwa County	Chung-Yu Chiang
13/05/02	1	HanBou (Hanpou), ChangHwa County	Chung-Yu Chiang

HONG KONG

Date Seen	No	Location seen	Finder
3/04/01	1	Mai Po Marshes	Geoff Carey
5/04/01	3	Mai Po Marshes	Geoff Carey
8/04/01	6	Mai Po Marshes	Geoff Carey
10/04/01	9	Mai Po Marshes	Geoff Carey
12/04/01	4	Mai Po Marshes	Geoff Carey
13/04/01	2	Mai Po Marshes	Richard Lewthwaite
14/04/01	2	Mai Po Marshes	John G. Holmes
15/04/01	1	Mai Po Marshes	Yu Yat Tung
16/04/01	1	Mai Po Marshes	Richard Lewthwaite
20/04/01	1	Mai Po Marshes	Geoff Carey
22/04/01	2	Mai Po Marshes	Richard Lewthwaite
23/04/01	2	Mai Po Marshes	John G. Holmes
23/04/01	4	Mai Po Marshes	Geoff Carey
26/04/01	1	Mai Po Marshes	Yu Yat Tung
29/04/01	3	Mai Po Marshes	Yu Yat Tung
30/04/01	3	Mai Po Marshes	Mike Kilburn
5/05/01	1	Mai Po Marshes	Geoff Carey
9/05/01	1	Mai Po Marshes	Geoff Carey
20/03/02	1	Mai Po Marshes	Bruce Ferry
2/04/02	1	Mai Po Marshes	Geoff Welch

Sightings within Australia**Western Australia**

Date Seen	No	Location seen	Finder
13/10/00	1	Beaches Crab Ck Rd Roebuck Bay Broome	Adrian Boyle
19/08/01	1	Kidney Bean Clay Pan, near Broome	Adrian Boyle
29/08/01	1	Kidney Bean Clay Pan, near Broome	Adrian Boyle
19/09/01	1	Broome Sewerage Works	Ros Jessop, Pete Collins
5/10/01	1	80 Mile Beach	Falk Huettmann
14/10/01	1	Port Hedland Saltworks	Peter Collins
16/10/01	1	Roebuck Bay, Broome	Adrian Boyle
17/10/01	1	Roebuck Bay, Broome	Adrian Boyle

19/04/02	1	Wader Beach, Roebuck Bay, Broome	Adrian Boyle
10/05/02	1	Richard's Point, Roebuck Bay, Broome	Adrian Boyle
11/06/02	1	Richard's Point, Roebuck Bay, Broome	Adrian Boyle

Queensland

Date Seen	No	Location seen	Finder
25/06/01	1	Karumba Point, Gulf of Carpentaria	Ceinwen Edwards
1/09/01	1	Manly Boat Harbour, Moreton Bay	Arthur and Sheryl Keates
23/09/01	1	Lytton	Arthur and Sheryl Keates

New South Wales

Date Seen	No	Location seen	Finder
3/02/01	4	Tullakool	Chris Coleborn
24/03/01	1	Tullakool	Chris Coleborn
15/09/01	1	Ash Island, Hunter Estuary, near Newcastle	Alan Morris
16/09/01	1	Ash Island, Hunter Estuary, near Newcastle	Ann Lindsey
28/09/01	1	Ash Island, Hunter Estuary, near Newcastle	Ann Lindsey
15/12/01	1	Penrhyn Inlet in Botany Bay	Mark Husk
19/12/01	1	Penrhyn Inlet in Botany Bay	Ken Gilmore
1/01/02	1	Penrhyn Inlet in Botany Bay	Mark Husk
6/01/02	1	Penrhyn Inlet in Botany Bay	Arthur and Sheryl Keates

South Australia

Date Seen	No	Location seen	Finder
3/03/00	1	Pelican Point, near Mt Gambier	Maureen Christie
25/06/00	1	Stoney Drain (east of Green Point)	Maureen Christie
14/01/01	1	Walkers Beach, SE of Venus Bay, Eyre Peninsula	Digger B. Jackson
17/01/01	1	Penrice Saltfields St Kilda Adelaide	David Close

Victoria

Date Seen	No	Location seen	Finder
24/02/01	1	Mildura Tip Swamp, Mildura	Miriam Pywell
9/04/01	4	Lake Kelly, near Kerang	Chris Coleborn

As usual, sightings are dominated by a plethora of records from the Mai Po Marshes in Hong Kong. We thank Geoff Carey enormously for his efforts in collating records from a large number of different observers, prominent amongst whom is Paul Leader. The sighting on the early date of the 20th March (2002) is yet another example of how early Curlew Sandpipers from Victoria can reach such latitudes in the Northern Hemisphere. Surprisingly, each year orange flagged Curlew Sandpipers from Victoria reach Hong Kong ahead of yellow-flagged birds from Northwest Australia.

The string of sightings on northward migration in Taiwan is the result of a considerably increased effort there in wader fieldwork in the last two years.

The sighting in Japan is unusual- Japan is on the eastern fringe of the migration route of this species.

A noticeable feature of the list is the complete absence of overseas flag sightings of birds on southward migration. Do they really take off from inland locations in China or elsewhere and fly non-stop to the northern coast of Australia?

As with most other species, leg-flag sightings within Australia mostly refer to birds still on migration but a few relate to birds that have changed their non-breeding areas to interstate locations.

Great Knot**Overseas Sightings****KOREA**

Date Seen	No	Site	Observer
10/05/01	1	Mankyung Estuary, Kunsan City	Ken Gosbell et al
7/04/02	1	Sosan	Han Jong-hyun

CHINA

Date Seen	No	Site	Observer
26/04/02	1	Yalu Jiang National Nature Reserve	David Melville, Pete Collins

TAIWAN

Date Seen	No	Site	Observer
8/04/01	1	Auku, Chiayi County	Mr. Tsai, Chih-Yuan and Ms. Wu, Li-Lan
5/04/02	1	Pachang River mouth, Chiayi county	Ms. Wu, Li-Lan
7/04/02	1	Peikang River Mouth, Chiayi County	Ms. Wu, Li-Lan
13/04/02	1	Pachang River mouth, Chiayi county	Ms. Wu, Li-Lan

Sightings within Australia**Queensland**

Date Seen	No	Site	Observer
14/01/01	1	Mathieson Homestead, near Hervey Bay	Arthur and Sheryl Keates
8/11/01	1	Maaroom, near Maryborough	Chris Barnes

South Australia

Date Seen	No	Site	Observer
7/01/01	1	Young Husband Peninsula, Coorong	Mark Ziembecki

Tasmania

Date Seen	No	Site	Observer
2/02/02	1	Robbins Island (Bird Point)	Eric Woehler et al

An unprecedented selection of sightings, reflecting the group's slightly greater success in catching Great Knot in the last few years. Overseas sighting locations are generally the same as those for Great Knot flagged in Northwest Australia and Queensland.

Three of the sightings within Australia appear to be birds that have changed their non-breeding area. We have little data on the site faithfulness of this species.

Sanderling**Overseas Sightings****JAPAN**

Date Seen	No	Location seen	Finder
16/08/01	4	Ichinomiya River Estuary, Chosei, Chiba	Kazuyuki Kuwabara
18/08/01	1	Sone, Futtsu, Chiba	Takemi Naito
19/08/01	1	Obitsu River, Kisarazu, Chiba, Tokyo Bay	Koki Hirano
20/08/01	1	Ooya River, Tsuna, Hyogo	Satoshi Ihori
29/08/01	1	Obitsu River, Kisarazu, Chiba, Tokyo Bay	Yoko Yamaoka
2/09/01	2	Kujukuri, Sanbu, Chiba	Kenzo Tomiya
2/09/01	1	Ibaraki Pref.	N. K.
15/09/01	1	Takamatsu, Ishikawa Prefecture, Kahoku-Gun	Hidenori Arayama
17/09/01	1	Kokura Beach, Hyuga, Miyazaki	Yutaka Onoo

6/10/01	1	Komaiko Seashore	Mr. Tomio Nagakawa
27/10/01	1	Takamatsu, Ishikawa Prefecture, Kahoku-Gun	Mr. Tomio Nagakawa

TAIWAN

Date Seen	No	Location seen	Finder
19/04/01	1	Taiping river mouth, Taitung County	Mr. Tsai, Wei-hsun
13/05/01	1	Ta-chia river mouth, Taichung County	Mr. Tsai, Chung-Huang

HONG KONG

Date Seen	No	Location seen	Finder
27/04/01	2	Mai Po Marshes	Karl Ng
30/04/01	1	Mai Po Marshes	Mike Kilburn

Sightings within Australia**Western Australia**

Date Seen	No	Location seen	Finder
10/09/01	1	Curran Point, near Drysdale River	George Swann
18/09/01	2	Bush Point, south Roebuck Bay, near Broome	Peter Collins, NWA 2001 Expedition
18/09/01	2	Kanidal Beach	Helen and Paul Evans
30/10/01	2	Coconut Wells, near Broome	Peter Collins, NWA 2001 Expedition

Queensland

Date Seen	No	Location seen	Finder
3/10/01	1	Wave Break Island South, Gold Coast	Edward Kleiber
12/04/02	1	Mirapool, Moreton Island	Ivell Whyte and John Olds

New South Wales

Date Seen	No	Location seen	Finder
23/09/01	1	South Beach in Ballina	Bo Totterman

South Australia

Date Seen	No	Location seen	Finder
23/02/01	2	Brown Bay, 15km E of Port Macdonnell	Maureen Christie
3/01/02	1	Murray Mouth, Goolwa	Roger Jaensch
17/04/02	1	Almonta Beach, Coffin Bay National Park	Bob Cook

Victoria

Date Seen	No	Location seen	Finder
2/03/01	1	Iron Prince Point, near Cape Howe	Jim Wilson
28/07/01	1	Discovery Bay	Dave Ryan

Tasmania

Date Seen	No	Location seen	Finder
25/04/02	1	Policemans Point near Ansons Bay, N of St Helens	Darryel Binns

As always, Japan dominates the overseas sightings. Japan appears to be the centre of the migration route for Sanderlings, more so than probably for any other wader species that migrates to Australia. Although all the sightings there listed in this report are of birds on southward migration, there have been orange-flagged birds seen on northward migration in previous years. However, the fact that the sightings in Taiwan and Hong

Kong were all of birds on northward migration may suggest that the Sanderling northward migration route through Asia is further west than the southward migration route.

Sightings within Australia show the wide variety of migration routes used by birds travelling to/from Victoria. The lower non-breeding season site faithfulness

of this species, compared with most other migratory waders, is also indicated by some of the records in the above list.

Eastern Curlew

Overseas Sightings

JAPAN

Date Seen	No	Location seen	Finder
26/03/01	1	Sone Estuary and Tidal Flat, Kitakyushu, Fukuoka	Kazuo Samoto

Sightings within Australia

Queensland

Date Seen	No	Location seen	Finder
19/01/02	1	Swan Bay, Southern Moreton Bay Marine Park	Brenda Healey

New South Wales

Date Seen	No	Location seen	Finder
21/07/01	1	Dykes in Kooragang Island, Newcastle	Ann Lindsey
20/08/01	1	Swan Bay, near Port Stephens	Sue Hamonet
1/09/01	1	Kurnell Shorebird Lagoon, Kurnell	Phil Straw

Not as a good a crop of flag-sightings as in other recent years. This probably reflects the lower number of Eastern Curlew caught and flagged in recent years, as a

result of the VWSG's fieldwork effort being concentrated on other species.

Red-necked Avocet

Sightings within Australia

New South Wales

Date Seen	No	Location seen	Finder
3/02/01	1	Tullakool	Chris Coleborn
14/09/01	1	Ash Island, Hunter Estuary, near Newcastle	Alan Morris

The relatively mobile/nomadic nature of this species is indicated by the two flag sightings at widely separated locations in New South Wales.

Ruddy Turnstone

Overseas Sightings

TAIWAN

Date Seen	No	Location seen	Finder
26/04/01	1	Tatu River Estuary, Changwha County	Chung-Yu Chiang
13/05/01	1	Ta-chia river mouth, Taichung County	Mr. Tsai, Chung-Huang
17/08/01	1	Tatu River Estuary, Changwha County	Chung-Yu Chiang
10/05/02	2	HanBou (Hanpou), ChangHwa County	Chung-Yu Chiang

NEW ZEALAND

Date Seen	No	Location seen	Finder
9/02/01	1	Miranda, Firth of Thames, South Auckland	N. Milius and W. Hare

Sightings within Australia**Western Australia**

Date Seen	No	Location seen	Finder
18/09/01	1	Kanidal Beach	Helen and Paul Evans

South Australia

Date Seen	No	Location seen	Finder
20/12/01	1	Pelican Point, near Mt Gambier	Maureen Christie
6/02/02	1	Lake St. Clair (between Beachport and Robe)	Maureen Christie

Tasmania

Date Seen	No	Location seen	Finder
3/02/02	1	Wildlife Sanctuary, George Town	Peter Duckworth

The sighting of six orange leg-flagged birds at overseas locations is a record. As indicated by recoveries also, Taiwan seems to be an especially important staging area for this species.

The New Zealand sighting is further evidence of some link between the Ruddy Turnstone population in that country and in the south east of Australia.

Some interstate transfers are apparent in the sightings within Australia.

Black-tailed Godwit**Overseas Sightings****CHINA**

Date Seen	No	Location seen	Finder
23/04/01	1	Happy Island, Hebei Province	Dave Allen, RSPB

Sightings within Australia**Western Australia**

Date Seen	No	Location seen	Finder
20/09/01	1	Roebuck Bay, Broome	Brian Thompson

This species continues to amaze. There have now been four flag sightings, two overseas (Korea and China) and two in Australia (both at Broome), from only two Black-tailed Godwits ever caught and flagged in Victoria! As

mentioned in the previous VWSG Bulletin (No. 24, April 2001, p. 32) it is possible that all records relate to the same individual.

Broad-billed Sandpiper**Overseas Sightings****TAIWAN**

Date Seen	No	Location seen	Finder
24/04/01	1	Szu-Tsao, Tainan city	Mr. Hsu, Sheng-Fa

At the time of this sighting only two Broad-billed Sandpipers had ever been flagged in Victoria. The most recent was at Stockyard Point in 1994 and it was seen again there in 1995. It is amazing that this bird should

have turned up again, especially overseas, so many years later.

Double-banded Plover**Overseas Sightings****NEW ZEALAND**

Date Seen	No	Location seen	Finder
25/11/00	1	Ashley River Estuary, Christchurch, South Island	Eric Spurr

The VWSG has flagged very few Double-banded Plovers. This was a sighting in the usual breeding area of birds that visit Victoria in the non-breeding season.

Sharp-tailed Sandpiper**Overseas Sightings****KOREA**

Date Seen	No	Location seen	Finder
11/05/02	1	Geum River Estuary, Chungnam Province	Hansoo Lee

CHINA

Date Seen	No	Location seen	Finder
24/05/02	1	Blue Sea Beach lagoons, Hebei	Stephen Andrews

Sightings within Australia**New South Wales**

Date Seen	No	Location seen	Finder
3/02/01	4	Tullakool	Chris Coleborn
8/09/01	1	Ash Island, Hunter Estuary, near Newcastle	Alan Morris
10/09/01	1	Ash Island, Hunter Estuary, near Newcastle	Alan Morris
15/09/01	1	Ash Island, Hunter Estuary, near Newcastle	Alan Morris

South Australia

Date Seen	No	Location seen	Finder
11/02/01	1	Penrice Saltfields St Kilda Adelaide	David Close

Only modest numbers of Sharp-tailed Sandpipers are caught and flagged by the VWSG each year. It is nice to get two more flag sightings overseas, which are slowly

enabling the migration route of this species to be delineated

Terek Sandpiper**Overseas Sightings****KOREA**

Date Seen	No	Location seen	Finder
10/05/01	1	Mankyung Estuary, Kunsan City	Ken Gosbell et al

This is only the second overseas sighting of a Terek Sandpiper flagged in Victoria. The previous one was in

Hong Kong. Only nine Terek Sandpipers have ever been flagged in Victoria.

Grey Plover**Overseas Sightings****JAPAN**

Date Seen	No	Location seen	Finder
27/08/00	1	Tama River Mouth, Tokyo	Hitoshi Shirota

Previous flag sightings of Grey Plover have also been mostly in Japan.

Greater Sand Plover

Overseas Sightings

TAIWAN

Date Seen	No	Location seen	Finder
20/07/01	1	Tatu River Estuary, Changwha County	Chung-Yu Chiang

In spite of only 16 Greater Sand Plovers ever being flagged in Victoria, we still continue to receive sightings from both overseas and within Australia. Their migration direction is more northwesterly than other waders and Taiwan is at the eastern edge of their main migration route.

ACKNOWLEDGEMENTS

Thanks are due to all those people throughout the flyway who took the trouble to search for, record and submit leg flag sightings. Thanks are also due to the Australian Bird and Bat Banding Scheme for sightings reported through them.

EDITORIAL TEAM

Editor: Dr David Milton, 336 Prout Rd., Burbank, 4156. Qld., AUSTRALIA. Ph: 07-3390 2179, Fax: 07 3826 7222, email: david.milton@csiro.au

Assistant Editor: Phil Straw, 15 Kings Rd, Brighton-Le-Sands, 2216. NSW, AUSTRALIA. Ph and fax: 02-9597 7765.

Production Editor: Dr Andrew Dunn, 5 Mersey St, Bundoora, 3083. Vic., AUSTRALIA. Ph: 03-9402 4944, email: amdunn@melbpc.org.au

Regional Literature Compilation: Clinton Schipper, 2 Orchard Dve, Croydon, 3136. Vic., AUSTRALIA. Ph: 03-9725 3368.

Indexing: Hugo Phillipps, c/- Birds Australia National Office.

Vignettes: Stephen Davidson

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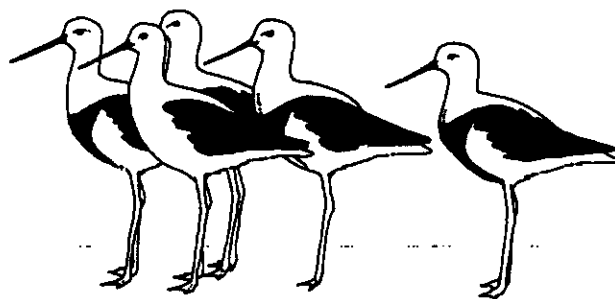
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Deadlines:

The closing dates for submission of material have been revised. They are **1 March** and **1 September** for the April and October editions respectively. **Extensions to these dates must be discussed with the Editor.** Contributors are reminded that they will probably have some comments to consider, and possibly incorporate, at some time after submission. It would be appreciated if this could be done promptly.



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