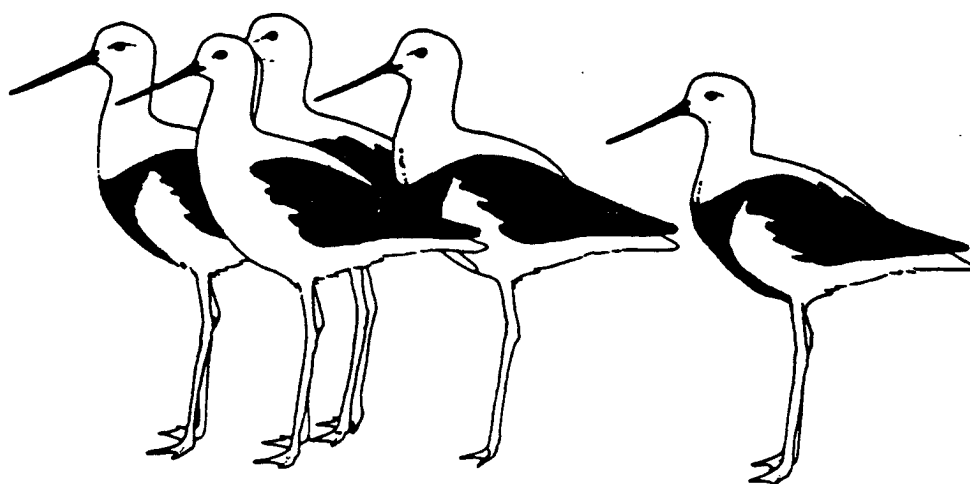


The Stilt



ISSN 0726-1888

**BULLETIN OF THE AUSTRALASIAN WADER STUDIES GROUP
OF THE
ROYAL AUSTRALASIAN ORNITHOLOGISTS UNION**

Number 18

APRIL 1991

**OBJECTIVES OF THE
AUSTRALASIAN WADER STUDIES GROUP
OF THE
ROYAL AUSTRALASIAN ORNITHOLOGISTS UNION**

1. To develop or assist with plans for wader research in Australasia in conjunction with other interested bodies
2. To co-ordinate and encourage counting, banding, feeding studies and other scientific programmes involving amateur and professional skills.
3. To encourage and assist with the publication of results.
4. To maintain effective communication between wader enthusiasts within Australasia and with similar groups overseas.
5. To formulate and promote policies for the conservation and management of waders and their habitat.

**VIEWS AND OPINIONS EXPRESSED IN "*THE STILT*" ARE THOSE OF
THE AUTHOR(S) AND NOT NECESSARILY THOSE OF THE AWSG.**

Subscriptions for 1991:

| | |
|-------------|----------|
| Australasia | AUS \$15 |
| Overseas | AUS \$20 |
| Libraries | AUS \$25 |

**ALL ENQUIRIES SHOULD BE DIRECTED TO
BRENDA MURLIS, ADMINISTRATIVE SECRETARY.**

EDITORIAL

Included in the items featured in this edition of *The Stilt* are another two papers on the morphometrics of waders occurring in Australia, in this instance Mongolian Plover and Black-fronted Plover. This brings the total number of species covered by such papers in *The Stilt* to 13. In order to ensure the survival of a species one must know such things as juvenile recruitment rate, life expectancy, pre-migratory fattening requirements and subspecies distribution. None of this is possible without a knowledge of the morphometrics of the species. It is therefore obvious that these papers are not just of academic interest but have an essential practical use also.

It is pleasing that two more papers from South-east Asia are also featured in this issue, in this case on the distribution and seasonal movements of waders in South-west Brunei and in the Guangdong region of China. It is important that papers such as these, which give information on the waders of these little known areas, be published in a widely distributed bulletin such as *The Stilt* so that they may be as broadly disseminated as possible.

Jeff Campbell

CHAIRMAN'S REPORT FOR 1990

1990 was another good year for the AWSG with much achieved or commenced to conserve and manage waders.

The Regular Counts Project came to an end in mid-year, as planned, and the final task is to write up the results. The Population Monitoring Project will continue, but with a change of coordinator as Luke Naismith is taking over from Marilyn Hewish. I'd like to place on record my thanks to Marilyn for the way she stuck to the task - running the counts and regularly reporting the results in *Stilt* with, as a bonus, insightful analyses of the count data for a number of species. Marilyn started out with 5 years of data in hand from the RAOU Wader Studies Programme, Luke now has ten. So, we are steadily compiling a very important population data base for a number of key sites in Australia.

Broome Bird Observatory offers an excellent opportunity for wader research and Brett Lane has prepared a proposal of suggested activities. Now that the observatory is close to being fully established, there is cause for optimism that serious wader studies will become part of the Observatory programme within the current year. As an excellent start, two Dutch scientists will be spending March and April at the Observatory studying the feeding ecology of Great and Red Knot. Pleasingly, this area of wader studies, which has been largely neglected in Australia until now, will receive further boosts in Victoria with two Honours students choosing to study aspects of the feeding ecologies of Pied Oystercatchers and Double-banded Plovers, respectively.

Two expeditions were successfully completed in 1990 and another two are planned for 1991.

The expedition to north-western Australia in March/April banded some 5500 waders of 31 species. There were 30 participants including four Asian trainees, the Taiwanese being fortunate enough to witness the first Australian controls (2) of Taiwan-banded birds. Two birds banded in Hong Kong were also caught. The most exciting outcome were the recoveries within 12 days in China of 4 birds banded during the expedition.

A team of two went to Java to train Indonesians in wader study techniques whilst collecting biometric, plumage and marketing data on Oriental Pratincoles, which are hunted in large numbers in the region. Despite an unseasonably late monsoon, some 730 pratincoles were caught and an excellent set of data were obtained. The results will be published as an AWB report.

In 1991, a member will be assisting in January with surveying of an area of the Ganges Delta not previously visited. The objectives of the visit will be to help in identifying significant sites and to train Bangladeshi biologists in identification and counting techniques. In mid-March, a team of four will be going to the Xuan Thuy Reserve in Vietnam (the only Ramsar site in south-east Asia) to assess the significance of the area for migratory waterfowl. Training will also be given in banding and counting techniques.

The management plan for waders and their habitats in Australia, which is being prepared for WWF, should be completed by May 1991. This document is designed to provide guidance to planners and conservationists. The RAOU/AWB project "Toward sustainable harvesting of waterbirds in the East Asia Flyway", which is being funded by the Australian International Development Assistance Bureau, is progressing well with the main focus being on sites in Thailand, Indonesia and China.

An encouraging start has been made on the leg-flagging project, with the Victorian Wader Study Group hoping to have more than 3000 waders flagged before the birds depart on northward migration. The flagging protocol allows for other groups within the flyway to take part.

The Stilt has gone from strength to strength with a number of papers from overseas countries being published during the year. *Stilt* papers are being cited with increasing frequency and it has been decided that contributions with a substantial scientific content should be reviewed in order to ensure that they are of a satisfactory standard and accuracy. The role of the reviewer will be to provide constructive advice, criticism and assistance where necessary and in a manner that encourages novices to analyse data and write up the results.

It is pleasing to see that a Wader Study Group has been formed in New South Wales and that they have made a start on cataloguing important wader sites and banding birds. Amongst other active and successful wader banding groups are those of the Queensland Ornithological Society, in Moreton Bay, and the Miranda Naturalists Trust, around Auckland.

The Group's financial position is sound, with the General and Research account balances increasing during the year. *Stilt* costs have been contained despite the improvement in size and quality. There should be no reason to increase subscriptions in the foreseeable future.

Our public awareness campaign has got off to a good start with Hugo Phillipps preparing regular press releases. The twin aims are to make the ornithological public-at-large aware of our activities and successes and to attract new members.

I would like to thank the Committee for all their hard work and support during the year. I'm sure that our members appreciate all the effort required to run the Group properly and successfully.

Mark Barter

AWSG TREASURER'S REPORT FOR 1990

It is pleasing to note the increase in paid-up members this year, and the increase in number of subscriptions received has resulted in a rise in our end-of-year balance.

Subscriptions received for WSG and AWB and shorebird book sales on behalf of the AWB account for some \$963, leaving out nett balance at nearly \$4500. Rises in production costs of *Stilt* have been kept to a minimum without, it is felt, compromising on quality of content and so our finances remain in a healthy position.

This year we opened a third account to hold money for expeditions to South-East Asia organised by the AWB.

David Henderson

Australasian Wader Studies Group Statement of Receipts and Payments for the Period 1 January 1990 - 31 December 1990

RECEIPTS

| | |
|-----------------------------------|----------|
| Balance B/F | 4,174.52 |
| Subscriptions | 4,248.38 |
| Sale of <i>Stilt</i> back numbers | 175.00 |
| AWB subscriptions / book sales | 605.19 |
| WSB (UK) subscriptions | 243.85 |
| Refund of Resident Wader | |
| Study costs | 283.00 |
| Bank Interest | 476.05 |

\$10,205.99

PAYMENTS

| | |
|------------------------|----------|
| <i>Stilt</i> - typing | 790.00 |
| - printing | 1,743.00 |
| - envelopes | 46.80 |
| - postage | 989.05 |
| Secretary's expenses | 394.08 |
| Chairman's expenses | 48.49 |
| Treasurer's expenses | 33.01 |
| WSB (UK) subscriptions | 630.95 |
| Bank charges | 33.00 |
| State Govt. tax | 3.65 |
| Balance C/F | 5,493.96 |

\$10,205.99

RAOU Research Fund (AWSG) Statement Of Receipts And Payments For The Period 1 January 1990 - 31 December 1990

RECEIPTS

| | |
|---------------|------------|
| Balance B/F | \$1,453.99 |
| Donations | 453.50 |
| Bank Interest | 132.11 |

\$2,039.60

PAYMENTS

| | |
|---------------------|----------|
| M. Hewish: expenses | \$ 69.05 |
| M. Barter: expenses | 9.04 |
| State Govt. Tax | .22 |
| Bank Charges | 2.00 |
| Balance C/F | 1,959.29 |

\$2,039.60

Audited and found correct in accordance with the books and records produced to me.

G.R. Long,
Honorary Auditor.

AWSG EXPEDITIONS

Statement of Receipts and Payments for the Period
1 January, 1990 - 31 December, 1990

RECEIPTS

| | |
|--------------------|------------|
| Donation from RAOU | \$3,000.00 |
| Bank Interest | 4.07 |

\$3,004.07

PAYMENTS

| | |
|-------------------------------|------------|
| Payment to Wayne Lawler | \$2,000.00 |
| Equipment for Java expedition | 731.75 |
| Bank charges | 8.90 |
| Govt. duties | 1.99 |
| Federal Tax | 1.55 |
| Balance C/F | 259.88 |

\$3,004.07

CONSERVATION NEWS

Once again matters concerning the conservation of wader habitat have been numerous since the last Conservation News. It is most pleasing to report that some successes have been had recently. For instance, the Newcastle City Council (NSW) has decided not to allow the construction of a marina in the stockton Bridge area to proceed. In Victoria the Environment Effects Statement for the Queenscliff Boating and Related Tourist Facilities Study and the Sway Bay (Queenscliff) Marine and Wildlife Reserves Proposed Management Plan are both highly cognizant of the importance of the area for waders and the proposals contained in them should be beneficial.

Many other submissions on various issues have been prepared however not all have reached a conclusion or have been successful in preventing possible degradation of habitat or increased disturbance of waders.

Jeff Campbell

TITLES OF INTEREST ADDED TO RAOU
LIBRARY COLLECTION IN 1990.

ACADEMY OF SCIENCE OF U.S.S.R. - SIBERIAN BRANCH, 1976, Symposium on the research in transcontinental connections of migratory birds and their role in dissemination of arboviruses. Abstracts. Novosibirsk.

ALONZO-PASICOLON, S., 1990, A survey of hunting pressure on waterbirds in Luzon, Philippines. Asian Wetland Bureau. (AWB Report No. 36). Kuala Lumpur.

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AUSTRALIAN NATIONAL PARKS & WILDLIFE SERVICE, 1989, An Australian national strategy for the conservation of species and habitats threatened with extinction-draft for public comment. ANPWS. Canberra.

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BROWN, W., 1980, Atlas of biological and recreational resources of the Victorian coast. Victorian Ministry for Conservation. Melbourne.

COWLING, S., 1989, Wetlands Wildlife. Gould League of Victoria & Victorian Wetlands Trust. Melbourne.

INTERNATIONAL WATERFOWL & WETLANDS RESEARCH BUREAU, 1980, Minutes of the 26th. Executive Board Meeting, Sapporo, Japan, February 1980.

JOHNSGARD, P.A., 1981, The Plovers, Sandpipers, and Snipes of the World. University of Nebraska Press, Lincoln.

KINGSFORD, T.R., J.L. PORTER, J.B.D. SMITH & L. LAWLER, 1990, An aerial survey of wetland birds in eastern Australia - October 1989. NSW National Parks & Wildlife Service. (NSW NP&WS Occasional Paper No. 9). Sydney.

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LANE, B.A. & K. WOOD, 1988, Wetland education and research service in Melbourne's west - a Proposal. Melbourne's Living Museum of the West. Footscray.

LAWLER, W. & J. PORTER, n.d., Nowra District Wetland Survey - preliminary report: birds.

LUGG, A. *et al.*, 1989, Conservation value of the wetlands in the Kerang Lakes area. Victorian Dept. of Conservation, Forests and Lands, Melbourne.

MORRISON, M.L. *et al.* eds., 1990, Avian foraging: theory, methodology and applications. Cooper Ornithological Society, Los Angeles.

NEW SOUTH WALES WATER RESOURCES COMMISSION, 1985, Draft water management plan for the Macquarie Marshes. NSW WRC & NP&WS. Sydney.

NORTON, J., S. STUART & T. JOHNSON (comps.), 1990, World checklist of threatened birds. Nature Conservancy Council, Peterborough.

OFFICE OF THE COMMISSIONER FOR THE ENVIRONMENT, 1988, Victoria's Inland Waters - State of the Environment Report. Melbourne.

PARR, L.B., 1988, The status and conservation of shorebird habitat in south-east Tasmania. University of Tasmania, Centre for Environmental Studies, Hobart.

RIEGEN, A. (Photographer) North-west Australia '90 - Wader expedition - March/April 1990. Video-cassette.

SCOTT, D.A. & C.M. POOLE, 1989, A status overview of Asian wetlands. Asian Wetland Bureau. (AWB Report No. 53). Kuala Lumpur.

SCOTT, D.A. & P.M. ROSE, 1989, Asian waterfowl census 1989, mid-winter waterfowl counts in southern & eastern Asia, January 1989. International Waterfowl & Wetlands Research Bureau. Slimbridge.

SOOTHILL, E. & r., 1982, Wading birds of the World. Blandford. Poole.

STROUD, D.A., G.P. MUDGE & M.W. PIENKOWSKI, 1990, Protecting internationally important bird sites - a review of the EEC Special Protection Area network in Great Britain. Nature Conservancy Council. Peterborough.

WESTERN AUSTRALIA ENVIRONMENTAL PROTECTION AUTHORITY, 1989, Report and recommendations of the Environmental Protection Authority. Perth.

Tricia White

RECENT LITERATURE

The following is a selection of articles dealing with waders from recent publications.

BRANSBURY, J., 1990, A late breeding record of the Hooded Plover. *S. Aust. Ornith.* 31: 55-56.

BROCK, K.J., 1990, Temporal separation of certain adult and juvenile shorebirds during fall migration. *Indiana Audubon Q.* 68: 67-74.

CHAFER, C.J. & C. BRANDIS, 1990, An American Golden Plover *Pluvialis dominica* at Comerong Island, New South Wales. *Aust. Birds* 24:1-3.

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DANN, P., 1990, Breeding territories, nesting and the timing of breeding of the Double-banded Plover *Charadrius bicinctus*. *Corella* 15: 13-18.

LENSINK, R. & P.L. MEININGER, 1990, Measurements, weights and moult of waders on the Banc d'Arguin, Mauritania, October 1988. *Wader Study Group Bull.* 58: 35-48.

LIDDY, J., 1990, Wing length, wingspan and body length measurements of live birds at banding stations. *Corella* 14: 148-155.

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UNDERHILL, L.G., 1987, The estimation of survival probabilities using retrap and census data. *Acta Ornith.* 23: 81-88.

WOODALL, P.F. & L.B. WOODALL, 1989, Daily activity and feeding behaviour of Beach Thick-knee *Burhinus neglectus* on North Keppel Island. *Queensland Nat.* 29: 71-75.

ZWARTS, L. & P. ESSELINK, 1989, Versatility of male Curlews *Numenius arquata* preying upon *Nereis diversicolor*: deploying contrasting capture modes dependent on prey availability. *Mar. Ecol. Prog. Serv.* 56: 255-269.

OBITUARY

John Hobbs died on 31 October 1990, following a heart attack. John was born in London on 7 June 1920 and migrated to Australia in 1952. In Australia he continued his career in the Police Force by joining the New South Wales force and spent the majority of this time at various stations in the south-west of the state. One of his earlier appointments in the region was at Dareton, where he met and married his wife Shirley, and it was to here that he retired in 1983.

It was in Dareton, where I was also living at the time, that I met John and had the privilege to spend time in the field with him. It was in the field that John really shone as an ornithologist, especially when it came to finding nests and studying breeding biology.

Although John published just one article in *The Stilt* (Observations on three breeding pairs of Black-fronted Plover, *Stilt* 11: 56-57) he published a number of items on waders, as well as many on other birds, in various Australian and British journals.

John is survived by his wife Shirley and four sons, Peter, Michael, Bruce and Greg. Our sincere sympathy is extended to them. He will be sadly missed.

Jeff Campbell

SHOREBIRD STUDIES MANUAL

This manual, which is published by the Asian Wetland Bureau, is available from the AWSG for \$25, post free. See *Stilt* 17 for a description and review of the contents. Send your money to Brenda Murlis, 34 Centre Road, Vermont South, VIC 3133. Overseas members should contact AWB directly by writing to Asian Wetland Bureau, Institute of Advanced Studies, University of Malaya, Lembah Pantai, 59100 Kuala Lumpur, Malaysia.

BACK ISSUES OF THE STILT

Back issues of *The Stilt* are available from Brenda Murlis (see inside back cover for address).

Prices are: Australia and New Zealand
Single copies – \$5.00 post paid
Complete set (1-17) – \$55.00 post paid

Other countries
Single copies – \$6.00, surface post paid
Complete set (1-17) – \$65.00 surface post paid

Limited quantities only of Nos. 5 and 6 are available.
Stilt No. 7 contains the Index for Nos. 1-6 and
Stilt No. 13 the Index for Nos 7-12.

FLAG WATCH 1991

Australian wader banding groups have commenced placing coloured leg flags on a variety of species caught in south-eastern Australia and Java, Indonesia. This activity is part of a cooperative East Asia - Australasia Flyway project, which has the objective of increasing knowledge of wader migration routes.

So far (early March) over 3400 birds have been flagged and it is hoped that a further 500 birds will be marked before the birds depart on northward migration in late March/early April.

Numbers of birds flagged to date are as follows:

| | |
|---|------|
| Red-necked Stint <i>Calidris ruficollis</i> | 1443 |
| Curlew Sandpiper <i>C. ferruginea</i> | 933 |
| Oriental Pratincole <i>Glareola maldivarum</i> | 602 |
| Sanderling <i>C. alba</i> | 208 |
| Ruddy Turnstone <i>Arenaria interpres</i> | 128 |
| Red Knot <i>C. canutus</i> | 60 |
| Bar-tailed Godwit <i>Limosa lapponica</i> | 40 |
| Pacific Golden Plover <i>Pluvialis dominica</i> | 25 |
| Sharp-tailed Sandpiper <i>C. acuminata</i> | 11 |

Other target species are Eastern Curlew *Numenius madagascariensis*, Grey Plover *P. squatarola*, Great Knot *C. tenuirostris* and Greenshank *Tringa nebularia*.

The flags are durable and should be visible as long as the marked bird remains alive. Therefore, a check should be made of any waders of the above species seen in the flyway for the next few years. We will keep you informed regularly concerning flagging activities and results through *The Stilt*.

The flags consist of either orange or dark green plastic bands with a flap, at right angles to the band, which has a length of about twice the band diameter.

The great majority of flags have been placed on the upper right leg (tibia), but a few are on the lower right leg (tarsus) and on the left leg. The exact position is **not** important.

Would members keep a watch for leg-flagged birds, particularly during the migration periods in April/May and July/September and also in the breeding season. Reports of sightings should include species name, place (including latitude and longitude), date and also approximate numbers and species of waders present. The information should be sent to:

Australian Bird Banding Scheme
GPO Box 8 Tel: (61)-(06)-2500321
Canberra ACT 2601 Fax: (61)-(06)-2500399
AUSTRALIA

Mark Barter

AWSG JAVA EXPEDITION SUCCESSFUL

Richard Johnson and Wayne Lawler made a field trip between 18 October and 21 November 1990 to the north coast of West Java with the objective of providing intensive training of Indonesian counterparts in methods of obtaining and analyzing population, migration and hunting data and, specifically, to apply these methods to the Oriental Pratincole. This species, a migratory wader, has been identified as being subject to heavy hunting pressure during passage through the area, possibly at an unsustainable level.

The fieldwork was the major activity in the first year of a two-year project initiated by the Directorate General of Forest Protection and Nature Conservation (Indonesia) and the Asian Wetland Bureau-Indonesia aimed at assessing and regulating hunting of waterbirds. It has been previously estimated that the annual catch of waterbirds on the north coast of West Java is 300,000, of which waders number 100,000.

The study area consisted of a largely flat coastal plain around Singakerta which is used for rice production. The region between the paddies and coast consisted of artificial fish ponds bordered by a narrow inter-tidal mud strip. Three sites were used, two coastal and one inland.

The proposed study methods involved catching as many Oriental Pratincoles as possible (the target being 1000) and banding, colour leg-flagging and collecting morphometric and moult data from each bird. Additionally, it was intended to survey the area to locate roosting and feeding areas, perform regular counts and collect data from bird wholesalers on catch figures.

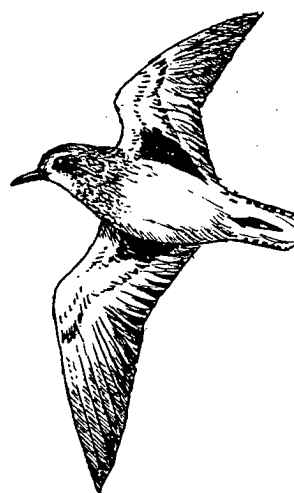
The prolonged dry season caused some problems with a lower than hoped for number of birds caught. Despite these problems, 736 Oriental Pratincoles were banded and detailed morphometric and moult data were collected from 610. Sixty birds from eight other species of waders were banded. The habitat requirements for the Oriental Pratincole were identified. Daily catch statistics were collected from bird wholesalers and this will provide a basis for estimating hunting pressure.

Training objectives were met, with the five Indonesian counterparts now considered to be capable bird banders.

Amongst the project recommendations are:- ongoing banding to monitor migration, continuing collection of hunting statistics, diet studies (possibility of showing the beneficial effect of waders in controlling pest insects), research on alternative sources of income for hunters and surveys of other areas for Oriental Pratincoles.

A detailed report on the expedition, including data analysis and interpretation, will be prepared for the AWB.

(Extracted from "A preliminary report on the Indramayu-Cirebon banding training project October - November 1990" by R. Johnson and W. Lawler)



—S. Dawson—

VIETNAM EXPEDITION

A team of four AWSG members, led by Brett Lane, left on March 16th for a four week visit to the Xuan Thuy Reserve, in the Red River Delta. The reserve is the only Ramsar site in south-east Asia.

The main objectives of the expedition were to comprehensively document the importance of the area as a water-bird migration site, by catching and counting, to provide training in wader study methods to Vietnamese scientists and to support the activities of the Wetlands and Waterbird Study Group of Vietnam.

Previous visits to the area have shown it to be important for herons, duck, waders, gulls and terns. Amongst the commoner waders are Mongolian Plover, Eurasian Curlew, Black-tailed Godwit, Spotted Redshank, Marsh Sandpiper, Greenshank and Broad-billed Sandpiper.

A summary of expedition results will be included in the October 1991 *Stilt* and a detailed report will be prepared for the Asian Wetland Bureau.

Mark Barter

FUTURE EXPEDITIONS

We would like to build up a register of experienced wader counters and banders who may wish to be considered for future AWSG expeditions to south-east Asia. A Register will be useful in cases where there is insufficient time to use the *Stilt* to advertise for participants.

These expeditions, like those to Java and Vietnam, will be planned in conjunction with the Asian Wetland Bureau.

Those who are interested in putting their names forward should write or telephone me at:

21 Chivalry Avenue 03-8033330
Glen Waverley VIC 3150

Mark Barter



BROOME BIRD OBSERVATORY REPORT

Walking along the beaches, or on the Pindan cliffs at high tide one quickly grows accustomed to seeing large flocks of mixed waders - it is so commonplace, even in the "off" season that it's easy to become blasé and see numbers but not species. Perhaps that's the time to begin looking elsewhere, to see what is felt to be unusual, even if the birds themselves are not.

Every year around October we begin paying more attention to the lawns, parks and ovals around Broome. We are of course looking for the first Yellow Wagtails, Little Curlews, Oriental Plovers, Oriental and Australian Pratincoles and *Gallinago* Snipe for the new season. Nor are we ever disappointed, even though their arrival dates may vary considerably. In 1990 however, we also noticed an increase in the number of "ordinary" waders feeding in the same areas. Masked Lapwing are always there, and the occasional Lesser Golden Plover is not surprising - but 16 on two ovals is. Birds we haven't noticed before are Grey Plovers, Bar-tailed and Black-tailed Godwits, Great Knots, Long-toed and Red-necked Stints, Sharp-tailed Sandpipers, Ruddy Turnstones, Greenshanks, Curlew Sandpipers and Large Sand Plovers. It may be that this isn't unusual and happens regularly in other places, but we haven't noted it before in Broome. Another interesting feature is the movement of the Yellow Wagtails. Initially we see them around town and only occasionally elsewhere - then in late December and January after rain they suddenly appear on the plains behind Crab Creek, always in larger numbers than we had previously seen them. At this time we commonly see them perching in trees, something they don't seem to do in town. On January 15 Gail saw 31 in one group on the edge of the plain. This is our largest flock in three years. About 50% of them were in good colour.

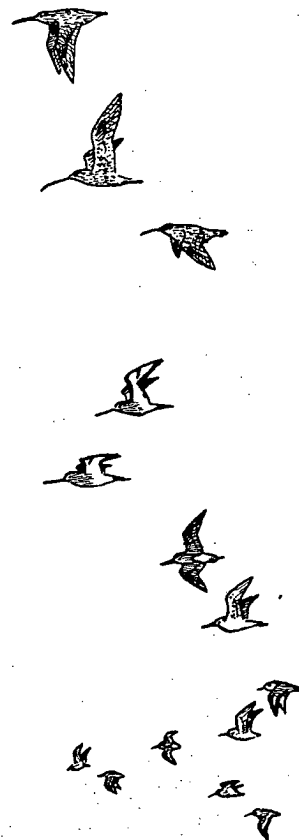
Since our last report we have fired the cannon net on three occasions - our catches have been tiny (as we intended, with a small and inexperienced team) but we did capture 32 Little Terns in our total of 119 birds. Two of them had been previously banded. We have since discovered that they were banded by the 1988 AWSG expedition at Quarry Beach. We were pleased to have Dr. Gerard Boere, the Senior Officer for Management and Research with the Netherlands National Forest Service participating in the shoot, it's a pity we didn't have a wider range of waders for him to handle. We had previously sighted an immature Ruff at the Sewerage farm, and were delighted to have it still there when we took Gerard for a positive I.D. Unfortunately the Little Ringed Plover was not so obliging when we took him to the Wildlife Park.

Gail Hooper and Brice Wells

REQUEST FOR ASSISTANCE - The Red-Kneed Dotterel as a Beach Bird

On 5 September 1990 while visiting Eyre Bird Observatory I was surprised to see a Red-kneed Dotterel amongst a mixed group of waders on East Kanidal Beach. Other species in the mixed flock were the Red-capped Plover, Red-necked Stint and Ruddy Turnstone. **IF ANYONE ELSE HAS OBSERVED THE RED-KNEED DOTTEREL ON A BEACH ANYWHERE IN AUSTRALIA I WOULD BE MOST INTERESTED TO HEAR ABOUT IT.** In particular I am interested in any observations you may have made on feeding behaviour and prey taken. Please write to Martin Schulz, 167 South Beach Road, Bittern, Victoria, 3918.

Martin Schulz



— S. J. H. M. S. —

RAOU VICGROUP WETLAND SURVEY

In October 1987 Victorian-based members of the RAOU commenced a five year survey of the birdlife of wetlands within the State. One of the reasons was to fill a gap in recording projects left after the completion of the Atlas. Now, with four years data available, we can offer access to the information for those who might wish to incorporate it into their own particular species studies.

Study Methods

Observers were asked to select a wetland and count the numbers of birds in each species on it at four specified times each year: February, April, June and October. In addition they record any evidence for breeding and the state of the wetland. Areas traditionally studied by VWSG and AWSG members were deliberately avoided so that our thin resources could be deployed in areas that had little or no other coverage. Each wetland is uniquely referenced by a four digit code that can be translated to a map grid reference, wetland type, and water surface area.

February and April were chosen to occur just before and after the duck hunting opening; June was a mid-winter count; October coincided with aerial surveys by CSIRO and NPWS (NSW) and was often the onset of breeding, too.

All of the count and breeding information is stored on a Macintosh computer using the *Omnis* database. A printout of the take-on is returned to the observer after the count to ensure that no transcription or typing errors have been made.

The count sheet has pre-printed wetland species names against which the number present can be recorded, both adult and immature, and the list includes a number of the more common wader species. Additional space has been allowed for comments and the rarer species are listed here as well as much anecdotal information about behavioural observations, the state of the wetland, and conservation issues.

Scope of the Study

Our counters number well over 150 now with only about a third being RAOU members. The others have been recruited from bird and field naturalist clubs throughout the State or have no affiliation at all.

Well over 300 wetlands are counted on each survey and about another 80 more spasmodically. While there are pockets that are more intensely covered than others, most areas of Victoria are represented. The range of wetland types is also broad, including tidal wetlands, inland saline and freshwater lakes, deep impoundments, sewerage treatment works, flood plain billabongs and marshes.

To date we have over 4000 separate site visits recorded on our computer, and by the end of the project in June 1992 it should exceed 6000.

Results from the Study

The two products that we envisaged when the project commenced were a popular printed account of the birds of the wetlands that we had studied and, perhaps more importantly, a database of information that could be made available to interested researchers. From the data on file we should be able to see

- population fluctuations which might correlate with weather or seasonal patterns;
- measures of breeding success on particular wetlands;
- and perhaps some ecological measures of association between species, and between bird species and wetland types.

Already the database has been used extensively in duck hunting management decisions, in the production of wetland management plans, the monitoring of new wetlands as they develop, and in research into the tracking of arbovirus outbreaks.

Wader Research

It is important that the existence of this additional source of information is brought to the notice of those involved in wader research. Even though it is the waterfowl, herons, cormorants and Rallidae that dominate our numbers, there are many records for wader species. We have a coverage, at least in Victoria, and a consistency in collection that is not available to you from other sources. The information is quantified and thus amenable to some statistical analysis and could well fill gaps in species accounts that you might be preparing.

We look forward to working with any readers of *The Stilt* who would find access to our data of value. Information on computing aspects of the database is available from:

David Nicholls
31 Northcote Road
Armadale Vic 3143

Any other information, including questions on the management, scope, future directions or involvement with the project, can be obtained from the co-ordinator:

Ian Endersby
56 Looker Road
Montmorency Vic 3094
Ph (03) 435 4781 (h); (03) 652 7755 (w)

Ian Endersby

NSW WADER STUDY GROUP NEWS

This is the first of a series of annual reports bringing news of the activities of the NSW Wader Study Group (formed in 1990) to those outside the state. The material is taken from NSW Wader Study Group Newsletters with the kind permission of the Editor Phil Straw and the respective authors.

1. Cannon Netting in Botany Bay by Keith Egan

The first cannon netting operation carried out by the NSW Wader Group took place on 16th July 1990 in Botany Bay.

After a week of regular observations of Double banded Plovers it was agreed to attempt to net them so that the DBPs could be colour banded before they returned to New Zealand.

To our disappointment the DBPs were conspicuous by their absence, however, a flock of Red-capped Plovers and Red-necked Stints were walked to the cannon netting area and a successful catch was made. This resulted in 16 Red-capped Plovers, including a retrap previously banded by Darryl Smedley on February 1984, 9 Red-necked Stints and 1 Double-banded Plover.

It is anticipated that more attempts will be made this summer to capture and band more waders and hopefully a good result with the DBPs next winter.

2. Inland Wetland Banding Expedition by David Geering

During a visit to the Booligal area, north of Hay, in mid December an area of residual floodwater was found to support large numbers of waders on the property of "Whongalea" 16km east of the township. Sharp-tailed Sandpipers and Red-kneed Dotterels were particularly abundant with the "Sharpies" numbering in the thousands.

It was the presence of Red-necked Avocets that prompted a return visit in early January with the aim of collecting a number of juveniles under a permit for Taronga Zoo. It was also hoped to take the opportunity of the potential to band large numbers of "Sharpies" under the auspices of the NSW WSG. Four days were spent with the assistance of Keith Egan in the area mist-netting waders. Unfortunately the rapidly falling water level had apparently made the area less suitable for the "Sharpies" which had all but disappeared from this location. There were, however, a flock of 200-300 Red-necked Avocet present and the first two days were spent concentrating on these, however, after the first night the catch rate of all birds dropped markedly. It was then decided to concentrate on the Dotterels.

Where possible the mist-nets were set with some cover of saltbush. Nets in this situation caught very well initially even in daylight, although the birds soon learnt to avoid them by flying around the net, or often by landing at the base of the net, and running under it! Moving the nets regularly helped maintain the catch rate.

In all 88 Red-kneed Dotterels, 8 Black-winged Stilts, 5 Sharp-tailed Sandpipers, 1 Marsh Sandpiper and two Whiskered Terns were banded by the Wader Study Group. Other birds caught included Red-necked Avocet, Pink-eared, Maned and Freckled Duck, Grey Teal, Black-tailed Native-hen, Australian Kestrel and White fronted and Orange Chats.

The trip yielded valuable information on Red-kneed Dotterels, a species not often caught in large numbers, with both morphometric and moult data obtained as well as a personnel lesson on the apparently fickle nature of Sharp-tailed Sandpipers.

It is hoped that a follow up trip, on the Australia Day long weekend, will result in more Dotterels being banded should conditions, particularly the rapid drying of the wetland, permit.

3. Koorangang Island Banding Expedition

In all, a total of fifteen people attended the weekend banding expedition to Koorangang Island on 12/13 January 1991, establishing a base camp under the Stockton end of the Stockton Bridge.

A Cannon net was set up Friday evening ready for high tide early Saturday morning and two nets were set up on the Saturday afternoon on the retaining wall to catch Greenshank on the Sunday morning. A total of 219 Bar-tailed Godwits were banded plus 14 retraps, 28 Greenshank, 2 Great Knot, 18 Marsh Sandpiper and 27 Curlew Sandpiper also were banded and 2 retrap Curlew Sandpiper (one banded in 1982) and 1 Marsh Sandpiper were also caught.

The Greenshank and Marsh Sandpiper were particularly valuable catches as these are not caught in large numbers and information on morphometric and moult is particularly needed.

VICTORIAN WADER STUDY GROUP NEWS

This is the first of a series of annual reports bringing news of the activities of the Victorian Wader Study Group to those outside the state. The material is taken from the VWSG Bulletin with the kind permission of the Editor John Dawson and the author Clive Minton.

VWSG Highlights 1989

1989 was another year of progress and achievement for the VWSG. In the fifteenth year since wader banding commenced in Victoria (9 birds in late 1975) a total of 7,021 birds were caught. This is down from the previous record year but still above the average of 6,640 for the last eleven years, in which the group has been fully active. Overall the VWSG has now banded 75,501 waders in Victoria (61,465 new birds and 14,036 retraps and controls).

Highlights amongst the catches were:-

- 109 Turnstone at Swan Island, Queenscliff, in November - the VWSG had only caught a total of 163 over the previous 15 years.
- 41 Eastern Curlew at the Gurdies (a new site to the east side of Westernport Bay). This is the best annual total since 1984 but still only raises the VWSG total to 178.
- 75 Greenshank at Warneet in March, including 19 retraps from the first catch of 36 there in November 1988. This is the largest catch made of Greenshank in Australia. Unfortunately this site has now been claimed by an adjacent new housing development.
- Continued successful monitoring of the Double-banded Plover population wintering at Swan Island, Queenscliff, with a catch of 176 in June.
- Good progress on the Oystercatcher study with a further 203 Pied Oystercatchers (including 58 retraps) and 24 Sooty Oystercatchers caught. A new colour banding scheme in which birds are individually marked was introduced in April with spectacular results.
- Unusually good samples of "overwintering" immature Curlew Sandpipers and Red-necked Stints were caught at Stockyard Point, Yallock Creek and Werribee S.F. Populations were high because of the exceptionally good breeding season for both species in the Arctic in the northern summer of 1988.

In contrast to the above successes, no Golden Plover were caught (for the second successive year). Only 17 Red Knot (most disappointing considering our joint study with New Zealand) were captured, and a meagre 28 Sharp-tailed Sandpipers (compared with 675 the year before).

Werribee Sewage Farm, and the adjacent spit, was again the principal banding site, closely followed by Queenscliff

and Westernport Bay. The total for Corner Inlet was much higher than usual because of a large Red-necked Stint catch (1242 in a total catch of 1309 - the groups third largest catch ever) off Mann's Beach in late January. A total of 33,314 waders has now been caught at Werribee S.F.

There were as usual some exciting overseas recoveries of banded birds. Curlew Sandpiper produced an amazing range with four in China and one each in Hong Kong and the USSR. The latter was 11751 km from the banding site at Werribee S.F. A Red-necked Stint travelled a similar distance from Queenscliff to Siberia.

But perhaps most noteworthy of all was a Turnstone from our first ever good catch. Banded at Swan Island, Queenscliff, in November 1989 it was recaptured in late April in Taiwan during the course of northward migration to its breeding grounds in Siberia. The Taiwanese now have three wader banding stations in operation and have exchanged a number of recaptures with Australia in the past year. This was the VWSG's first overseas recovery of a Turnstone.

The VWSG has regularly been involved with tern banding - both chicks and adults - and has expanded its efforts in this area in recent years. Most banding of Crested Tern chicks continued at Mud Island (1212) and off Mann's Beach, Corner Inlet, (397) and a further 71 Caspian Tern chicks were marked (including 62 in one visit to the colony off Mann's Beach) - all in December 1989. Fairy Terns were also successful in hatching young for the first time for many years in Corner Inlet and 25 chicks were banded off Mann's Beach. A new departure was the banding of two Whiskered Tern chicks on a marsh near Colac in late December (and a further 16 in early January 1990).

A steady stream of recoveries of Crested Terns occurs in their first year, but very few thereafter. Almost all are slow movements eastwards up to the Queensland/NSW border. Some of these involved movements of several hundred kilometers within a few weeks of the birds fledging, indicating a rapid post-fledging dispersal.

The adult tern banding at Point Wilson, Spermwhale Head, The Lakes National Park, which was commenced in January 1989 was successfully continued in 1990 with 521 caught in late January (including 441 Common Terns) and 142 in early March (including 49 Little Terns). Eleven White-winged Black Terns were also caught. There were also some valuable retraps of birds banded elsewhere in Victoria.

Once again I would like to conclude this summary of an eventful and productive year by thanking all those who contributed so much - those who carried out the fieldwork and those who facilitated it by granting us permission to operate on their land, etc. I hope the achievements are a satisfying reward!

Clive Minton

Numbers of Waders "Processed" by VWSG in Victoria in Each Month to 31 December, 1989

"Processing" includes measuring wing length, bill length and/or total head length (as appropriate) and weight; also recording full details of primary feather moult (if any). Additional wing moult has been gathered on some birds which were not fully processed. The table below is used to plan fieldwork, with the object of obtaining usable samples (preferably on at least 50 birds) of data for each month of the year for all the main study species.

| | J | F | M | A | M | J | J | A | S | O | N | D | TOTAL |
|------------------------|------|-----|------|------|-----|-----|-----|-----|-----|-----|------|------|-------|
| Pied Oystercatcher | 68 | 64 | 82 | 72 | 102 | 152 | 84 | 45 | 2 | 6 | 9 | 20 | 706 |
| Sooty Oystercatcher | 2 | 3 | 3 | 2 | - | 8 | 43 | 14 | - | - | - | - | 72 |
| Masked Lapwing | 4 | 3 | 77 | - | - | 13 | - | - | - | 3 | 18 | 11 | 129 |
| Grey Plover | 1 | 14 | 4 | 3 | - | 2 | - | - | 2 | 35 | 16 | - | 77 |
| Lesser Golden Plover | 9 | 26 | 30 | 1 | - | - | - | - | - | 22 | 40 | 39 | 167 |
| Red-kneed Dotterel | - | 10 | - | 20 | - | 44 | 11 | 16 | 12 | 8 | 22 | - | 143 |
| Hooded Plover | - | - | - | - | - | 15 | 2 | - | - | - | - | - | 15 |
| Mongolian Plover | 46 | 1 | 6 | 7 | 1 | - | 2 | - | - | - | 1 | - | 66 |
| Double-banded Plover | - | 1 | 95 | 257 | 676 | 695 | 865 | 758 | 1 | - | - | - | 3348 |
| Large Sand Plover | 14 | - | - | - | - | 1 | 1 | - | - | - | 1 | - | 17 |
| Red-capped Plover | 11 | 66 | 48 | 111 | 192 | 72 | 61 | 14 | 8 | 11 | 10 | 5 | 609 |
| Black-fronted Plover | - | 7 | - | - | 11 | 16 | 6 | 9 | 2 | - | 4 | 7 | 62 |
| Black-winged Stilt | - | 6 | - | - | - | - | - | - | - | 4 | 2 | 1 | 13 |
| Red-necked Avocet | 39 | - | - | - | - | - | - | 10 | 2 | 41 | 46 | 36 | 174 |
| Ruddy Turnstone | 17 | 1 | 76 | 27 | 1 | 7 | - | - | 12 | 7 | 110 | 16 | 274 |
| Eastern Curlew | 15 | - | 1 | - | - | 15 | - | 2 | 8 | 73 | 59 | 5 | 178 |
| Whimbrel | - | - | - | - | - | 1 | - | - | - | - | - | - | 1 |
| Grey-tailed Tattler | 28 | - | - | 3 | - | 3 | - | - | - | - | - | - | 34 |
| Greenshank | 1 | - | 76 | - | - | - | - | - | - | - | 36 | - | 113 |
| Terek Sandpiper | 8 | 1 | - | 1 | 2 | - | - | 1 | - | 1 | - | 10 | 24 |
| Latham's Snipe | 29 | 44 | - | - | - | - | - | - | - | 1 | 4 | 8 | 86 |
| Bar-tailed Godwit | 72 | 8 | 31 | 1 | - | 61 | - | - | 34 | 52 | 190 | 267 | 716 |
| Red Knot | 124 | 65 | 56 | 34 | 2 | 43 | 73 | - | 8 | 420 | 255 | 174 | 1254 |
| Great Knot | 96 | 1 | 3 | - | - | 4 | - | - | 15 | 53 | 40 | 129 | 341 |
| Sharp-tailed Sandpiper | 993 | 499 | 93 | 2 | - | - | - | 9 | 518 | 329 | 270 | 910 | 3623 |
| Little Stint | - | - | - | - | - | - | - | - | - | - | 1 | - | 1 |
| Red-necked Stint | 1328 | 685 | 3400 | 1860 | 330 | 223 | 436 | 316 | 431 | 886 | 2295 | 1890 | 14080 |
| Long-toed Stint | - | - | - | - | - | - | - | - | - | 1 | - | - | 1 |
| Curlew Sandpiper | 471 | 771 | 923 | 144 | 205 | 33 | 141 | 308 | 160 | 818 | 555 | 764 | 5293 |
| Sanderling | 11 | - | - | - | - | - | - | - | - | 1 | 6 | 2 | 20 |
| Broad-billed Sandpiper | - | 1 | - | - | - | - | - | - | - | - | - | - | 1 |
| | | | | | | | | | | | | | 31638 |

The majority of the birds caught when the VWSG visited other States were also processed including 1327 birds caught in Tasmania (Nov. 1979), 820 birds caught in South Australia (Feb. 1980), 921 birds in New South Wales (Mar. 1981), Aug/Sept/Nov. 1982, Oct/Nov. 1983, Mar/April. 1985, Aug/Sept. 1986 and Mar/April. 1988.

BANDING AND FLAGGING OF WADERS AROUND BRISBANE

Over the years, the high density of waders on the foreshores of Moreton Bay has attracted the attention of professional and amateur ornithologists. Systematic roost counts are conducted as part of the Australia wide monitoring programme and some intensive studies have been undertaken on population changes, feeding behaviour, and local habitat preferences. Moreton Bay, and the Great Sandy Strait farther to the north, are major refuges for migratory waders in Australia. Over 100,000 birds use these areas during summer and many thousands more stop over during migration

Beginning in 1989 birds have been captured and banded in small numbers from a handful of suitable cannon netting sites around Brisbane. Interest in this activity is growing and the importance of establishing a systematic and long term programme of banding is important not only for understanding local movement of birds but also as an important adjunct to banding and flagging activities that are occurring elsewhere in Australia and in South East Asia.

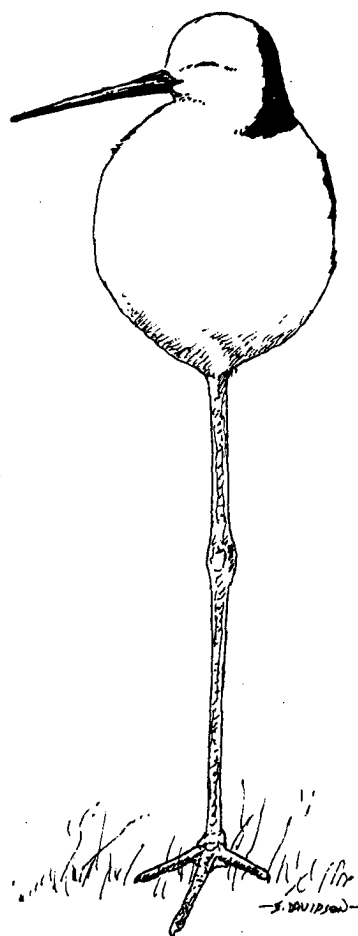
Cannon netting was originally started to gather data on Bar-tailed Godwits but the opportunities for pursuing other, specific aims are becoming clear with increasing knowledge of roosting sites and the development of local netting skills. Much useful information has already been collected from the 635 birds and 15 species banded (Table 1). Dark green plastic leg flags are now being placed on Great Knots as part of a co-ordinated international effort of ascertaining flight paths of a range of species.

We have our problems in that our only net is a mere 15 m long and the team is still growing in size and skill. Also, roosting sites around Brisbane are predominantly muddy while the sandier, more populated roosts are on Moreton or Stradbroke Islands and difficult to access. Nevertheless, we are managing quite well and will inevitably increase our activities to a broader range of sites and to much higher capture tallies in the future. The increased interest in waders shown by government, ornithologists and the general public will help maintain the momentum for a long term programme of wader study around Moreton Bay.

Peter Driscoll.

Table 1. Numbers of birds banded

| | |
|------------------------|-----|
| Pied Oystercatcher | 24 |
| Lesser Golden Plover | 2 |
| Mongolian Plover | 40 |
| Large Sand Plover | 47 |
| Ruddy Turnstone | 1 |
| Greenshank | 1 |
| Terek Sandpiper | 3 |
| Black-tailed Godwit | 30 |
| Bar-tailed Godwit | 256 |
| Red Knot | 59 |
| Great Knot | 135 |
| Sharp-tailed Sandpiper | 5 |
| Curlew Sandpiper | 26 |
| Silver Gull | 1 |
| Little Tern | 5 |
| Total | 635 |



MORPHOMETRICS OF VICTORIAN BLACK-FRONTED PLOVER

Charadrius melanops

Mark Barter, 21 Chivalry Avenue, Glen Waverley, VIC 3150

Introduction

During the period 1979-86, a total of 51 Black-fronted Plovers were caught in mist nets and processed by the Victorian Wader Study Group. The birds comprised 36 adults, 12 first-years and three of indeterminate age. Thirty five were trapped at Bendigo Sewage Farm in central Victoria, 14 at Towong in northern Victoria and 2 at Werribee Sewage Farm.

Measurements were obtained using standard techniques. Wing-lengths were measured to the nearest whole mm, bill, total head and tarsus to the nearest 0.1mm and weight to the nearest gram.

Birds were aged according to the Australian Bird and Bat Banding Schemes code, viz:

- 2+ - in second year or older
- 1 - in first year.

Two+ birds are often referred to as adults and first-years as juveniles.

Results

Wing, bill, total head and tarsus length, and weight data are given in Tables 1 - 5, respectively.

Wing lengths of adults (2+) at 114.6mm are longer, on average, than those of first-years (113.8mm), but not significantly so ($p>0.05$). Adults with new outer primaries (measured in June-July) had significantly longer wings than those with old primaries in November/February (115.7 vs. 113.8mm; $p<0.05$).

The average adult bill-length of 16.1mm is not significantly longer than that of first-year birds (15.9mm; $p>0.05$).

Mean total head lengths for the two age groups are virtually identical (2+ - 37.6mm, 1 - 37.7mm).

Average weights of adults and first-year birds are similar (32.3 and 32.0g, respectively). However, adults in winter (June/July) average significantly heavier than in summer (November/February), ie. 33.8 vs. 30.3g; $p<0.005$.

Adults appear to commence primary moult in November and by early February have a median primary moult score of 30 ($n=7$), with the range being 21 to 47. First-year birds caught in June - August still retained all their juvenile primaries.

Acknowledgements

My thanks are due to the Victorian Wader study Group for allowing me to analyse the data and publish the results.

Table 1. Average wing lengths of adult and first-year Black-fronted Plover.

| Age | Group | n | x | sd |
|-----|---------|----|-------|------|
| 2+ | All | 38 | 114.6 | 2.65 |
| | Old P10 | 16 | 113.8 | 2.64 |
| | New P10 | 17 | 115.7 | 2.54 |
| 1 | | 11 | 113.8 | 2.42 |

Key: n = sample size
 x = mean
 sd = standard deviation
 P10 = tenth (outer) primary

Table 2. Average bill lengths of adult and first-year Black-fronted Plover.

| Age | n | x | sd |
|-----|----|------|------|
| 2+ | 21 | 16.1 | 0.83 |
| 1 | 4 | 15.9 | 0.68 |

Table 3. Average total head lengths of adult and first-year Black-fronted Plover.

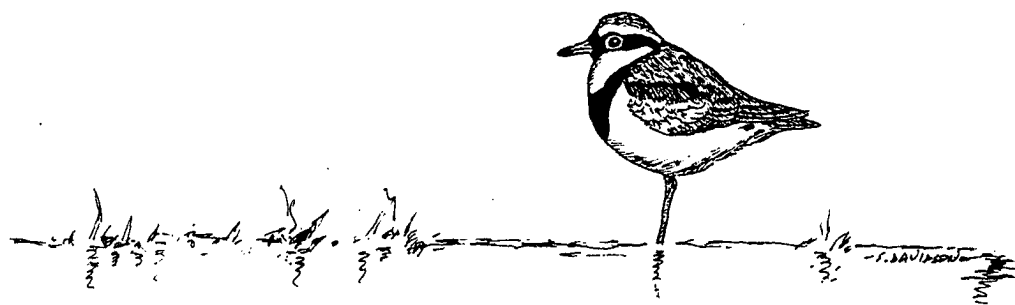
| Age | n | x | sd |
|-----|----|------|------|
| 2+ | 34 | 37.6 | 1.12 |
| 1 | 12 | 37.7 | 0.72 |

Table 4. Average tarsal length of adult Black-fronted Plover.

| Age | n | x | sd |
|-----|---|------|------|
| 2+ | 6 | 25.8 | 1.44 |

Table 5. Average weights of adult and first-year Black-fronted Plover.

| Age | Period | n | x | sd |
|-----|---------|----|------|------|
| 2+ | All | 34 | 32.3 | 3.44 |
| | Nov/Feb | 16 | 30.3 | 2.72 |
| | Jun/Jul | 17 | 33.8 | 2.58 |
| 1 | All | 12 | 32.0 | 2.30 |



BIOMETRICS AND MOULT OF MONGOLIAN PLOVERS *Charadrius mongolus* SPENDING THE NON-BREEDING SEASON IN AUSTRALIA

Mark Barter, 21 Chivalry Ave, Glen Waverley, VIC 3150, Australia

Summary

A preliminary analysis is presented of data obtained from 287 Mongolian Plovers caught in Australia; 66 in Victoria and 221 in north-western Australia (NWA). Average adult wing, bill and tarsus-lengths (ie. 134.2, 17.0 and 32.1mm, respectively, in NWA), and the ratios of wing:tarsus, wing:bill and bill-length:maximum bill-depth, are consistent with published data for the *mongolus* subspecies group. Victorian adults weigh, on average, 64g during the non-migratory period, being some 3g heavier than NWA birds and are heavy enough in April to comfortably reach the Gulf of Carpentaria (2600km); the heaviest are capable of flying to Irian Jaya (4400km). Average NWA adults are not as heavy as Victorian birds before migration and seem to be incapable of flying non-stop to China and probably have to stage in Indonesia or The Philippines. Some NWA and Victorian adults arrive in suspended primary moult. A proportion of first-year birds undergo partial descendant primary moult. Adults depart from both regions in April with a substantial amount of breeding plumage.

Introduction

This paper presents the results of a preliminary analysis of data obtained from Mongolian Plovers caught by the Australasian Wader Studies Group (AWSG), during the period 1981 to 1990, and the Victorian Wader Study Group (VWSG), from 1979 to 1989. The AWSG data has been collected during seven major expeditions to north-western Australia covering the August/September, October/November and March/April periods, during which 221 birds were caught. The VWSG has caught lower numbers (66), but these are spread more evenly throughout the year.

There are five subspecies of the Mongolian Plover and these fall into two groups - the *atrifrons* subspecies group, comprising *atrifrons*, *pamirensis* and *schaeferi*, and the *mongolus* subspecies group, consisting of *mongolus* and *stegmanni*. The *mongolus* race is the most common in Australia, but there are confirmed records of *stegmanni* in Darwin (Lane 1986, 1987; Deignan 1964). It seems possible that *schaeferi* could occur in north-western Australia (Lane 1986, 1987), as its non-breeding range includes Java, and there have been two published records of birds from the *atrifrons* group on the east coast of Australia (Izzard 1985, McBride 1986).

In Australia, the Mongolian Plover occurs mainly in the Gulf of Carpentaria and on the east coast down to northern New South Wales. Smaller numbers occur on the north-western and south-eastern coasts (Lane 1987). The Australian population is estimated to be 20,000 (Watkins in prep.).

Published data for wing, bill and tarsus-length measurements of the different races are given in Tables 1 to 3, respectively. According to Hayman *et al* (1986), adults of the *mongolus* and *atrifrons* groups can be separated by a wing:tarsus ratio of 4.1 (*mongolus* group: above; *atrifrons* group: below). Cramp and Simmons (1983) state that the *mongolus* group mostly have a wing:bill ratio above 7.70, whilst the *atrifrons* group ratio is below this value. They also state that the ratio of bill-length to maximum bill-depth at the gonys is mostly under 3.80 for the *mongolus* group and above for the *atrifrons* group; with *stegmanni* averaging 3.33 and *mongolus* 3.52.

Methods

The great majority of birds were caught with cannon-nets, a few in mist-nets, at a number of sites in both Victoria and north-western Australia (NWA).

Measurements were obtained using standard techniques. Wing-lengths were measured to the nearest whole mm, total head and tarsus to the nearest 0.1mm and weight to the nearest gram. Bills (exposed culmen) were measured to either the nearest whole mm or 0.1mm; as the results were not significantly different ($p > 0.5$), the data were combined.

Birds were aged according to the Australian Bird and Bat Banding Schemes code, viz:

- 3+ - in third year or older
- 2+ - in second year or older
- 2 - in second year
- 1 - in first year.

It is generally possible to separate 3+ and second-year birds during the August to November period. However, this cannot be done following moult of the tenth primary in either age group and both are then referred to as 2+. Three+ and 2+ birds are often referred to as adults and first-years as juveniles.

Results And Discussion

Wing-length (Table 4)

Average wing-lengths of adults with old outer primaries (Vic: 136.0, NWA: 134.2mm) are consistent with the published data for *mongolus* (see Table 1). Wing lengths are 3 to 4mm longer following completion of primary moult.

The difference in average wing-lengths between Victorian and NWA adults with new outer primaries is not significant ($p > 0.05$).

The relative wing-lengths of adult, second- and first-year birds in NWA (ie. 138.2, 127.8 and 130.4mm, respectively) indicate that Mongolian Plovers do not replace their outer primaries until their first full primary moult as a second-year bird.

Bill-length and depth (Tables 5 and 6)

The average bill-length of Victorian adult birds (16.3mm) is consistent with the published data for *mongolus* (see Table 2).

The bill-length of NWA adult birds is, on average, significantly longer than that of Victorian birds (ie. 17.0 vs 16.3mm; $p < 0.05$). However, feather wear at the bill-base can be expected to be greater in NWA due to the more severe UV conditions and this may explain the apparently longer bills. The effect is also shown in the case of NWA second-year birds (ie. 17.8 vs 17.0mm for adults) which, presumably, have very worn feathers.

The average bill:bill-depth ratios of 3.26 in Victoria and 3.54 in NWA confirm that Australian birds fall, at least generally, into the *mongolus* group and indicates that Victorian birds may be *stegmanni* and those in NWA *mongolus*. The possible racial differences between the two regions are consistent with the locations of the breeding areas, as *stegmanni* breeds further east than *mongolus*.

The wing:bill-length ratios of 8.34 (Victoria) and 7.89 (NWA) are consistent with the Cramp and Simmons (1983) statement that the *mongolus* subspecies group mostly has values greater than 7.70.

Total head-length (Table 7)

Average values for adults in NWA and Victoria are identical (45.7mm), thus providing support for the view that bill-length differences between the two sites are due to variations in feather wear differences at the bill-base.

Tarsus and tarsus plus toe-length

The tarsus-length measurements for adults (32.1mm; $n=16$, $sd=1.02$) are consistent with those given in Table 3 for *mongolus* (c.31.0mm), especially if allowance is made for shrinkage in specimens.

The average adult tarsus plus toe-length is 55.3mm ($n=12$, $sd=1.87$). The wing:tarsus ratio of NWA birds is 4.18, which is consistent with the Hayman *et al* statement that the *mongolus* subspecies group ratio is above 4.1.

Weight (Tables 8 and 9)

Victorian adults weigh 64g, on average, in the November/January period, are gaining weight in March and reach around 104g in April. The heaviest April bird weighed 110g. The estimated flight range for April birds of average weight is 4000km and for the heaviest bird, 4500km (see Davidson (1984) for flight range estimation; assumed flight speed of 75km/h). Thus, Victorian birds could comfortably reach the Gulf of Carpentaria (2600km) and the heaviest is capable of

reaching Irian Jaya (4400km), especially as the calculated flight range is probably an underestimate (Barter and Wang 1990).

NWA adults are lighter, on average, than Victorian birds of the same age (61 vs. 64g, respectively) and do not appear to become as heavy before migration (averaging 83/85g, with the heaviest bird at 105g). Equivalent flight ranges are 2500km for average weight birds and 4400km for the heaviest. Even the heaviest birds would seem to be incapable of reaching the south coast of China (4800km), and Mongolian Plovers travelling north from NWA probably need to stop at intermediate sites in Indonesia and The Philippines.

NWA first-year birds average 58g in the March/April period. Only three first-years have been caught in Victoria, these weighing 61(January), 64(July) and 89g(May).

The lighter weights of NWA adults compared to Victorian birds of the same age and of first-years versus adults is typical for palearctic waders in Australia (see, for example, Barter *et al* 1988).

Primary Moulting

Primary moult data is limited, but some general observations are made below.

In Victoria, adults caught in January have replaced 60 to 90% of their primaries and moult is complete by the second half of March, at the latest. Three out of 45 adults caught in early January in active moult showed suspended moult of the inner primaries (2x4, 1x5), these having probably been replaced at an intermediate stop during southward passage.

Limited data indicates that some first-year Victorian birds, if not all, undergo a degree of primary moult commencing at the innermost primary.

There is evidence that some NWA adults arrive in August/September in suspended moult (2 out of 7). This finding is contrary to the view expressed in Cramp and Simmons (1983) that "unlike *C. leschenaultii*, (the Mongolian Plover) starts in August upon arrival in winter quarters, rather than when still in or near breeding area,..."

In NWA, the moult status of second-year birds is well in advance of that of returning adults.

As in Victoria, some NWA first-year birds undergo a degree of primary moult (12 out of 30), commencing at the innermost primary. Five had arrested moult with two (1), three (2) and six (2) feathers replaced. Four out of 18 second-years were in arrested moult in August/September having five to nine new inner primaries which, presumably, were replaced during first-year partial moult.

Breeding plumage

In Victoria, adult birds have well developed breeding plumage before departure in April, with most having 50% or more, some 100%, breeding plumage.

NWA adults show similar levels of breeding plumage to Victorian birds and average 75% or more during April.

Acknowledgements

I wish to thank both the Australasian Wader Studies Group and the Victorian Wader Study Group for making their data available for analysis and allowing me to publish the results. Bands were supplied by the Australian Bird and Bat Banding Schemes.

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Table 1. Published data for wing-lengths (mm) of Mongolian Plover subspecies.

| Subspecies | Age | Sex | n | x | sd | Range | Source |
|-------------------|-----|-----|----|-------|------|---------|--------|
| <i>pamirensis</i> | A | M | 17 | 128 | 2.56 | 124-132 | (1) |
| " | A | F | 7 | 131 | 2.69 | 128-134 | (1) |
| <i>atrifrons</i> | A | M | 11 | 124 | 2.24 | 120-128 | (1) |
| " | A | F | 9 | 127 | 3.12 | 124-131 | (1) |
| " | A | M | 41 | 127.8 | - | 119-132 | (2) |
| " | A | F | 31 | 128.8 | - | 123-134 | (2) |
| " | J | M | 9 | 125.4 | - | 118-136 | (2) |
| " | J | F | 27 | 124.3 | - | 118-133 | (2) |
| <i>schaeferi</i> | A | M | 30 | 130 | 2.34 | 127-134 | (1) |
| " | A | F | 60 | 131 | 2.70 | 126-135 | (1) |
| <i>mongolus</i> | A | M | 13 | 134 | 2.96 | 130-138 | (1) |
| " | A | F | 6 | 136 | 2.37 | 133-140 | (1) |
| " | A | M | 21 | 134.5 | - | 127-145 | (2) |
| " | A | F | 15 | 134.8 | - | 127-140 | (2) |
| " | J | M | 13 | 129.1 | - | 125-136 | (2) |
| " | J | F | 16 | 130.6 | - | 127-143 | (2) |

Key: A = adult (1)= Cramp and Simmons 1983
 J = juvenile (2)= Prater *et al* 1977
 M = male
 F = female
 n = sample size
 x = mean
 sd = standard deviation

Table 2. Published data for bill-lengths (mm) of Mongolian Plover subspecies.

| Subspecies | Age | Sex | n | x | sd | Range | Source |
|-------------------|-----|-----|----|------|------|-------|--------|
| <i>pamirensis</i> | A | M | 18 | 16.9 | 1.30 | 15-18 | (1) |
| " | A | F | 8 | 16.9 | 0.74 | 16-18 | (1) |
| <i>atrifrons</i> | A | M | 11 | 16.7 | 0.40 | 16-17 | (1) |
| " | A | F | 9 | 16.9 | 0.61 | 16-18 | (1) |
| " | A | - | 76 | 17.4 | - | 15-20 | (2) |
| " | J | - | 46 | 17.5 | - | 16-20 | (2) |
| <i>schaeferi</i> | A | M | 32 | 18.6 | 1.04 | 17-21 | (1) |
| " | A | F | 66 | 18.6 | 0.79 | 17-21 | (1) |
| <i>mongolus</i> | A | M | 11 | 16.2 | 0.81 | 15-17 | (1) |
| " | A | F | 3 | 15.6 | - | 15-16 | (1) |
| " | A | - | 51 | 16.6 | - | 15-19 | (2) |
| " | J | - | 37 | 16.5 | - | 15-19 | (2) |

Key as in Table 1.

Table 3. Published data for tarsus-lengths (mm) of Mongolian Plover subspecies.

| Subspecies | Age | Sex | n | x | sd | Range | Source |
|-------------------|-----|-----|----|------|------|-------|--------|
| <i>pamirensis</i> | A | M | 18 | 33.9 | 1.30 | 32-35 | (1) |
| " | A | F | 8 | 33.4 | 0.74 | 32-34 | (1) |
| <i>atrifrons</i> | A | M | 10 | 32.8 | 1.22 | 31-34 | (1) |
| " | A | F | 8 | 32.6 | 1.58 | 31-34 | (1) |
| " | A | - | 77 | 32.4 | - | 30-35 | (2) |
| " | J | - | 46 | 32.4 | - | 30-36 | (2) |
| <i>schaeferi</i> | A | M | 23 | 34.6 | 0.91 | 33-36 | (1) |
| " | A | F | 40 | 34.5 | 1.44 | 32-38 | (1) |
| <i>mongolus</i> | A | M | 11 | 31.0 | 0.58 | 30-32 | (1) |
| " | A | F | 3 | 30.8 | - | 29-32 | (1) |
| " | A | - | 52 | 30.6 | - | 27-34 | (2) |
| " | J | - | 38 | 30.7 | - | 27-34 | (2) |

Key as in Table 1.

Table 4. Average wing-lengths (mm) of the different age groups in Victoria and north-western Australia (NWA).

| Place | Age | Feather condition | n | x | sd |
|----------|-------|-------------------|----|-------|------|
| Victoria | 2+/3+ | New P10 | 13 | 139.3 | 2.75 |
| | | Old P10 | 45 | 136.0 | 3.04 |
| NWA | 2+/3+ | New P10 | 77 | 138.2 | 3.07 |
| | | Old P10 | 34 | 134.2 | 4.79 |
| | 2 | Old P10 | 13 | 127.8 | 4.25 |
| | 1 | Old P10 | 21 | 130.4 | 2.62 |

Key as in Table 1.

Table 5. Average bill-lengths (mm) of the different age groups in Victoria and north-western Australia (NWA).

| Place | Age | n | x | sd |
|----------|-------|----|------|------|
| Victoria | 2+/3+ | 52 | 16.3 | 0.84 |
| | 1 | 3 | 16.0 | 1.00 |
| NWA | 2+/3+ | 83 | 17.0 | 0.73 |
| | 2 | 15 | 17.8 | 0.96 |
| | 1 | 15 | 17.2 | 0.92 |

Key as in Table 1.

Table 6. Average bill-depths (mm) at gonys of adults and first-year birds in Victoria and north-western Australia (NWA).

| Place | Age | n | x | sd |
|----------|-------|----|-----|------|
| Victoria | 2+/3+ | 5 | 5.0 | 0.26 |
| NWA | 2+/3+ | 51 | 4.8 | 0.29 |
| | 1 | 16 | 4.6 | 0.28 |

Key as in Table 1.

Table 7. Average total head-lengths (mm) of the different age groups in Victoria and north-western Australia (NWA).

| Place | Age | n | x | sd |
|----------|-------|----|------|------|
| Victoria | 2+/3+ | 50 | 45.7 | 1.01 |
| NWA | 2+/3+ | 72 | 45.7 | 1.64 |
| | 2 | 13 | 45.7 | 0.86 |
| | 1 | 15 | 45.4 | 0.67 |

Key as in Table 1.

Table 8. Average weights (g) of adult Victorian birds.

| Period | n | x | sd | Range |
|------------|----|-------|-------|---------|
| Nov/Jan | 46 | 64.0 | 3.27 | 56-71 |
| 1st h. Mar | 1 | 88.0 | - | - |
| 2nd h. Mar | 5 | 87.4 | 8.54 | 73-95 |
| 1st h. Apr | 4 | 105.0 | 5.78 | 100-110 |
| 2nd h. Apr | 3 | 102.7 | 10.97 | 90-109 |

Key as in Table 1.

Table 9. Average weights (g) of NWA birds of the different age groups.

| Period | n | 3+/2+ x | sd | n | 2 x | sd | n | 1 x | sd |
|------------|----|------------|------|----|--------|------|----|--------|------|
| Aug/Sept | 10 | 61.0 | 4.41 | 16 | 64.3 | 4.75 | - | - | - |
| Oct/Nov | 22 | 61.4 | 3.88 | 2 | 61.0 | 4.24 | - | - | - |
| 3rd w. Mar | 10 | 79.0 | 9.84 | - | - | - | - | - | - |
| 4th w. Mar | 29 | 79.7 | 7.68 | - | - | - | - | - | - |
| 1st w. Apr | 46 | 82.5 | 7.92 | - | - | - | - | - | - |
| 2nd w. Apr | 32 | 85.1 | 5.84 | - | - | - | - | - | - |
| 3rd w. Apr | 10 | 71.8 | 6.03 | - | - | - | - | - | - |
| Mar/Apr | - | - | - | - | - | - | 37 | 57.7 | 4.83 |

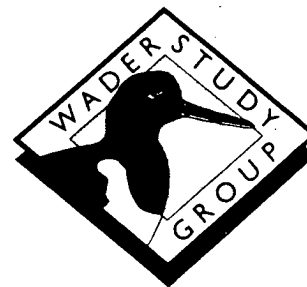
Key as in Table 1.



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WADER STUDY GROUP SECTION

The following paper is reprinted from the Wader Study Group Bulletin Number 57, December 1989 with kind permission of the Editor David Stroud.



Review: Bulletin of the Working Group on Waders (USSR)

M.G. Wilson

KONDRATIEV, A. Ya. (Ed.). 1989. *Bulletin of the Working Group on Waders*. (In Russian) Pp. 70. All-Union Ornithological Society (USSR Academy of Sciences) and Institute for the study of Biological Problems of the North (Far East Branch of the USSR Academy of Sciences), Magadan 0.40 roubles. 300 copies printed.

This second Bulletin of the Soviet Wader Group begins with a report from the Executive Committee. Some new regional representatives have been appointed, but gaps remain to be filled. Recommendations are made for improving the work of the representatives, including liaison with the Committee. Potential contributors to the Bulletin are advised that much of the material submitted is not suitable for publication, but records of rare or endangered species, "sensational" new records, the more exciting ringing recoveries, and announcements important to a large number of ornithologists will be welcome. Publicity for the Soviet Wader Group is guaranteed at home (through *Ornithologiya* and the Bulletin of the All-Union Ornithological Society) and abroad (bibliography of Soviet publications on waders prepared by V.V. Morozov in *WSG Bulletin*). The 4th All-Union Wader Conference is due to take place in Donetsk in February 1990: G.N. Molodan (pp. 6-7) gives more details on topics to be covered, competitions, registration, contributions and the names of the seven-man organising committee under the chairmanship of V.E. Flint.

The Wader Records Committee presents its report on pp. 7-11. Semipalmated Plovers *Charadrius semipalmatus* on Gerd Island (1 bird) and Wrangel Island (2 pairs) in 1988 are accepted as the first for the USSR: M.S. Stishov and V.I. Pridatko (p. 60) describe voice and behaviour and note that both pairs on Wrangel Island showed distraction displays. A claimed breeding record of American Golden Plover *Pluvialis dominica* on Wrangel Island is considered not fully authenticated, while the Committee reserves judgement on a report of an alleged Semipalmated Sandpiper *Calidris pusilla* on Gerd Island. In contrast, there is no doubt about the country's first Killdeer *Charadrius vociferus*, second White-rumped Sandpiper *Calidris fuscicollis*, and *P. dominica* (all Chukotka) as these were collected.

Certain published records have not stood up to critical re-examination: with the rejection of a record on the Volga, Long-toed Stint *Calidris subminuta* has yet to occur in the European USSR, while a museum specimen of "*C. subminuta*" from Chukotka proved after closer scrutiny to be Temminck's Stint *C. temminckii*. Doubt is cast on breeding records of the last species and Broad-billed Sandpiper

Limicola falcinellus in central Yakutia, and of *L. falcinellus* (non-proven) in Kamchatka. Red-necked Stint *C. ruficollis* records in the eastern European USSR, southern Yamal peninsula and Turkmeniya are all rejected, and the claimed breeding of Marsh Sandpiper *Tringa stagnatilis* in Leningrad region (see the book by Mal'chevski & Pukinski 1983) is thought more likely to refer (and a photograph in the book supports the revision) to Terek Sandpiper *Xenus cinereus*. The Records Committee emphasizes the need to provide full supporting details for all records submitted and requests notification of other apparently erroneous records in the literature.

While the value of regional committees for the assessment of many records is fully recognized, records of certain species are, it is considered, better examined at an All-Union level. All records of the following 18 species should be submitted to the Soviet Working Group Records Committee: Pheasant-tailed Jacana *Hydrophasianus chirurgus*, Painted Snipe *Rostratula benghalensis*, American Spur-winged Plover, Semipalmated Plover, Oriental Plover *Charadrius veredus*, Killdeer, Spur-winged Plover *Hoplopterus spinosus*, American Black Oystercatcher *Haematopus bachmani*, Black Turnstone *Arenaria melanocephala*, Wilson's Phalarope *Phalaropus tricolor*, Spotted Greenshank *Tringa guttifer*, White-rumped Sandpiper, Semipalmated Sandpiper, Least Sandpiper *Calidris minutilla*, Buff-breasted Sandpiper *Tryngites subruficollis*, Slender-billed Curlew *Numenius tenuirostris*, Eskimo Curlew *N. borealis* and Oriental Pratincole *Glareola maldivarum*. This list may be of interest to foreign birdwatchers visiting the Soviet Union: for example, P. Hottola from Finland reported (*Dutch Birding* 9:123) apparently the first 20th-century record of Spur-winged Plover for the USSR (April 1984 at Batumi, Black Sea, not to mention the country's first Audouin's Gull *Larus audouinii* at the same place in October 1984). The Committee further wishes to receive for consideration breeding records of Wandering Tattler *Heteroscelus incanus*, Jack Snipe *Limnocryptes minimus*, Broad-billed Sandpiper, and Solitary Snipe *Gallinago solitaria*, also reports of any species breeding outside its normal range.

I.M. Gorban' (pp. 12-13) discusses the work of records committees in general (they have been established in the Soviet Baltic republics and in the western Ukraine - at L'vov in 1982). A committee for the whole of the Ukraine is deemed desirable but has yet to be set up. Meanwhile, a list of 30 wader species (rare breeders and vagrants) is put forward and this is likely to be adopted - probably with some revision following discussion - by such a committee.

Of the five new reserves ('zapovedniks') established in the RSFSR, and one in the Ukraine, in 1987-8, two are important for waders: 1) Dagestan (north-west Caspian); and 2) Daurian (south-east Transbaykal), which boasts colonies of Relict Gull *Larus relictus*, Asiatic Dowitcher *Limnodromus semipalmatus*, and (the only breeding site in the USSR) Oriental Pratincole. It is also an important staging post for migrating birds, including the largest autumn gatherings in the country of Little Curlew *Numenius minutus*.

V.S. Sarychev (pp. 16-18) reports on membership and activities in the Central Region, touching on site-mapping, waders and man-made habitats, and protection of sites. Project *Haematopus* (p. 19) seeks to ascertain the status and distribution of Oystercatcher *H. ostralegus longipes* in this region.

Of the 39 wader species recorded in the western Ukraine, 14 are breeders. I.M. Gorban' (pp. 19-21) briefly summarizes the history of wader studies in the region, and emphasizes the need to concentrate future research on movements, population trends, and breeding ecology. M.E. Zhmud (pp. 21-23) reviews the present status of waders in the Ukraine. An ornithological data-bank (primarily on breeding biology) was set up in neighbouring Belorussia in 1983 (M. E. Nikiforov *et al.*, pp. 23-24).

Studies of waders and other birds have been carried out in the extreme north-east of the USSR (the territory east of the Kolyma river) by, among other, L.A. Portenko, A.V. Krechmar, V.E. Flint, A.A. Kishchinskiy, P. S. Tomkovich and, not least, A. Ya Kondratiev who (pp. 24-28, with map) explains the role of the Institute for the Study of Biological Problems of the North and notes that there are two reserves (Wrangel Island and Magadan) in a region where 50 species of waders have been recorded - a number likely to increase owing to the proximity of the North American continent. Future studies should be concerned with distribution, migration routes, little-known species, and so on.

Much further south, in Kazakhstan and Central Asia, wader students have been looking at pre-breeding behaviour of Sociable Plover *Chettusia gregaria*, breeding biology of White-tailed Plover *C. leucura* and others, and waders in two reserves and the Ila delta. During March - May 1988, over 2,000 waders of 30 species (including 719 Kentish Plovers *Charadrius alexandrinus* and 638 Little Stints *Calidris minuta*) were ringed and special attention was paid to fat reserves of migrants (A.E. Gavrilov, p.29)

M.E. Zhmud (pp. 30-32) writes on the organization of population-ecology studies. A.K. Yurlov (pp. 33-34) heads a six-man team whose aim is to find and safeguard the breeding grounds of the Slender-billed Curlew: a search on the Tartas river in 1988 was unsuccessful, while this Bulletin appeared too early to report on the joint Soviet-ICBP expedition to the Tara river in 1989. Sadly this also was fruitless. Perhaps 1990 will bring happier news.

A number of reports (pp. 35-42) concern wader ringing and movements: colour-ringing and marking in Kazakhstan, Chukotka, Yamal (A.A. Vinokurov & E.I. Gavrilov, p. 35), with 7,508 birds of 39 species ringed in south-central Siberia,

Australian-ringed Curlew Sandpiper *Calidris ferruginea* and Indian-ringed Little Stint recovered there, Curlew Sandpiper and Red-necked Stint in Australia (A.P. Savchenko, pp. 36-37). A total of 6,300 birds of 36 species were ringed at the Chany lakes (Novosibirsk) in 1974-1987, including 1,311 Ruff *Philomachus pugnax* and, in 1987, 26 adult and juvenile Dowitchers (A.K. Yurlov, pp. 37-38). On the north-west Black Sea, the ringing total for 1974-1987 was 16,121 birds of 34 species, producing 117 recoveries (A. I. Koryukov, pp. 38-40). A Kentish Plover ringed 31 December 1985 at 25° 35'N, 78° 05'E in India was recovered at Lake Alakol' in Kazakhstan (46° 18'N, 81° 24'E) on 2 September 1987, 2,320 km N (E.I. Gavrilov & F.F. Karpov, p.40). P.S. Tomkovich (pp. 41-42) summarizes what is known about movements of Knot *Calidris canutus* from the four geographical populations. Wrangel Island birds, together with those from Alaska are described as a new subspecies, wintering in America. Small Chukotka birds (*rogersi*) migrate along the Pacific coast of Asia. Nominate *canutus* breeds in Taimyr and on the New Siberian Islands. Larger birds from Taimyr migrate west to Europe, but small Knot from the New Siberian Islands have not been recovered there. The wintering grounds of these two populations are still not known exactly, nor (perhaps) the breeding grounds of birds wintering in Africa. Further collecting of specimens and morphometric data is recommended, but attention is also drawn to the work of A.A. Goede (Delft, Netherlands) on determining metal levels (and hence origin) in the plumage of Knot and other waders.

V. Yu. Il'yashenko (pp. 43-46) explains wader pterylosis with the help of figures and puts forward, for the benefit of the field ornithologists, a simpler scheme than that used by Steetenheim in *Nomina anatomica avium* (1979). Following this, P.S. Tomkovich (pp. 46-47) appeals for help in the preparation of a guide to the downy plumage of waders.

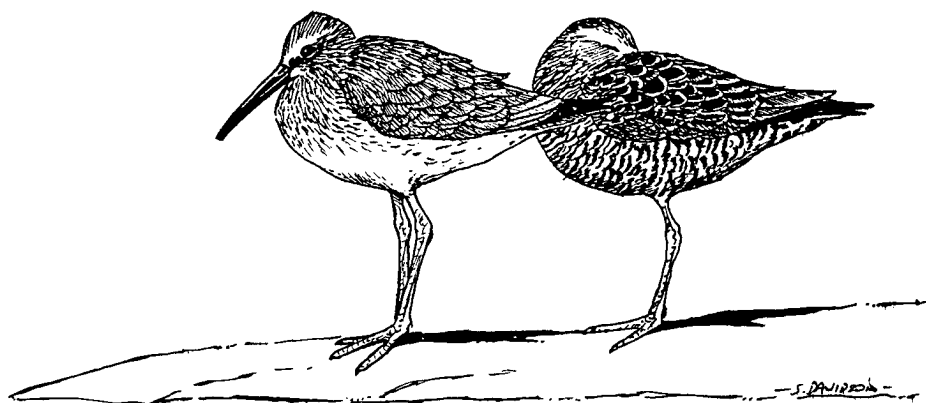
Thirty-six wader species feature in the national and republican or regional Red Data Books of the USSR: E.I. Sotnikova (pp. 47-49) list these birds together with their status in each of the RDBs in which they are included. Up to the end of 1988, 62 reserves had been established in the RSFSR: E.I. Sotnikova and V.G. Krever (pp. 49-51) discuss the extent to which the 16 wader species listed in that republic's Red Data Book enjoy a measure of protection through breeding within the reserves, also noting whether new reserves are planned for parts of their breeding range.

P.S. Tomkovich *et al.* (pp. 51-58d) describe breeding conditions on the tundra from the Kola Peninsula east to Chukotka in 1988 (lemmings, arctic foxes, weather: see review of Bulletin 1 in *WSG Bulletin* 55: 29-31). (A more detailed translation of this article appears elsewhere in this *Bulletin*: Eds.).

Speculation about Cox's Sandpiper *Calidris paramelanotos* continues: P.S. Tomkovich (pp. 58-59) summarizes reports and discussion in the Western literature and cites L.S. Stepanyan's "somewhat surprising" view that the bird is most likely a hybrid between Ruff and Pectoral Sandpiper *Calidris melanotos* or Sharp-tailed Sandpiper *C. acuminata*.

Apart from book reviews, the final items in this second Bulletin are short notes (pp. 59-62) on Spoon-billed Sandpipers *Euryrhynchus pygmaeus* in Lazo Reserve (Sea of Japan) in August 1986, Semipalmated Plovers on Gerald and Wrangel Islands in 1988 (see above), first Lapwing *Vanellus vanellus* breeding in the Siberian subarctic (Yamal), July 1988, vagrant Long-billed Dowitcher *Limnodromus scolopaceus* at Lake Baykal (September 1987), two Black-winged Stilts *Himantopus himantopus* collected apparently for a Lithuanian (!) museum in Magadan region in summer 1987, and Dotterel *Eudromias morinellus* and Knot breeding at Lake El'gygytyn (Anadyr' Highlands) in 1988.

The address of the Soviet Working Group on Waders is *c/o Zoological Museum of Moscow State University, 6 Herzen Street, SU-103009 MOSCOW.*





ASIAN WETLAND BUREAU NEWS

Funding from ANPWS will permit surveys of shorebirds in East China to continue in 1991 and will enable coordination of Flyway surveys and data analysis to be commenced by an Asian biologist, based at AWB in Kuala Lumpur. The Coordinator, Taej Mundkur from Rajkot, India, has a broad background in ecology and waterbirds and has provided expertise for several AWB training courses.

AWB has directed funds to AWSG for two expeditions to South-east Asia. The first, to Indramayu-Cirebon, Java, was undertaken in October-November 1990, as part of a regional assessment of waterbird hunting. Two AWSG members gave training to Indonesian counterparts and the team obtained valuable data on migration of the Oriental Pratincole *Glareola maldivarum* and on hunting of waterbirds including the threatened Milky Stork *Mycteria cinerea*.

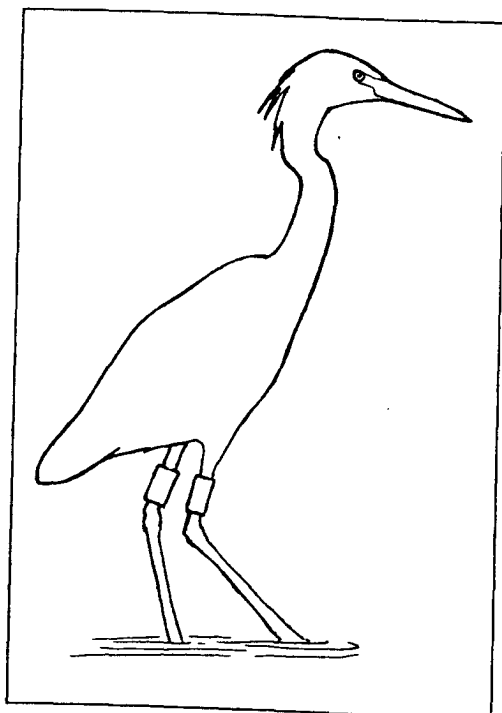
The second expedition, to the Con Lu area of Red River Delta, Vietnam (Vietnam's only RAMSAR site), has been arranged for March - April 1991. Objectives include documentation of the importance of the site for northward migration of waterbirds, intensive training of a Vietnamese biologist in shorebird banding and support for the Wetland and Waterbird Working Group of Vietnam. Results will appear in a later issue.

In Peninsular Malaysia, AWB has begun a 12-month investigation of the birdstrike hazard at Subang (Kuala Lumpur) and Bayan Lepas (Penang) International Airports. Recent strikes have involved the Pacific Golden Plover *Pluvialis fulva*, which is one of the most abundant species at both sites. Other shorebirds occurring at the airfields include the Pin-tailed Snipe *Gallinago stenura* and Little Ringed Plover *Charadrius dubius*. Additional hazard may be presented by passage migrant raptors such as the Black Baza *Aviceda leuphotes* may prove more hazardous.

In Singapore, AWB has provided technical advice to the Parks and Recreation department and the Wildfowl and Wetland Trust (UK) in developing the Sungei Buloh Bird Sanctuary. Doug Watkins was contracted to provide intensive training to Singaporeans who will establish a bird banding program there. In October-November 1991, his team colour-dyed 247 shorebirds, to elucidate local movements and recaptured a Redshank *Tringa totanus* that was banded at nearby Serangoon seven years earlier.

Roger Jaensch.

REQUEST FOR INFORMATION



Have you seen this bird?

In July 1990, Asian Wetland Bureau (AWB) and Kyung Hee University, Seoul, colour marked 82 fledgling Chinese Egrets (*Egretta eulophotes*) on Shin Islet, South Korea.

The birds were marked using red or white colour bands, with the following codes:

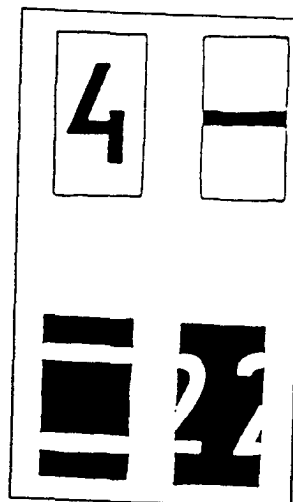
- i) one, two or three horizontal bands.
- ii) a digit (0-9) repeated on three sides.

Information on this endangered Red Data Book species is urgently required.

Please send ALL sightings (including those with incomplete details or repeated sightings of the same bird) to:

Colin Poole, AWB,
Institute for Advanced Studies,
University of Malaya,
59100 Kuala Lumpur, MALAYSIA.

Details required include: right leg band colour and code; left leg band colour and code; date; locality; coordinates; country; habitat; and observer's name and address.



THE DISTRIBUTION OF CHARADRIIFORMES IN THE GUANGDONG REGION, CHINA

Gao Yuren (South China Institute of Endangered Animals, Guangzhou, China)

Abstract

According to specimens in our institute and a recent survey by the author, 56 species of Charadriiformes appear in the Guangdong area (including Hainan Island and South China Sea Archipelago) and are described in this paper. The birds are classified into 9 families and 25 genera. They are mainly scattered in the southern and eastern coastal regions, central area and Hainan Island. They are distributed along the seacoasts and rivers and into the inland. The Long-billed Dowitcher *Limnodromus sacolopaceus* was first recorded in Hong Kong in 1982 (Chalmers 1984b), a new record for China. Most of the species appear in certain months of the year, only 13 species are present year round in this area. The lowest number of species present is in June and July and January and February. Two peaks appear in March-May and August-December. This shows that the Charadriiformes in Guangdong consist basically of passage migrants and winter visitors.

Results

There are 64 species of Charadriiformes recorded in China (Cheng Tso-hsin 1976) of which 56 species, 87.5% of the total, are found in Guangdong area (including Hainan Island and South China Sea Archipelago). Most of the Charadriiformes in Guangdong are migratory species. Principally, there are winter visitors or passage migrants. One of the two major migration routes in China originates in North-east provinces of China and runs along the coast towards the South (may branch in Korean Peninsula or Japan Islands) to various islands in South Asia and Australia, and vice versa (Cheng Tso-hsin *et al.* 1955; Yan Zhong-wei 1985). This has been proved by the recapture in Australia of Chinese banded birds and by the similar banding work recently done in China (Hsu Wei-shu *et al.* 1987). The Guangdong region plays an important role on the route. Since the history of bird banding in China is fairly short, the number of banded birds and of banded species are limited. This paper is based on the specimens collected in our institute and my recent surveys. I attempt to provide general information for the species of Charadriiformes in Guangdong and their seasonal and geographical distribution. It is hoped that this paper will provide a reference for further research on Charadriiformes in Guangdong and in China generally.

As shown by Fig. 1 and Table 1; 56 species are classified into 9 families and 25 genera. They are mainly scattered in the southern and eastern coastal regions, central area and Hainan Island. The central part of Guangdong Province is the confluence area of branches of Zhujiang (Pearl) River. They also show that the distribution range is along the seacoast as well as along rivers and into the inland. Most of the species appear in certain months of the year, while Grey Plover *Pluvialis squatarola*, Little Ringed Plover *Charadrius dubius*, Kentish Plover *Charadrius alexandrinus*, Mongolian Plover *Charadrius mongolus*, Eurasian Curlew *Numenius arquata*, Common Redshank *Tringa totanus*, Greenshank *Tringa nebularia*, Wood Sandpiper *Tringa glareola*, Common Sandpiper *Tringa hypoleucos*, Red-necked Stint *Calidris ruficollis*,

Temminck's Stint *Calidris temminckii*, and Black-winged Stilt *Himantopus himantopus*, appear all year round in this area, though some species only have a few individuals being seen in some months. The reports from Hong Kong basically support this point (Webster 1975, Chalmers 1982, 1984a, 1984b). The Long-billed Dowitcher *Limnodromus scolopaceus* was first recorded in Hong Kong in 1982, a new record for China. To quote Chalmers (1984b) "The Long-billed Dowitcher breeds in North America and North-east Asia and is a noted long-distance migrant and wanderer. It is recorded as an uncommon winter visitor or transient in Japan and has occurred in Australia"

The percentages of the monthly occurrences of various species in a while year are shown in Fig. 2.

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Figure 1. The Guangdong area.
Figures refer to locations in Table 1.

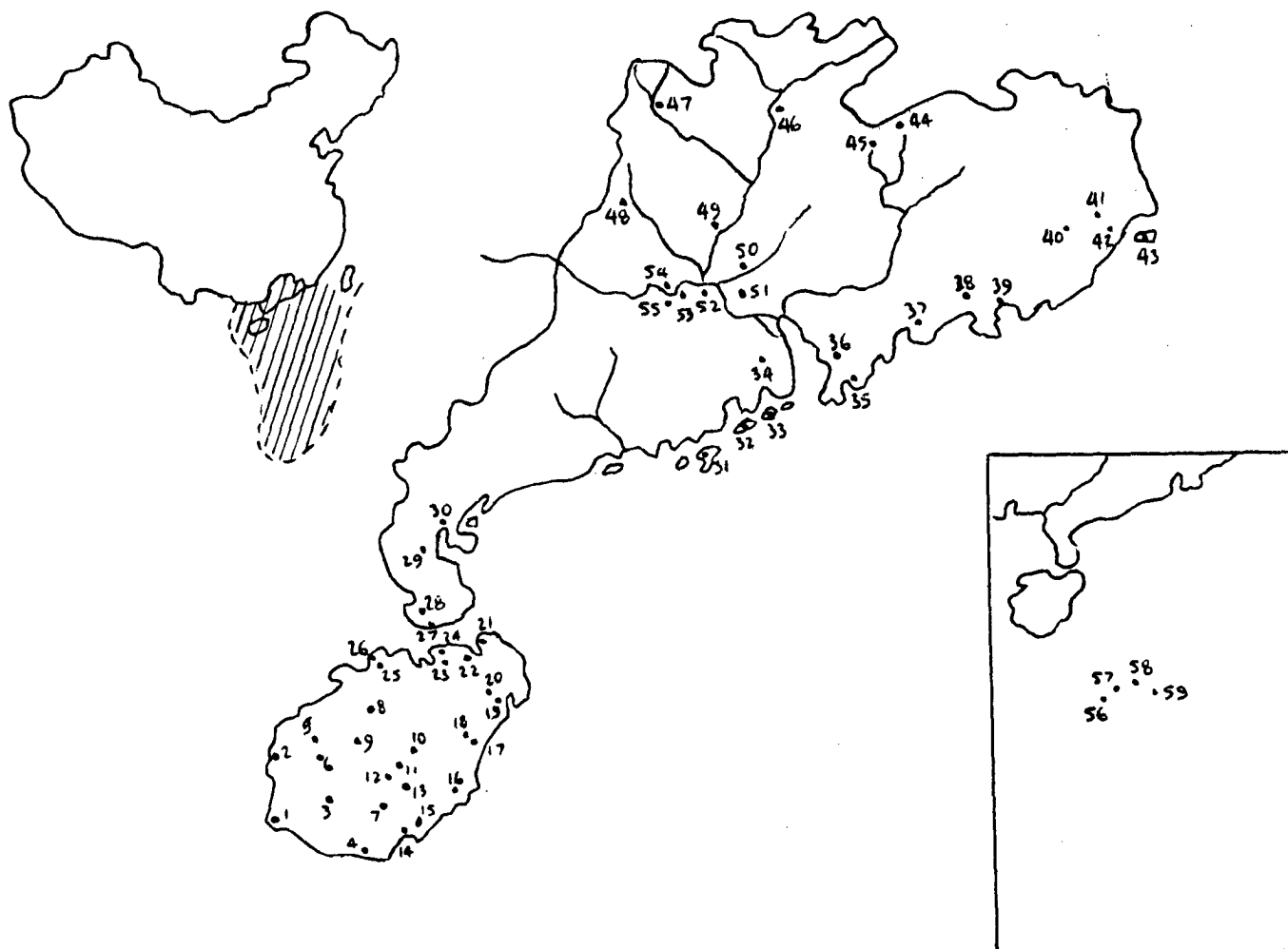


Figure 2. Monthly Percentage of the occurrence of Charadriiformes.

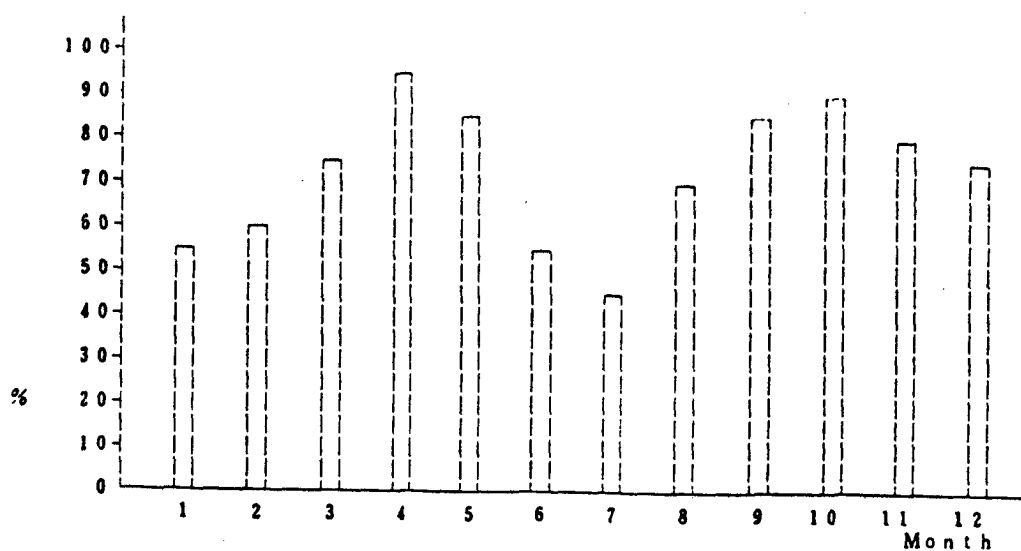


Table 1 The Distribution of Charadriiformes in the Guangdong Area continued...

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Table 1 The Distribution of Charadriiformes in the Guangdong Area

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WADER MOVEMENTS IN SOUTH-WEST BRUNEI 1987/88

Derek Harvey & Jennifer Elkin
PTR/3, BSP Seria Brunei Darussalam

Introduction

As a contribution as Asian Wetland Bureau's INTER-WADER Programme, regular counts of wading birds have been carried out on Sungais Seria and Bera in the Belait District of Brunei since August 1985. This report presents the third year's observations.

Period Covered

1 August 1987 to 16 May 1988. Due to leave commitments and the departure of one "counter", the area was not checked in the latter weeks up to 31 July.

Graphs

The data presented in the graphs were arrived at by taking the maximum count of each species in each week for the period covered. The bar chart indicates when each species was present.

Counts were carried out once (occasionally twice) a week as compared to twice a week in 86/87 and daily in 85/86. It is probable that this accounts for slightly lower numbers in some species.

Nomenclature

Nomenclature and species order follow those of the Interwader Count Data Form 1.

Himantopus himantopus - Black-winged Stilt

The only sighting was a single bird in immature plumage on 29 September '87 at Sungai Seria.

Glareola maldivarum - Oriental Pratincole

No autumn sightings. Fourteen birds arrived on 14 February '88 and 13 birds were seen at the end of March. Birds tended to move out of study area to grassland (e.g. opposite BSP Head Office).

Charadrius dubius - Little Ringed Plover

Similar pattern to previous years. Present from early August '87 and building up to an autumn maximum (182 birds) at the end of October. All birds had gone by the end of April '88.

Charadrius alexandrinus - Kentish Plover

Fewer birds than in the previous two years. First arrival 29 September '87 and a spring maximum of 82 mid-February. As in previous years, numbers decreased during the wetter months of December and January. Last bird left early May.

Charadrius peronii - Malaysian Plover

None seen in study area.

Charadrius mongolus - Mongolian Plover

Numbers and patterns consistent with previous years.

Charadrius leschenaultii - Greater Sandplover

Similar pattern to previous years but fewer birds.

Pluvialis fulva - Lesser Golden Plover

A less impressive autumn build up than in previous years (max 236) and a small wintering flock of around 200. Birds tended to disperse to grassland during December. An abrupt departure at the end of April. One bird remained an extra week.

Pluvialis squatarola - Grey Plover

The only sighting was a single bird on 29 December '87.

Calidris tenuirostris - Great Knot

A single sighting of a bird in breeding plumage on 4 April at Sungai Seria (seen alongside a Red Knot - also in breeding plumage).

Calidris canutus - Red Knot

Two sightings at Sungai Seria - one bird (with Great Knot) on 4 April which stayed for three days and one bird on 15 May. Both birds in breeding plumage.

Calidris alba - Sanderling

Four birds on 29 September and 12 on 21 December. Small spring passage Feb/March and a single bird on 28 April. Primarily a bird of the beaches.

Calidris ruficolis - Red-necked Stint

Confirmation again of main passage in autumn, with a September peak of 243 birds. Flock of 70-80 birds overwintering with no significant spring passage.

Calidris temminckii - Temminck's Stint

Scattered sightings of one or two birds between 2 November and early March - similar pattern to previous years. All sightings at Sungai Bera.

Calidris subminuta - Long-toed Stint

Present from early August with numbers building up to a Dec/Jan maximum of 249 birds. Numbers decreased during March/April with no sign of the impressive spring passage recorded in 85/86 and 86/87.

Calidris acuminata - Sharp-tailed Sandpiper.

The only sighting during the year was one bird on 29 September (with a broken leg) at Sungai Seria.

Calidris ferruginea - Curlew Sandpiper

Once again, small numbers of passage birds recorded Aug/Sept (maximum four on 8 September). Northward passage birds recorded in ones and twos from 18 February (maximum three birds on 20 April).

Limicola falcinellus - Broad-billed Sandpiper

Two birds seen on 8 September. Thereafter one seen regularly until 7 October. Two birds again on 8 November and one on the 18th. No spring sightings.

Philomachus pugnax - Ruff

Two birds arrived on 19 September. One left on the 22nd, leaving a single bird until the 26th. No spring sightings.

Snipe sp.

Only birds seen were on grassland outside study area.

Limnodromus semipalmatus - Asiatic Dowitcher

Autumn passage migrant. Single birds seen 18 August and 24 September only.

Limosa limosa - Black-tailed Godwit

One bird on 13 September at Sungai Bera is the first for the three year study period.

Limosa lapponica - Bar-tailed Godwit

On 8 November, two birds arrived - one left on the 11th, the other stayed until 7 December. No spring sightings.

Numenius phaeopus - Whimbrel

An autumn passage migrant with birds seen from 8 September through to early December. Similar numbers to 86/87 with a maximum of 11 early October. Single bird seen once (7 April) on return passage.

Tringa totanus - Redshank

Present from mid-August, with a passage flock of 26 birds on the 25th. The wintering group of seven to nine birds increased to 13 at the end of April with the arrival of passage birds. Four Redshank were still present mid-May, after which no data is available.

Tringa stagnatilis - Marsh Sandpiper

Main passage in the autumn with 27 birds recorded on 29 September (this is the largest flock recorded in the three year study period). Only winter sightings were one to two birds mid-January. A small return passage (maximum five birds) in March/April.

Tringa nebularia - Greenshank

Similar pattern to previous years. First arrival early September, building up to 11 birds at the end of November and 13 late February. All birds left at the end of April.

Tringa ochropus - Green Sandpiper

Uncommon in study area. Single bird seen once on 28 February.

Tringa glareola - Wood Sandpiper

Numbers similar to 85/86. Autumn passage smaller than 86/87.

Xenus cinereus - Terek Sandpiper

An autumn passage migrant, with one to six birds recorded mid-August to end-November. A small passage flock on 29 September increased numbers briefly to 13. A single bird was seen in the spring (28 April).

Actitis hypoleucos - Common Sandpiper

Similar pattern to previous years. Numbers slightly down.

Heteroscelus brevipes - Grey-tailed Tattler

A passage migrant, with one or two birds seen irregularly throughout the winter. Main passage in the autumn with maximum six birds recorded on 10 November.

Arenaria interpres - Ruddy Turnstone

Autumn sightings only of up to three birds in September and one bird in November.

Phalaropus lobatus - Red-necked Phalarope

One bird seen regularly between 7th and 13th October in a small creek of the Sungai Seria.

Discussion

This three year project developed as a response to the Interwader Project. A similar study had been done in 1980 by Vowles and Vowles and the present project has, with small modifications, followed the same protocol.

The size of the wader population using Sungais Seria and Bera is statistically small, but a remarkably consistent pattern of usage has emerged from the study which confirms closely the findings of Vowles and Vowles.

Both in terms of total numbers of birds and of species, the autumn migration is greater than the return passage in the spring, and includes species which, with the exception of the occasional single bird, do not appear in the spring, and are therefore presumed to return to their breeding territories by another route. These are:-

| | |
|-------------------|---------------------------------|
| Turnstone | <i>Arenaria interpres</i> |
| Whimbrel | <i>Numenius phaeopus</i> |
| Terek Sandpiper | <i>Xenus cinereus</i> |
| Bar-tailed Godwit | <i>Limosa lapponica</i> |
| Asian Dowitcher | <i>Limnodromus semipalmatus</i> |

By contrast, Oriental Pratincole *Glareola maldivarum* is usually seen on spring passage, and does not appear to pass through the area in the autumn.

The other interesting and consistent observation is that whereas the autumn passage of Red-necked Stint *Calidris ruficollis* is much larger than the spring passage, the reverse is usually true of the Long-toed Stint *Calidris subminuta* which reaches its peak numbers in March and April.

During the three year period of study, the environment and ecology of the study area remained constant and stable. However, an extension to the protective sea wall, now proposed, seems likely to dry out a significant area of tidal mud which currently provides a good biomass of wader food. This may well affect numbers of birds using the Sungai in the future, and a similar study over a 12 month period in about five years time would be a worthwhile project to update the status of these estuaries.

Acknowledgements

We would like to thank the following for their contribution to the study:

Mr. John Howes of Interwader for his valued advice and encouragement.

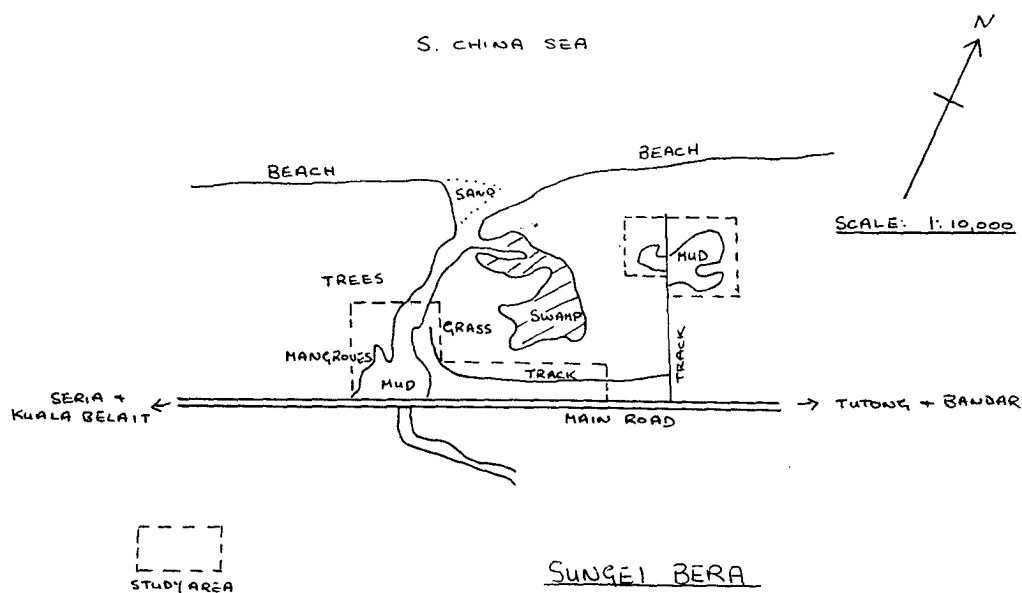
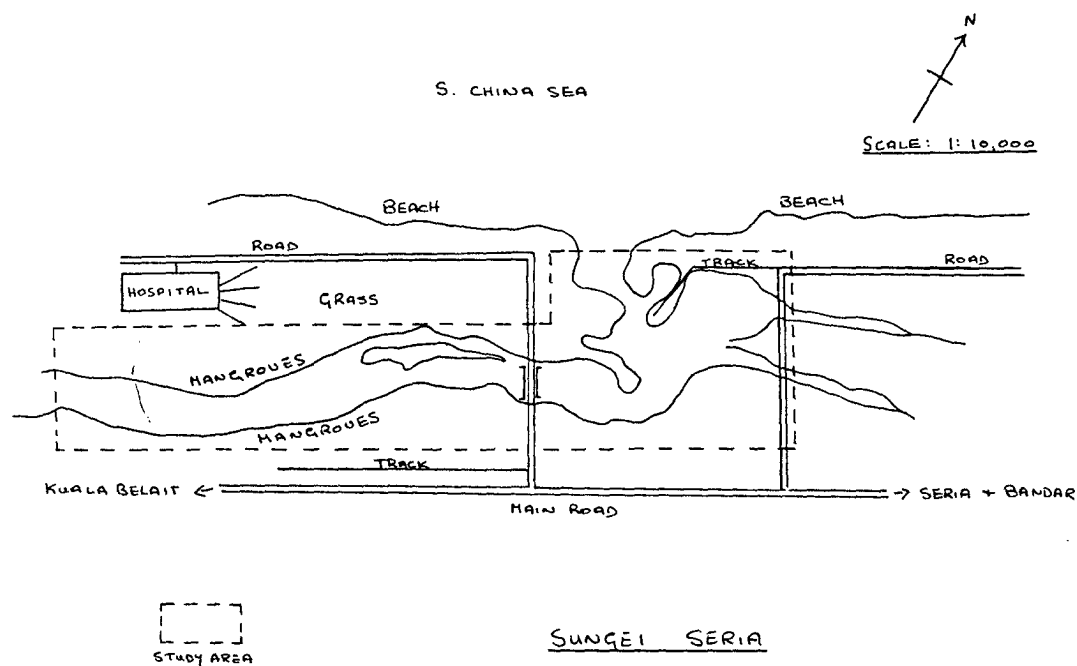
Brunei Shell Petroleum Co. Sdn Bhd. who have continued to support this project.

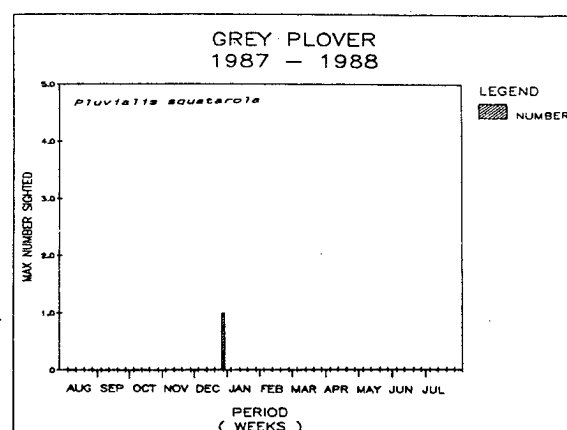
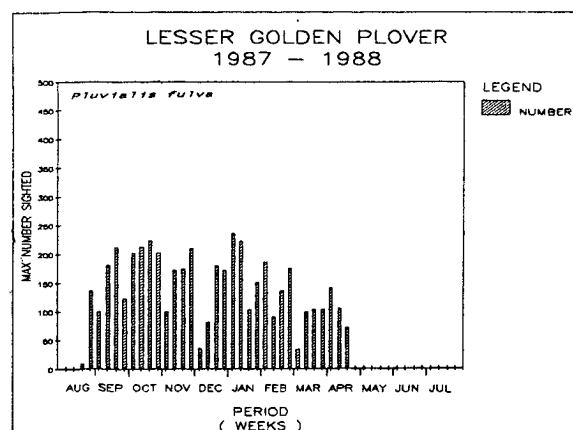
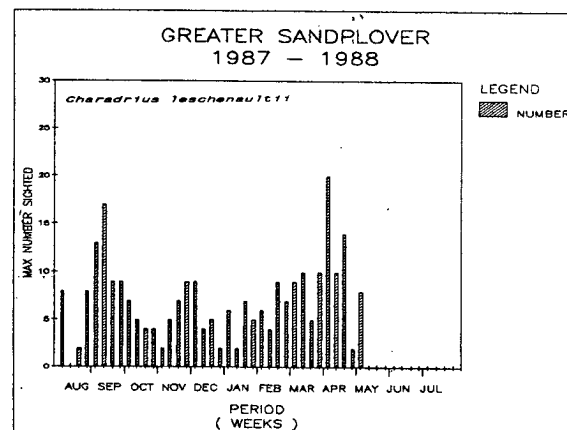
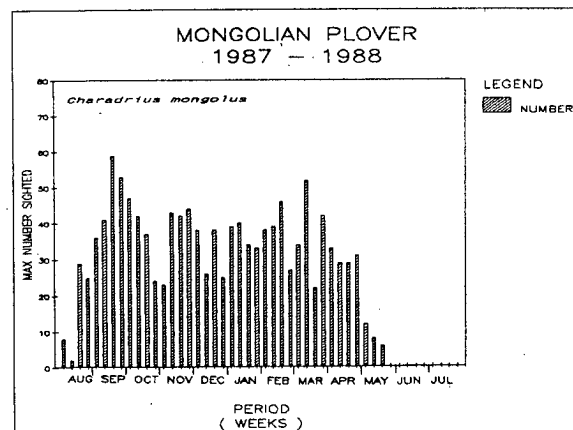
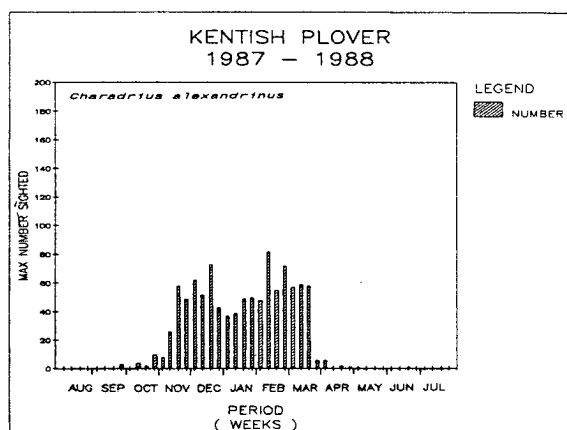
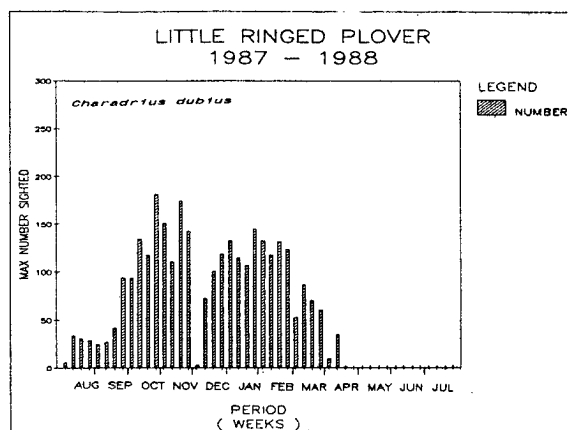
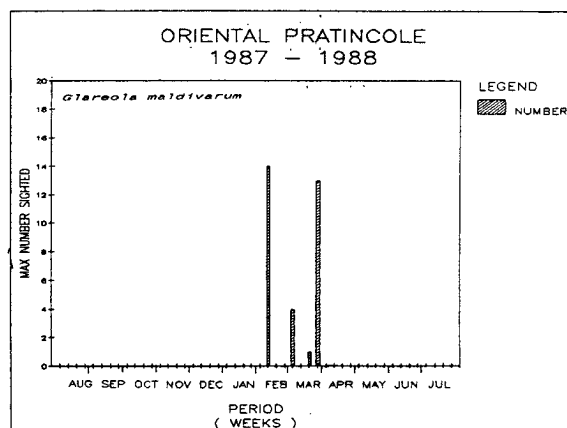
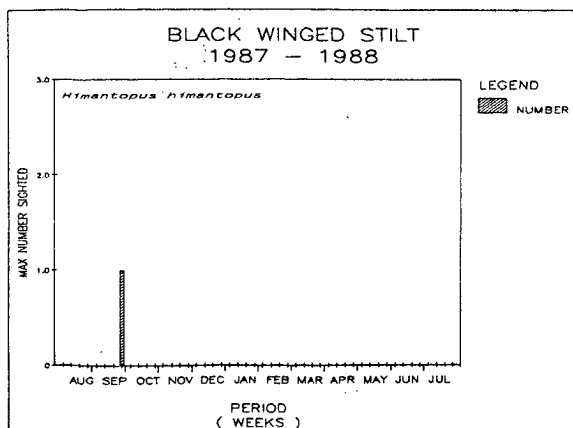
Ian Frame, who once again has computerised and made sense of our crude data.

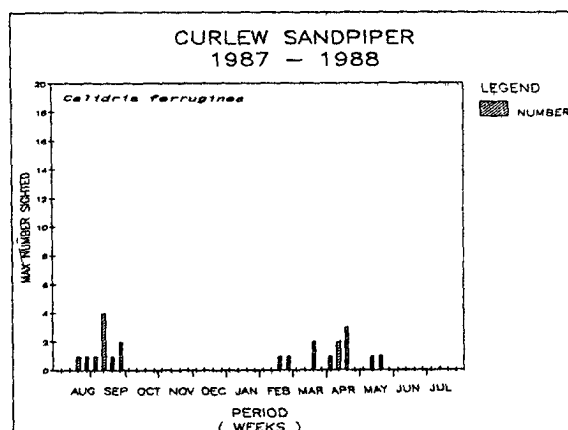
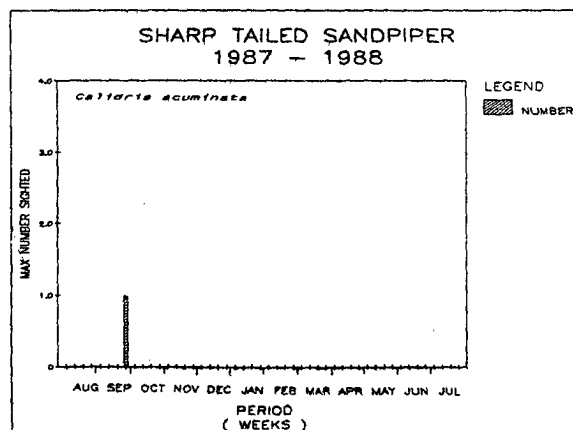
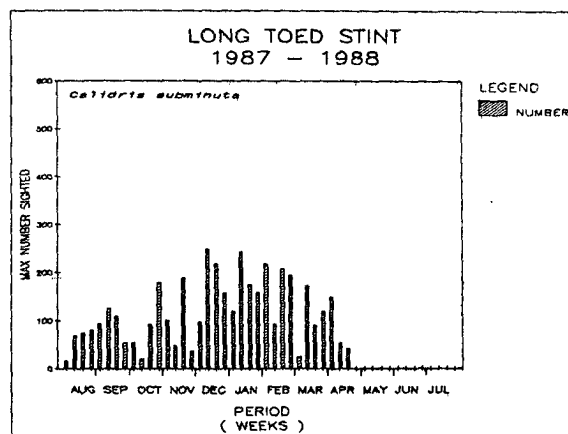
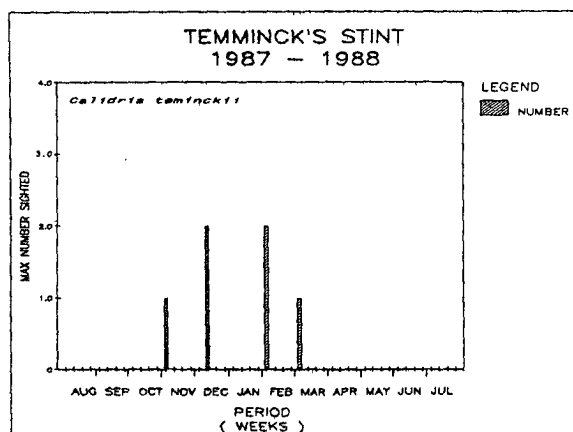
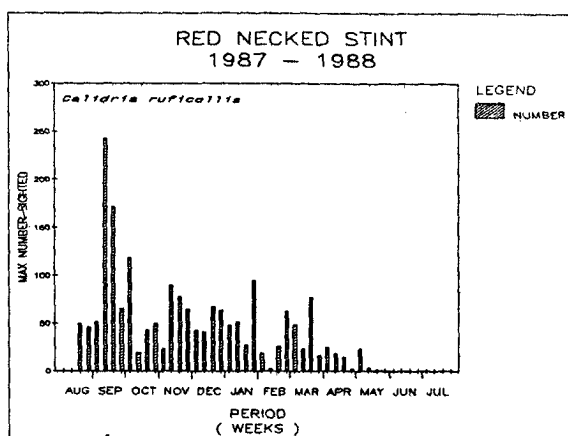
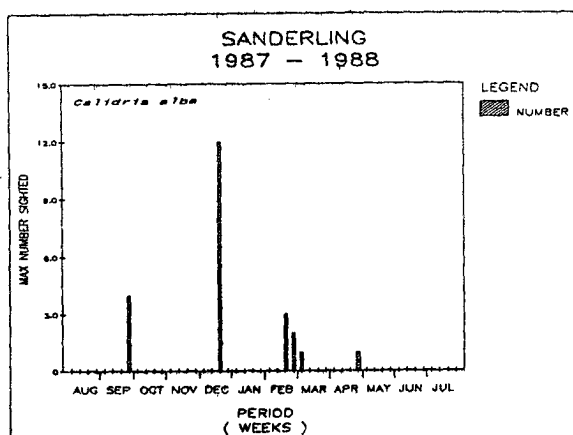
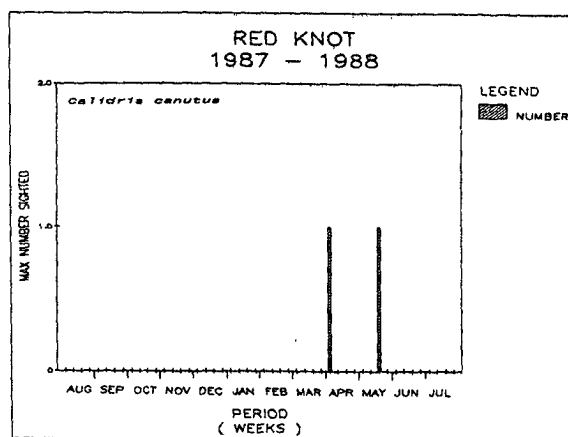
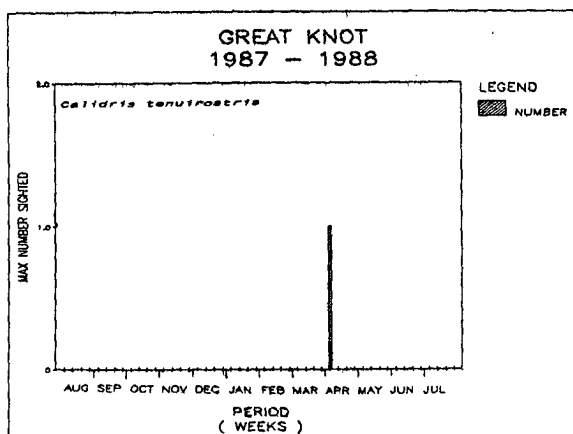
Wayne Elkin for invaluable practical assistance.

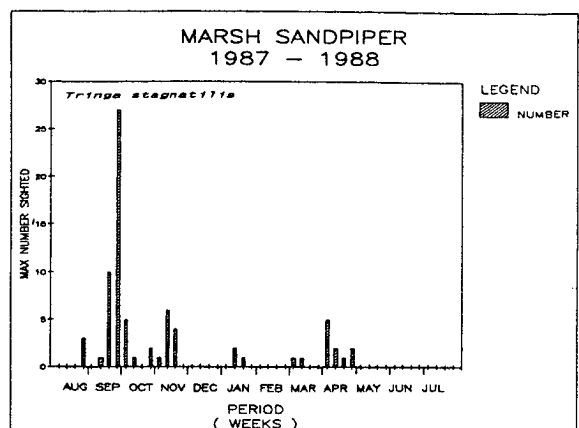
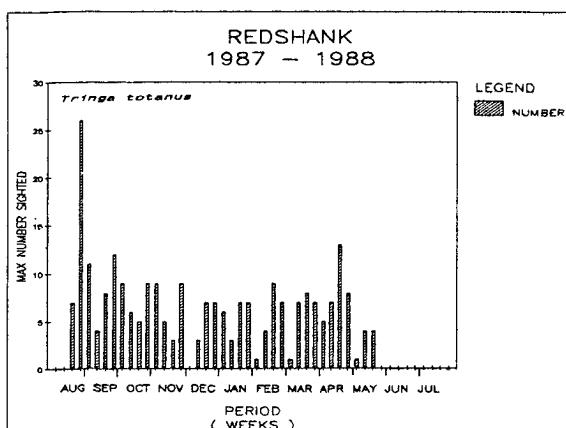
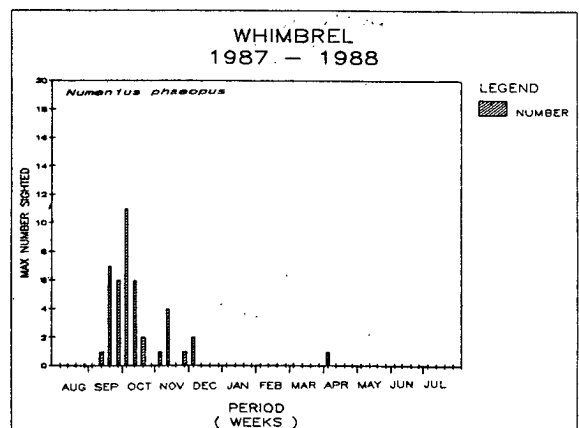
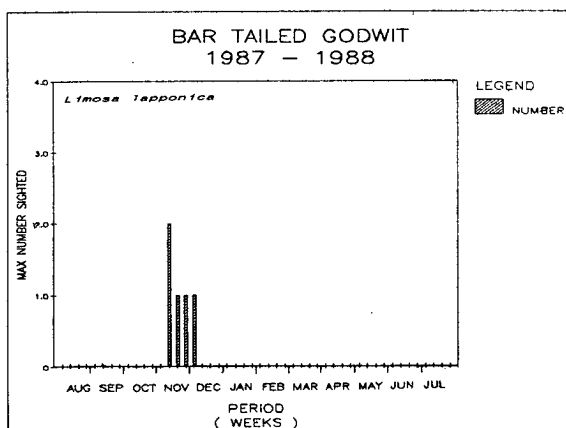
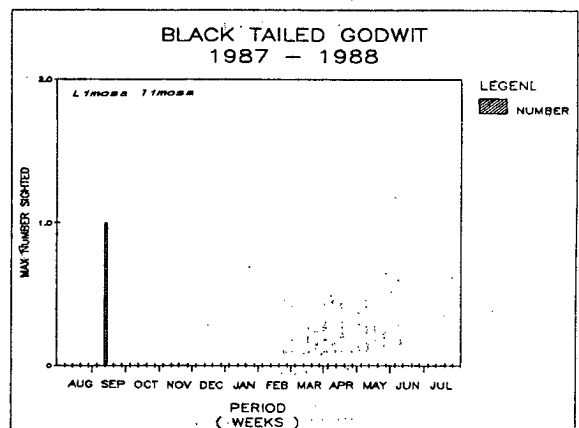
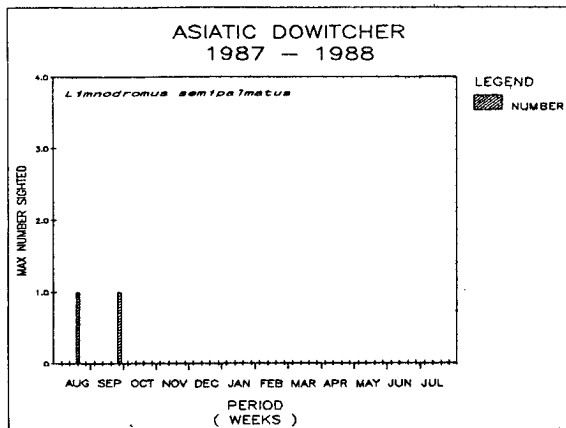
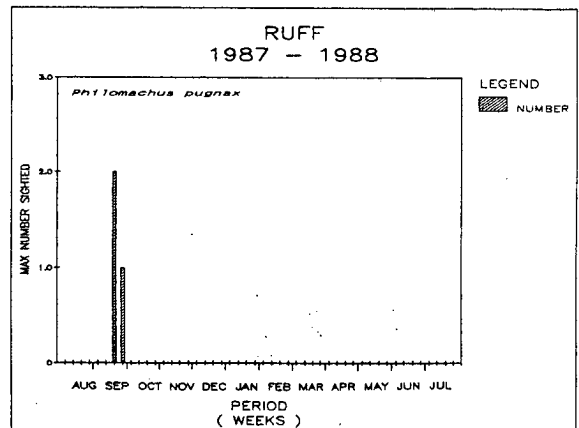
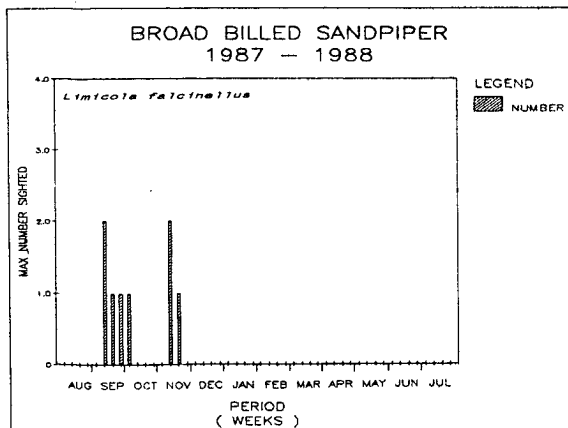
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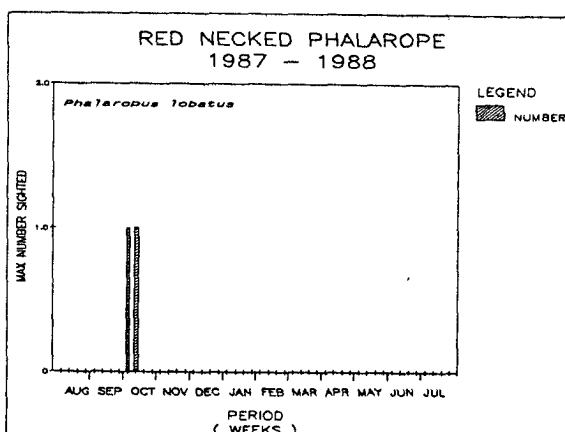
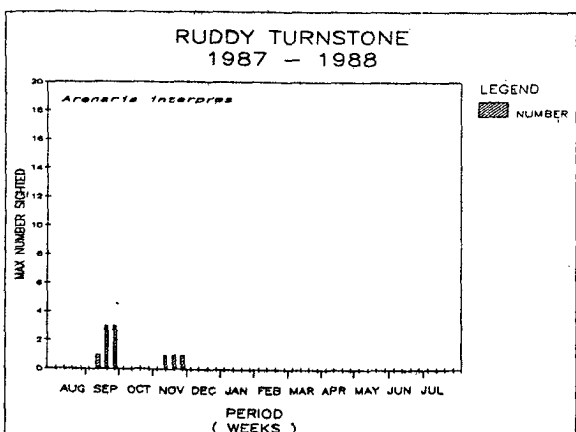
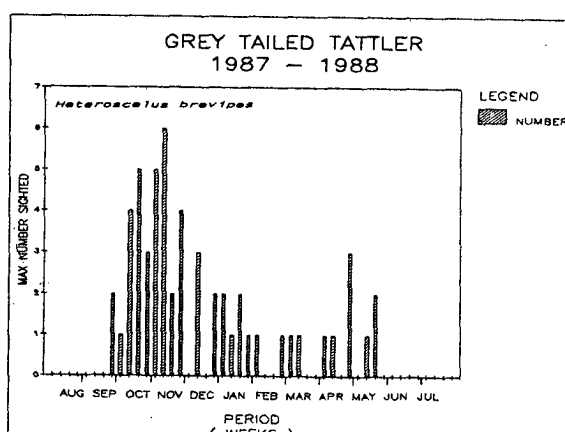
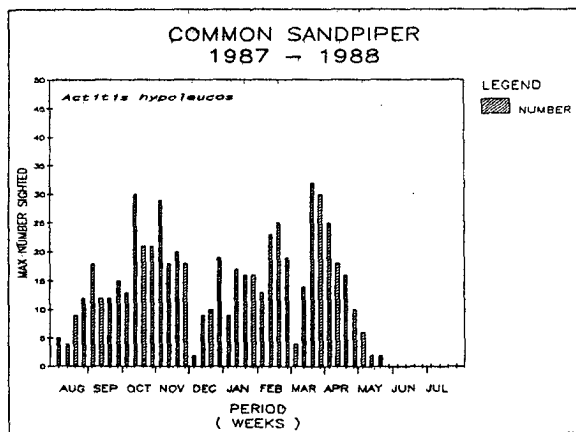
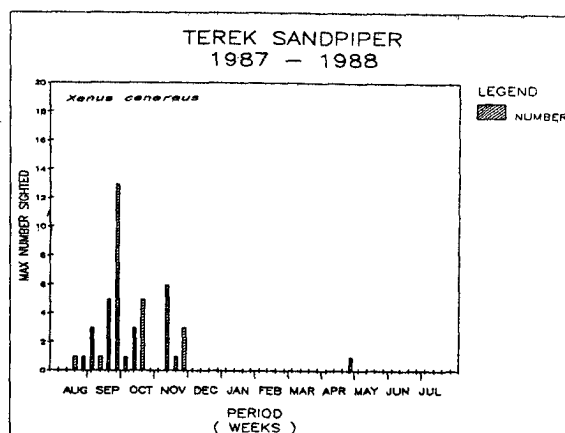
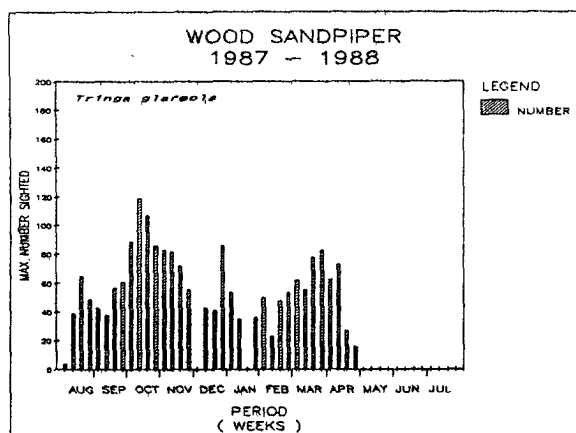
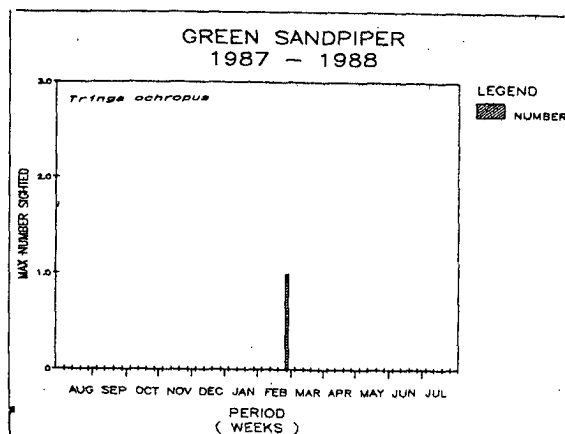
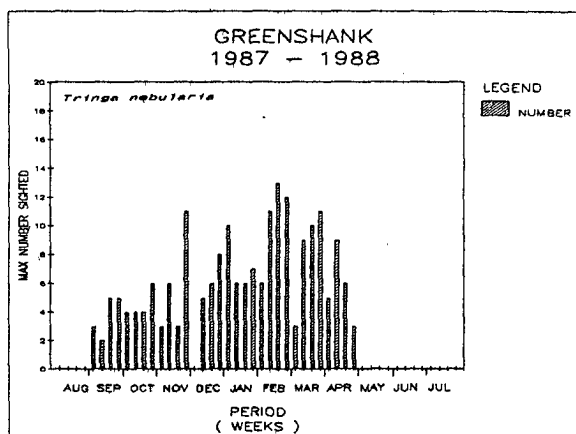
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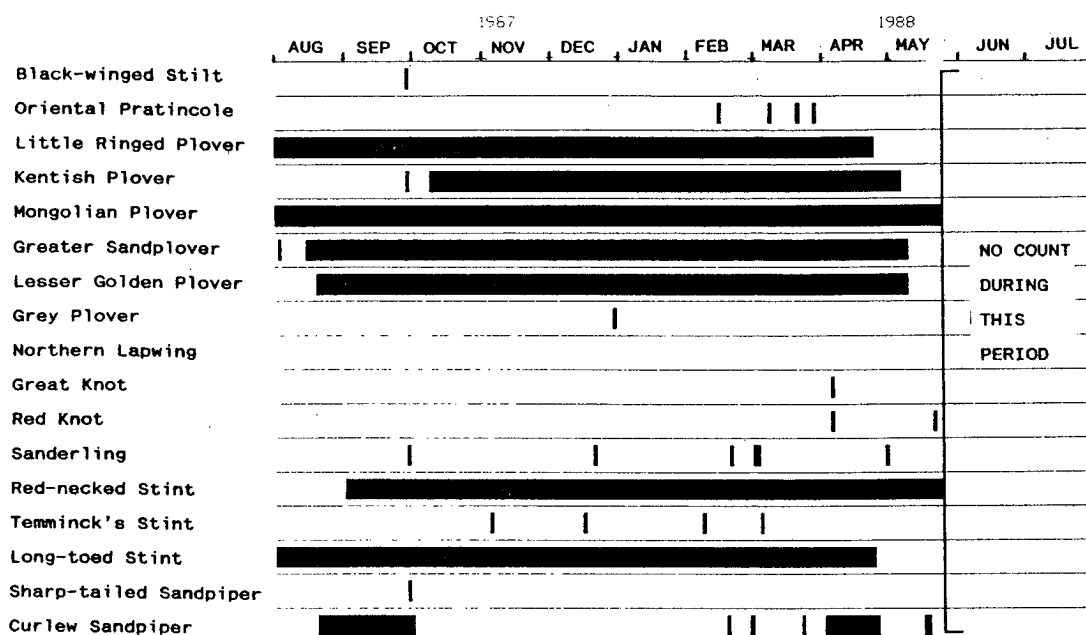




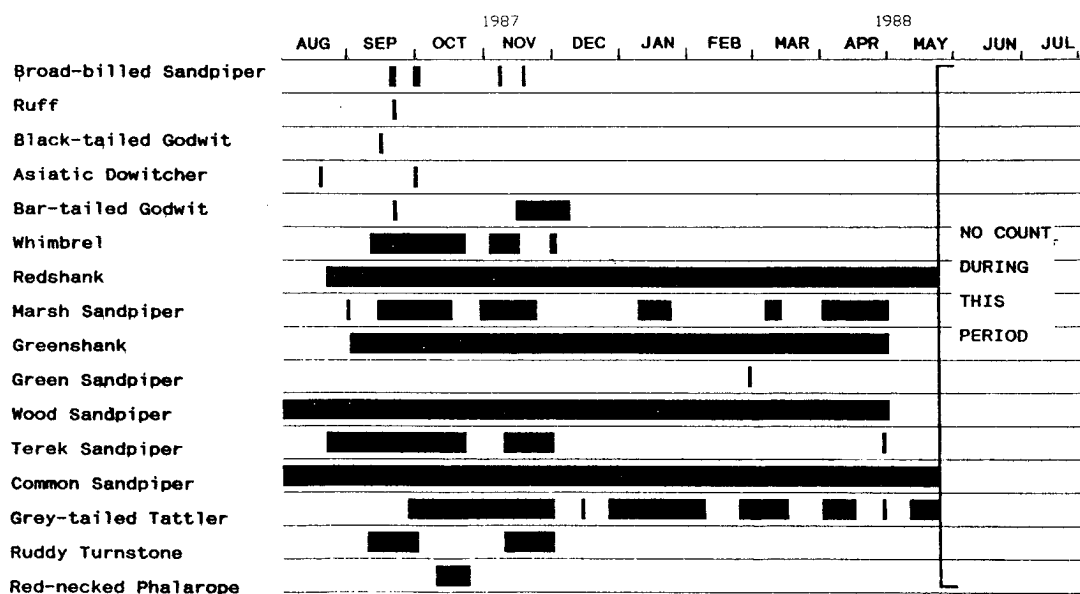








A COMPARISON OF THE OCCURRENCE OF EACH SPECIES OBSERVED



A COMPARISON OF THE OCCURRENCE OF EACH SPECIES OBSERVED

BOOK REVIEW

Homeward Bound: problems waders face when migrating from the Banc d'Arguin, Mauritania, to their northern breeding grounds in spring. Ens, B.J., T. Piersma, W.J. Wolff & L. Zwarts (Eds) 1990. Published for WIWO and RIN by Uitgeverij Het Open Boek, Den Berg, Texel. Softback, 364 pages. Also published as volume 78, parts 1 & 2, of the Dutch journal *Ardea*.

Available from Stichting WIWO, U.v. Stuivenbergweg 4, 6644 AB Ewijk, The Netherlands, by sending an international money order (Eurocheque or postal giro order) for DFL 55.00 (about \$40.00 Australian).

This book is a collection of papers covering the scientific results of a series of Dutch wader expeditions to West Africa from 1985 to 1989. The Banc d'Arguin bore the brunt of the fieldwork, an area of tidal flats and shallow water off the Saharan coast of Mauritania. The parallels with NW Australia should make this interesting to Australian readers - both are inconveniently remote, hot regions which support many thousands of non-breeding migratory waders.

An introductory article summarizes why the work was done, the major conclusions and directions for future research. The papers follow in fairly logical order; the book can be read in one lump by those with the perseverance to tackle 22 consecutive and meaty papers (they are interspersed with a few photographs). The papers are presented in 5 major sections.

1. What makes the Banc d'Arguin attractive for waders? (6 papers)

The section kicks off with a detailed description of the habitat - geography, climate, hydrography and so on. Seagrasses seem to be the major producers fuelling the ecosystem. Most of the wader prey it supports is very small, with the dramatic exception of an awesome bivalve, the Giant Bloody Cockle. These weigh almost as much as Oystercatchers, their only predators; how the Oystercatchers open the immense shells without being trapped (and thus killed) is not known. There is however some solid data on how many the Oystercatchers take and eat each year. The tiny prey items of the other waders are far harder to sample, and guesswork was needed in calculating how much prey is available and how much is eaten by waders. It seems clear though, that (compared with other E. Atlantic wader feeding grounds) the Banc d'Arguin is not particularly food rich; it is speculated that it would not support so many waders if the environment were not stable from year to year. The final three papers deal with other possible stresses on waders at the Banc d'Arguin - heat, salt load (the effects of these are still not known) and falcon predation - recently arrived birds seem at greatest risk but the overall effect of birds of prey on wintering waders is not known.

2. Description of migration patterns in space and time. (5 papers).

The first paper deals with breeding location and migration routes of waders wintering in West Africa, using biometrics and supplemented by recovery data. It is an impressive document but too concise; for instance recoveries are only mentioned in prose, not quantitatively and graphically; biometrics from breeding grounds are from an unpublished data set but are only presented as unhelpful small lines on otherwise informative graphs. Unscrambling size differences is not at all easy when geographical variation at the breeding grounds is slight and clinal, especially when sexual size dimorphism also complicates the picture. Yet another problem is the uncertainty over how many of the birds caught were wintering in the study area and how many were using it as a staging site. The extent of staging is investigated in a paper which features techniques meriting use in NW Australia. These include analysis of changes in age proportions in wader catches, changing sex proportions in species than can be sexed in the field (e.g. Bar-tailed Godwit) and of course, lots more counting!

Sightings of departing birds were used to investigate the seasonal timing of spring departure. Species breeding at higher latitudes tended to leave later, presumably to avoid arriving at breeding grounds while they were still frozen. Dunlin data from the Waddenzee is presented in another paper and is also consistent with the theory that departure timing is under internal (not direct environmental) control. This may come as a surprise to those with experience of departing flocks from NW Australia; our waders seem to have a remarkable knack for leaving on afternoons and evenings when high level tailwinds are favourable. Presumably they have a different departure control mechanism when they leave staging areas on their final northward migration step.

A June census showed that, as expected, most "summering" birds in the non-breeding area were immature. Yet for some species (Grey Plover, Dunlin, Red Knot and Sanderling), appreciable numbers of birds in breeding plumage "summer" in the Banc d'Arguin. It is suggested that variation in the age of first breeding is responsible, but the possibility that some adults take sabbatical leave received little attention. This has been reported in another transequatorial migrant, the Cory's Shearwater, in which about 7% of breeding adults interrupt breeding for one to several years (Mougin *et al* 1985). [Mougin, J.-L., C. Jouanin & F. Roux. 1985. *Bocagiana* 86: 1-12.]

3. Migratory Behaviour (2 papers)

A long paper dealing with the behaviour of departing waders should make us rather ashamed of how little we have published on the topic from the NW. It is well known on the Australian grapevine that waders leaving Broome do so in smallish flocks of rather regular size, that they usually call a

lot, are usually in single species flocks and usually fly in formation. But I can't remember anything in *Stilt* confirming this sort of thing with systematic observations as has been done in this paper; it also contains much discussion of the significance of these observations and one of many lists of references that look well worth investigating. They used an optical range finder to follow orientation of departing flocks - rather primitive and labour intensive compared with the radar facilities at Broome, with a much shorter range; they lost sight of their birds before they had reached "cruising height". It did allow them however, to calculate rate of climb and identify the species in the monitored flocks. It would also be a useful device in calculating flight speeds but the paper presents no data on this, critical though it is in estimating flight ranges. Other interesting observations: Birds made no directional compensation for wind drift except when there were tail winds (these are rare at low altitudes at the Banc d'Arguin); most birds left in the afternoon regardless of tide height. A second paper on Avocets reinforces the notion that flock size at departure is important; they dropped in from the south and left northwards shortly afterwards, having re-adjusted the flock size without refuelling. This sort of observation suggests there is a substantial energy saving in formation flight, but there is no hard data for waders yet.

4. How to acquire the nutrient reserves necessary for migration. (6 papers).

Here the book moves into fields untouched in Australia. A few waders taken into captivity for a while provided a good deal of physiological information. The energy needed to keep a wader alive and well, and the efficiency with which food (especially protein) was turned into energy, turned out to be lower in waders that winter in the tropics than in those that winter in temperate regions. Both phenomena reduce the amount of internal heat production of tropical waders, so it is suggested that they are adaptations to avoid heat stress. It was found that energy required for mass gain was lower in lean birds than in fat birds and it was calculated that even at the latest stages of pre-migratory mass gain, birds were increasing reserves of protein as well as fat. This is confirmed in another paper, in which analysis of body compositions of catching casualties showed only 50-60% of pre-migratory mass gain to be fat. The extra mass is protein; exactly where it is found and what it does remains one of the most intriguing mysteries of bird migration. Until it is sorted out one has to regard current flight range estimates as dodgy - most published ones are based on the assumption that all pre-migratory mass gain is fat.

The superstar of this section is the Whimbrel. It preys on conveniently large crabs, so it is possible to make field observations of size, species and numbers of crab eaten and to keep track of what bits are discarded. To work out what these observations mean in terms of energy consumption, digestibility of crabs was studied with the assistance of some Whimbrels kept in captivity for a while. It transpired that although more skeleton was rejected at times of high food intake, crab digestibility decreased, probably because food had to pass through the more quickly. This makes weight

gain a tricky process; for instance to realize a 30% increase in digested energy, the daily rate of food intake needs to increase 45%. A point is reached where digestion rate is the bottleneck preventing faster weight gain. This is consistent with the field studies, for Whimbrels have a maximum intake rate during feeding sessions which does not increase during the "wintering" season; when feeding quickly they have to stop for digestion pauses. The pre-migratory weight increase occurs because they manage feeding sprees of high intake rate at night as well as by day. This is only possible because crabs are available for a longer period of the day late in the season. Why the crabs indulge in such apparently dangerous behaviour is not explained! It is argued that it is nutritionally impossible for Whimbrels to migrate north any earlier than they do; this seems inconsistent with the conclusion earlier in the book that wader departure time is under internal control.

5. Constructing energy budgets of migration schemes (3 papers).

In estimating these budgets, the weight of waders as they depart on their northward migration is an important parameter. It is a messy thing to calculate, for even at peak migration times a wader catch will include an unknown proportion at various stages of weight gain, a proportion that have no intention of migrating at all - and if you are lucky, an unknown proportion of birds that are ready to go. The analysis problem has been attacked in a variety of ways. In Turnstones, it was bypassed by using recaptured birds to calculate the rate of mass gain. Capture had a surprising effect on weight gain - it apparently took Turnstone 25 days to recover from the experience - so only birds recaptured in different years were used.

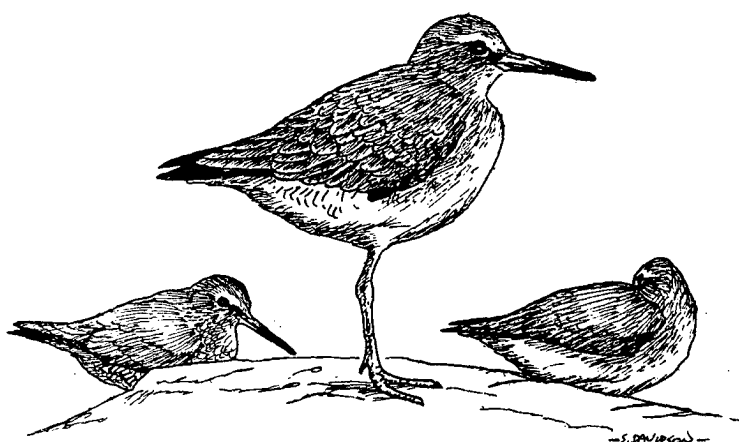
For some species a more complex method was used. It takes into account the proportions of birds leaving per week (estimated from counts and observations of flock departures) because leaving birds are presumably the heaviest in the population. The extent of breeding plumage was recorded in all birds caught; Banc d'Arguin birds in breeding plumage feed less intensively than those in transitional plumage, presumably because many (or all?) of them have attained departure mass. Body moult notes are also needed, for while some birds may leave before attaining full summer plumage, all seem to suspend body moult while migrating. (A couple of unconvincing suggestions are put forward to explain this, but the possibility that it reduces water loss was not considered). With so many possible error sources, it is not clear how reliable the eventual estimates of departure masses are. One conclusion seems justified though; in larger species the migratory reserve forms a smaller proportion of body mass than it does in smaller ones.

Bar-tailed Godwits at the Banc d'Arguin depart over a short period, nearly all leaving between 22-27 April. Fairly accurate calculations of departure mass can thus be made from rate of mass gain. The values arrived at for Godwits form the basis of one of the most robust flight range estimates available. It is supplemented by data on the composition of the reserve mass, and there are some direct observations of

flight speed (again not published in full). Many Bar-tailed Godwits move to the Waddenzee in NW Europe, and counts done there confirm that these flights are non-stop. Flight range estimates on the Banc d'Arguin Godwits show that they could not cover this distance without exploiting high altitude tail winds. In the final paper it is argued that this is probably the case with many other species wintering on the Banc d'Arguin, in part because a review of the literature on flight speeds in waders suggests that large and small species fly at much the same speed. This is a surprising conclusion for fast flight costs a small wader a lot more energy per km than it costs a large one. There are many other exasperating variables that must be known to calculate flight range; all receive some discussion and the authors conclude that current equations systematically underestimate flight range.

In this age of photocopiers, actually buying a book which presents a series of papers is not a great idea. But this one is on my shopping list; it has lots that is thought-provoking and new, many techniques that are well worth pinching, and a delightful lack of CV papers. As a final note, thanks are due to the Dutch authors for publishing in English! Pretty lucid English too, with barely a slip-up to remind one of how useful it is to be brought up speaking the worlds most widely used language. Abstracts are also provided in French and Dutch, which gives us food for thought. Can *Stilt* become the eastern flyway journal without catering for the non-English speakers doing pioneer wader work in Asia?

Danny Rogers.



BANDING ROUND-UP

Compiled by Jamie Pook, Australian Bird and Bat Banding Schemes, Australian National Parks and Wildlife Service, GPO Box 8, Canberra, ACT 2601.

The following lists are supplied from data supplied to the Scheme between March 1990 and March 1991. Permission must be sought from the banders and clearance given by the ABBBS before using these data in publications.

LAYOUT OF DATA:

- ✓ Line 1 - band number; banding place; co-ordinates; date of banding; age; sex; bander
- Line 2 - recovery method; recovery status; recovery place; co-ordinates; recovery date; age; sex; finder
- Line 3 - distance and direction between banding and recovery places; time elapsed between banding and recovery

SYMBOLS USED:

Age code:

- U = unknown;
- P = nestling;
- J = juvenile;
- 1 = within the first year of life;
- +1 = within the first year or older;
- 2 = within the second year;
- +2 = within the second year or older; etc

Sex:

- U = unknown;
- M = male;
- F = female.

Method of encounter:

- 01 = probably trapped;
- 02 = trapped but device is unknown to the banding office;
- 03 = trapped in a mist net;
- 04 = trapped with a cage trap;
- 05 = trapped with a cannon net;
- 25 = bird sick or injured;
- 31 = collided with a moving road vehicle;
- ✓ 40 = band found on a bird, no further data on how encountered;
- 41 = band returned, not reported if on a bird;
- 46 = colour marking sighted in field, bird one of a cohort marked in this manner;
- ✓ 48 = colour marking sighted in field;
- 54 = beachwashed;
- 61 = shot - reason unknown;
- 63 = taken for scientific study;
- 67 = taken for food or feathers;
- 68 = shot for food or sport;
- 99 = found dead, cause unknown.

Status after encounter:

- 00 = status of bird and band is unknown;
- 01 = status of bird unknown, band left on bird;
- 02 = status of bird is unknown and the band was left on the bird;
- 03 = bird is dead, status of band is unknown;
- 04 = bird is dead, band left on bird;
- 05 = bird is dead, band removed from bird;
- 09 = rehabilitation attempted but bird died, band status unknown;
- 13 = bird released alive with band;
- 14 = bird released alive, band removed;
- 26 = bird was alive in the wild with the band;
- 29 = bird not banded, but recovered with band;

129 RIDDY TURNSTONE

ARENARIA INTERPRES

051-29700 SWAN ISLAND QUEENSLIFFVIC

03 13 SZO-TSAO TAIWAN

Distance: 7244 km

Direction: 335 degs.

38d15m S 144d40mE 891118

22d58m N 120d10mE 900429

2 U VICTORIAN WADER STUDY GROUP

U U TAIWAN BIRD BANDING CENTRE

Time elapsed: 0 yrs 5 mnths 11 days

153 BAR-TAILED GODWIT

LIMOSA LAPPONICA

071-84701 BEACHES CRAB CK RD ROEBUCK BAY BROOME

67 05 EAST END OF CHONGMING ISLAND CHINA

Distance: 5503 km

Direction: 359 degs.

18d0m S 122d22mE 880323

31d30m N 121d52mE 890300

+2 U AUSTRALASIAN WADER STUDY GROUP

U U EAST CHINA WATERBIRD GROUP

Time elapsed: 1 yr

071-85176 SHORES OF THE 80 MILE BEACHWA

67 05 EAST END OF CHONGMING ISLAND CHINA

Distance: 5642 km

Direction: 1 degs.

19d15m S 121d20mE 880401

31d30m N 121d52mE 890400

+2 U AUSTRALASIAN WADER STUDY GROUP

U U EAST CHINA WATERBIRD GROUP

Time elapsed: 1 yr

071-86531 SHORES OF THE 80 MILE BEACHWA

67 03 EAST CHONGMING ISLAND SHANGHAI CHINA

Distance: 5642 km

Direction: 1 degs.

19d15m S 121d20mE 900404

31d30m N 121d52mE 900415

+2 F AUSTRALASIAN WADER STUDY GROUP

U U EAST CHINA WATERBIRD GROUP

Time elapsed: 0 yrs 0 mnths 11 days

071-86536 SHORES OF THE 80 MILE BEACHWA

67 03 ZANGHAI SHANGHAI PROVINCE CHINA

Distance: 5564 km

Direction: 0 degs.

19d15m S 121d20mE 900404

30d48m N 121d27mE 900416

+2 M AUSTRALASIAN WADER STUDY GROUP

U U EAST CHINA WATERBIRD GROUP

Time elapsed: 0 yrs 0 mnths 12 days

081-35529 KOORAGANG ISLAND NATURE RESERVENSW

05 14 MIRANDA FIRTH OF THAMES NEW ZEALAND

Distance: 2191 km

Direction: 109 degs.

32d52m S 151d46mE 881204

37d10m S 175d19mE 901103

+1 U HARDY

U U BANDERS

Time elapsed: 1 yrs 10 mnths 30 days

155 GREY-TAILED TATTLER

TRINGA BREVIPES

061-70870 BEACHES CRAB CK RD ROEBUCK BAY BROOME

03 13 TA TU HSI TAIWAN

Distance: 4673 km

Direction: 357 degs.

18d0m S 122d22mE 880407

24d12m N 120d28mE 890902

+2 U AUSTRALASIAN WADER STUDY GROUP

+2 U TAIWAN BIRD BANDING CENTRE

Time elapsed: 1 yrs 4 mnths 25 days

061-72179 BEACHES CRAB CK RD ROEBUCK BAY BROOME

03 13 KUANTO TAIWAN

Distance: 4771 km

Direction: 358 degs.

18d0m S 122d22mE 900412

25d7m N 121d27mE 900505

+2 U AUSTRALASIAN WADER STUDY GROUP

U U TAIWAN BIRD BANDING CENTRE

Time elapsed: 0 yrs 0 mnths 23 days

HD0-1827 TA TU HSI TAIWAN

05 13 BEACHES CRAB CK RD ROEBUCK BAY BROOME

Distance: 4673 km

Direction: 177 degs.

24d12m N 120d28mE 890821

18d0m S 122d22mE 900412

+2 U TAIWAN BIRD BANDING CENTRE

+2 U AUSTRALASIAN WADER STUDY GROUP

Time elapsed: 0 yrs 7 mnths 22 days

160 TEREK SANDPIPER

TRINGA TEREK

051-25346 BUFFALO CREEK DARWINNT 12d20m S 130d54mE 890918 +1 U GEERING
 67 05 EAST END OF CHONGMING ISLAND CHINA 31d30m N 121d52mE ? U U EAST CHINA WATERBIRD GROUP
 Distance: 4967 km Direction: 349 degs.

161 CURLEW SANDPIPER

CALIDRIS FERRUGINEA

041-14038 SALTWORKS, PORT HEDLANDWA 20d11m S 118d54mE 831109 2 U WA WADER STUDY GROUP
 05 13 MAI PO MARSHES HONG KONG 22d29m N 114d2m E 900408 U U MELVILLE
 Distance: 4750 km Direction: 353 degs. Time elapsed: 6 yrs 4 mnths 29 days

041-17708 BEACHES CRAB CK RD ROEBUCK BAY BROOME 18d0m S 122d22mE 850417 +2 U AUSTRALASIAN WADER STUDY GROUP
 03 13 SZO-TSAO TAIWAN 22d58m N 120d10mE 900429 U U TAIWAN BIRD BANDING CENTRE
 Distance: 4538 km Direction: 356 degs. Time elapsed: 5 yrs 0 mnths 12 days

041-58597 YALLOCK CREEK NEAR KOOWEERUPVIC 38d13m S 145d28mE 900101 +2 U VICTORIAN WADER STUDY GROUP
 03 13 MAI PO MARSHES HONG KONG 22d29m N 114d2m E 900504 U U MELVILLE
 Distance: 7479 km Direction: 328 degs. Time elapsed: 0 yrs 4 mnths 3 days

041-58597 YALLOCK CREEK NEAR KOOWEERUPVIC 38d13m S 145d28mE 900101 +2 U VICTORIAN WADER STUDY GROUP
 03 13 MAI PO MARSHES HONG KONG 22d29m N 114d2m E 900504 U U MELVILLE
 Distance: 7479 km Direction: 328 degs. Time elapsed: 0 yrs 4 mnths 3 days

GNS-19653 MAI PO MARSHES HONG KONG 22d29m N 114d2m E 870426 +2 U MELVILLE
 05 13 SALTWORKS, PORT HEDLANDWA 20d15m S 118d55mE 900325 +2 U AUSTRALASIAN WADER STUDY GROUP
 Distance: 4757 km Direction: 173 degs. Time elapsed: 2 yrs 10 mnths 29 days

041-17308 BEACHES CRAB CK RD ROEBUCK BAY BROOME 18d0m S 122d22mE 850324 +2 U AUSTRALASIAN WADER STUDY GROUP
 67 05 EAST END OF CHONGMING ISLAND CHINA 31d30m N 121d52mE 890300 U U EAST CHINA WATERBIRD GROUP
 Distance: 5503 km Direction: 359 degs. Time elapsed: 4 yrs

041-31101 WERRIBEE SEWERAGE FARM (SPIT, PT WILSON) 38d3m S 144d32mE 870118 +2 U VICTORIAN WADER STUDY GROUP
 67 03 ZANGHAI SHANGHAI PROVINCE CHINA 30d48m N 121d27mE 890505 U U EAST CHINA WATERBIRD GROUP
 Distance: 8020 km Direction: 339 degs. Time elapsed: 2 yrs 3 mnths 17 days

162 RED-NECKED STINT

CALIDRIS RUFICOLLIS

033-65884 INVERLOCH (ANDERSONS INLET & PT. 38d37m S 145d45mE 881120 +2 U VICTORIAN WADER STUDY GROUP
 SMYTHE)
 67 05 HANGZHOU BAY CHINA 30d48m N 121d27mE 900512 U U EAST CHINA WATERBIRD GROUP
 Distance: 8117 km Direction: 338 degs. Time elapsed: 1 yrs 5 mnths 22 days

163 SHARP-TAILED SANDPIPER

CALIDRIS ACUMINATA

041-05708 SALT PONDS 12 KM W OF BURRABO NSW

67 05 HANGZHOU BAY CHINA

Distance: 7730 km Direction: 339 degs.

35d22m S 144d12mE 880131 +2 U MAHER

30d48m N 121d27mE 900512 U U EAST CHINA WATERBIRD GROUP

Time elapsed: 2 yrs 3 mths 11 days

164 RED KNOT

CALIDRIS CANUTUS

051-15251 SWAN ISLAND QUEENSLAND VIC

05 14 MIRANDA FIRTH OF THAMES NEW ZEALAND

Distance: 2686 km Direction: 97 degs.

38d15m S 144d40mE 861108 1 U VICTORIAN WADER STUDY GROUP

37d10m S 175d19mE 901103 U U BANDERS

Time elapsed: 3 yrs 11 mths 26 days

051-27757 SHORES OF THE 80 MILE BEACHWA

68 05 MIAO-GANG YANGTZE RIVER ESTUARY CHINA

Distance: 5572 km Direction: 1 degs.

19d15m S 121d20mE 850413 +2 U AUSTRALASIAN WADER STUDY GROUP

30d52m N 121d52mE 900412 U U EAST CHINA WATERBIRD GROUP

Time elapsed: 4 yrs 11 mths 30 days

165 GREAT KNOT

CALIDRIS TENUIROSTRIS

061-44140 BEACHES CRAB CK RD ROEBUCK BAY BROOME

67 03 ZANGHAI SHANGHAI PROVINCE CHINA

Distance: 5401 km Direction: 358 degs.

18d0m S 122d22mE 850325 +2 U AUSTRALASIAN WADER STUDY GROUP

30d48m N 121d27mE 900407 U U EAST CHINA WATERBIRD GROUP

Time elapsed: 5 yrs 0 mths 13 days

061-69592 BEACHES CRAB CK RD ROEBUCK BAY BROOME

67 03 CHONGMING ISLAND SHANGHAI CHINA

Distance: 5472 km Direction: 359 degs.

18d0m S 122d22mE 880323 +2 U AUSTRALASIAN WADER STUDY GROUP

31d27m N 121d53mE 880400 U U ZHANG

061-69632 BEACHES CRAB CK RD ROEBUCK BAY BROOME

67 05 MEIGONG SHANGHAI PROVINCE CHINA

Distance: 5407 km Direction: 359 degs.

18d0m S 122d22mE 880323 +2 U AUSTRALASIAN WADER STUDY GROUP

30d52m N 121d52mE 890408 U U EAST CHINA WATERBIRD GROUP

Time elapsed: 1 yrs 0 mths 16 days

061-70158 SHORES OF THE 80 MILE BEACHWA

01 00 CHONGMING DAO SHANGHAI CHINA

Distance: 5627 km Direction: 0 degs.

19d15m S 121d20mE 880331 +2 U AUSTRALASIAN WADER STUDY GROUP

31d36m N 121d30mE 880425 U U NATIONAL BIRD BANDING CENTER

Time elapsed: 0 yrs 0 mths 25 days

061-44140 BEACHES CRAB CK RD ROEBUCK BAY BROOME

03 13 ZANGHAI SHANGHAI PROVINCE CHINA

Distance: 5426 km Direction: 359 degs.

18d0m S 122d22mE 850325 +2 U AUSTRALASIAN WADER STUDY GROUP

30d48m N 121d27mE 900407 U U EAST CHINA WATERBIRD GROUP

Time elapsed: 5 yrs 0 mths 13 days

061-44753 BEACHES CRAB CK RD ROEBUCK BAY BROOME

67 03 ZANGHAI SHANGHAI PROVINCE CHINA

Distance: 5426 km Direction: 359 degs.

18d0m S 122d22mE 850418 +2 U AUSTRALASIAN WADER STUDY GROUP

30d48m N 121d27mE 900408 U U EAST CHINA WATERBIRD GROUP

Time elapsed: 4 yrs 11 mths 21 days

061-44807 BEACHES CRAB CK RD ROEBUCK BAY BROOME

68 05 ZANGHAI SHANGHAI PROVINCE CHINA

Distance: 5426 km Direction: 359 degs.

18d0m S 122d22mE 850418 1 U AUSTRALASIAN WADER STUDY GROUP

30d48m N 121d27mE 900403 U U EAST CHINA WATERBIRD GROUP

Time elapsed: 4 yrs 11 mths 16 days

061-69597 BEACHES CRAB CK RD ROEBUCK BAY BROOME

67 03 ZANGHAI SHANGHAI PROVINCE CHINA

Distance: 5426 km Direction: 359 degs.

18d0m S 122d22mE 880323 +2 U AUSTRALASIAN WADER STUDY GROUP

30d48m N 121d27mE 900408 U U EAST CHINA WATERBIRD GROUP

Time elapsed: 2 yrs 0 mths 16 days

165

GREAT KNOT

CALIDRIS TENUIROSTRIS

061-69698 BEACHES CRAB CK RD ROEBUCK BAY BROOME
67 05 EAST END OF CHONGMING ISLAND CHINA
Distance: 5503 km Direction: 359 degs.

18d0m S 122d22mE 880325 1 U AUSTRALASIAN WADER STUDY GROUP
31d30m N 121d52mE 890430 U U EAST CHINA WATERBIRD GROUP
Time elapsed: 1 yrs 1 mnths 5 days

061-69936 SHORES OF THE 80 MILE BEACHWA
67 03 ZANGHAI SHANGHAI PROVINCE CHINA
Distance: 5564 km Direction: 0 degs.

19d15m S 121d20mE 880329 1 U AUSTRALASIAN WADER STUDY GROUP
30d48m N 121d27mE 900420 U U EAST CHINA WATERBIRD GROUP
Time elapsed: 2 yrs 0 mnths 22 days

061-70997 BEACHES CRAB CK RD ROEBUCK BAY BROOME
68 05 ZANGHAI SHANGHAI PROVINCE CHINA
Distance: 5426 km Direction: 359 degs.

18d0m S 122d22mE 900327 +2 U AUSTRALASIAN WADER STUDY GROUP
30d48m N 121d27mE 900403 U U EAST CHINA WATERBIRD GROUP
Time elapsed: 0 yrs 0 mnths 7 days

061-71068 BEACHES CRAB CK RD ROEBUCK BAY BROOME
67 03 ZANGHAI SHANGHAI PROVINCE CHINA
Distance: 5426 km Direction: 359 degs.

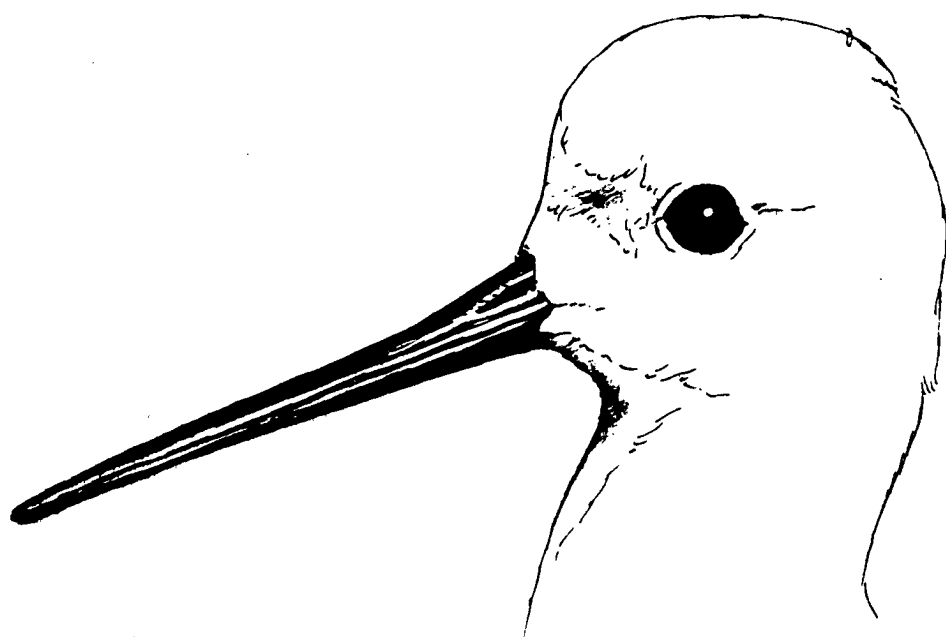
18d0m S 122d22mE 900327 +2 U AUSTRALASIAN WADER STUDY GROUP
30d48m N 121d27mE 900408 U U EAST CHINA WATERBIRD GROUP
Time elapsed: 0 yrs 0 mnths 12 days

071-84678 BEACHES CRAB CK RD ROEBUCK BAY BROOME
67 03 ZANGHAI SHANGHAI PROVINCE CHINA
Distance: 5426 km Direction: 359 degs.

18d0m S 122d22mE 880323 +2 U AUSTRALASIAN WADER STUDY GROUP
30d48m N 121d27mE 900420 U U EAST CHINA WATERBIRD GROUP
Time elapsed: 2 yrs 0 mnths 28 days

071-84698 BEACHES CRAB CK RD ROEBUCK BAY BROOME
67 03 ZANGHAI SHANGHAI PROVINCE CHINA
Distance: 5426 km Direction: 359 degs.

18d0m S 122d22mE 880323 1 U AUSTRALASIAN WADER STUDY GROUP
30d48m N 121d27mE 900408 U U EAST CHINA WATERBIRD GROUP
Time elapsed: 2 yrs 0 mnths 16 days



-S. DAVIDSON-

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