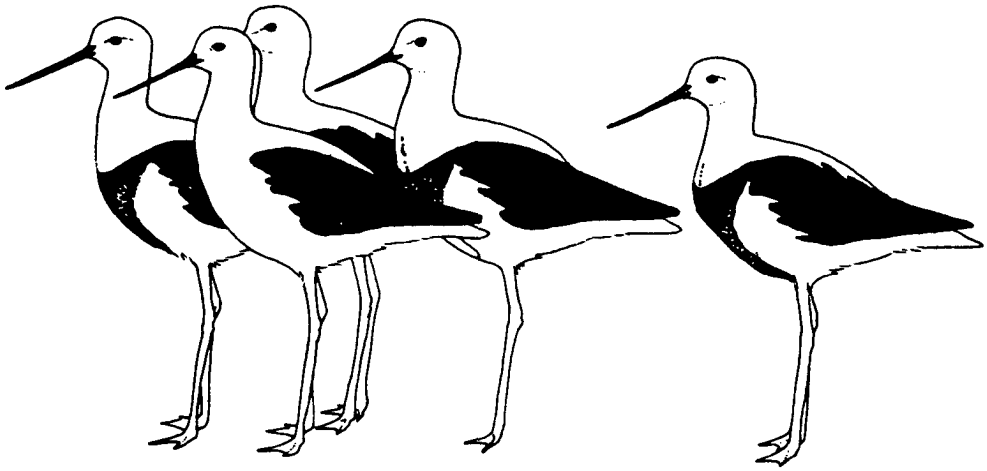
The Stilt



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BULLETIN OF THE AUSTRALASIAN WADER STUDIES GROUP
OF THE
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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.

EDITORIAL

There was an excellent response to my request in the previous editorial for more material for publication. A good supply of articles is essential if *The Stilt* is to appear regularly.

Several changes have been made in this issue. The contents page has been moved to the back cover for greater ease of perusal; the naming of the issues of *The Stilt* has been changed to April and October to avoid the confusion that seasonal terms create and the yellow cover has been adopted as the standard bulletin colour.

This issue contains an index of the first six issues of *The Stilt* (Spring 1981 to Autumn 1985) and is partitioned into general, author and species headings. This index was made possible by the stirling efforts of Brenda and Mick Murlis and Karen Barter to whom many thanks are extended.

I am often asked what is the editorial policy for *The Stilt* and so have included the following outline as a guide.

------ *The Stilt* serves as the official journal of the Australasian Wader Studies Group and as such publishes material of interest to members on any aspect of the life histories of waders (*Charadii*) or on the workings of the organisation. *The Stilt* publishes papers, reviews, comments, preliminary results, illustrations, requests for information and general notices and A.W.S.G. news. Little restraint is placed on either the kind of matter accepted or the style in which this matter is presented. Informality is an important element of *The Stilt* which should be seen in a co-ordinating, informative and 'catalytic' role rather than a final repository of scientific information. However, considerable attention is given to clarity and conformity of presentation. Authors should be members of the A.W.S.G. but material from non-members may be included at the discretion of the editor.

The Stilt is published in April and October, although in the past, both the regularity and size of *The Stilt* have been dictated by limited availability of suitable copy. The editor is assisted by sub-editors whose role is to solicit and pass on relevant articles to the editor. This purpose is best served if the assistant editors are geographically distant from the editor. In the interests of equitably stimulating and representing wader enthusiasts in Australasia, the editorship is passed on to a different state every two years if practical.

Reference to a recent issue of *The Stilt* suffices as a guide to editorial policy on format. An index is prepared after every three years (six issues) and is published in a subsequent issue.------

Finally I should like to thank Margaret Considine (Assistant Editor) and Hazel Dann for their cheerful deciphering of my scrawls into the typewritten sheets before you. I should also like to welcome Eric Woehler (Tasmania) as an additional Assistant Editor and hope his association with *The Stilt* will be happy and fruitful.

PETER DANN

REPORT ON THE WINTER, 1985 NATIONAL WADER COUNT

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The Winter, 1985 National Wader Count was held over the weekends of 29th/30th June and 6th/7th July, 1985. Coverage was slightly less extensive than in previous years. The best coverage was obtained in Victoria and New South Wales (59% of count sheets). An aerial survey of northern Cape York Peninsula was made by Don Jeans, and Mike Maher of C.S.I.R.O. Division of Wildlife and Rangelands Research kindly provided wader count results collected during an aerial survey of the lakes of north-western New South Wales. Coverage of inland sites was slightly better this year compared to Winter, 1984. Table 1 shows the number of sheets submitted in the Winter, 1985 count compared to the previous two winter counts.

This report presents selected results of the Winter, 1985 National Wader Count. Information is presented on the numbers of each species in each state, changes since the previous winter count and the effect on some resident species of the drying out of many inland wetlands after the 1984 floods.

Coverage

Table 1 shows the numbers of sheets submitted and numbers of waders counted in each state and territory of Australia during the last three Winter National Wader Counts. Coverage of each state is briefly discussed below:

Table 1: Comparision of the number of sheets and numbers of waders for winter wader counts from 1983 to 1985.

State	No. of Sheets			Total Waders		
	1983	1984	1985	1983	1984	1985
New South Wales	57	78	94	5,793	7,956	20,116
Victoria	190	157	144	43,330	21,237	30,365
Queensland	48	35	47	21,295	8,823	10,127
South Australia	41	27	28	24,753	7,193	18,337
Western Australia	59	44	32	16,242	69,012	8,539
Tasmania	50	69	52	5,991	5,713	6,254
Northern Territory	11	8	8	1,674	1,772	1,879
TOTAL	456	418	405	11,9048	121,70	95,937

* 1984 count includes an aerial survey of Broome-Port Hedland, W.A.

NEW SOUTH WALES: The number of sites counted was generally consistent with previous years with the exception of the aerial survey of the lakes in the north-west of the state on 10th July.

VICTORIA: Fewer sites were counted this year although the total number of waders observed was higher.

Table 2. Summary of totals for each species in each state for 1985 Winter National Wader Count.

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	TOTAL
174 BUSH THICK-KNEE		2	15						17
175 BEACH THICK-KNEE	6		14						20
130 PIED OYSTERCATCHER	120	1387	268	79	99	1399	4		3356
131 SOOTY OYSTERCATCHER	85	285	38	3	7	176			594
133 MASKED LAPWING	1171	2206	539	287		1800	61		6064
135 BANDED LAPWING	12	60			31	58			161
136 GREY PLOVER		8			13		122		143
137 LESSER GOLDEN PLOVER	47	4	36						87
132 RED-KNEED DOTTEREL	679	919	49		169		1		1817
138 HOODED PLOVER	19	125		61	253	219			677
139 MONGOLIAN PLOVER	15	1	289			1	49		355
140 DOUBLE-BANDED PLOVER	555	3401	28	74		1433			5491
141 LARGE SAND PLOVER		6	60				246		312
142 ORIENTAL PLOVER			10				110		120
143 RED-CAPPED PLOVER	2277	2279	840	408	648	688	92		7232
144 BLACK-FRONTED PLOVER	761	345	503	14	105	19	2		1749
146 BLACK-WINGED STILT	2248	1180	713	34	2063		137		6375
147 BANDED STILT	233	8389		15311	4007				27940
148 RED-NECKED AVOCET	8663	2275	132	724	429				12223
129 RUDDY TURNSTONE	16	47	21	6	32	62	48		232
149 EASTERN CURLEW	680	353	436	3		27	26		1525
150 WHIMBREL	176	47	476			1	53		753
151 LITTLE CURLEW			3						3
154 WOOD SANDPIPER			5						5
155 GREY-TAILED TATTLER	134	9	482	5	3	5	30		668
156 WANDERING TATTLER			12						12
847 TATTLER SP			171		2				173
157 COMMON SANDPIPER			4				2		6
158 GREENSHANK	18	118	89	13	14	5	5		262
159 MARSH SANDPIPER	28	24	10						62
160 TEREK SANDPIPER	6		128				4		138
152 BLACK-TAILED GODWIT	8	3	51		5		6		73
153 BAR-TAILED GODWIT	1559	1771	1174		1	39	120		4664
164 RED KNOT	20	770	73	4			74		941
165 GREAT KNOT		32	711		49		520		1312
163 SHARP-TAILED SANDPIPER	9	30	5						44
162 RED-NECKED STINT	482	4284	545	1265	478	321	63		7438
161 CURLEW SANDPIPER	89	280	45	8	98	1			521
166 SANDERLING		1		26	2		12		41
172 ORIENTAL PRATINCOLE			1						1
173 AUSTRALIAN PRATINCOLE		1	30				92		123
891 REDSHANK					1				1
997 UNIDENTIFIED SMALL WADER		3							3
998 UNIDENTIFIED MEDIUM WADER			101		30				131
999 UNIDENTIFIED LARGE WADER		40							40
996 UNIDENTIFIED WADER			2020	12					2032
STATE TOTALS	20116	30685	10127	18337	8539	6254	1879		95937
NUMBER OF SHEETS	94	144	47	28	32	52	8		405

QUEENSLAND: More sites were counted this year including an aerial survey of northern Cape York Peninsula and extra inland sites.

SOUTH AUSTRALIA: No counts were made of the St. Vincent Gulf and fewer inland sites were counted.

WESTERN AUSTRALIA: The number of sites counted was higher and included the central west coast, the south-west coast and nullabor areas. No aerial survey of the north-west coast was made this year. Fewer sites were visited on the Swan coastal plain.

TASMANIA: Coverage was consistent with previous years.

NORTHERN TERRITORY: Counts of the Darwin area were made as in previous years but there were no aerial surveys of remote coastline.

Table 2 shows the total number of each species in each state. Almost 96,000 waders were counted in Australia this winter of which only 2,200 remained unidentified, most of which were recorded during the aerial survey of northern Cape York. Banded Stilts (27,940), Red-necked Avocets (12,223), Red-necked Stints (7,438) and Red-capped Plovers (7,232) were most numerous species and made up 59% of the total count of identified species. In the Winter, 1984 count Red-capped Plover was the most numerous species followed by Red-necked Stint, Great Knot and Curlew Sandpiper. The differance probably reflects movement during the last twelve months of resident species from drying wetlands far inland, which were not counted, to coastal areas.

Coverage was greater in the Summer, 1985 count when more coastal sites were visited. The proportion of the summer population overwintering for four species of migratory waders are shown in Table 3. Proportions were highest in Queensland, New South Wales and Northern Territory and lowest in the south-eastern states although a greater proportion of Bar-tailed Godwit overwintered in Tasmania this year. Similar findings have been made in previous winter counts. This suggests that juvenile migratory waders possibly move out of southern Australia in winter. Alternatively juveniles, which overwinter, do not move into southern Australia when they first arrive to the extent that adults do. Banding studies are needed in the north to confirm whether the proportion of juveniles is higher there in summer than it is further south.

Table 3: Winter 1985 counts as a percentage of the Summer 1985 counts for each state for some migratory waders.

Species	NSW	VIC	QLD	SA	WA	TAS	NT
Great Knot	-	5.5	28.2	-	7.6	-	38.0
Red-necked Stint	20.3	8.3	32.9	9.3	7.0	4.9	35.4
Curlew Sandpiper	3.4	1.2	4.5	0.4	5.4	0.1	-
Bar-tailed Godwit	29.5	18.3	24.4	-	0.2	24.7	11.2

SOME SPECIES RESULTS

Curlew Sandpiper *Calidris ferruginea*

Count Results

State	1984	1985
NSW	108	89
VIC	1,735	280
QLD	595	45
S.A.	1,509	8
W.A.	1,794	98
TAS.	21	1
N.T.	1	-

Table 4: Proportion of overwintering Curlew Sandpipers since 1982

	1982	1983	1984	1985
Summer	52,778	71,147	52,927	31,381
Winter	1,133	8,524	5,763	521
% Overwintering	2.1	12.0	10.9	1.7

The proportion of overwintering Curlew Sandpipers (1.7%) was much lower than in previous years. This very low count reflected a poor breeding season during 1984 as evidenced by low proportions of juvenile birds in catches made by the Victorian Wader Study Group in Victoria (2.0%).

Red-necked Stint *Calidris ruficollis*

Count Results

State	1984	1985
NSW	160	482
VIC	2,122	4,284
QLD	418	545
S.A.	2,614	1,265*
W.A.	1,488	478*
TAS	122	321
N.T.	7	63

(* = reduced coverage in S.A. and of favoured areas in W.A.)

Table 5: Proportion of overwintering Red-necked Stints since 1982.

	1982	1983	1984	1985
Summer	157,917	111,544	106,387	82,587
Winter	14,937	14,656	6,931	7,438
% Overwintering	9.5	13.1	6.5	9.0

The number of Red-necked Stints overwintering this year was slightly greater than in Winter, 1984 despite slightly lower coverage. The proportion of overwintering Red-necked Stints was greater than in 1984 and is most likely due to a more successful breeding season last year. Banding studies by the V.W.S.G. in Victoria also support this as a higher percentage of juvenile birds was found in catches in 1984-85.

Double-banded Plover *Charadrius bicinctus*

Total counted: Winter 1982: 5,669
Winter 1983: 4,645
Winter 1984: 3,487
Winter 1985: 5,491

State Totals:

VIC	3,401	59.7%
TAS	1,433	25.1%
NSW	555	9.7%
S.A.	74	1.3%
QLD	28	0.5%
W.A.	-	
N.T.	-	

Coverage within the species' range in eastern Australia is comparable with past Winter National Wader Counts. All sites showed increases in numbers this year. Larger numbers of Double-banded Plovers were recorded this year at Corner Inlet and Altona in Victoria. A successful breeding season in New Zealand in 1984 could account for the observed increase. The proportion of juvenile Double-banded Plovers banded in Victoria by the V.W.S.G. in 1985 was 17% compared to 11% in 1984. Rainfall and other climatic factors may also affect the numbers and distribution of Double-banded Plovers. This species is known to use pasture areas and with inland areas being drier this winter birds may have moved from inland sites which are not normally counted to coastal sites which are.

Banded Stilt *Cladorhynchus leucocephalus*

Total counted, Summer 1984: 13,747
Winter 1984: 756
Summer 1985: 66,709
Winter 1985: 27,940

Most important sites, Winter 1985	No. Counted	% Winter count
Coorong, S.A	15,077	54.0%
Esperance coast, W.A	3,987	14.3%
Western district Lakes, Vic	3,245	8.4%
Altona, Vic	2,150	7.7%
Wimmera Lakes, Vic	1,230	4.4%
Bellarine Peninsula, Vic	917	3.3%

A similar number of sites favoured by Banded Stilts were counted this year yet

numbers were much greater than in Winter, 1984. This winter over 15,000 were counted at one site in The Coorong where none were observed in Winter, 1984. Large numbers were also counted in the Western District and Wimmera Lakes in Victoria where last winter there were none. Lake Eyre filled in 1984 and an aerial survey there in mid-July, 1984 revealed over 30,000 Banded Stilts. Since then Lake Eyre has dried and Banded Stilts have moved back to near-coastal areas.

Red-necked Avocets *Recurvirostra novaehollandiae*

Total counted,	Summer 1984:	2,076
	Winter 1984:	1,494
	Summer 1985:	7,021
	Winter 1895:	12,223

Coverage within this species range was consistent with previous winters with the exception on this year's aerial survey of the lakes of north-western New South Wales where over 6,800 were recorded. At Lake Eyre in September, 1984, over 95,000 Red-necked Avocets were counted. The larger numbers recorded since Winter, 1984 reflect movement of these birds out of the far inland where they are not normally counted.

Acknowledgments

The 1985 Winter National Wader Count would not have been possible without the assistance of many people and organisations.

We wish to thank all the state and regional co-ordinators for their time and energy; Jo Wieneke (Townsville area), Marion Crouther (Mackay area), Bill Horton (Brisbane area), Jim Perry and Wilma Barden (Hunter-Port Stephens area), Alan Morris (Rest of New South Wales), Richard Alcorn (Wimmera Lakes), Margaret Cameron (Bellerine Peninsula), Val Curtis (Westernport), Angela Jessop (Altona), Mike Bamford, Roger Jaensch and Doug Watkins (Western Australia), Bob Patterson (Tasmania) and Tony Hertog (Darwin area).

The support of the Victorian Fisheries and Wildlife Division by providing boats and personnel for the counts of Corner Inlet is greatly appreciated.

The Australian National Parks and Wildlife Service and the Utah Foundation provided financial assistance for the Wader Count.

Finally a big thankyou to all those wader counters who sent in results and to all those who have supported the National Wader Counts over the past five years. Your efforts have made a valuable contribution to our knowlege and understanding of Australia's waders.

SEX DETERMINATION BY BILL LENGTH OF LIVE ADULT CURLEW SANDPIPERS *CALIDRIS FERRUGINEA*

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SUMMARY

A statistical technique has been used to calculate the mean bill length of live male and female adult Curlew Sandpipers at each of three sites in Australia and three sites in Asia. The mean bill lengths of live birds were found to be longer than those determined from museum specimens. Pooled Australian data gives bill length means and standard deviations of 37.0 mm (S.D. 1.55) for males and 41.0 mm (S.D. 1.49 mm) for females. At the 95% confidence level, adult birds in Australai can be sexed using the criteria males < 37.3 mm and females > 40.8 mm, whilst at the 90% level the criteria are males < 37.8 and females > 40.3 mm. Approximately 57% of birds can be sexed at the 95% level and 69% at the 90% level.

INTRODUCTION

Thomas and Dartmall (1970) first drew attention to the possibility of sexing Curlew Sandpipers *Calidris ferruginea* from bill length measurements. Since then further data have been published on museum material and these results, together with Thomas', are summarised in Table 1. It can be seen that the separation between the mean bill lengths for the sexes varies between 2.3 to 4.8 mm, with an average difference of 3.5 mm based on weighted male and females means of 36.2 and 39.7 mm, respectively, for the 14 samples. Pienkowski *et al* (1979) have used the percentage cumulative frequency technique (Griffiths 1968) to obtain means and standard deviation of bill lengths for the sexes in live adult birds. Their results are given in Table II from which it can be seen that the difference between the sexes in the means is 3.7 mm. The bill lengths for live males and females at 37.4 and 41.1 mm, respectively, are 1.2 and 1.4 mm longer than the means for museum material.

METHODS

Bill length information was obtained from live adult Curlew Sandpipers caught at six sites, these being Anna Plains (northern Western Australia), southern Victoria, Hobart (Tasmania), Hong Kong, central Thailand (near Bankok) and Tamil Nadu (southern India). The measurements were taken by a number of people and involved measuring from feather margin to the bill tip.

Estimates of the mean lengths and standard deviations of male and female bills were made using the method described in Griffiths (1968). Arithmetic probability paper is used to separate bimodal data into the two constituent normal populations. The technique involves plotting the percentage cumulative frequencey (PCF) of bill length and determining the point of inflexion of the resulting sigmoidal curve. The inflexion point gives the sex proportions within the sample and enables calculations to be made of means and standard deviations of bill length for each of the sexes.

RESULTS AND DISCUSSIONS

The bill length data from the six sites have been plotted as frequency histograms in Figure 1. Most sites show a degree of skewness, with Victoria, Hong Kong and Thailand having some evidence of bimodality. The corresponding PFC

REGION	AGE.	MALE				FEMALE				$\bar{x}$ DIFF.	SOURCE
		n	$\bar{x}$	s.d.	R	n	$\bar{x}$	s.d	R		
HOBART	—	34	35·6	2·4	21·5–40·0	23	39·5	2·5	35·5–43·5	3·9	THOMAS(1978)
AUSTRALIA	—	21	36·0	2·0	31·3–38·7	14	39·0	1·9	36·0–42·6	3·0	BARTER(1984)
BRITAIN	A	6	37·7	—	36–40	5	40·0	—	37–42	2·3	MINTON(1972)
"	J	26	35·4	—	32–41	25	38·1	—	34–44	2·7	"
MEDITERRANEAN	—	26	35·5	—	32–39	12	38·3	—	35–41	2·8	"
AFRICA/ MIDDLE EAST	—	55	36·0	—	31–40	25	38·8	—	34–43	2·8	"
INDIAN OCEAN	—	62	36·4	—	33–42	49	38·8	—	34–44	2·4	"
AUSTRALASIA/ FAR EAST	—	11	35·2	—	33–37	5	38·4	—	35–41	3·2	"
SIBERIA	—	6	36·0	—	34–37	4	39·3	—	36–42	3·2	"
WESTERN + CENTRAL EUROPE	—	29	36·2	1·5	33–38	33	40·1	1·1	38–42	3·9	CRAMP(1983)
INDONESIA	A	19	36·0	1·5	32–39	10	40·8	1·6	39–43	4·8	"
—	A	35	36·0	—	33–39	16	39·4	—	35–42	3·4	PRATER(1977)
—	J	26	36·2	—	32–44	23	38·7	—	35–43	2·5	"
SOUTH AFRICA		103	36·8	1·7	32–42	123	40·9	2·0	36–45	4·1	ELLIOT(1976)

Table I. Summary of bill length data for sexed museum material

(Legend: n = number of birds

$\bar{x}$ = mean

s,d. = standard deviation

R = range of measurements

$\bar{x}$ Diff. = difference between sex means)

diagrams with the constituent distribution lines are given in Figures 2-7.

The curves for birds caught in Anna Plains, Victoria, Hong Kong and Thailand are sufficiently sigmoidal in nature to allow the inflexion points to be picked with reasonable confidence. The curves for Hobart and Tamil Nadu are only mildly sigmoidal and the chi-squared test was used to determine the inflexion point for these two sites. The technique involves selection of a number of possible inflexion points, calculation of the relevant constituent distributions for the sexes and then use of the test to find the particular distribution which gives the best fit of the observed data. There is some evidence for the presence of a few birds of shorter bill length than expected at the three Australian sites. With the exception of Hong Kong, none of the individual site data can be proven beyond reasonable doubt to have come from other than single normal distributions. However, in all cases the calculated constituent distributions for the sexes give a better fit of the observed data according to the chi-squared test. Additionally, the means, standard deviations and differences between means for the six sites are internally consistent as discussed below.

The range of means at the six sites, as shown in Table III, is 36.6 to 37.5 mm for males and 40.4 to 41.4 mm for females. Within the limits of PCF analysis the standard deviations are considered to be reasonably similar for the sexes at any single site and from one site to another, with the exception of Thailand where the deviations for both sexes are higher than elsewhere. The variation between the means at the different sites can be explained satisfactorily by the moult/abrasion cycle at the feather margin as described by Pienkowski (1976). He showed for Red Knot *Calidris canutus* that the mean bill length tended to a minimum in the periods November to January and April/May and to a maximum during August to October and February/March. The Victorian and Hobart data (short bill lengths) were obtained during the December to February period and the Hong Kong (short bill lengths) during March to May. Anna Plains birds (long bill lengths) were measured during late October/early November. Thai data are partly anomalous in that whilst the female bill lengths are consistent with the measurement period (November to February), the male bill lengths are longer than would be expected at that time of the annual cycle. The great majority of Tamil Nadu birds (medium bill lengths) were caught in November and February to April and the resulting bill lengths represent the averages for birds at different stages of the moult/abrasion cycle. Allowing for the variation caused by the moult/abrasion cycle, the sex means and standard deviations are consistent with Pienkowski's (1976) results for birds caught in Morocco, (see Table II), which themselves could be expected to have longer bills as they were caught from July to September.

REGION	AGE	MALE		FEMALE		$\bar{x}$
		$\bar{x}$	s.d.	$\bar{x}$	s.d.	diff
MOROCCO	A	37.4	1.7	41.1	1.5	3.7

Table II - Bill length data for sexed live adults caught in Morocco ($\bar{x}$ = mean; s.d. = standard deviation); (Pienkowski 1976).

PLACE	NO. OF ADULT BIRDS	MALE $\bar{x}$	MALE s.d.	FEMALE $\bar{x}$	FEMALE s.d.	P(%)	DIFFERENCE BETWEEN MEANS
ANNA PLAINS	275	37.2	1.70	41.4	1.40	55	4.2
VICTORIA	316	36.9	1.60	40.8	1.50	73	3.9
HOBART	224	36.8	1.30	40.4	1.45	75	3.6
HONG KONG	61	36.6	1.40	40.9	1.30	69	4.3
THAILAND	108	37.5	2.05	40.7	1.90	63	3.2
TAMIL NADU	544	37.2	1.65	40.7	1.65	55	3.5

Table III - Calculated bill length data for the six sites (P = inflexion point; $\bar{x}$ mean; s.d. = standard deviation).

The sex means at all six sites are longer than the weighted averages for museum material of 36.2 and 39.7 mm for males and females, respectively. An obvious explanation is bill shrinkage in dead birds. However, the literature is confusing on this matter. Prater (1977) states that the bills of museum specimens do not differ significantly from fresh measurements. This view is supported by Engelmoer et al (1983) who investigated post-mortem changes in eleven species of wader. However, Summers (1976) found, for Ruddy Turnstone *Arenia interpres* and Sanderling *Calidris alba*, that museum specimens tend to have shorter bill lengths than freshly collected birds, ie. about 5% for Turnstone and 2% for Sanderling. Atkinson *et al.* (1981) record that skins of Purple Sandpiper *Calidris maritima* had shorter bills than live birds (2.8% for males and 7% for females) and found, for a different group of birds, that bills shrunk 1.1-0.6 mm in about 30 mm during storage. Dick *et al* (1976) comment that "While museum skins are liable to varying degrees of shrinkage and cannot be compared directly to those of live birds, the relative difference in size should be similar to that of live specimens." The available evidence indicates that sexing of live Curlew Sandpipers from museum specimen bill measurements can give incorrect results.

The data for the three Australian sites have been pooled in order to obtain an estimate of the bill lengths for adult Curlew Sandpipers spending the non-breeding season in Australia. The resulting means, standard deviations and difference between means for the sexes is shown in Table IV. Pooling of data can be justified on the basis of movement of banded birds and sightings of colour-dyed birds (Minton and Lane, 1984; Unpublished data from the Australian Bird Banding Scheme). When the results are comapared to those for Australian museum specimens (Thomas and Dartnall, 1970; Barter, 1984), the apparent shrinkages are 3.2% for males and 4.1% for females.

MALE $\bar{x}$	MALE s.d.	FEMALE $\bar{x}$	FEMALE s.d.	$\bar{x}$ diff.
37.0	1.55	41.0	1.49	4.0

Table IV - Pooled results from the three Australian sites ($\bar{x}$ = mean; s.d. = standard deviation).

BILL LENGTH(mm)	PROBABILITY MALE BIRD(%)	BILL LENGTH(mm)	PROBABILITY MALE BIRD(%)
35.0	100.0	39.5	31.1
35.5	99.8	40.0	16.1
36.0	99.6	40.5	7.6
36.5	98.9	41.0	3.4
37.0	97.3	41.5	1.5
37.5	93.7	42.0	0.8
38.0	86.0	42.5	0.1
38.5	71.9	43.0	0.0
39.0	51.7	-	-

Table V - Calculated probabilities that a bird of known bill length is a male.

The probability of a bird of known bill length being male can be calculated from the means and standard deviations of the two sex distributions (Rogers, 1976). The calculated probabilities for the case where there is no *a priori* information on the distribution of males and females in the population are listed in Table V. The resultant curve, shown in Figure 8, can be used to estimate the criteria for sexing birds of different bill lengths at various levels of confidence. Bill length values at 95% and 90% confidence levels, together with the percentage of birds sexed correctly and incorrectly at these levels, are given in Table VI. It can be seen that at the 95% level 56.5% of birds can be sexed whilst at the 90% level the percentage increases to 69%. The similarity of the bill length data at the three Asian sites to that at the Australian sites indicates that similar sexing criteria could also be applied to adult Curlew Sandpipers in Asia.

CONFIDENCE LEVEL (%)	SEXING CRITERIA(mm) MALE	FEMALE	BIRDS SEXED CORRECTLY (%)	BIRDS SEXED INCORRECTLY (%)	BIRDS UNSEXED (%)
95	$\leqslant$37.3	$\geqslant$40.8	56.5	0.7	42.8
90	$\leqslant$37.8	$\geqslant$40.3	69.0	1.6	29.4

Table VI - Sexing criteria at 95 and 90% confidence levels.

CONCLUSIONS

The result of a statistical analysis of bill lengths of live Curlew Sandpipers at six sites, three in Australia and three in Asia show that:

(a) There is reasonable agreement between the mean bill length and standard deviation of length for each sex at the six sites. Variations between means can be satisfactorily explained by the moult/abrasion cycle at the feather margin on the bill. The estimates are consistent with those obtained in Morocco for the live adult birds.

(b) The bill lengths of live birds are longer than those of sexed museum material and live birds should not be sexed on the basis of bill lengths determined from museum specimens.

(c) The estimated bill length data of birds spending the non-breeding season in Australia are–

Male Mean - 37.0 mm
Standard deviation - 1.55.mm
Female Mean - 41.0 mm
Standard deviation - 1.49 mm

(d) Australian birds can be sexed on the following basis:

95% confidence level (56.5% of birds sexed)
Males $\leqslant$ 37.3 mm
Females $\geqslant$ 40.8 mm
90% confidence level (69% of birds sexed)
Males $\leqslant$ 37.8 mm
Females $\geqslant$ 40.3 mm

ACKNOWLEDGEMENTS

I would like to thank the Western Australian and Victorian Wader Study Groups, and the Tasmanian Shorebird Study Group for allowing me to have access to their records. David Melville kindly provided measurements taken by himself in Hong Kong, Thailand and India - his studies in Thailand were supported by the Association for the Conservation of Wildlife and the Smithsonian Institution, and in India his work was part of the Bombay Natural History Society's Avifauna Project. I am grateful to the Bombay Natural History Society for permission to include their data. Brett Lane and David Melville provided invaluable comments on the first draft and Ken Rogers worked tirelessly in his attempts to keep me on the straight and narrow statistical path. My thanks also to Karen Barter for typing the various drafts and the final paper.

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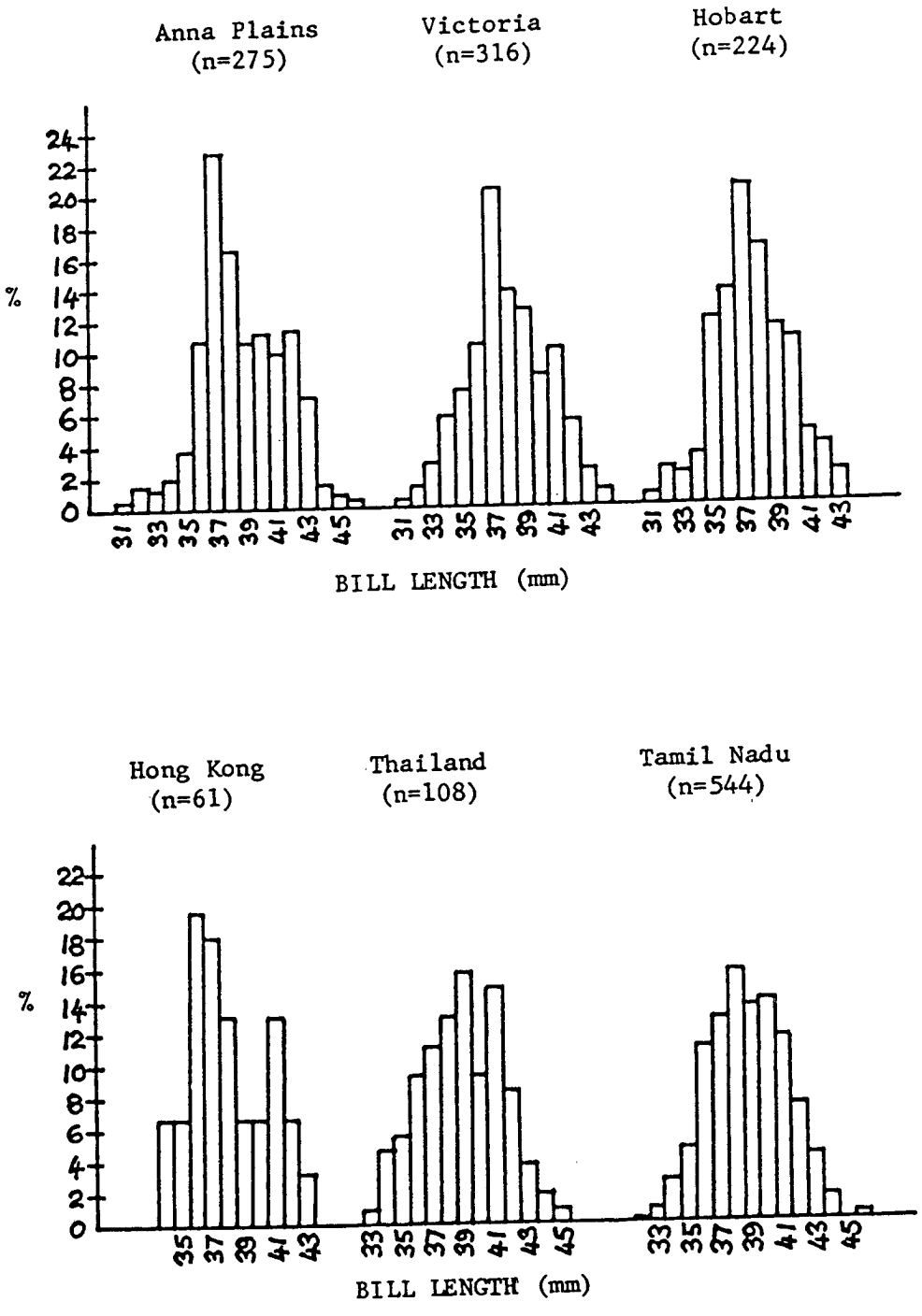

Fig 1. Percentage frequency histograms of bill length at the six sites.

PCF DIAGRAMS

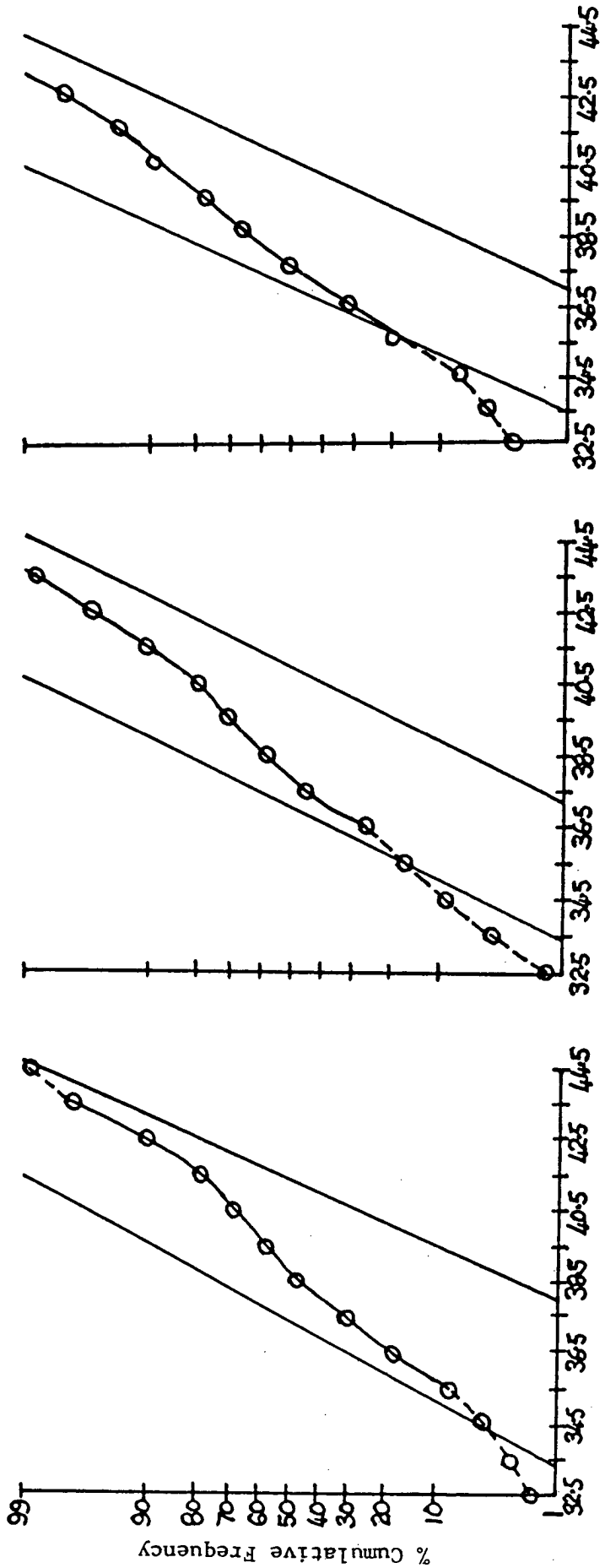

Fig 2. Anna Plains

Fig.3. Victoria

Fig 4. Hobart

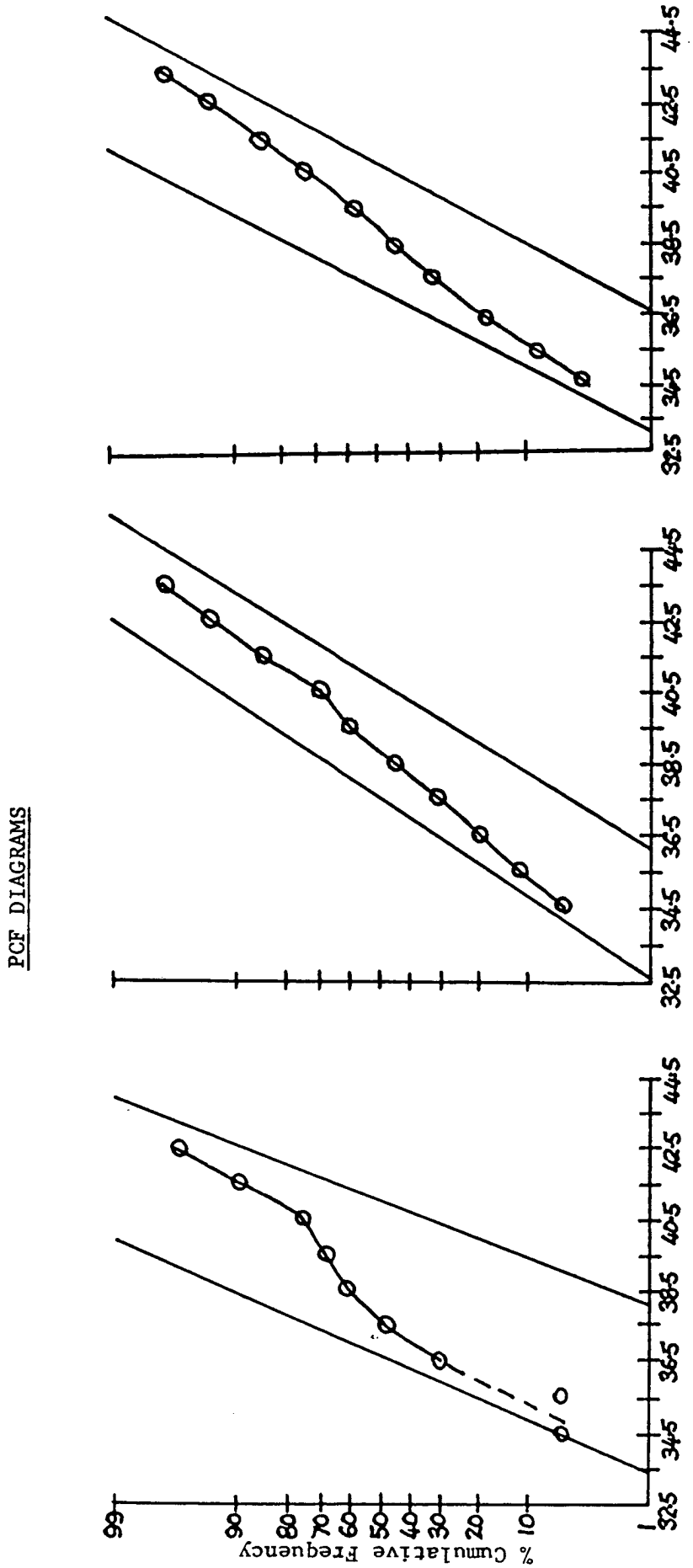

Fig 5. Hong Kong

Fig 6. Thailand

Fig 7. Tamil Nadu

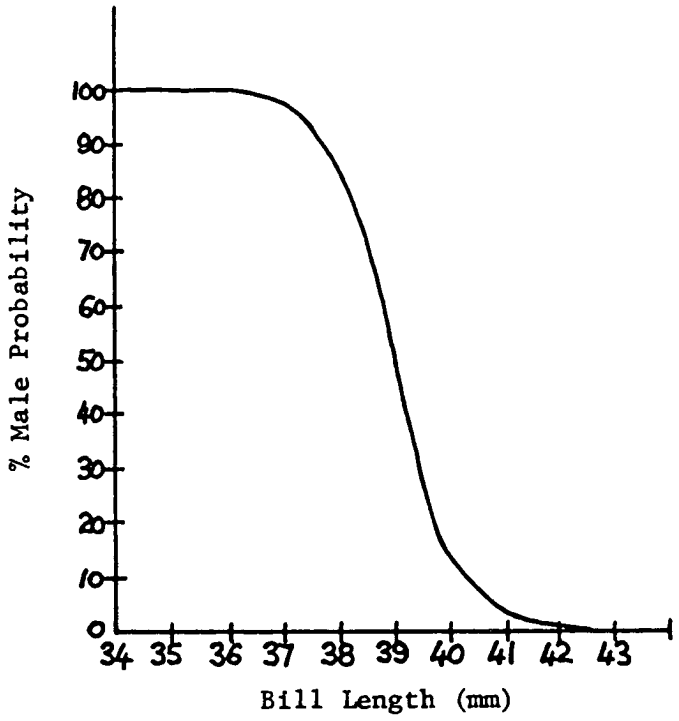

Fig 8. Curve showing probability that bird of known bill length is a male.

A STUDY OF THE NORTHWARD MIGRATION FROM SOUTHERN TASMANIA OF RED-NECKED STINT *CALIDRIS RUFICOLLIS* AND CURLEW SANDPIPER *CALIDRIS FERRUGINEA* USING COLOUR-DYED BIRDS

O. G. M. Newman, R. M. Patterson and M. A. Barter, 58 Sinclair Avenue, West Moonah, Hobart, Tasmania 7009.

Red-necked Stint and Curlew Sandpiper are common austral summer migrants to southern Tasmania. Adult Red-necked Stint arrive in September and depart in March and April. First-year birds commence arriving in October and November and, whilst many winter in Tasmania, results from winter counts and recoveries of banded birds show that some move to the Australian mainland for the austral winter. Adult Curlew Sandpiper arrive and depart at similar times to adult Stint but with very few exceptions, first-year birds leave Tasmania during the winter.

Analysis of banding recoveries and sightings of colour dyed-birds tentatively indicates that both species enter Australia, on southward migration, through north-west Australia and then presumably fly directly across Australia to the south-eastern part of the continent. However, there are no records of adult birds on northward migration being retrapped in northern Australia. It is also not clear where those first-year Tasmanian Stints and Curlew Sandpipers which leave the State go during the austral winter. In an attempt to throw light on these questions the Tasmanian Shorebird Study Group decided to catch and colour-dye the two species prior to the 1984 northward migration.

During the weekend of 17th and 18th March, the Group colour-dyed 634 Red-necked Stints, consisting of 583 adults and 51 first-year birds, and 170 Curlew Sandpipers, comprising 158 adults and 12 first-years. All birds were dyed yellow (Picric Acid) on the underparts and green (Malachite Green) on the underwing. The birds were captured at South Arm Neck in the Derwent Estuary.

Subsequent observations of colour dyed-birds in the Hobart area suggested that departure was a protracted affair extending over several weeks from the time of capture.

During the following two months there were a total of twelve sightings of Red-necked Stints and four of Curlew Sandpipers at sites well removed from southern Tasmania. The detailed results are listed below:

Date	Location	Plumage	No. of Birds
Red-necked Stint			
20 March	Little River, Werribee, Vic (38 02S, 144 34E)	Full basic	2
27 March	Shallow Inlet, Vic (38 50S, 146 06E)	Full basic	1
31 March	Flinders Island, Tas (40 07S, 148 03E)	Full basic	1
8 April	Little River, Werribee, Vic (38 02S, 144 34E)	Full basic(A)	1

15 April	Paradise Rd Lagoon, Werribee, Vic (38 02S, 144 34E)	Full basic(B)	2
	13th Mile Beach, Barwon Heads, (38 17S, 144 30E)	Full basic	1
5 May	Borrie Lake Outlet Drain, Werribee, Vic (38 02S, 144 34E)	Moulting into alternate plumage	1

Curlew Sandpiper

30 March	Flinders Island, Tas (40 07S, 148 03E)	Full basic	1
6 April	Ballina, NSW (28 50S, 153 31E)	Not known	1
5 May	Borrie Outlet Drain, Werribee, Vic, (38 02S, 144 34E)	Full basic	1
13 May	Avalon Saltworks, Vic (38 05S, 144 26E)	Full basic	1

Unidentified

28 March	Ballina, NSW (28 50S, 153 31E)	Not known	1
28 March	Byron Bay, NSW (28 43S, 153 37E)	Not known	1

(A) different bird to that sighted on 20th March
(B) both different birds to that sighted on 8th April.

A number of interesting points arise form the sightings:-

(1) The observation of Red-necked Stints at Werribee, Victoria (2 birds: 59 km movement), Shallow Inlet, Victoria (1 bird: 470 km movement) and Logan Lagoon, Flinders Island, Tasmania (1 bird: 320 km movement) after elapsed periods of 3, 10 and 14 days, respectively, from the time of capture are consistent with a protracted departure period as noted in the Hobart area.

(2) The first Curlew Sandpiper was seen at Cameron Inlet on Flinders Island, Tasmania, 13 days after dyeing.

(3) All the sightings of Red-necked Stint were in either Victoria (10) or Flinders Island (1).

(4) Curlew Sandpiper were seen in Victoria (2) and Flinders Island (1). Perhaps more interestingly one Curlew Sandpiper was also sighted at Ballina in northern coastal NSW, (1650 km) twenty days after dyeing. Two unidentified birds were in the same area of NSW 11 days after dyeing.

(5) Except for the Red-necked Stint seen on the 5th May, all Stint (8) and Curlew Sandpiper (3) sighted in Victoria were in full basic plumage. Assuming that none on the birds in basic plumage subsequently moulted into breeding plumage, and that sightings at different locations did not involve the same birds, 16% of first year Stints and 25% of first year Curlew Sandpiper were seen outside the Tasmanian mainland. In contrast, there was only one similar sighting of an adult bird, a Red-necked Stint, out of 583 and 158 adult Red-necked Stints and Curlew Sandpipers, respectively.

In 1985, dyeing was repeated on a more limited scale. On this occasion first-year birds were marked green and adults yellow. Resightings of first year birds outside the Hobart area were one Red-necked Stint at Andersons Inlet, Victoria, on 6th July, and one Curlew Sandpiper at Ballina on 18th July. These observations support the trends noted in 1984.

The following conclusions are drawn:-
Adult Red-necked Stints and Curlew Sandpipers overfly the Bass Strait Islands and Victoria on their northward migration. At least some first-year birds appear to leave with the adult birds. However, banding studies in the Hobart area have shown that first-year birds do not build up substantial fat reserves comparable to those possessed by adult birds immediately prior to migration. Consequently, the first-year birds drop out at suitable feeding areas such as Flinders Island and Victoria. Assuming that the first-year birds depart with the adults the migration appears to follow the east coast of Tasmania up through the east coast of the Furneaux Group Islands to Victoria. The birds seen on the east coast of Flinders Island were feeding in extreme coastal locations, separate from substantial flocks of unmarked birds of the same species which were feeding on partially dried out lagoons. The sightings. in northern NSW provide some evidence for northern migration up the east coast of the Australian mainland. Unfortunately, it is not known whether adult birds were involved. There was no evidence to support a migration route through the centre and north-west of Australia has has been established for the southward route. However, this may be a consequence of observer bias.

The winter of 1984 was abnormal in Tasmania in that almost no Red-necked Stints remained in the Hobart area. In fact the number of winter Stints was the lowest recorded over a 20-year period. Consequently, the 1984 results may be anomalous. Observations in Victoria during 1984 established a similar lack of winter Red-necked Stints and Curlew Sandpipers. It was subsequently established that large numbers of these species were present at Lake Eyre which was providing uncharacteristically favourable feeding habitat. Assuming that the Tasmanian first year birds were ultimately drawn to this and similar inland resources, it is bewildering to speculate on the reasons why the abnormally complete movement of first year birds should commence by partial passage with the migrating adults (ie. how did they know a resource existed which could be opportunistically exploited?).

The colour-dyeing exercise was very successful and as discussed the exercise may have been fortunate in documenting an exceptional event involving the abnormal movement of first year birds. We extend our gratitude to the many people who gave their time to the capture and dyeing of the birds and also to the subsequent field observation effort. OMGN and RMP also acknowledge the help of the Tasmanian National Parks and Wildlife Service in providing logistic support during a comprehensive survey of Flinders Island.

Charadriiformes of a North-western Victorian Wheat Farm

Jeff Campbell, Conrobert St., Newstead, VIC 3462.

A wheat farm in the dry country of North-western Victoria is hardly the most likely place to find the birds colloquially known as 'waders', but it is of course a typical location of members of the order Charadriiformes such as Masked and Banded Lapwings, Inland Dotterel and Australian Pratincole.

Records were kept of these species seen between November 1983 and January 1985 while residing and working on such a farm, near Meringur, and some 90 km west of Mildura.

Of these species only the Masked Lapwing *Vanellus miles* is resident in the area (Table 1). One pair was found in all months and was known to have bred there in November 1984, raising two offspring to at least runner stage. This pair was generally found on bare to sparsely vegetated ground near the farm house, where it bred, although occasionally ranged more widely on the farm.

The Banded Lapwing *Vanellus tricolor* is not a resident species although it was present in most months (Table 1). In 1984 it was recorded in all months except February and March. On 8 April 1984, 22 birds were recorded and breeding activity was observed in July very soon after rain fell, breaking a dry period of some four months. On 8 July a nest containing four eggs was accidently destroyed when run over by a chisel plough pulled by a tractor. The eggs were not visibly damaged and were placed in a small scrape by the author. Both birds of the pair remained near the eggs and one was sitting on the clutch some two hours later.

On 10 July another nest, containing two eggs, was located. The clutch increased by one daily until 12 July when it contained four eggs. At this nest the sitting bird was seen when approached in the tractor, it flattened itself on the nest with wings outstretched and did not leave even when the tractor and chisel plough passed within about one metre of it. The brooding bird would however fly when approached on foot, circling the nest and calling in a very agitated manner.

On 23 July another nest containing three eggs was seen from the tractor. Once again the sitting bird did not flee even when the tractor came very close. On 25 July this clutch had increased to four. Only one adult bird was seen in the vicinity of this nest, both on this first sighting and later when it was observed through binoculars from some distance. At the other two nests the non-brooding bird spent much of the day standing within one or two metres of its mate.

In an effort not to disturb the lapwings unnecessarily the nests were not closely inspected until 25 August by which time all were found to be empty and no birds were seen nearby, therefore breeding success was not determined.

On 23 October 1984 a flock of 28 birds, the first large flock recorded since breeding activity was observed in July, was seen flying over the farm in an easterly direction. On 14 January 1985 an estimated 20 birds were seen in and around the house yard in the shade of the garden trees and also standing under a sprinkler on the lawn. This was on a day of 40°C. Many of these lapwings appeared to be in moult, lacking the usual crisp and neat look of this species.

The Inland Dotterel *Pelthyas australis* is also a regular non-seasonal visitor to the farm (Table 1) (Blakers *et al.*). Although breeding was not recorded by the author it has been reported on the farm during many years by the farm owner (B. Farmilo, pers. comm.).

On 25 June 1983 before the author took up residence on the farm, three dotterels were seen in a lightly vegetated paddock. This was a very windy day and the birds were thus extremely difficult to approach, on two occasions the birds flew off some considerable distance before alighting in another part of the paddock. These birds all exhibited slight differences in plumage, as follows: 1. An adult as described and illustrated in Pizzey (1980) but with the flanks brighter and more distinctly rufous. 2. As above but with an indistinct black facial bar. 3. An immature as described in Pizzey (ibid).

On 6 July 1984 one adult was seen from the tractor, this bird was on fallowed ground and ran a short distance from the tractor on each occasion it was approached. It was extremely difficult to see on the recently worked ground, turning its back to the observer and seemingly disappearing. It is worthy of note that this was the only bird of this species seen on the farm during 1984 (Table 1), generally it is a much more common visitor (B. Farmilo, pers. comm.).

The Australian Pratincole *Stiltia isabella* was an occasional and uncommon visitor (Table 1). Only two birds were seen during the two years and the species had not been recorded there prior to this (B. Farmilo, pers. comm.).

On 24 January 1984 one adult pratincole was observed in cattle yards near the house, close to a water trough. This bird remained in the area for only about ten minutes before it flew off in a westerly direction after being disturbed by observers.

On 31 July 1984 an immature of this species was seen from the tractor in a fallowed paddock. The bird was reluctant to fly, prefering to run a short distance from the tractor and turn its back to the observer. It then became extremely difficult to see, its dull immature plumage blending superbly with the bare ground. A search of this paddock on the following day failed to locate this bird. This record is significant in that this species is generally regarded as a 'summer' migrant to North-western Victoria.

	1983						1984							1985
	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J
Masked Lapwing	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Banded Lapwing			+			+	+	+	+	+	+	+	+	+	+
Inland Dotterel									+						
Australian Pratincole			+						+						

Table 1. Months in which the four species of Charadriiformes were recorded from November 1983 to January 1985

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Wader Banding in the Sydney District 1983-1984

Darryl Smedley, 258 Railway St., Baulkham Hills, NSW 2158.

During 1983 and 1984 wader banding in the Sydney district involved mist netting at two main locations: the Hawkesbury Swamps, particularly Pitt Town Common Nature Reserve, McGrath's Hill and Bakers Lagoon, and shores of Botany Bay. A small swamp at Deepwater Park East Hills was netted specifically for Latham's Snipe which use it as a daytime roost.

The swamps and the bay have their inherent difficulties as catching sites; the Swamps can dry out and fill very quickly rendering them unsuitable for waders and the bayside locations suffer from high background lighting and almost a constant sea breeze. Nevertheless these difficulties, which I am sure are not peculiar to Sydney, can be overcome and satisfactory catches made.

Effort is mostly directed towards the mugratory species, mainly as support to the other major banding programmes conducted elsewhere in the country. Unfortunately, the Sydney area does not support large concentrations of waders that can be easily captured using our present techniques. The potential is there to increase the number of birds handled as we become better organised and our knowledge of the daily activities of the birds increases, particularly at locations within Botany Bay.

All netted birds are weighed, wing and wing span measurements taken as well as bill and tarsus as necessary, aged if possible and an assessment of moult made. Fortunately, data on all waders banded in the Sydney district since the late 1950's are recorded on cards filed in species and band order. This box usually accompanies any wader outings so original banding data is instantly available for any subsequent recaptures.

Banders contributing to the '83 and '84 totals were Darryl Smedly, Geoff Bell, Jeff Hardy, Alan Morris, Bill Lane and Graham Cam. The accompanying table gives the numbers of each species banded each year.

Species	1983	1984
Masked Lapwing	9	2
Lesser Golden Plover	1	12
Mongolian Plover		5
Red-capped Plover	4	28
Black-fronted Plover	8	-
Bar-tailed Godwit	-	6
Curlew Sandpiper		53
Red-necked Stint	-	95
Sharp-tailed Sandpiper	23	5
Red Knot	-	1
Latham's Snipe	21	14
TOTAL	66	221

EVIDENCE FOR POLYANDRY IN THE COMB-CRESTED JACANA

Stephen Garnett, Garden of St Erth, Blackwood, VIC 3458.

Although polyandry is a well-known feature of several species of the Jacanidae (Jenni, 1974), there is no published evidence that it occurs in the Comb-crested Jacana *Irediparra gallinacea*, despite the assumption by some authors, particularly me, that it does so (Garnett and Cox, 1983). This was pointed out to me by Professor Don Jenni who came to Australia in December 1983 for a reconnaissance study of the species. He has since returned to do a more comprehensive study but as a result of his comments, I made the following observations which appear to justify my earlier assumption.

On 19th June 1984 observations were made at Lotus Vale Station (17° 02'S, 140° 23'E), about 70 km north of Normanton. Four male jacanas were tending between 3 and 4 newly hatched chicks on a single 20 x 200 patch of *Nymphaea* and *Nympoides* water lilies. When one family group was approached by canoe, the adult male performed two distraction displays. Initially it ran from the crouching chicks in a low 'rodent' run, calling loudly and with wings drooping. Secondly, when the canoe was within a metre of the chicks, the male lay prostrate on the lilies, stretched one leg backwards and turned in a tight circle as though the leg was held. At about the time the males distraction display intensified, a female, noticeably larger than the male, flew to lilies near the male and performed the first display, a 'rodent' run with loud calling. The adjacent male with chicks was then approached in the canoe, the male performed similar displays to his fellow cuckold and then the same female came across to keep his company and repeat her rodent run in an attempt to distract me from this second set of chicks. A second female responded to the distraction displays of the other two males tending chicks.

During three hours of observation from the bank of the lagoon the following day the same females were seen to move freely between their two males but the foraging ranges of neither males nor females overlapped. Nine immature birds, lacking combs or breast bands, moved freely about the entire area of lilies, although they avoided the immediate vicinity of the males. One of the males was seen to carry four chicks beneath its wings for a short distance when they came to the edge of the floating vegetation.

Although females have yet to be seen copulating with and laying clutches for multiple males, the above contistutes strong circumstantial evidence that the Comb-crested Jacana is indeed polyandrous.

I am grateful for the company and canoe of John Woodburn and for many hours of entertaining conservation about jacanas with Don Jenni.

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NESTING BEHAVIOUR OF THE BUSH THICK-KNEE

Stephen Garnett, Garden of St. Erth, Blackwood, Vic. 3458.

Unlike in southern cities, Bush Thick-knees have adapted well to the urbanization of Townsville and breed freely around the city's parks and waste blocks, including the grounds of James Cook Univsersity (19°19'S; 146°48'E). During the 1984/5 breeding season I was in the position to make the following notes on consecutive nests of the same pair.

Nest sites: On mown grass in open *Eucalyptus alba/Epolycarpa* woodland. The first was within 2m of a path used by several hundred students each day, the second 60m away. The same two sites, to within a metre, had been used the previous year by thick-knees, presumably the same pair.

Nest building and egg laying: At 09.40 on 18 Nov the male, female and surviving young of the previous brood were standing under a sparse copse of *E. Alba*. The female bent down and moved a short stick about 5cm, then turned to stand heead to tail with the male. The male, which had longer legs, had his bill over the back of the female. After about 15 secs standing together the male moved slowly round to the back of the female and placed his bill under her tail, appearing for all the world to be looking for an egg. After 3 secs he moved his bill to above the tail and 4 secs later stalked slowly away to a more shady site. The young of the previous brood, which had been watching from about 5m away, followed the male into the shade. The female sat in the sun and panted, remaining there for the next 11 minutes with unusually dilated eyes and tail cocked. At 09.54 she rose to reveal beneath her an egg which she probed gently with her bill. She moved a few paces away but soon returned to sit on it.

Egg laying interval: Over the next two days the nest was visited on three occasions. On each the female was sitting beside the egg rather than on top of it, although defending it vigorously. The male was once seen to approach the egg but not sit either on or beside it. At 11.00 on 20 Nov she was still sitting beside one egg. At 14.20 she was incubating two, the most recent was very warm and white and appeared to have been laid only moments before. Minimum egg-laying interval was 49 hr 06 mins, the maximum 52 hr 26 mins.

Incubation period: Detailed observation could not be maintained during incubation but both parents were seen to incubate. At 14.05 on 13 Dec one egg was piping. At 0915 the following morning the female was brooding both young about 1m from nest site. The minimum incubation period was 22 days 23 hr 45 mins.

Defense of nest: Both adults defended the nest, their vigour increasing as incubation progressed. As one approached, the sitting bird would at first flatten itself against the ground. When it was obvious you had seen it, the bird would hiss and slowly rise above the eggs with wings outstretched. If observation continued from a distance it would sometimes run at one accompanied by its mate, who was usually roosting in the shade nearby. Late in incubation it was more reluctant to leave the nest and in the final days it was possible to slide one's hand under the sitting female, if she was approached from behind, and elicit no more than a hiss. At approach from the front she would rise but peck an intruding hand.

Care of young: The previous brood hatched on 28 Sept. One chick disappeared soon after hatching leaving one at the time of the second egg-laying on 18 Nov. Shortly before the first egg was laid both adults were observed chasing the young of the previous brood. First one then the other adult put its bill over the back of the younger birds which then walked away at an accelerated stalk, although it soon returned. On 20 Nov it was still roosting in the vicinity of the nest but by 8 Dec had disappeared. The minimum period of care was therefore 53 days, the maximum 71 days. It was not possible to tell when it had fledged because the whole family, when alarmed, raised no more than a trot. The second brood fared much better and both were still with their parents when last seen on 1 May, a minimum period of 138 days.

Not surprisingly much of this description resembles behaviour recorded for the Stone Curlew *Burhinus oedicnemus* (Cramp *et al.*) but there appears to be no record of actual egg-laying in that species while its nest, a scrape in the ground, appears more elaborate than that of the Australian species. The Stone Curlew, however, also has a two day egg-laying interval although the incubation period is slightly longer than in this pair of Bush Thick-knees.

I am grateful to Anne-Marie Watt for braving the wrath of a female thick-knee with a new second egg and James Cook University gardeners for their tolerance of long grass.

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A.W.S.G. NEWS

A New Lease of Life for the AWSG

Mark Barter, Chairman, AWSG Interim Committee, 21 Chivalry St., Glen Waverley, VIC 3150.

Members will have learnt from the editorial in the last issue that funding of the RAOU Wader Studies Programme by the Australian National Parks and Wildlife Service will finish at the end of 1985, with the result that the RAOU will not be able to continue employing full-time staff to plan and co-ordinate wader research activities in Australasia from then onwards.

During the five years that the Programme has been running, considerable advances have been made towards obtaining improved knowledge of wader populations and the major sites used by waders in Australasia and in gaining a better understanding of resident and migratory wader ecologies. However, there is still much to find out if we are to be in a position to argue effectively for conservation of waders and their habitats here and in the migration flyways to our north. If the essential work which was started during the Programme is to continue, the planning and co-ordinating of activities will have to be undertaken by a different organisation and the obvious group for this task is the AWSG. However, if the AWSG is to be effective it will need to be rejuvenated as it has been relatively inactive in recent years.

In early June, a number of Melbourne-based members met and formed an Interim Committee to oversee the rejuvenation programme. The members of that Committee are Mark Barter, Margaret Considine, Peter Dann, Stephen Garnett, David Henderson, Marilyn Hewish, Brett Lane, Richard Loyn, Clive Minton, Brenda and Mick Murlis and Jon Starks. The initial tasks we set ourselves included:

defining general objectives,
establishing scientific goals,
agreeing on a scientific programme which is within the capabilities of the Group,
setting up an effective liaison programme for communication with our widespread membership and other wader groups in Australasia and overseas,
formulating an achievable budget and reviewing subscription levels.

Since that first meeting there have been another two, in July and August, and it is a great credit to the enthusiasm and hard work of all those on the Interim Committee that these tasks, and more, have been completed.

You will find a statement of the AWSG objectives on the inside of the front cover. The objectives, with the exception of the first one, are virtually identical to those proposed to the RAOU Research Committee when the Group was formed in May 1981. The flavour of the objectives is to cast the AWSG in a planning, assisting, co-ordinating and communicating role in Australasian wader research activities, with the prime objective being the conservation of waders and their habitats.

The core activity of the Group is the Scientific Programme. Considerable time and effort has gone into formulating the scientific objectives and activities and the results are discussed by Brett Lane elsewhere in this issue.

The establishment of a strong liaison function is an essential factor in the success of an organisation like ours which can suffer from the tyranny of distance - both within Australia and New Zealand and between ourselves and groups with similar interests elsewhere in the world. We have started to rebuild and extend the regional representative network and to establish frequent contacts with like groups, such as Interwader in South East Asia and the Wader Study Group in Britain.

A number of decisions have been taken concerning *The Stilt*. Firstly, it will be published each April and October. Secondly, the news content will be substantially increased in order to improve communication between our widely scattered members. With the increasing emphasis on analysis of count, migration and biometric data there will be no problems, as there have been in the past, in getting sufficient numbers of technical papers to ensure that *The Stilt* gains a reputation of being an important wader publication on a world scale.

We will be undertaking a membership drive shortly with the aim of substantially increasing our membership above the current level of around 200. If our intelligence is correct there are at least 400 wader enthusiasts who are not members. If you are one of these, or know somebody who isn't a member but should be, please do something about it. We need all the members we can get in order to create a viable AWSG.

Now to the crunch, albeit a relatively mild one. We have decided to raise the 1986 subscription to $10 from the current level of $5. The reason is very simple. Five dollars barely covers the cost of printing and posting two copies of *The Stilt* per year. An additional $5 is needed to pay for the postage, telephone costs and computing time involved in running the scientific programme and analysing the results. These costs are, of course, currently paid for out of RAOU Wader Study Programme funds which run out at the end of this year. We estimate, with our current number of members, that the $10 subscription will enable us to break even during 1986. Any increase in membership will mean more money for the waders. Facilities are also available for members and others to make a tax-deductible donation and details of how this can be done are on the subscription form.

One final point. The Interim Committee, as its name implies, is designed to have a short life. The new rules of the Group, as accepted by the RAOU Council, require that an elected Committee take office is June 1986 for a period of two years. Elsewhere in this issue you will find a call for nominations for a new committee and ballot papers will be sent out in the April issue of *The Stilt*.

AWSG RESEARCH - 1986 AND BEYOND

Brett Lane, AWSG Research Co-ordinator, RAOU 21 Gladstone St., Moonee Ponds, VIC 3039.

The Interim Committee of the AWSG appointed a scientific sub-committee to establish goals and priorities for the group's research and to formulate a practical research programme. These tasks have now been completed.

The sub-committee decided that the ultimate aim of AWSG research should be to provide information to enable the effective protection and management of wader populations in our region.

We discussed a number of possible directions for wader research in Australia. Population monitoring, migration studies, documenting the waders of northern Australia, banding, feeding studies and research into Australian-breeding species were all considered. Obviously, the AWSG lacks the resources to organise research in all these directions.

Given the ultimate aim, we decided on the current fate of waders in Asia was an important consideration in deciding our final programme.

Duncan Parish, the co-ordinator of the Interwader project in eastern Asia, has estimated that about 50% of the wader habitat in Asia has been destroyed and a further 20% is threatened within the next decade. As well, somewhere between 250,000 and 1.5 million waders are killed there for food each year and there are no controls or information on the effects of this. Habitat destruction is nowhere near as extensive in Australia but increased coastal development and recreation is likely to place increasing pressure on wader populations in the future, especially in the more densely populated parts of the east and south coasts. Accordingly, population monitoring in Australia, to determine how wader numbers are changing, was made the top priority.

We still have a long way to go in documenting the migration routes of waders within Australia. Only with this information can the important staging sites be identified and preserved. Given the conservation objective this was also thought to be a top priority.

Population Monitoring

Objective:

To monitor, at selected sites, year-to-year changes in population levels of migratory and Australian-breeding waders and attempt to account for these in terms of reproductive success and mortality.

Methods:

Counts: There will still be sample counts in summer (early February) and winter (mid-June) each year of selected sites to determine numbers of as many species as possible. This is essentially a continuation of National Wader Counts at a smaller number of sites. The sites have been carefully selected in consultation with state and regional representatives of the Group and cover habitats that are near natural and those that are subject to alteration by human activities. In this way, population trends associated with local changes can be discerned from any overall trends.

Banding: All wader banding groups will be encouraged to catch a sample of a hundred or more of as many species as practical at the same discrete site(s) between December and February each year. The proportion of juveniles in catches will be an index of breeding success and the rate at which birds banded in previous years occur as retraps in catches will give an indication of mortality rates.

Year-to-year changes in numbers detected by counts should correlate with changes in breeding success and mortality as they have over the last five years of the RAOU Wader Studies Programme.

Regular Counts

Objective:

To determine the timing of arrival, departure and migration in a sample of sites throughout the country. Also, to determine the timing of flocking and movements of Australian-breeding species and in the case of inland species, responses to drought and flood.

Method:

Monthly or more frequent counts of selected sites over two years or more to show when waders move into and out of an area. Preliminary analysis of such counts from the RAOU Wader Studies Programme has shown that two or more years of counts are neccessary to determine with any certainty how waders use a site through the year. The sub-committee agreed on the following criteria which counters should use in deciding whether a site is suitable for such counts:

- The site need not hold large numbers of waders, but could hold as few as twenty,
- Inland sites, provided that they are permanent, are particularly valuable for monitoring overland migration and the movements of inland species in response to rainfall.
- The site must be discrete and not part of or one roost in a complex coastal wetland or a single lake amongst a group of adjacent ones.
- Sites should be easy to cover, only requiring between half and two hours for one person to count effectively, except where counters consider a more difficult site feasible.
- Counts must continue for a minimum of two years and at least once per month. The longer the count series, the better.

The sub-committee agreed that any research over and above these two projects required more resources than the group currently has. The most limiting factor was volunteer time to organise projects and analyse results for reporting to participants and preparing publications. There will be annual reports of these two projects in The Stilt.

Studies of feeding behaviour and diet were also considered important. Food and its availability determine where waders live and in what numbers. Studies of the relationship between food supplies and how waders use an area are essential for predicting the impact of habitat destruction and alteration. Such detailed research requires professional support. A broad-sheet, publicising the need for these studies and the background information currently available, has been sent to appropriate university departments encouraging post-graduate students to research this subject.

In this issue of The Stilt there is an insert asking members to register for one or both of the AWSG projects. On the back of it is a list of the sites to be counted in the population monitoring counts. If you are near these sites and are able to assist, or if you live near a suitable site for regular wader counts and are able to do them, please fill in the form and send it to the co-ordinator of the project concerned.

Finally, if you would like more information on the AWSG research programme, have any ideas for other research projects, or would like to help in organising

research, please do not hesitate to contact me.

The scientific sub-committee has the primary function of monitoring the research projects and assessing the suitability of new projects suggested by the membership. As a major consideration in our assessment of the feasibility of projects has been finding people to organise them and analyse the results. Any offers of help would be gratefully received.

It is only with the support of members that the AWSG can conduct research and therefore be an effective agent in the conservation of Australia's important wader populations.

CALL FOR NOMINATIONS FOR AWSG COMMITTEE

In accordance with the Rules of the Group, nominations are called for all positions on the Committee which is to take office for two years from 1st July, 1986.

The positions and the names of those acting in them on the Interim Committee are listed below:

Chairperson - Mark Barter
Research Co-ordinator - Brett Lane
Administrative Secretary - Brenda Murlis
Editor - Peter Dann
Treasurer - David Henderson
Liaison Officer - Jon Starks
Committee Members - Clive Minton
(up to 3)

Ballot papers will be included with the April edition of *The Stilt.*

If you are financial member of the AWSG, please send your nomination by 31st January 1986 seconded by another member to:

Mrs. B. Murlis, 34 Centre Rd., Vermont, VIC 3133.

AN OCCASIONAL STINT

An Occasional Stint No. 3 (second printing) written by members of the Tasmanian Shorebird Study Group is now available. Articles include:-

A population survey of the Hooded Plover in Tasmania. M. Newman/R. Patterson.
Weight variations and migration strategy of Curlew Sandpiper wintering in Tasmania. M. Barter.
Weight variations in Red-necked Stint whilst wintering in Tasmania. M. Barter.
Mortality rates of Curlew Sandpiper determined from rocket net catches. K. Harris.
A review of the winter gull counts in the Derwent Estuary, 1980/83.. W. Wakefield.
The wader habitats of Moulting Lagoon, Tasmania. W. Wakefield.
Survival of Pied Oystercatchers banded as pulli. M. Newman.

Cost including postage is $6.20. Please make cheque/money order payable to Shorebird Study Group; address c/o Mrs. P. Park Campania, Tasmania 7026.

VICTORIAN WADER STUDY GROUP : DATES FOR FIELDWORK OCTOBER - DECEMBER 1985

DATE	PLACE & OBJECTIVES	TIDE	
		TIME	HEIGHT
Oct 19-20	Queenscliff	Sat 1518*	1.4m
	Various species	Sun 0421*	1.6m
Nov 23-24	Werribee Sewerage Farm or	Sat 1209	0.8m
	Altona (Pt Cook)	Sun 1300	0.7m
	Eastern Golden Plover		
Dec 14-15	InverlocH	Sat 1359	1.3m
	Eastern Curlew	Sun 1452	1.3m
Dec 28	Werribee Sewerage Farm	Sat 1556	0.7m
	Smaller waders		

*Time at Port Phillip Heads - two hours later in Swan Bay

The normal meeting time will be 5 hours before high tide. Please however phone Clive Minton or one of the other contacts listed below, a few days before each planned date to advise of your availability and to obtain final details of the rendezvous time and location. It is most desirable that people do phone before each field work weekend.

Contacts: Clive Minton - 589 4901 (home) 661 2892 (office)
Mark Barter - 233 3330 (home) 658 3966 (office)
Brenda Murlis - 874 2860 (home)
Ira Savage - (052)216 253 (home)
Brett Lane - 370 1272 (work)
Peter Dann - (059) 568 300 (work)
John Dawson - 787 2082
Ken Rogers - 714 8433 (home) 419 9511 (office)
Angela Jessop - 898 1288 (home)

GENERAL INDEX (STILTS 1-6)

AUTHOR INDEX (STILTS 1-6)

SPECIES INDEX (STILTS 1-6)

Hooded Plover: 1 App, 2.5, 2.44, 2.46, 2.49, 3.7, 3.8, 3.10, 4.24, 5.2, 5.21, 5.27, 6.35

Inland Dotterel: 2.49

Large Sand Plover: 1 App, 2.5, 2.20, 2.27, 2.49, 3.4, 3.10, 3.15 3.24, 4.14, 4.24, 6.4, 6.32

Latham's Snipe: 1.4, 1 App, 2.49, 3.10, 4.24. 5.23, 6.31

Lesser Golden Plover: 1.4, 1.11, 1 App, 2.5, 2.20, 2.27, 2.49, 3.15, 4.19, 4.24, 6.31, 6.32

Little Ringed Plover: 1 App, 3.15

Little Stint: 2.38, 2.50, 4.6

Long-toed Stint: 1 App, 2.5, 2.50, 3.15, 4.24

Marsh Sandpiper: 1 App, 2.5, 2.49, 3.15, 4.24, 6.30

Masked Lapwing: 1 App, 2.5, 2.49, 3.4, 3.10, 4.24, 5.10, 5.21

Mongolian Plover: 1.9, 1.11, 1 App, 2.2, 2.20, 2.29, 3.4, 3.9, 3.10, 3.15, 4.24, 5.25, 6.4, 6.29, 6.31, 6.32, 6.34

Oriental Plover: 2.20, 2.27, 2.49, 3.4, 4.24, 6.6

Oriental Pratincole: 1 App, 2.5, 3.15, 6.10

Painted Snipe: 1 App, 2.49, 3.15

Pectoral Sandpiper: 1 App, 2.50

Pied Oystercatcher: 1.1, 1.6, 1 App, 2.5, 2.20, 2.27, 2.37, 2.40, 2.43, 2.49, 2.51, 3.7, 3.9, 3.10, 3.15, 4.24, 5.10, 5.21

Red-capped Plover: 1 App, 2.5, 2.20, 2.27, 2.37, 2.44, 2.49, 3.4, 3.8, 3.9, 3.10, 4.14, 4.24, 5.10, 5.24, 5.27, 6.4

Red-kneed Dotterel: 1 App, 2.5, 2.43, 2.49, 3.4, 3.7, 3.9, 3.10, 4.24

Red Knot: 1.1, 1.4, 1.6, 1 App, 2.5, 2.20, 2.27, 2.40, 2.50, 2.51, 2.53, 3.10, 3.15, 3.24, 3.25, 4.14, 4.24, 5.10, 6.4, 6.31

Red-necked Avocet: 1 App, 2.5, 2.49, 3.4, 3.10, 4.14, 4.24, 5.20, 5.27

Red-necked Stint: 1.2, 1.3, 1.4, 1.11, 1 App, 2.2, 2.5, 2.11, 2.20, 2.27, 2.29, 2.37, 2.40, 2.45, 2.50, 2.51, 2.54, 3.4, 3.7, 3.9, 3.10, 3.15, 3.24, 3.25, 4.14, 4.19, 4.24, 5.10, 5.20, 5.23, 5.26, 5.27, 6.4, 6.31

Redshank: 6.4, 6.30

Ringed Plover: 1.App, 3.15

Ruddy Turnstone: 1.2, 1.4, 1 App, 2.5, 2.20, 2.27, 2.47, 3.4, 3.8, 3.10, 3.15, 4.24, 6.4, 6.31, 6.33

Ruff and Reeve: 1 App, 2.50, 3.15

Sanderling: 1 App, 2.5, 2.20, 2.27, 2.38, 2.50, 3.10, 3.11, 3.15, 4.24, 6.4

Sharp-tailed Snadpiper: 1.2, 1.3, 1.4, 1.11, 1 App, 2.2, 2.5, 2.20, 2.27, 2.37, 2.50, 3.4, 3.9, 3.10, 3.15, 4.14, 4.24. 5.10, 5.20, 5.26. 6.4, 6.31

Snipe Sp: 2.50

Sooty Oystercatcher: 1 App, 2.5, 2.20, 2.27, 2.37, 2.43, 3.7, 3.10, 4.24, 5.21

Tattler Sp: 2.2, 3.10, 4.24

Terek Sandpiper: 1.4, 1 App, 2.5, 2.20, 2.27, 2.49, 2.54, 3.4, 3.10, 3.15, 4.24, 5.10, 5.25, 6.4

Wandering Tattler: 3.15, 5.25

Whimbrel: 1.2, 1.9, 1 App, 2.5, 2.20, 2.27, 2.49, 3.15, 4.19, 5.10, 6.6, 6.30

Wilson's Phalarope: 1 App

White-rumped Sandpiper: 2.50, 4.6

Wood Sandpiper: 1 App, 2.5, 2.49, 3.15, 4.24

Wrybill: 1.1

AUSTRALASIAN WADER STUDIES GROUP

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*** CONTRIBUTIONS TO 'THE STILT' SHOULD BE SENT TO THE EDITOR ***

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CONTENTS