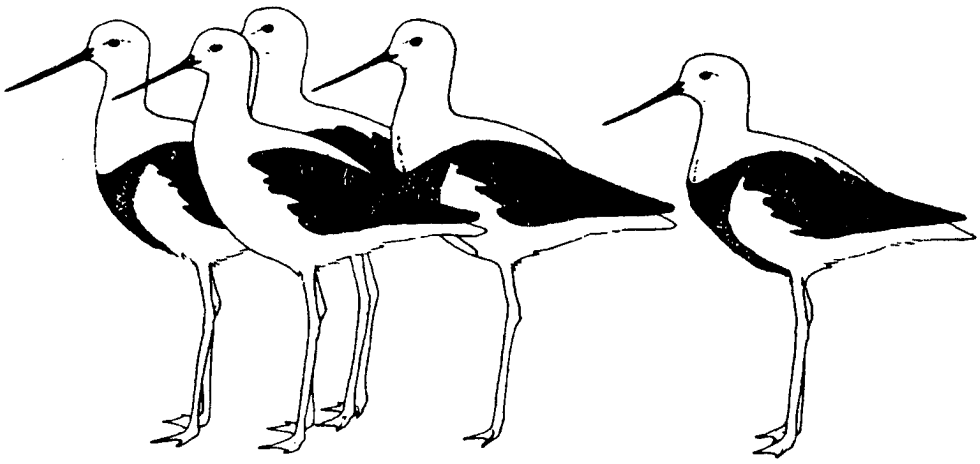
# The Stilt



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

NO. 8 APRIL 1986

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.

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## EDITORIAL

It is A.W.S.G. policy that the editorship of *The Stilt* is passed onto a different state every two years if practical. My term as Editor ceases with this issue and I'm pleased to announce that *The Stilt* is moving to Tasmania where it will be edited under the capable guidance of Eric Woehler. Eric has been an Assistant Editor of *The Stilt* and has alot of wader experience from his activities with the Shorebird Study Group.

This issue contains two new sections which I hope will become permanent parts of *The Stilt*. The first is the Banding Totals and Recoveries Section which was kindly supplied by Kim Lowe and his staff from the Australian Bird & Bat Banding Scheme (Australian National Parks and Wildlife Service). The banding totals are for the twelve-month period ending on the 31st December 1985 and show the number of each species banded in each state in that period. The recoveries are ANPWS computer printouts and the relevant codes are translanted at the beginning of the section.

The Interwader article in this issue heralds what I hope will become a permanent Asian Section of *The Stilt*. There is substantial wader research being carried out in Asia and more communication between Australia and Asian wader enthusiasts could only be useful. For the same reason it would be benificial to include a New Zealand Section in *The Stilt* in the future.

Finally, I should like to thank Margaret Considine (Assistant Editor) for all her help during my term as Editor. I should also like to thank all those people who have contributed to *The Stilt* and made it such a success.

PETER DANN

## SEX-RELATED DIFFERENCES IN ADULT CURLEW SANDPIPERS *CALIDRIS FERRUGINEA* CAUGHT IN VICTORIA

Mark Barter, 21 Chivalry Ave., Glen Waverley, Vic 3150.

SUMMARY

Adult Curlew Sandpipers caught in Victoria betweeen March 1978 and October 1985 have been analysed for sex-related differences in weight, primary feather and breeding plumage moult, and population composition. Birds were sexed using a bill-length criterion which allows sexing as about the 94% confidence level. Females were heavier than males, averaging 58.2g versus 56.0g over the October/January period. Both sexes have a minimum weight in early November and commence pre-migratory fattening at the same rate in late January/early February. Males start primary feather moult first in early October being initially one to two weeks ahead of females, although there is little or no difference during the latter stages of moult in late January/early February. Similarly, males start moulting into breeding plumage first in late January, approximately twenty days ahead of females, with the difference increasing as moult progresses. When birds first return from the breeding grounds the male proportion of the population is higher than the austral summer average, whilst during the departure period the proportion is lower. These results support previous observations that males leave and return to the breeding grounds before females.

### INTRODUCTION

A number of investigators have described sex-related differences in Curlew Sandpipers *Calidris ferruginea*, with birds having been sexed by dissection or through use of a statistical technique (Griffiths, 1968) to obtain a sexing criterion based on measurement of bill lengths of live birds.

Portenko (1959) reported that males arrive at and leave the Siberian breeding grounds before females. Males were found to arrive earlier at Ottenby, in the Baltic, during southward migration (Edelstam, 1972) and to reach Morocco two to three weeks prior to females (Pienkowski *et al.*, 1976). The latter workers found that males commenced primary feather moult before females, this difference being found also in Muaritanian birds (Wilson *et al.*, 1980). However, neither Thomas and Dartnell (1971) nor Elliot *et al.* (1976) could detect any sex differences in primary moult timing in Tasmania and South Africa, respectively.

Elliot *et al.* (1976) found that males moulted into breeding plumage before females, with 33% of males and only 5% of females having nearly complete breeding plumage on departure in early April. There was little or no difference between levels of breeding plumage for the sexes upon their return to South Africa.

Puttick (1981) has reported that females forage faster and more successfully than males, that the sexes form segregated flocks and that females, being larger, exclude males from the best feeding areas.

This paper describes sex-related differences in the timing of primary feather and breeding plumage moult, in weight and in changes in population composition, for adult Curlew Sandpipers caught in Victoria which have been sexed on the basis of bill length. The derivation of the sexing criterion has been described

in detail elsewhere (Barter, 1985).

METHODS

Adult Curlew Sandpipers caught in southern Victoria between March 1978 and October 1985 were sexed by bill length. In the majority of cases, that is when bill lengths were measured to the nearest millimetre, the following criterion was used:

Males $\leqslant$ 37mm
Females $\geqslant$ 41mm

In the few cases where bill lengths were measured to 0.1mm, the criterion employed was:

Males $\leqslant$ 37.3mm
Females $\geqslant$ 40.8mm

With these criterion, the composite sexing confidence level is about 94%.

When the overall sex ratio was being calculated the criterion used was:

Males $\leqslant$ 39.0mm
Females $\geqslant$ 39.1mm

This criterion is based on the fact that an equal number of males and females will be inaccurately sexed, if it is assumed that there are equal numbers of males and females in the sample. However, if the proportion of males exceeds that of females, the number of males being incorrectly sexed will be greater than that of females with the consequence that the male proportion will be underestimated. Similarly, a preponderance of females will lead to an underestimate of the female proportion.

RESULTS AND DISCUSSION

(a) Weights

Fortnightly average weights obtained from 1330 sexed birds over the period August to April are listed in Table 1 and are shown graphically in Fig. 1. The numbers of sexed birds for each fortnight are given also in Table 1. Data are not available for the first half of February and the second half of April. The weight of both sexes falls to a minimum in the first half of November and then rises to a maximum in December before declining slightly prior to pre-migratory fattening, which commences in late January/early February. The average weight of birds over the October/January period is 58.2g for females and 56.0g for males. Both sexes appear to commence fattening at the same time and gain weight at the same rate. Average weights in early April are 89.0g for females and 85.3g for males.

The minimum weight in early November coincides with the period of fastest moult as measured by primary moult score. Moulting waders can have low body weights (Boere, 1976; Wilson *et al.*, 1980; Owen and Krohn, 1973; Page, 1974; Barter, 1984) and it has been suggested that the cause is increased energy demand due to feather renewal and the additional heat losses that occur because of reduced insulation (Evans and Smith, 1975).

(b) Primary Feather Moult

Median primary moult scores for catches comprising 587 sexed and moult-scored birds are given in Table II and are shown graphically in Fig. 2. The regression lines (males, $r=0.99$; females, $r=0.98$; both $p<0.001$) and the free-hand dashed curves, which incorporate the data not included in the regression analysis, indicate that males start moulting their primary feathers in early October some one to two weeks before females, but that there is little or no difference at the end of the moulting period in late January/early February. Earlier primary moult in males could be a result of their prior arrival in Victoria from the breeding grounds.

The earlier start of primary moult in males is confirmed by analysis of moult in individual birds which shows that the first males in moult were found on 13th September whilst the first females were identified on 1st October. From the 13th September until the end of that month, six males out of seventeen scored were in moult, whilst none out of five females was in moult. On the 1st October twelve out of twenty-five males were in primary moult and only one out of six females.

The earlier commencement of primary moult in Victorian male Curlew Sandpipers confirms the results obtained in Morocco (Pienkowski *et al.*, 1976) and Mauritania (Wilson *et al.*, 1980).

(c) Breeding Plumage

The average breeding plumage fraction for each sex, by catch, is plotted in Fig. 3 together with regression lines (breeding to non-breeding: males, $r=-0.92$, $p<0.005$. Non-breeding to breeding: males, $r=0.88$, $p<0.005$; females, $r=0.95$, $p<0.001$). The results were obtained from catches comprising 553 sexed birds which had each been subjectively assessed for degree of breeding plumage in six categories - nil (0.0) trace (0.1), 0.25, 0.5, 0.75, and full (1.0). The small amount of data available for females following their return to Australia indicates that there is little difference between the sexes during moult into non-breeding plumage. However, there is a considerable difference in timing between the sexes during moult into breeding plumage. Males commence moulting in the second half of January whilst females start around the middle of February. The initial difference of about twenty days increases as moult progresses, with the indication being that males complete moult well before arrival at the breeding grounds, whilst females probably do not finish moulting until after arrival.

The Victorian results are similar to those determined for Curlew Sandpipers spending the non-breeding season in South Africa (Elliot *et al.*, 1976), where it was found that there is little difference between the sexes upon arrival but that males are considerably ahead of females during moult into breeding plumage.

(d) Sex Ratio

The percentage of adult males caught in each month from August to April is shown graphically in Fig 4. The number of birds sexed during this period was 2282, with the monthly totals being as shown in the Figure. It can be seen that, following initial levels of 71 to 75% in August/September, the male percentage falls to within a range of 61 to 68% during the October/February period before declining to 55% in March and further to 33% in April. As stated previously (see Methods), the male proportions of the population will be underestimates from August to February, whilst the female proportion will be an underestimate in April.

The results support the observations of Portenko (1959) that males leave and return to the breeding grounds first.

It is interesting to note the high proportion of males present during the non-migration period. This phenomenon will be discussed in a future paper.

ACKNOWLEDGEMENTS

My grateful thanks are due to the VWSG for making their data available for analysis, to Brett Lane for his very useful comments on the first draft of this paper and to Karen Barter for her typing of the various drafts.

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| | | MALE | | | FEMALE | | |
|---|---|---|---|---|---|---|---|
| MONTH | FORTNIGHT | n | $\bar{x}$ | S.D. | n | $\bar{x}$ | S.D. |
| AUGUST | 2 | 16 | 53.6 | 3.8 | 4 | 56.7 | 3.8 |
| SEPTEMBER | 1 | 31 | 55.7 | 3.1 | 7 | 56.4 | 5.5 |
| | 2 | 10 | 53.6 | 4.3 | 4 | 59.0 | 2.1 |
| OCTOBER | 1 | 59 | 57.8 | 4.2 | 13 | 59.9 | 5.2 |
| | 2 | 46 | 56.1 | 2.9 | 22 | 59.2 | 3.5 |
| NOVEMBER | 1 | 42 | 53.0 | 3.3 | 32 | 54.9 | 3.3 |
| | 2 | 68 | 55.5 | 3.1 | 18 | 57.8 | 2.8 |
| DECEMBER | 1 | 38 | 56.8 | 3.1 | 18 | 60.0 | 3.8 |
| | 2 | 167 | 56.5 | 4.9 | 56 | 59.5 | 4.2 |
| JANUARY | 1 | 51 | 55.1 | 3.4 | 32 | 57.2 | 3.4 |
| | 2 | 65 | 55.8 | 3.8 | 14 | 58.4 | 2.8 |
| FEBRUARY | 2 | 180 | 64.0 | 7.7 | 103 | 65.5 | 8.5 |
| MARCH | 1 | 108 | 71.4 | 7.9 | 86 | 72.9 | 7.3 |
| | 2 | 12 | 82.4 | 5.4 | 13 | 87.8 | 4.8 |
| APRIL | 1 | 4 | 85.3 | 1.5 | 11 | 89.0 | 4.6 |

TABLE I Average weight data by fortnight for the Sexes (n=number, $\bar{x}$=mean, S.D.=standard deviation)

| DATE | MALE | | FEMALE | |
|---|---|---|---|---|
| | n | MPMS | N | MPMS |
| 1-2-3/10/82 | 28 | 0 | 6 | 0 |
| 5/10/85 | 28 | 0 | 3 | 0 |
| 19/10/85 | 10 | 8 | 13 | 1 |
| 30/10/81 | 24 | 20 | 10 | 15 |
| 8-9/11/80 | 30 | 20 | 21 | 17 |
| 23/11/80 | 44 | 27 | 11 | 26 |
| 7/12/80 | 30 | 31 | 18 | 29 |
| 16/12/79 | 45 | 34 | 21 | 33 |
| 28-29/12/82 | 46 | 36 | 27 | 34 |
| 2/1 /82 | 23 | 37 | 12 | 35 |
| 13/1 /80 | 17 | 44 | 19 | 40 |
| 26/1 /80 | 55 | 47 | 14 | 47 |
| 24/2 /79 | 21 | 50 | 11 | 50 |

TABLE II Median primary moult score by sex and catch (n=number, MPMS=median primary moult score)

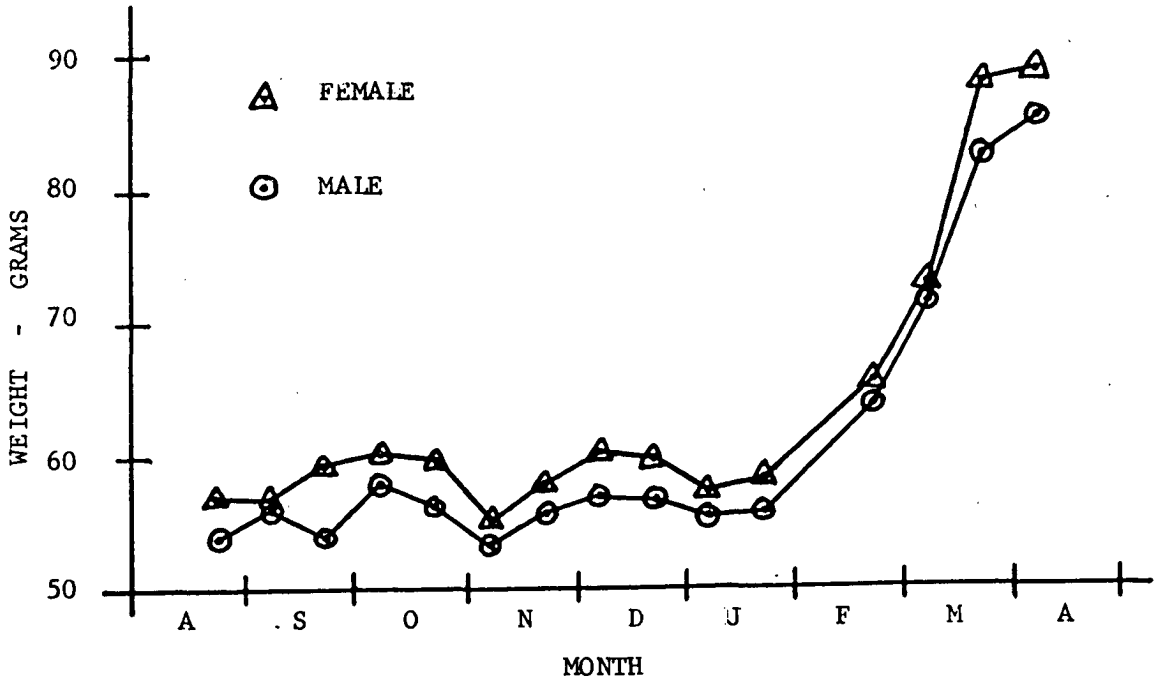


Fig 1. Average fortnightly weights of the sexes

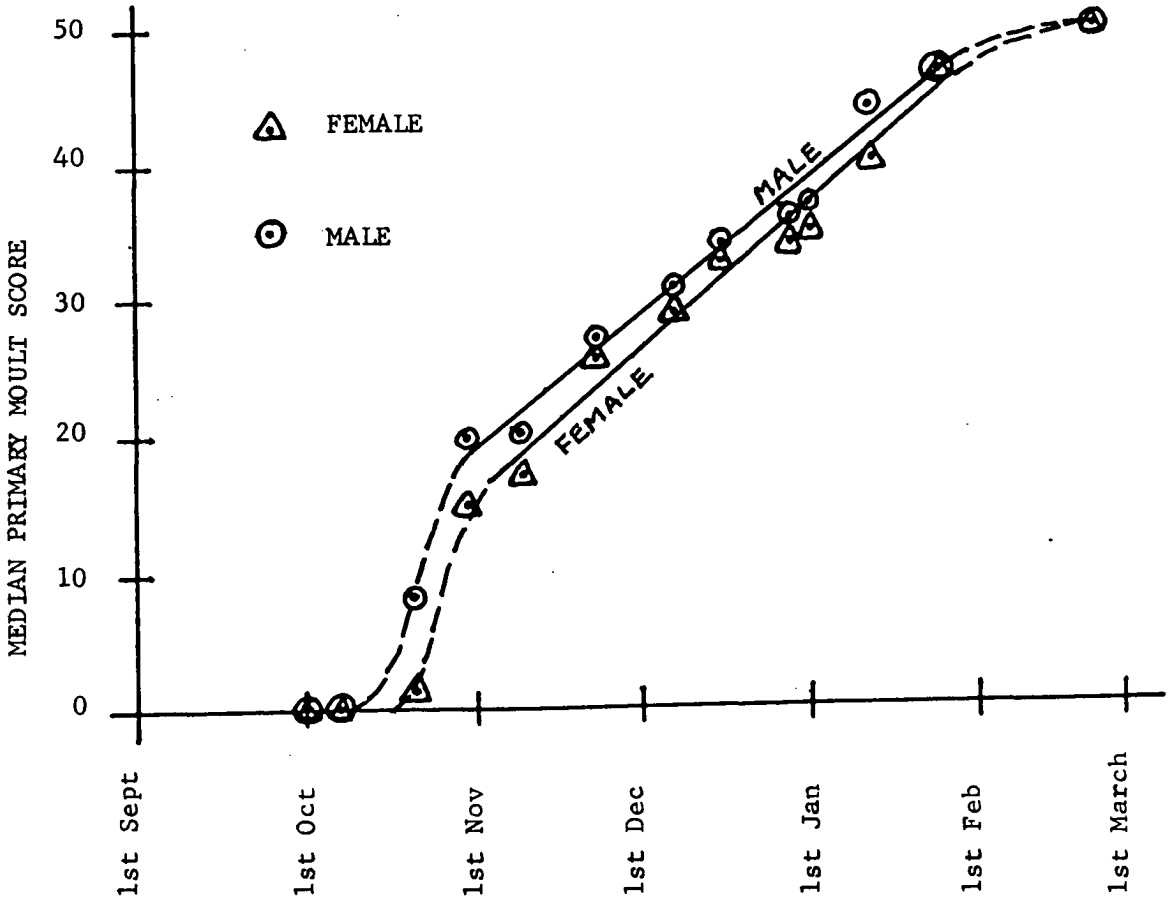


Fig 2. Median primary moult score by catch and sex

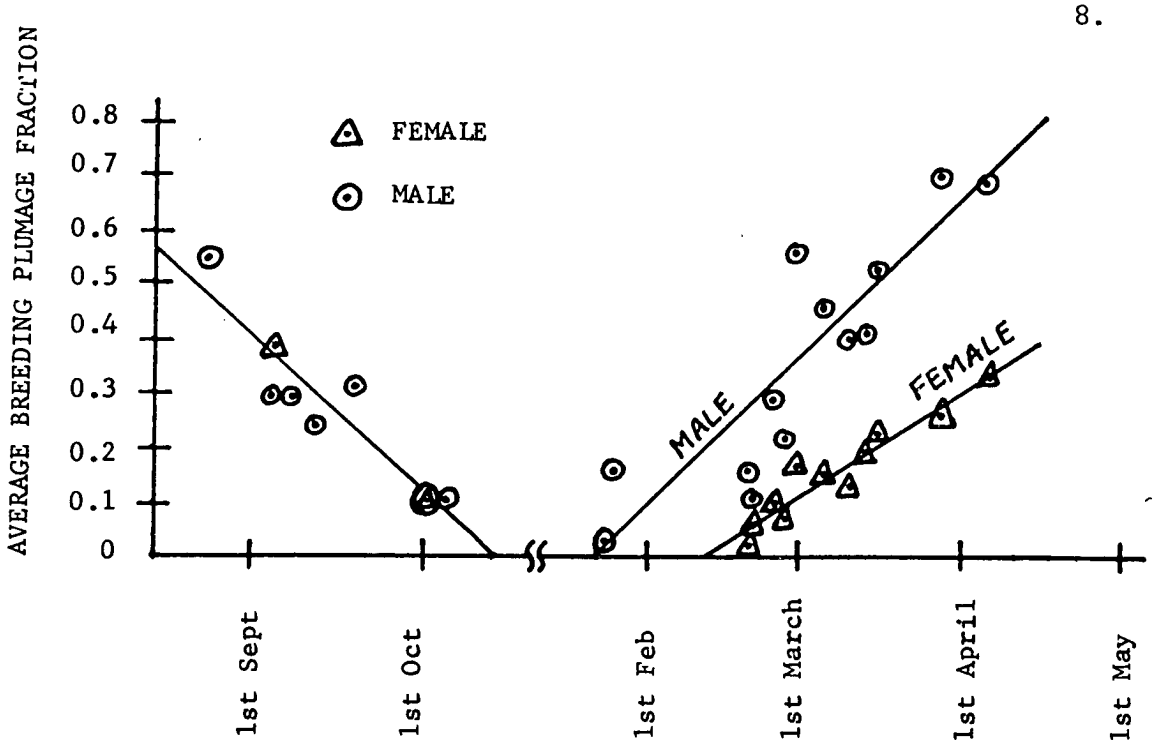


Fig 3. Breeding plumage fraction of each sex by catch, with calculated regression lines.

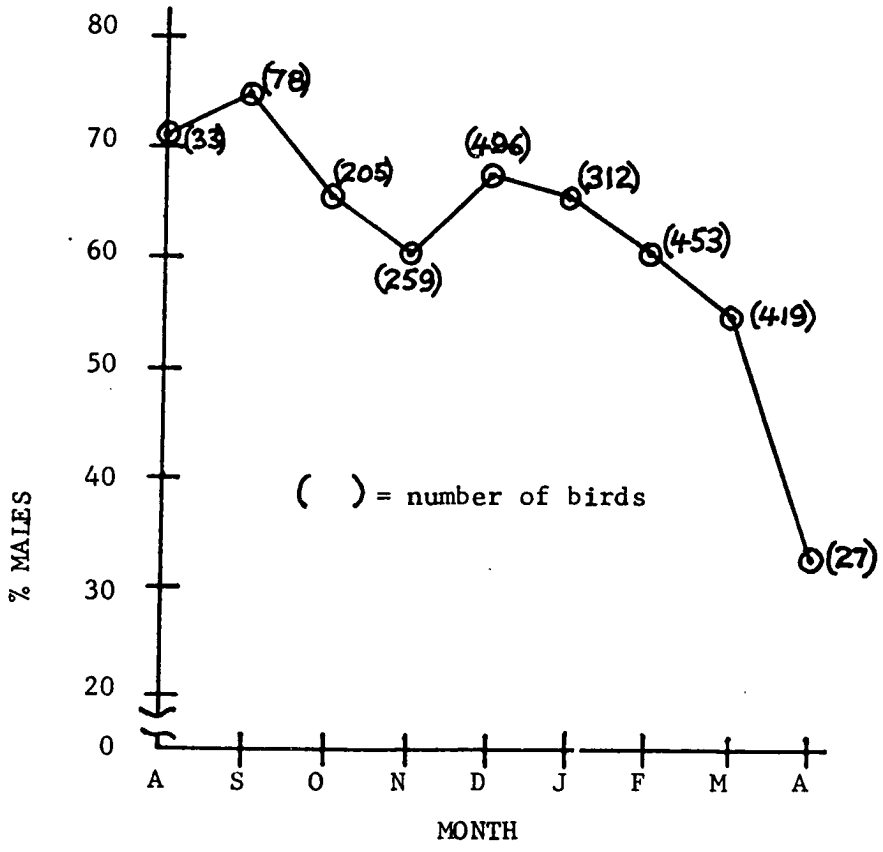


Fig 4. % males by month

## SEASONAL CHANGES IN THE WADER POPULATION IN THE SOUTH-EAST OF THE GULF OF CARPENTARIA

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

The Gulf of Carpentaria is always remote and largely inaccessible. At no time is it more so than in the summer wet season although this is when most waders are present (Guard and Garnett, 1982). It is for this reason that the composition of wader flocks that occupy even the most accessible corner of the Gulf, the south-east, which is the second most important site for waders in Australia after the north-west (Lane, 1984), has been determined on only four occasions.

The most comprehensive counts of waders on the Gulf coast were made by Brett Lane, Roger Guard and myself in late September 1983 when over forty feeding flocks were counted at eight separate sites between the Nicholson River on the southern shore of the Gulf and the Chapman River on the eastern side. Subsequently, in June 1984, I was able to make a total count of the major wader roost at Pt Austin 50 km north of Karumba while in the December 1984 and April 1985, I counted feeding flocks to the north and west of Karumba.

The numbers seen on each of these visits have been totalled to derive a percentage that allows comparision between months (Table 1). Although the comparisons are somewhat rough - in September we had noted large differences between sites but unfortunately it was logistically impossible to repeat counts at the same sites - they do serve to indicate broad changes in flock composition. The counts of feeding flocks, in September, December and April, were made on a variety of substrates in approximate proportion to their area along the coast, making the comparision among these three more realistic than with the roost at Austin Island.

The most dramatic change was the departure of Red Knot *Calidris canutus* between September and December. In September 1983 we found Red Knot one of the three most abundant waders between the Nicholson and Gilbert Rivers. By December there were only scattered individuals among the flocks of Great Knot *Calidris tenuirostris*. Presumably the Gulf is a transitional feeding area for Red Knot flying onto New Zealand where they spend the non-breeding season although more data is needed. Numbers were still low until at least the 15th April but by June there were a large number of birds at Austin Island. These may have been non-breeding birds that had flown only a part of the return migration. About 20% of both Red and Great Knot present in June were in full breeding plumage.

Other changes between September and December were somewhat hidden by the movement of knot. However there did appear to be an increase in the number of Black-tailed Godwit *Limosa limosa* and Red-necked Stint *Calidris ruficollis* after September, a protracted arrival implied by observations at sea in the northern Gulf of Carpentaria during December (Carter, 1983). Departure, however, is likely to have been rapid after the 15th April. The final count on that date included many fat and vivid Godwit on the verge of migration. The Gulf is the most important habitat for Black-tailed Godwit so far discovered in Australia (B. Lane, pers. comm.).

Some of the less common species, such as Terek Sandpiper *Tringa terek*, Greenshank *Tringa nebularia* and Marsh Sandpiper *Tringa stagnatilis*, also seemed more numerous in December than September from casual observations but their rarity masked obvious variation in the count data. All three would appear

to depart after mid-April. Curlew Sandpipers *Calidris ferruginea* appear to be transient visitors during September on their way further south. They had not returned by April, but, as with Eastern Curlew *Numenius madagascarensis*, (Blakers *et al.*, 1984) many non-breeding birds appear to move from southern to northern Australia during the southern winter.

Three resident Australian species were also recorded on the coast. Red-capped Plovers *Charadrius ruficapillus* that use the coast in winter were almost absent by December, perhaps moving inland following the influx of palaearctic migrants. Breeding was observed at several inland sites during April.

Pied Oystercatchers *Haematopus ostralegus* were common only at Karumba Point where they roost behind the mangroves to the north-east. The number at this roost was 72 in September, 165 in December and 160 in April. Elsewhere around the south-east Gulf, Pied Oystercatchers were seen only as pairs or individuals. In June, when the roost at Karumba Point was not visited, seven pairs were probably breeding at Pt Austin since all fourteen birds present rose to attack a Black-breasted Buzzard *Hamirostra melanosternon* that was taking eggs of Little Terns *Sterna albifrons* (Garnett, 1985). However no nests were found.

Large numbers on Black-winged Stilts *Himantopus himantopus* were never included in ground counts although flocks of up to 100 birds have been seen during aerial surveys. Numbers on the coast during the dry winter season do not appear to account for the 5000+ Black-winged Stilts that breed on ephemeral swamps just inland during the wet season.

In September and December the relative densities of different species on different substrates were examined. The highest densities of most species were found on the soft, low-tide muds adjacent to the mangroves. Further offshore and at river mouths, the substrate was sandy and wader flocks were more dispersed. Others intending to watch waders in the Gulf should note that, at low tide, hard, walkable sand can usually be found traversing only a hundred metres of knee-deep mud beyond the mangroves.

In addition to counts along the coast, waders were also observed in three other habitats: the banks of river estuaries, intertidal saltflats inland from the coastal strip of mangroves, and the grassy plains further inland still. Counts of river banks were made in September and April. Observations of waders in the other two habitats were made in December and April.

Waders along the estuaries of three rivers were counted - the Nicholson in September and the Bynoe and Flinders in April. The relative abundance of waders is described in Table 2. For four species, the estuaries of the Gulf rivers are likely to be of particular importance - Eastern Curlew, Whimbrel *Numenius numenius*, Common Sandpipers *Tringa hypoleucos* and Terek Sandpipers. Given there are about 1550 km of tidal estuary along rivers between the Chapman River in the north and the Nicholson in the west, an extrapolation from the relative abundance in Table 2 gives populations of 480 Eastern Curlew, 1100 Whimbrel, 235 Common Sandpiper and 1875 Terek Sandpipers in this Gulf habitat alone. These compare with highest counts elsewhere of 1970 Eastern Curlew at Great Sandy Strait, 1020 Whimbrel at Roebuck Bay and 3000 Terek Sandpiper at Eighty Mile Beach (B. Lane, pers. comm.). Common Sandpipers never concentrate sufficiently to give maximum counts. The estimate of estuary length is probably too low and given that all but the Common Sandpiper also occur in other habitats around the Gulf, many more may occur here than has been estimated.

The intertidal saltflats supported surprisingly few birds. In June and September

they were dry but by December the first of the high spring tides that regularly flood the saltflats at the end of the dry season had occurred. Eastern Curlew, Whimbrel, Greenshank and Marsh Sandpiper were seen around small bodies of standing water at this time but few birds were seen on the extensive areas of soft mud. Even tracks of birds were few. By April rain had flushed much of the saltwater from the surface of the more landward flats but the extensive saltpans closer to the sea still held few birds. This might be partly explained by the consistency of the mud. Whimbrel observed walking across the surface carried beneath their feet clods of mud several centimetres thick. One wonders how much mud can be carried before feeding on the mudflats ceases to be worth the effort.

In June and September the grass plains were almost devoid of waders but for a few Australian Pratincoles *Stiltia isabella*. In December and April they were teeming. In December a total of 6400 Little Curlew *Numenius minutus* and 1000 Oriental Pratincole *Glareola maldivarum* were seen. The Little Curlew were in several large scattered groups of up to 1000 birds which were feeding on burnt Flinder Grass plains or on the shorter grass immediately adjacent to the bare saltflats (Garnett and Minton, 1985). Oriental Pratincoles were in flocks of 30 to 80, typically circling across the Flinders Grass, both burnt and unburnt, often up to 300 m above the ground. They preferred to land on more open areas, particularly along roads or on the bare flats around dams. Both species were seen drinking at dams, usually on the wing. At one dam I watched a constant stream of both species coming in from the plains, circling the water several times until low enough to dip their bills briefly into the water and then circling away again. Only occasionally did a few land at the water's edge. The numbers of both species were surprisingly large considering the records documented in the RAOU Atlas. After I left, numbers of Oriental Pratincole apparently increased still further but all disappeared by January (J. Woodburn, pers. comm.). A small number of Oriental Plover *Charadrius veredus* were also present on the burnt grass feeding among Brolgas *Grus rubicundus* and Sarus Cranes *G. antigone*.

By April the wet season had started and the once bare plains were covered in tall grassland interspersed with freshwater swamps. On these the most abundant species was Sharp-tailed Sandpiper *Calidris acuminata*. Numbers could not be estimated, as they were reluctant to flush from the dense sedgeland in which they were feeding, but from the frequency with which they were encountered there could not have been less than 10,000. The mean weight of 18 birds mist-netted on the plains was 68.0 $\pm$ 16.7 g, only slightly above fat-free weight, but they ranged in weight from 47.5 to 104.0 g, indicating that they were probably arriving in a very much depleted state but were then gathering sufficient fuel from the south-east Gulf wetlands to fly much further north on the next leg of the journey. In September, smaller numbers of Sharp-tailed Sandpipers fed along the coast in the soft mud adjacent to the mangroves but by December they were virtually absent. In June none were seen at all.

Other migratory waders abundant on the sub-coastal wetlands were Marsh Sandpipers, Greenshank and some Curlew Sandpiper. Of Australian resident species, Masked Lapwing *Vanellus miles*, Red-kneed Dotterel *Erythrogonys cinctus*, Black-fronted Plover *Charadrius melanops*, Red-capped Plover and Black-winged Stilt were common. Young of all five were abundant. A single male Painted Snipe *Rostratula benghalensis* caught at night in a mist-net may have been part of a larger population. Oriental Pratincoles were absent but Australian Pratincoles were numerous and had also be breeding.

I am most grateful to John Woodburn of Normanton without whose hospitality the

Gulf would have been visited far less frequently. Also much appreciated was the company of my fellow counters, Brett Lane and Roger Guard. Brett Lane and Gay Crowley were kind enough to comment on the text.

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Table 1. Percentage composition of coastal wader flocks in the south-east Gulf of Carpentaria at four different seasons.

| Species | Roost Pt Austin June 1984 | Feeding flocks Sites from Bynoe R. to Pt Austin Late Sept. 1983 | Feeding Flocks Sites from Flinders R. to 10km N Karumba Pt Dec. 1984 | Feeding Flocks Sites from Flinders R. to 10km N Karumba Pt Early April 1985 |
|---|---|---|---|---|
| Pied Oystercatcher | 0.7 | 0.7 | 4.0 | 5.0 |
| Grey Plover | 0.3 | 1.0 | 0.3 | 0.9 |
| Lesser Golden Plover | 0 | 0.1 | 1.0 | 0.2 |
| Mongolian Plover | 9.0 | 0.4 | 2.7 | 7.4 |
| Larger Sand Plover | 7.7 | 1.5 | 4.3 | 8.4 |
| Oriental Plover | 0 | 0 | 0.5 | 0 |
| Red-capped Plover | 8.4 | 1.7 | 0.1 | 0.4 |
| Turnstone | <0.1 | 0.1 | <0.1 | 0.3 |
| Eastern Curlew | 1.6 | 0.1 | 0.4 | 1.2 |
| Whimbrel | 0.3 | 0.2 | 0.6 | 1.9 |
| Little Curlew | 0 | 0 | 0.1 | 0 |
| Grey-tailed Tattler | 0.2 | 0.1 | 0.2 | 1.1 |
| Common Sandpiper | 0 | 0 | <0.1 | 0 |
| Greenshank | <0.1 | 0.4 | 0.9 | 1.0 |
| Marsh Sandpiper | 0 | 0.5 | 0.6 | 1.5 |
| Terek Sandpiper | 0.4 | 0.1 | 1.3 | 2.7 |
| Black-tailed Godwit | 5.5 | 6.5 | 18.7 | 17.3 |
| Bar-tailed Godwit | 0.2 | 0.3 | 1.0 | 1.2 |
| Red Knot | 13.1 | 21.3 | 2.1 | 4.3 |
| Great Knot | 31.8 | 36.8 | 28.3 | 30.1 |
| Sharp-tailed Sandpiper | 0 | 2.5 | 1.3 | 0 |
| Red-necked Stint | 8.2 | 21.0 | 27.2 | 13.4 |
| Curlew Sandpiper | 12.6 | 4.5 | 2.6 | 1.7 |
| Sanderling | 0 | <0.1 | 0 | 0 |
| Broad-billed Sandpiper | 0 | 0.1 | 1.7 | 0.2 |
| Total counted | 2748 | 10695 | 5403 | 3310 |

Table 2. Relative abundance of waders (No./km) along the banks of three river estuaries in the south-east Gulf of Carpentaria.

| Species | Nicholson R. | Flinders R. | Bynoe R. | Mean |
|---|---|---|---|---|
| Masked Lapwing | 0 | 2.67 | 1.00 | 1.32 |
| Lesser Golden Plover | 0.23 | 0 | 0 | 0.05 |
| Mongolian Plover | 0.03 | 0 | 0 | 0.01 |
| Large Sand Plover | 0.13 | 0 | 0 | 0.03 |
| Red-capped Plover | 2.17 | 0.05 | 0 | 0.48 |
| Black-winged Stilt | 0 | 2.04 | 0.78 | 1.02 |
| Eastern Curlew | 0.53 | 0.18 | 0.29 | 0.31 |
| Whimbrel | 1.13 | 0.20 | 0.86 | 0.71 |
| Grey-tailed Tattler | 0.07 | 0 | 0 | 0.01 |
| Common Sandpiper | 0.40 | 0.11 | 0.09 | 0.15 |
| Greenshank | 0.30 | 0.60 | 0.38 | 0.44 |
| Terek Sandpiper | 0.80 | 0.33 | 2.00 | 1.21 |
| Black-tailed Godwit | 0.07 | 0 | 0 | 0.01 |
| Bar-tailed Godwit | 0 | 0.02 | 0 | 0.01 |
| Sharp-tailed Sandpiper | 0.03 | 0 | 0 | 0.01 |
| Red-necked Stint | 0.13 | 0 | 0 | 0.03 |
| Curlew Sandpiper | 0.17 | 0 | 0 | 0.04 |
| km. counted | 30 | 45 | 65 | 140 |

## THE SUBSPECIES OF MONGOLIAN PLOVER *CHARADRIUS MONGOLUS* IN AUSTRALIA

Brett Lane, Royal Australasian Ornithologists Union, 21 Gladstone St., Moonee Ponds, 3039, Australia.

### INTRODUCTION

The recent sighting in New South Wales of two different subspecies of Mongolian Plovers is of interest (Izzard, 1985; *see also A. McBride's comments this issue*). Cramp and Simmons (1983) recognise five subspecies, divisable into two broad groups: the "mongolus" group comprising *C. m. mongolus* and *C. m. stagmanni*, and the "atrifrons" group containing *C. m. pamirensis, C. m. atrifrons* and *C. m. schaeferi*. The two groups differ in the amount and distribution of black on the head and underparts when in breeding plumage. There are also differences in measurements and proportions, the "mongolus" group having longer wings, a shorter, deeper bill and shorter tarsi. Within the two groups separation of the subspecies is based on detailed differences in breeding plumage, which are generally clinal, and differences in proportions. Table 1 shows the differences in measurements and proportions within the Mongolian Plover based on information in Cramp and Simmons (1983). Figure 1 shows the currently known breeding and non-breeding range of the five subspecies.

In view of the proximity of north-western Australia to the non-breeding ranges of *schaeferi* and *atrifrons* and a record near Darwin of *stegmanni* (Deignan, 1964), information from birds handled during the north-west expeditions between 1981 and 1985 was analysed to determine which subspecies were present. In the Broome - Port Hedland area of Western Australia, 74 Mongolian Plovers have been caught and banded (Aug-Sept., 1981, 3; Aug-Sept., 1982, 24; Oct-Nov., 1983, 24; Mar-Apr., 1985, 27). Unfortunately, only a proportion of these had sufficient measurements taken to enable comparison with the criteria of Cramp and Simmons (1983).

### RESULTS

The following refers to 34 adult birds (18 months or older), the wing and bill lengths of which were measured. The bill depth was measured on only ten of these (all in March and April 1985). Table 2 gives the measurements as well as the ratios of wing length to bill length and bill length to bill depth for these birds where possible.

There is no significant difference between wing length in birds handled before the completion of primary moult (Aug-Nov.) and that of those handled after moult had finished (Mar-Apr.) ($t = 0.519$; $df = 32$). The slight difference observed is probably due to differing states of primary wear, newer feathers in March and April being slightly longer.

Birds handled from August to Novvember fall into two groups on the basis of wing/bill ratio: 8 of the "atrifrons" group and 17 of the "mongolus" group. Unfortunately bill depth was not measured and birds were not in breeding plumage so no further corroboration is possible. All except one of the "atrifrons" group birds had a wing length greater than 128 millimeters, suggesting that they were *schaeferi*. The subspecies *pamirensis* can be ruled out on distribution grounds. In the absence of further evidence, the conclusion that *schaeferi* visits north-western Australia is only tentative.

In March and April, 1985, all birds handled were from the "mongolus" group based

on wing/bill ratios and on bill length/depth ratios. The breeding plumage of these birds supported this conclusion. The average bill length/depth ratio of these birds was 3.28, slightly lower than that of *stegmanni* and lower than that of the other subspecies. Only one individual exceeded the average ratio for *mongolus*.

## DISCUSSION

Deignan (1964) collected four specimens of Mongolian Plovers at Darwin and stated... "Three of my four skins are in almost complete nuptial plumage and are inseparable from a long series of topotypical specimens of *stegmanni*. It may be found that *Charadrius m. mongolus*, with which Australian birds have hitherto been placed, does not occur at all in this part of the world.". Condon (1975) states of *mongolus* that... "Occurrence of this subspecies (is) not completely established in all parts of Australia.". These statements suggests that the conclusion that *stegmanni* and few *mongolus* occur in north-western Australia is not unreasonable.

Izzard's (1985) brief description of the birds he saw in New South Wales indicated that they were from the "atrifrons" group. They had white foreheads with thick black median lines. Based on the descriptions of Cramp and Simmons (1983), these would appear to be *schaeferi*. That this subspecies should appear on the east coast of Australia is most unexpected given their known distribution in Asia during the non-breeding months (see Figure 1).

It appears likely that three subspecies of the Mongolian Plover occur in Australia: *mongolus, stegmanni* and *schaeferi*. The evidence presented here is fairly limited and this conclusion is tentative. Clearly, more work is needed to confirm the presence of different subspecies in Australia. Observers should familiarise themselves with the differences in breeding plumage, and look at individuals carefully when they are moulting into breeding plumage in late February, March and April. Any observations which readers may have would be gratefully received.

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Table 1: Morphometric criteria for determining races of the Mongolian Plover (source: Cramp and Simmons, 1983).

| PARAMETER | "MONGOLUS" GROUP | | "ATRIFRONS" GROUP | | |
|---|---|---|---|---|---|
| | mongolus | stegmanni | pamirensis | atrifrons | schaeferi |
| Wing length (mm) | | | 75% > 128 | 87% < 128 | 90% > 128 |
| Wing/Bill ratio | > 7.70 | | | < 7.70 | |
| Bill length/ depth ratio | < 3.80 | | | > 3.80 | |
| Av. Bill length/ depth ratio | 3.52 | 3.33 | 3.95 | 4.07 | 4.23 |

Table 2: Morphometrics and proportions of adult Mongolian Plovers handled in north-western Australia, 1981 to 1985.

| DATE | WING LENGTH (A) | BILL LENGTH (B) | BILL DEPTH (C) | RATIOS A/B | RATIOS B/C |
|---|---|---|---|---|---|
| 1981 | 140 | 18.1 | | 7.73 | |
| (Aug-Sept) | 135 | 16.9 | | 7.99 | |
| 1982 | 130 | 17.2 | | 7.56 A | |
| (Aug-Sept) | 128 | 15.4 | | 8.31 | |
| | 126 | 17.1 | | 7.37 A | |
| | 134 | 18.0 | | 7.44 A | |
| 1983 | 138 | 17 | | 8.11 | |
| (Oct-Nov) | 140 | 16 | | 8.75 | |
| | 131 | 18 | | 7.27 A | |
| | 134 | 16 | | 8.37 | |
| | 130 | 17 | | 7.64 A | |
| | 132 | 17 | | 7.76 | |
| | 141 | 17 | | 8.29 | |
| | 139 | 17 | | 8.17 | |
| | 134 | 17 | | 7.88 | |
| | 134 | 16.5 | | 8.12 | |
| | 129 | 18 | | 7.16 A | |
| | 138 | 17 | | 8.10 | |
| | 135 | 17 | | 7.94 | |
| | 145 | 18 | | 8.05 | |
| | 135 | 17 | | 7.94 | |
| | 135 | 17.8 | | 7.58 A | |
| | 132 | 17.5 | | 7.54 A | |
| | 139 | 17.8 | | 7.81 | |
| 1985 | 136 | 15.9 | 4.8 | 8.55 | 3.31 |
| (Mar-Apr) | 136 | 16.3 | 4.7 | 8.34 | 3.47 |
| | 135 | 16.0 | 4.9 | 8.44 | 3.26 |
| | 142 | 17.9 | 5.0 | 7.93 | 3.58 |
| | 137 | 16.4 | 5.2 | 8.35 | 3.15 |
| | 140 | 16.5 | 5.5 | 8.48 | 3.00 |
| | 138 | 16.1 | 5.1 | 8.57 | 3.16 |
| | 133 | 16.8 | 5.1 | 7.92 | 3.29 |
| | 135 | 16.4 | 5.4 | 8.23 | 3.04 |
| | 137 | 17.6 | 5.0 | 7.78 | 3.52 |

(A = "atrifrons" group birds, probably shaeferi)

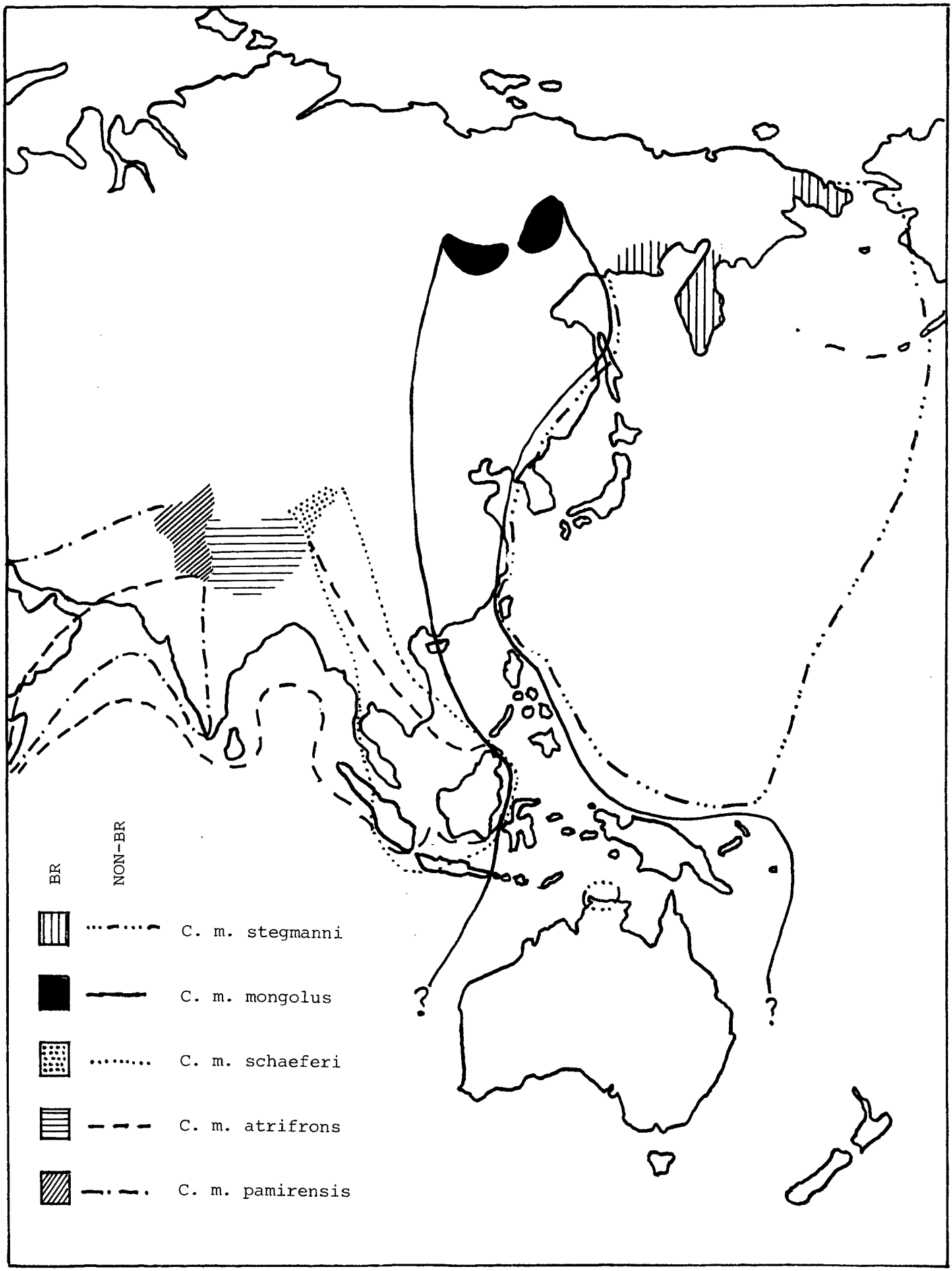



FIGURE 1: Approximate currently known breeding and non-breeding range of subspecies of the Mongolian Plover (source: Cramp & Simmons, 1983).

## INTERWADER

Duncan Parish, Coordinator, PO Box 10769, 50724, Kualar Lumpar, Malaysia.

INTERWADER - the East Asia/Pacific Shorebirds Study Programme - was formed in 1983 initially to study migrant waders along the west coast of Peninsula Malaysia (*The Stilt* 4, p.23). This first survey, conducted primarily by members of the Western Australian Wader Study Group, identified a number of key sites which have been investigated in detail recently. A Curlew Sandpiper marked in Singapore during the survey was seen in N.W. Australia six weeks later - thus proving that some migrants reaching Australia do pass through the Malay Peninsula. Since 1983, there have been two within-season recoveries of waders from Australia to the Malay Peninsula.

Following the success of this pilot operation, INTERWADER has expanded and developed considerably. It is still based in Kuala Lumpur but now has a permanent staff of five, and coordinates surveys in eight to ten East Asian countries each season. Work in each country is coordinated by a voluntary National Coordinator who reports periodically to the central office with survey results and requests for assistance.

Intensive surveys are organised using teams of international volunteers (so far from Australia, Holland, UK, Canada) together with local biologists, staff of conservation agencies and amateur birdwatchers. These teams conduct aerial and ground wader surveys, feeding ecology and habitat studies, and make recommendations for management measures or new protected areas.

The aims of INTERWADER are as follows:

1. To identify key wetland sites in the East Asia/Pacific Region used by migrating waders.
2. To determine the numbers using these sites and the routes taken between them by different species and races.
3. To conduct ecological studies on waders and their habitats.
4. To make conservation recommendations to appropriate agencies.
5. To increase public and governmental awareness of the problems.

### Threats to Waders

One of the greatest threats to Palaearctic waders which spend the non-breeding season in Australia is hunting and destruction in their habitat in Asia. In S.E. Asia waders use primarily areas of mangrove/mudflat on the coast as refuelling grounds on their long flights. These areas have a very rich food supply and enable the birds to double their body weight in two to three weeks.

In most, if not all, of the region, mangroves are under heavy pressure from development. In the Philippines over 70% of the mangrove zone has been cleared or severely degraded, and in Thailand over 90% is affected by logging or clearance. In Peninsular Malaysia 20% has already gone and a further 25% is threatened with conversion to fish and prawn ponds. In Singapore the government ignored the pleas of conservationists and reclaimed their last intact estuary to make a "park". This site use to support 10-20,000 waders and was one of the most important in the Malay Peninsula. In Korea there are proposals to reclaim over 345,000ha of intertidal mudflats, and since Korea is thought to be a very important area for migrating waders, this is likely to have a severe effect on

wader numbers.

A further threat to waders comes from hunting. An estimated 250,000 - 1,500,000 are killed each year on migration through eastern Asia. In one site in Java alone 100,000 waders are killed annually along with many other waterbirds. In the Phillippines, Thailand and China hunting is widespread and, as yet, often uncontrolled. Easy access to modern mistnets has led to an increase in mortality in recent years and the trapping pressure is likely to increase with the demands of the growing population. Unless adequate controls are enforced now entire sections of the waterbird community may be severely reduced.

INTERWADER Programme

It is against this background that INTERWADER has developed its programme over the last three years. During this period 7000km of coast has been surveyed in Peninsular Malaysia, Sabah, Sarawak, Thailand, Indonesia, Hong Kong and the Philippines and over thirty important wader sites have been identified and mapped.

One of the major successes of the programme has been the location of large numbers of Asian Dowitchers *Limnodromus semipalmatus*. Prior to 1984, the largest groups located were 39 in S.E. Asia and 130 in N.W. Australia. In April 1984, two sites important for Asian Dowitchers on their northern migration were located in the Inner Gulf of Thailand (400+ birds) and Deep Bay in Hong Kong (339+). In 1985 the site in the Inner Gulf of Thailand held 500 birds during the same week of the year demonstrating strong site affinity. Even more have been found on southern migration. Up to 75 have been located in Southern Thailand; 1460 were recorded in Jambi and Riau S.E. Sumatra in October/November 1984,; 480 in Sarawak in October 1985 and over 400 at Way Kambas in Lampung Province in south Sumatra in November 1985. Smaller numbers have been recorded in the Philippines and Timor over the last year. It is likely that the population of this "Red Data Book" species is much larger than previously imagined. However, only two of the sites located have any form of protected status and several of the sites are already under threat.

Ground and aerial surveys have located the following numbers of waders in different parts of the region.

| | |
|---|---|
| S.E. Sumatra | 100,000 |
| Thailand | 45,000 |
| Peninsula Malaysia | 50,000 |
| Sabah | 20,000 |
| Sarawak | 30,000 |
| | 245,000 |

The figures given represent the situation at a particular time and do not reflect the rapid turnover of waders that occurs at most of the sites. Initial studies have indicated that the number of waders which use an important site during a season may be four or five times the peak count. Thus the sites already located may be used by over one million birds on migration.

It will take a lot more work before all key sites are known in S.E. Asia, but plans are being made to complete the job in the next three or four years. INTERWADER has just developed a joint programme with the Indonesian Government to survey over 10,000km of coastline including some of South East Asia's largest wetland systems in Sumatra, Kalimantan and Irian Jaya. Discussions are being held with the Chinese over coastal surveys in that country. Vietnamese and

Burmese scientists have also indicated interest in contributing to the programme.

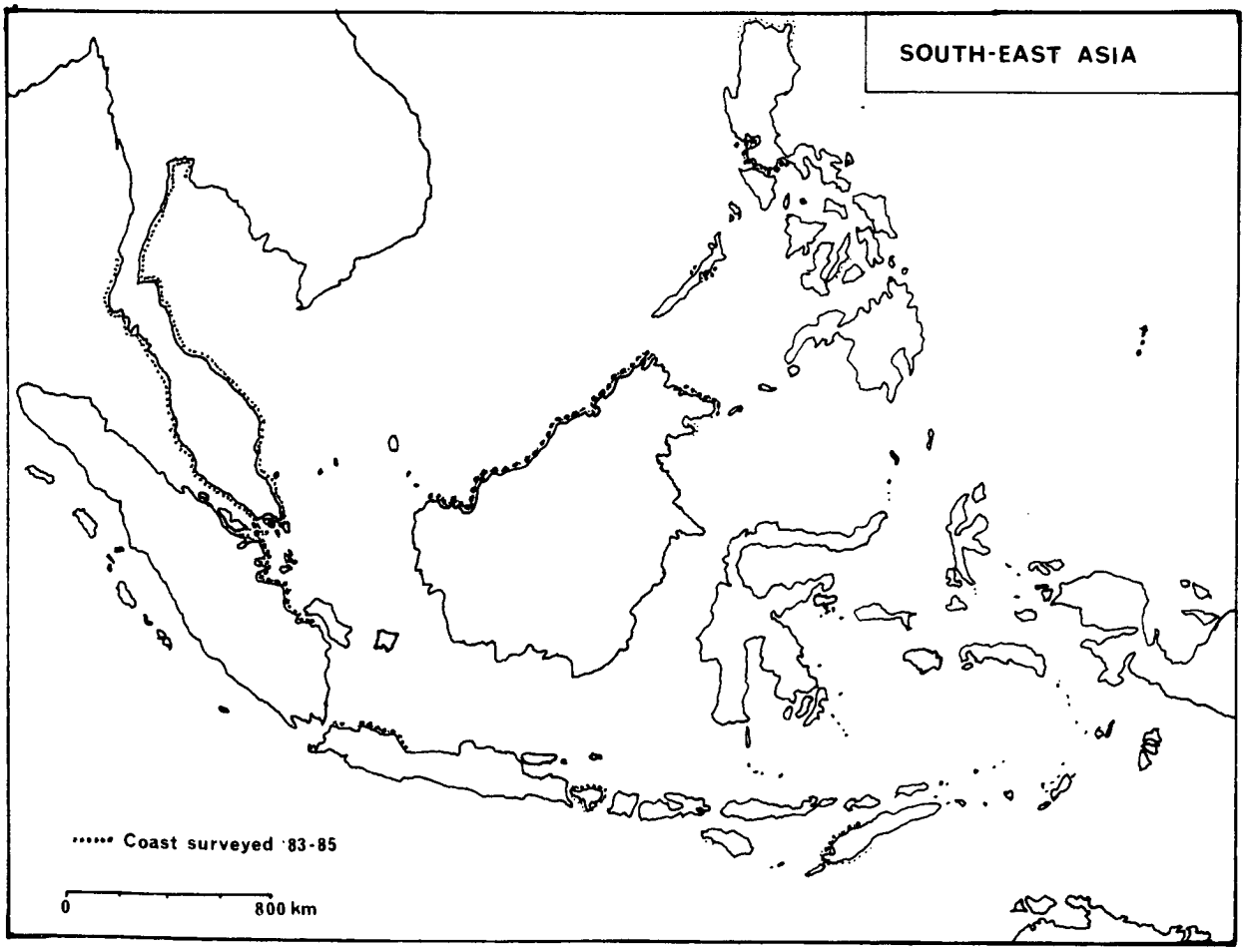
A number of organisations have contributed funds to the running of INTERWADER including the Australian National Parks and Wildlife Service, Royal Australasian Ornithologists Union, International Council for Bird Preservation, World Wildlife Fund, Wild Bird Society of Japan and a wide variety of other organisations. However, much more money is needed to enable the main sites to be identified before they are destroyed.

Thus the major shortages which limit the amount of survey work that INTERWADER can carry out are that of skilled man-power and funding.

Further details of the completed INTERWADER survey work are given in the 1984 Annual Report - 164pp - available from the RAOU or INTERWADER.

Australian wader watchers interested in becoming involved in INTERWADER's Asian Survey Programme should contact me enclosing details of experience and availability.

Future issue of the Stilt will contain an Asian/Pacific section which include a news round-up on the region and a number of scientific papers on wader studies in the region. Anyone interested in submitting material for this section should contact either myself or the Editor of *The Stilt*.



## OPEN NOTEBOOK

### FOOT-TREMBLING IN THE RED-KNEED DOTTEREL

M. Schulz, 37 Halifax St., Middle Brighton, Vic 3186.

Foot-trembling behaviour has been widely reported in members of the genus *Charadrius* (eg. Johnsgard 1981, Osborne 1982, Pienkowski 1983, and Schulz 1984). The Red-Kneed Dotterel *Erythrogonys cinctus*, related to Charadrius, has been studied by Maclean (1977), but was not observed to employ this behaviour.

On 1 September 1985 a Red-kneed Dotterel was observed in a drying-out brackish waterhole on the Strzelecki Creek in north-eastern South Australia. Foraging behaviour was entirely confined to wading in water approximately 1-1.5 cm deep adjacent to the water's edge. During a five minute observation period a uniform strategy was employed:

The dotterel moved forward with the left foot, stood still momentarily while trembling with the right foot and then moved forward with the left foot and repeated the cycle. During the observation period the bird travelled about 80 m. The actual trembling motion was similar to that described in the Hooded Plover *Charadrius rubricollis* by Schulz (1984) where the vibrating foot was held slightly ahead of the other foot and vibrated rapidly against the substrate. The difference between the Red-kneed Dotterel and the Hooded Plover (and reports of foot-trembling in other *Charadrius*) being that in the latter species foot-trembling was conducted on saturated sand, lacking a 1-1.5 cm cover of water. While trembling, the bird looked intently and occasionally pecked at the surface of the water. Several times the dotterel entirely immersed its head after a prey item. It was not possible to determine what the dotterel was feeding on. However, inspection of the substrate revealed insect (Chironomid?) larvae to be present.

This feeding method is different to that outlined for the species by Johnsgard (1981) who stated that the dotterel "typically runs rapidly over the mud and usually feeds by probing into mud with its rather long bill". However, observations were similar to those reported by Maclean (1977) in that the Red-kneed Dotterel was not observed to feed on dry ground.

Foot-trembling behaviour is likely to enhance prey availability to the Red-kneed Dotterel by stirring up the substrate so as to expose buried prey. Pienkowski (1981) found that this behaviour occurred in the Ringed Plover *C. hiaticula* in situations of low prey availability such as under low temperatures, high wind speeds or rain and led to increased activity in small crustacea. The conditions under which the Red-kneed Dotterel was observed were not considered adverse (ie. calm, no cloud cover, and air temperature approx. 25 C). However, a low prey availability may have been present simply due to the Strzelecki Creek drying out and the water being concentrated into small waterholes. As these waterholes (depending on the soil type present) progressively dried out salt concentrations increased until reaching the point where the water became distinctly brackish (by taste). Freshwater invertebrates would find it difficult to survive under such conditions and hence the unusual feeding behaviour (regarded as this when compared to the feeding methods of the species described by Maclean 1977, Johnsgard 1981, and pers. obs.) may have been in response to low densities of prey available in the substrate for the dotterel.

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## A COOLING MECHANISM IN LITTLE CURLEW?

P. Park, Campania, Tasmania 7026.

The following phenomenon was noticed whilst cannon-netting Little Curlew *Numenius minutus*, with the North-west Wader Expedition, during March and April 1985, at Roebuck and Anna Plains in Western Australia.

When extracting wader birds from nets, it is the usual practice to free the tail, feet and legs from the net before proceeding to the head and wings. Therefore, it was easy to see that in almost all the birds that I extracted, the feathers around the anus were very wet but not matted with excreta, and that the cloaca was noticibly everted, showing the pinky red mucosal lining. The birds were immediately put into keeping cages and it was approximately ten to fifteen minutes before the first birds were banded and biometric data taken. By this time the cloacae of all the birds that our team handled appeared normal.

It is known that some birds, for example comorants, storks, ibises and vultures spuirt liquid excreta onto their bare legs as a heat regulating mechanism when ambient temperatures are high causing cooling of the blood as the excreta evaporates (Welty, 1975).

Could this phenomenon of cloacal eversion have been a heat regulating mechanism or due to the shock of capture? The mean maximum temperatures for Broome, the closest recording station to Roebuck Plains, for March and April 1985 were 34.2 and 34.0C respectively (Commonwealth Bureau of Meteorology records). It was noticed that the Little Curlew were gular fluttering. This rapid oscillation of the thin floor of the mouth and upper throat is another mechanism for loosing excess body heat (Campbell and Lack, 1985).

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## ANOTHER REPORT OF THE MONGOLIAN PLOVER SUBSPECIES (CHARADRIUS MONGOLUS ATRIFRONS) FROM NEW SOUTH WALES

Alan McBride, 3/108 Cabramatta Rd., Mosman, NSW 2088.

On the 6th April at Kooragang Island there had been an obvious influx of waders during the previous week including one Asiatic Dowitcher. A total of 17 species of Palaearctic waders were seen on the day and this included one *Charadrius mongolus atrifrons*. It was noted to be smaller than *C. m. mongulus* with hardly any white on the forehead above the bill and also lacked the fine black line on the upper breast, though the upper breast was very neatly cutoff from the white throat. I presumed this individual to be *C. m. atrifrons* after consulting Prater *et. al.* (1977). Guide to the Identification and Ageing of Holarctic Waders. B.T.O.

*(Ed. - This follows an earlier report by John Izzard in The Stilt 6.)*

## A.W.S.G. NEWS

### REGULAR COUNT PROJECT OF THE AWSG

The Australasian Wader Studies Group (AWSG) has recently taken over the running of various wader survey projects, many of which carry on from the RAOU Wader Studies Programme. Regular counts of waders at specific sites have been conducted by many people over the past few years, as private projects or as part of co-ordinated efforts such as the Northward Migration Project. The data gained from this method of surveying waders are extremely valuable and since there are many people already engaged in regular surveys, the AWSG has decided to make the continuation and co-ordination of Regular Counts one of its main priorities for the next five years.

As I have been appointed co-ordinator of the Regular Count Project, I would like to take this opportunity to introduce myself. I became involved in RAOU projects through the Atlas, and subsequently became involved in the RAOU Wader Studies Programme. Although the Wimmera region of Victoria where I live sounds an unlikely place for waders, it is an endorheic region and thus the low but regular rainfall accumulates in a large number of small or large wetlands, some saline but most are freshwater. The twice-yearly counts during the Wader Studies Programme have impressed upon me the great year-to-year variability of inland habitat. For example Lake Buloke, a large shallow freshwater wetland, was dry for the summer and winter counts of 1983, and flooded in the spring of that year. On the summer count of 1984, 12000 Sharp-tailed Sandpipers were recorded there and in the winter count 3530 Red-capped Plovers. By January 1986, Lake Buloke was almost dry once again.

#### Value of Regular Counts

The data gained from Regular Counts have already contributed much to our understanding of the migration patterns of migratory waders, and the seasonal and habitat-dependent movements of the resident species. For example, regular counts in Australia have shown that Sharp-tailed Sandpipers utilize inland habitats in south-eastern Australia on southern migration but not on northward migration. Regular counts have also allowed a preliminary comparision of the large-scale but non-seasonal movements of Banded Stilts with rainfall patterns.

Much of the data already gained from regular wader counts is contained in the book Shorebirds in Australia written by Brett Lane to be published by Thomas Nelson, Australia, for the RAOU in October 1986.

Objectives of Regular Counts

The objectives of this project have been determined by the AWSG Scientific Sub-committee. They are:

"To determine the timing of arrival, departure and migration of migratory species and flocking in resident species. Also to monitor the effects of rainfall patterns on the movements of inland resident species."

Participation in the Regular Count Project

About 30 sites are presently being monitored (See Map), and it is hoped that this number will be doubled over the life of the project. The north-east and east coasts and the inland of south-east Australia have fairly good coverage, but more participants are needed throughout the rest of the country.

Participants are asked to conduct monthly or more frequent wader counts at discrete wetlands for a minumum of two years. The project will continue until the end of 1990.

The value of Regular Counts increases markedly as the duration of the project increases. For example, on an inland wetland in an area of irregular rainfall wader numbers may vary dramatically from year-to-year, and a reasonable picture of the movement of the different wader species in and out of that wetland under different conditions may not emerge for several years. On the other hand, many coastal sites, and inland sites in areas of regular rainfall, may show fairly stable patterns in the numbers on many species from year-to-year.

Type of Site

The site need not be a nationally significant one, but one which holds as few as 20 waders. This is because the intent of the project is to monitor changes in the numbers of each species over time rather than to determine absolute numbers.

The site should be easy to cover, perhaps only requiring between one half and two hours for one person to cover effectively.

Ideally the site should be discrete and not part of, or one roost in, a complex coastal wetland or a single inland wetland amongst a group of adjacent wetlands.

A "discrete" site is considered to be one which is far enough removed from other wader habitat that a day-by-day random movement of waders between sites is unlikely. However, in practice truly discrete sites are few and far between. Many participants will be forced to choose one high tide roost from a set of roosts, or a single inland wetland from a collection of wetlands simply because it is impossible to survey the whole area.

The method in these cases is not invalidated because any patterns that emerge over the duration of the survey are a *prima facie* case that the observed pattern is real and is not simply the result of random movements of waders between different sites in the area. Participants in this situation are

encouraged to either

1. continue Regular Counts over a longer period than would be needed in a truly discrete site of similar habitat; or

2. survey a second site in the same general area if no-one else is already doing so. If the abundance patterns for the different wader species rise and all in a similar manner for the two sites then it is a fairly safe conclusion that the two sites are representative of the whole wetland system; or

3. survey the one site more frequently.

Storage of Results

Data from this project will be stored on the RAOU computer and the original count sheets will be stored at the RAOU Headquarters so that they will be available to all researchers.

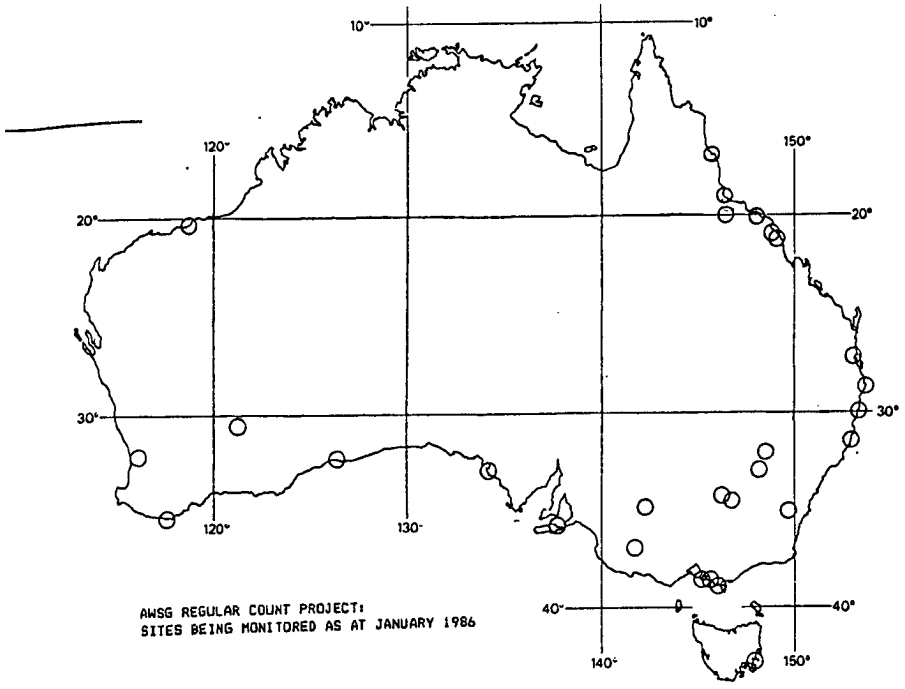
Reports

Individual participants are encouraged to analyse and write up their own results for publication in The Stilt, since there is no one who better understands the exact nature of a wetland than the person who visits it regularly.

A report on this project will appear in each April copy of The Stilt, describing the highlights and emerging trends that have accumulated in the previous year's data. The first report will appear in 1987, and will include notes from all data to date. At the end of the project a major report will be prepared that will draw together the data obtained from all Regular Counts.

If you are interested in participating in this project, please contact me at the address below.

Richard Alcorn,
Coordinator,
17 Lawrence St.,
Horsham 3400, Vic.



POPULATION MONITORING PROJECT: PROGRESS REPORT

The A.W.S.G.'s Population Monitoring Project has begun, with the 1986 summer count taking place on 1,2 and 8,9 February.

The transition between the R.A.O.U National Wader Counts and the A.W.S.G. project was a smooth one, making use of the information gained and involving the network of co-ordinators and counters set up over the past five years. Many of our co-ordinators for our selected site counts are continuing from the R.A.O.U. project: new co-ordinators have received assistance from their predecessors in the form of information on wader sites and contacts with previous counters. Co-ordinators have also been given the names of those who expressed an interest in wader counting by marking the appropriate sections in the R.A.O.U Questionnaire or *The Stilt* no. 7 insert.

The count instructions used for the National Wader Counts have been rewritten stating the new objectives of the project, and, together with the count sheets, have been reprinted and sent to the regional co-ordinators.

Because of the smooth transition, we will have 10 years of unbroken count data from our selected sites. For conservation purposes, these counts will allow us to follow wader population trends, and account for them in terms of habitat alteration, human disturbance, drought and inland flooding, killing for food in Asia, and reproductive success. The results will be correlated with information obtained from counting, banding, and colour-dyeing activities in Australia and Asia, and, in this way, the A.W.S.G. will fulfil its objectives of initiating and co-ordinating wader research in the Australian/S.E. Asian region.

I would like to thank members of the A.W.S.G Interim Committee for their help in the many small and large tasks involved in organizing this project. In particular, Brett Lane has allowed me to tap his vast knowledge of waders, wader places, and wader people, and Terry Barter has performed miracles in meeting my requests for printing. Finally, I would like to thank the regional co-ordinators and counters. Without their efficiency and hard work, this project would not exist.

Marilyn Hewish,
National Co-ordinator.

ROYAL AUSTRALASIAN ORNITHOLOGISTS UNION, WORLD WILDLIFE FUND AUSTRALIA, EARTHWATCH - NORTHERN AUSTRALIAN EXPEDITIONS

World Wildlife Fund, Australia together with Earthwatch are funding an RAOU research project to discover how waders use the coast of northern Australia during their migration between arctic breeding grounds and southern Australia. The information obtained during the project will help us determine the importance of habitats in northern Australia to waders. The project will involve four expeditions to northern Australia.

The Broome-Port Hedland area, in north-western Australia, is the most important stretch of coast for waders in Australia. Over 850,000 birds either stay there over the non-breeding months or pass through on their way to southern Australia. Two expeditions, from 11 to 26 April 1986 and from 15 August to 14 September 1986, will study the northward and southward migrations respectively.

Research will include regular counts and aerial surveys to record changes in

numbers of waders during the migration. During the August-September 1982 expedition, nearly 400,000 waders arrived from across the Indian Ocean in only 14 days! Waders will be banded and colour-dyed to determine where they migrate after leaving the north-west. In addition, the Bureau of Meteorology radar at Broome will be used to monitor waders departing and arriving at nearby Roebuck Bay. There will be plenty of interesting research activities for people to be involved in on these expeditions.

During southward migration, another expedition will be held to the south-eastern corner of the Gulf of Carpentaria in Queensland from 14 to 27 September 1986. We will regularly count a number of key roosting sites either side of Karumba to determine when each species arrives and in what numbers. We will also search for colour-dyed waders from the north-west. The results will tell us whether waders migrate along the north coast from the Broome-Port Hedland area or if they arrive directly. We know that large numbers of Red Knots pass through the Gulf on migration and these may go to New Zealand.

The final expedition, from 13 to 25 October 1986, will visit the coast of Arnhem Land in the Northern Territory where waders have only been surveyed from the air. This will be the furthest north in Australia that waders have been intensively watched so it promises to turn up some interesting finds. (Numbers of people on this expedition are limited.)

How you can help

Members are encourage to support the RAOU's contribution to the international efforts of the IUCN/WWF Wetland Conservation Programme. Why no join one of the expeditions? For details of cost and travel arrangements please contact RAOU.

You don't have to go on an expedition to help on this project. Colour-dyed waders from the north-west will be flying south between August and November so why not register to check your local wader haunts for them.

If you can help, please complete the enclosed insert and return it to the RAOU.

Brett Lane,
Research Co-ordinator.

MIGRATION STUDIES OF DOUBLED-BANDED PLOVERS (request for searches for colour-banded birds in winter 1986)

Since the late 1970s, Doubled-banded Plovers have been colour-banded in both New Zealand and Australia to help in studies of breeding biology and migration. In New Zealand, only a few localities (in the central South Island) have received significant coverage up until 1985, and these mainly for studies of population dymanics and breeding ecology. In the 1985 season, however, colour-banding was greatly increased throughout New Zealand in order to examine patterns of migration from region to region. About 20 members of the Ornithological Society of New Zealand (OSNZ) took part in the banding which resulted in about 1,000 new birds being banded. Approximately 80 geographical regions were recognised, each of which has a separate colour-band code for adult males, adult females and juveniles.

This colour-banding will provide information firstly on post-breeding movements to moulting areas in New Zealand, and secondly on late summer-autumn movements to the wintering grounds. Many thousands of Double-banded Plovers winter in

Australia, so we are very keen for ornithologists in Australia to check for color-banded birds. The bands used in New Zealand are white, yellow, red, dark blue, dark green and metal - all on the tarsi. Metal is part of the colour code, so it is important to note its position on the tarsus. In Australia, most birds have been banded (260 last winter) with metal on the tibia and with colours on the tarsi - normally three different colours on each bird (red, dark blue, pale green or white).

When checking for colour-banded birds, please double check combinations, taking care not to confuse left and right legs. The data needed are: date, locality, number of birds checked for bands; band combinations eg. left leg red over white over blue, right leg metal; observers name and address.

With a population of probably only 10,000 birds - half of which winter in Australia - the probability is that you may only have to examine 10 or 20 birds to find one with colour bands this winter. So reward for effort should be more than worthwhile. Please, therefore, take every opportunity to examine all Double-banded Plovers very carefully and report your results as soon as possible after the observation.

Please send details of colour-banded birds to: Banded Dotterel Study Group, c/- Dr. Ray Pearce, P.O. Box 69, Lake Tekapo, South Island, New Zealand; OR Victorian Wader Study Group, c/o Dr. Clive Minton, 165 Dalgetty Rd., Beaumaris, Vic. 3193, Australia.

## INTERNATIONAL SYMPOSIUM ON WETLANDS

An international symposium on wetlands is being organised by the Hunter Wetlands Trust. It will be held at the University of Newcastle, NSW from Thursday 5 June to Sunday 8 June 1986 and cover the topics of research, education, recreation and management. Requests for further details should be sent to the Covener: Kevin McDonald, Science Dept., Newcastle College of Advanced Education. PO Box 84 Waratah, NSW 2298.

## AWSG - DATES TO REMEMBER

Winter Population Monitoring Count: 14 - 15 June 1986. Contact your state or regional representative or M. Hewish, 74 Wellington St., Bacchus Marsh 3340, Victoria.

Victorian Hooded Plover Survey: 18 - 19 October 1986. Contact Brett Lane, c/o AWSG, 34 Centre Rd., Vermont 3133, Victoria.

## BACK ISSUES OF THE STILT

The early issues of our journal *THE STILT*, have been reprinted and we now have available all issues from No. 1 to No. 7, at a cost of $3.50 per copy (including postage).

For contents of previous Stilts, please refer to the index at the back of Stilt No. 7. Back copies are available from: The Administrative Secretary, A.W.S.G., c/- 34 Centre Rd., Vermont, VIC 3133.

CHAIRMAN'S REPORT FOR 1985

In the five year life of the AWSG, 1985 was a memorable one. Following a relatively dormant period during the existance of the RAOU Wader Studies Programme, the Group was revitalised in the second half of 1985 with the object of ensuring the continuation of wader research when the RAOU Programme finished at the end of the year.

An Interim Committee was formed and its members have worked with great enthusiasm to get the Group functioning effectively again. In the short period of seven months since the first committee meeting a number of significant milestones have been passed. Amongst these are:

* formation of a revised set of objectives;
* development of a scientific programme which will get into full swing in 1986;
* establishment of a new corps of regional and state representatives;
* initiation and strengthening of relations with like-minded groups overseas.

The Committee believed there was a need to increase the annual subscription in order to provide funds for the scientific programme and it was decided to double the subscription from $5 to $10 for this reason. Fortunately, members appear to have accepted the need for the increase as they have been renewing their 1986 membership at an encouraging rate.

The membership drive in November has resulted in over 60 new members which brings our membership to a little over 300. A number of generous members have taken advantage of the tax-deductibility status for donations which arises from our now being a group within the RAOU. The total of these donations is currently (end January) around $400 and, like the new member list, is still increasing.

The strength and cohesion of a geographically widespread organisation like ours is very dependent on members having an active involvement in the affairs of the Group. Ways in which this can be achieved include taking part in the core activity, the Scientific Programme, writing articles, notes or news items for *The Stilt*, suggesting new activities and constructively criticising our planned work. Members who want to know more of, or wish to contribute to, our on-going activities can contact their local representative who is kept up to date with developments through receiving all committee meeting agendas and minutes.

Members have much to thank the Interim Committee for. In its short life the Committee has laid the groundwork for the AWSG to take over the planning and organising for wader research in Australasia. An elected Committee will be taking over for the next two years from 1st June and I am sure they will build on the good start made by their predecessors.

Mark Barter,
Chairman, Interim Committee

## TREASURER'S REPORT FOR 1985

Statement of Receipts and Payments for the period 1st January 1985 - 31st December 1985.

| Receipts | $ | Payments | $ |
|---|---|---|---|
| Balance b/f | 986.10 | *Stilt* 6 printing | 267.99 |
| Subscriptions | 1385.03 | *Stilt* 6 postage | 150.20 |
| Sales of *Stilt* back numbers | 157.50 | Reprinting *Stilts* 1-3 | 562.00 |
| Advertising Revenue (inclusion in *Stilt*) | 40.00 | A.W.S.G. Letterheads | 40.00 |
| Donations | 5.00 | Postage - letters and inserts and brochures to non-members of A.W.S.G. | 73.80 |
| Bank Interest | 35.00 | Envelopes for *Stilt* | 82.95 |
| | | Secretary's expenses - additional postage & stationary | 99.17 |
| | | Printing *Stilt* 7 | 427.27 |
| | | Various printing costs - membership lists, forms, brochures and count forms | 96.00 |
| | | Federal Tax on Debits | 0.95 |
| | | Stamp Duty | 4.10 |
| | | Tasmanian debits duty | 1.05 |
| | | State duty on deposits | .30 |
| | | Balance c/f | 802.85 |
| | $2608.63 | | $2608.63 |

## BANK RECONCILIATION AS AT 31ST DECEMBER 1985

| | $ |
|---|---|
| Balance as per Bank Statement | 1326.12 |
| Less unpresented cheque | 523.27 |
| Balance as per Cash Book | $802.85 |

## INVESTMENT ACCOUNT

| Receipts | $ | Payments | $ |
|---|---|---|---|
| Balance b/f | 136.36 | Balance c/f | 148.35 |
| Bank interest | 11.99 | | |
| | $148.35 | | $148.35 |

Despite a decrease in our Current Account balance the AWSG is now in a more healthy financial position than at the end of 1984. A sustained membership drive has produced significant results, and renewals for 1986 are coming in steadily although it is too early to judge the effect of raising the annual subscription to $10.

It is hoped that more money can be directed to our Investment Account and the money be used to part-fund research activities, although our recently-opened RAOU Research Fund account should cover the major research expenses. Initial response to requests for donations to this fund have been most encouraging.

A major expense this year was the reprinting of early issues of *Stilt* and numbers of these have been sold to new members whilst others have been used to fulfill orders from previous years. Current issues of *Stilt* are printed in sufficient numbers to allow a reasonable surplus to supply future demand.

David Henderson,
Treasurer.

NEW COMMITTEE OF THE AUSTRALASIAN WADER STUDIES GROUP

The Commmittee elected to take office from 1st June 1986 for a period of two years is as follows:

Chairman - Mark Barter
Treasurer - David Henderson
Administrative Secretary - Brenda Murlis
Editor - EriC Woehler
Research Coordinator - Brett Lane
Liaison Officer - Jon Starks
Committee Member - Clive Minton

Eric Woehler was nominated to replace Peter Dann as Editor of *The Stilt*. Peter had expressed a wish to stand down following completion of a two-year stint.

All the other members of the Interim Committee were willing to stand for election and, as there were no other nominations, were duly elected.

Brenda Murlis,
Administrative Secretary.

## BANDING RECOVERIES

Symbols used:
*How Aged: PF = plumage and feather wear; P = plumage.*
*Sex: U = unknown; M = male; F = female.*
*How Sexed: P = plumage pattern.*
*Method Code: 01 = probably trapped but device is unknown by the Banding Office; 02 = trapped but device unknown to Banding Office; 03 = trapped in mist net; 04 = trapped in cage trap; 05 = trapped with a cannon net.*
*Status Code: 00 = status of bird and band are unknown to the Banding Office; 05 = bird is dead and the bird was removed; 13 = the bird was released alive wearing a band; 14 = the bird was released alive and the band was removed.*

AUSTRALIAN BANDING TOTALS (1st July 1984 to 30th June 1985)
(data supplied by Australia Bird Banding Scheme)

| SPECIES | TAS | WA | VIC | TOTAL |
|---|---|---|---|---|
| Pied Oystercatcher | 20 | | 5 | 25 |
| Sooty Oystercatcher | 1 | | | 1 |
| Masked Lapwing | 38 | | 12 | 50 |
| Banded Lapwing | 12 | | | 12 |
| Lesser Golden Plover | 7 | | 17 | 24 |
| Hooded Plover | 9 | | | 9 |
| Mongolian Plover | | | 3 | 3 |
| Double-banded Plover | 38 | | 49 | 87 |
| Large Sand Plover | | | 1 | 1 |
| Red-capped Plover | 147 | 10 | 5 | 162 |
| Black-fronted Plover | 20 | | | 20 |
| Black-winged Stilt | | 3 | | 3 |
| Red-necked Avocet | | | 34 | 34 |
| Ruddy Turnstone | 1 | | 1 | 2 |
| Eastern Curlew | 1 | | 70 | 71 |
| Whimbrel | | | 1 | 1 |
| Terek Sandpiper | | | 1 | 1 |
| Latham's Snipe | | | 3 | 3 |
| Bar-tailed Godwit | 1 | | 45 | 46 |
| Red Knot | | | 63 | 63 |
| Great Knot | | | 32 | 32 |
| Sharp-tailed Sandpiper | 10 | 1 | 457 | 468 |
| Pectoral Sandpiper | 1 | | | 1 |
| Red-necked Stint | | 92 | 3224 | 3316 |
| Curlew Sandpiper | 219 | 52 | 1162 | 1433 |
| Sanderling | | 1 | | 1 |
| TOTAL | 525 | 159 | 5185 | 5869 |

AUSTRALIAN BIRD & BAT BANDING SCHEMES 27/3/86

REPORT ON BAND RECOVERIES

| BANDING AND RECOVERY LOCATIONS | DATE (YYMMDD) | AGE CODE | HOW AGED | SEX | HOW SEXED | METHOD CODE | STATUS CODE |
|---|---|---|---|---|---|---|---|
| Band no.: 041-01444 Species: 140 DOUBLE-BANDED PLOVER CHARADRIUS BICINCTUS | | | | | | | |
| Banded: WERRIBEE SEWERAGE FARM (SPIT, PT WILSON) VIC | 810801 | +2 | PF | U | | 05 | 13 |
| Latitude: 38 deg 3min 0sec S ; Longitude: 144 deg 32min 0sec E . | | | | | | | |
| Recovered: TEKAPO RIVER, NEW ZEALAND | 850924 | +1 | P | F | P | 04 | 13 |
| Latitude: 44 deg 9min 0sec S ; Longitude: 170 deg 25min 0sec E. | | | | | | | |
| Distance: 2266.55 Direction: 115 degs. Time elapsed: 4 yrs 1 mths 23 days | | | | | | | |
| Bander: THE VICTORIAN WADER STUDY GROUP Finder: MESSRS PIERCE & MALONEY | | | | | | | |
| Band no.: B53566 * Species: 140 DOUBLE-BANDED PLOVER CHARADRIUS BICINCTUS | | | | | | | |
| Banded: CASS RIVER NEW ZEALAND | 841224 | J | U | U | | 01 | 13 |
| Latitude: 43 deg 53min 0sec S ; Longitude: 170 deg 30min 0sec E . | | | | | | | |
| Recovered: WERRIBEE SEWERAGE FARM (SPIT, PT WILSON) VIC | 850518 | +2 | P | U | | 05 | 13 |
| Latitude: 38 deg 3min 0sec S ; Longitude: 144 deg 32min 0sec E. | | | | | | | |
| Distance: 2269.03 Direction: 277 degs. Time elapsed: 0 yrs 4 mths 25 days | | | | | | | |
| Bander: THE NEW ZEALAND BANDING SCHEME Finder: THE VICTORIAN WADER STUDY GROUP | | | | | | | |
| Band no.: B52910 * Species: 140 DOUBLE-BANDED PLOVER CHARADRIUS BICINCTUS | | | | | | | |
| Banded: CASS RIVER NEW ZEALAND | 841029 | +2 | P | F | P | 01 | 13 |
| Latitude: 43 deg 53min 0sec S ; Longitude: 170 deg 30min 0sec E . | | | | | | | |
| Recovered: YALLOCK CREEK, NEAR KOOWEERUP VIC | 850817 | +2 | P | F | P | 05 | 13 |
| Latitude: 38 deg 13min 0sec S ; Longitude: 145 deg 28min 0sec E. | | | | | | | |
| Distance: 2186.98 Direction: 278 degs. Time elapsed: 0 yrs 9 mths 19 days | | | | | | | |
| Bander: THE NEW ZEALAND BANDING SCHEME Finder: THE VICTORIAN WADER STUDY GROUP | | | | | | | |
| Band no.: 041-05050 Species: 140 DOUBLE-BANDED PLOVER CHARADRIUS BICINCTUS | | | | | | | |
| Banded: STOCKYARD PT, LANG LANG, WESTERNPORT VIC | 830724 | +2 | PF | U | | 05 | 13 |
| Latitude: 38 deg 22min 0sec S ; Longitude: 145 deg 32min 0sec E . | | | | | | | |
| Recovered: TEKAPO RIVER, NEW ZEALAND | 851009 | +1 | P | F | P | 04 | 13 |
| Latitude: 41 deg 18min 0sec S ; Longitude: 170 deg 15min 0sec E. | | | | | | | |
| Distance: 2133.27 Direction: 106 degs. Time elapsed: 2 yrs 2 mths 16 days | | | | | | | |
| Bander: THE VICTORIAN WADER STUDY GROUP Finder: MESSRS PIERCE & MALONEY | | | | | | | |
| Band no.: 041-06811 Species: 140 DOUBLE-BANDED PLOVER CHARADRIUS BICINCTUS | | | | | | | |
| Banded: STOCKYARD PT, LANG LANG, WESTERNPORT VIC | 820424 | +2 | PF | U | | 05 | 13 |
| Latitude: 38 deg 22min 0sec S ; Longitude: 145 deg 32min 0sec E . | | | | | | | |
| Recovered: POTTS RIVER, SOUTH ISLAND, NEW ZEALAND | 851006 | +1 | P | M | P | 04 | 13 |
| Latitude: 43 deg 35min 0sec S ; Longitude: 170 deg 55min 0sec E. | | | | | | | |
| Distance: 2203.94 Direction: 113 degs. Time elapsed: 3 yrs 5 mths 12 days | | | | | | | |
| Bander: THE VICTORIAN WADER STUDY GROUP Finder: MESSRS PIERCE & MALONEY | | | | | | | |
| Band no.: 041-09885 Species: 140 DOUBLE-BANDED PLOVER CHARADRIUS BICINCTUS | | | | | | | |
| Banded: SWAN ISLAND QUEENSCLIFF VIC | 840630 | J | PF | U | | 05 | 13 |
| Latitude: 38 deg 15min 0sec S ; Longitude: 144 deg 40min 0sec E . | | | | | | | |
| Recovered: ALEXANDRA, NEW ZEALAND | 851020 | U | | U | | 04 | 13 |
| Latitude: 45 deg 15min 0sec S ; Longitude: 169 deg 23min 0sec E. | | | | | | | |
| Distance: 2187.15 Direction: 118 degs. Time elapsed: 1 yrs 3 mths 20 days | | | | | | | |
| Bander: THE VICTORIAN WADER STUDY GROUP Finder: THE NEW ZEALAND BANDING SCHEME | | | | | | | |

* New Zealand Wildlife Service band.

AUSTRALIAN BIRD & BAT BANDING SCHEMES

REPORT ON BAND RECOVERIES

| BANDING AND RECOVERY LOCATIONS | DATE (YYMMDD) | AGE CODE | HOW AGED | SEX | HOW SEXED | METHOD CODE | STATUS CODE |
|---|---|---|---|---|---|---|---|
| Band no.: 041-01361 Species: 140 DOUBLE-BANDED PLOVER | | | | | | | CHARADRIUS BICINCTUS |
| Banded: WERRIBEE SEWERAGE FARM (SPIT, PT WILSON) VIC | 810531 | +2 | PF | U | | 05 | 13 |
| Latitude: 38 deg 3min 0sec S ; Longitude: 144 deg 32min 0sec E . | | | | | | | |
| Recovered: ALEXANDRA, NEW ZEALAND | 851027 | U | | U | | 04 | 13 |
| Latitude: 45 deg 15min 0sec S ; Longitude: 169 deg 23min 0sec E. | | | | | | | |
| Distance: 2208.12 Direction: 119 degs. Time elapsed: 4 yrs 4 mths 27 days | | | | | | | |
| Bander: THE VICTORIAN WADER STUDY GROUP Finder: THE NEW ZEALAND BANDING SCHEME | | | | | | | |
| Band no.: 051-24631 Species: 141 LARGE SAND PLOVER | | | | | | | CHARADRIUS LESCHENAULTII |
| Banded: 80 MILE BEACH, 7 KM SOUTH ANNA PLAINS WA | 831103 | +2 | U | U | | 05 | 13 |
| Latitude: 19 deg 15min 0sec S ; Longitude: 121 deg 25min 0sec E . | | | | | | | |
| Recovered: BEIHAI KWANG-SI CHINA | 850804 | U | | U | | 01 | 02 |
| Latitude: 21 deg 29min 0sec N ; Longitude: 109 deg 5min 0sec E. | | | | | | | |
| Distance: 4701.93 Direction: 342 degs. Time elapsed: 1 yrs 9 mths 1 days | | | | | | | |
| Bander: THE WA WADER STUDY GROUP Finder: MR WU KAI-YUNG | | | | | | | |
| Band no.: 061-31094 Species: 155 GREY-TAILED TATTLER | | | | | | | TRINGA BREVIPES |
| Banded: STOCKTON NSW | 771112 | +1 | U | U | | 03 | 13 |
| Latitude: 32 deg 56min 0sec S ; Longitude: 151 deg 47min 0sec E . | | | | | | | |
| Recovered: OBITSU RV. KISARAZU-SHI CIBA PREF. JAPAN | 850829 | +1 | | U | | 05 | 13 |
| Latitude: 35 deg 25min 0sec N ; Longitude: 139 deg 54min 0sec E. | | | | | | | |
| Distance: 7667.11 Direction: 349 degs. Time elapsed: 7 yrs 9 mths 17 days | | | | | | | |
| Bander: MR SG LANE Finder: YAMASHINA INSTITUTE FOR ORNITHOLOGY | | | | | | | |
| Band no.: 040-95238 Species: 161 CURLEW SANDPIPER | | | | | | | CALIDRIS FERRUGINEA |
| Banded: WERRIBEE SEWERAGE FARM (SPIT, PT WILSON) VIC | 790310 | +2 | PF | U | | 01 | 13 |
| Latitude: 38 deg 3min 0sec S ; Longitude: 144 deg 32min 0sec E . | | | | | | | |
| Recovered: CI MANUK ESTUARY, INDRAMAYU, WEST JAVA | 850921 | U | | U | | 15 | 03 |
| Latitude: 06 deg 15min 0sec S ; Longitude: 108 deg 15min 0sec E. | | | | | | | |
| Distance: 5078.86 Direction: 304 degs. Time elapsed: 6 yrs 6 mths 11 days | | | | | | | |
| Bander: THE VICTORIAN WADER STUDY GROUP Finder: BAPAK KARDJA | | | | | | | |
| Band no.: 040-97184 Species: 161 CURLEW SANDPIPER | | | | | | | CALIDRIS FERRUGINEA |
| Banded: WERRIBEE SEWERAGE FARM (SPIT, PT WILSON) VIC | 801026 | +2 | PF | U | | 02 | 13 |
| Latitude: 38 deg 3min 0sec S ; Longitude: 144 deg 32min 0sec E . | | | | | | | |
| Recovered: GESIK, CIREBON DISTRICT, WEST JAVA | 850801 | U | | U | | 15 | 05 |
| Latitude: 06 deg 34min 10sec S ; Longitude: 108 deg 32min 18sec E. | | | | | | | |
| Distance: 5031.78 Direction: 304 degs. Time elapsed: 4 yrs 9 mths 6 days | | | | | | | |
| Bander: THE VICTORIAN WADER STUDY GROUP Finder: BAPAK CHARLIM | | | | | | | |
| Band no.: 041-12982 Species: 161 CURLEW SANDPIPER | | | | | | | CALIDRIS FERRUGINEA |
| Banded: SWAN ISLAND QUEENSCLIFF VIC | 850126 | +2 | PF | U | | 01 | 13 |
| Latitude: 38 deg 15min 0sec S ; Longitude: 144 deg 40min 0sec E . | | | | | | | |
| Recovered: FUJIAN PROVINCE, LONGHAI CO. CHINA | 850515 | U | | U | | 01 | 00 |
| Latitude: 24 deg 24min 0sec N ; Longitude: 117 deg 48min 0sec E. | | | | | | | |
| Distance: 7481.10 Direction: 333 degs. Time elapsed: 0 yrs 3 mths 20 days | | | | | | | |
| Bander: THE VICTORIAN WADER STUDY GROUP Finder: THE NATIONAL BIRD BANDING CENTER | | | | | | | |

AUSTRALIAN BIRD & BAT BANDING SCHEMES

REPORT ON BAND RECOVERIES

| BANDING AND RECOVERY LOCATIONS | DATE (YYMMDD) | AGE CODE | HOW AGED | SEX | HOW SEXED | METHOD CODE | STATUS CODE |
|---|---|---|---|---|---|---|---|
| Band no.: P729029 ¶ Species: 162 RED-NECKED STINT | | | | | CALIDRIS RUFICOLLIS | | |
| Banded: KHADYN LAKE, 40 K STH KYZYL, TUVA SSR USSR | 840907 | J | | | U | 01 | 13 |
| Latitude: 51 deg 18min 0sec N ; Longitude: 94 deg 36min 0sec E . | | | | | | | |
| Recovered: BEACHES, CRAB CK RD, ROEBUCK BAY, BROOME WA | 850419 | 1 | P | | U | 05 | 14 |
| Latitude: 18 deg 0min 0sec S ; Longitude: 122 deg 22min 0sec E. | | | | | | | |
| Distance: 8140.04 Direction: 152 degs. Time elapsed: 0 yrs 7 mths 12 days | | | | | | | |
| Bander: THE SOVIET BANDING SCHEME Finder: THE AUSTRALASIAN WADER STUDY GROUP | | | | | | | |
| Band no.: 032-11349 Species: 162 RED-NECKED STINT | | | | | CALIDRIS RUFICOLLIS | | |
| Banded: LAKE FORRESTDALE WA | 791208 | U | | | U | 03 | 13 |
| Latitude: 32 deg 9min 0sec S ; Longitude: 115 deg 56min 0sec E . | | | | | | | |
| Recovered: SWAN ISLAND QUEENSCLIFF VIC | 850323 | +2 | U | | U | 05 | 13 |
| Latitude: 38 deg 15min 0sec S ; Longitude: 144 deg 40min 0sec E. | | | | | | | |
| Distance: 2690.76 Direction: 112 degs. Time elapsed: 5 yrs 3 mths 15 days | | | | | | | |
| Bander: MR JAK LANE Finder: THE VICTORIAN WADER STUDY GROUP | | | | | | | |
| Band no.: 032-19920 Species: 162 RED-NECKED STINT | | | | | CALIDRIS RUFICOLLIS | | |
| Banded: WERRIBEE SEWERAGE FARM (SPIT, PT WILSON) VIC | 790922 | +2 | PF | | U | 02 | 13 |
| Latitude: 38 deg 3min 0sec S ; Longitude: 144 deg 32min 0sec E . | | | | | | | |
| Recovered: GESIK, CIREBON DISTRICT, WEST JAVA | 820101 | U | | | U | 15 | 05 |
| Latitude: 06 deg 34min 10sec S ; Longitude: 108 deg 32min 18sec E. | | | | | | | |
| Distance: 5031.28 Direction: 304 degs. Time elapsed: 2 yrs 3 mths 9 days | | | | | | | |
| Bander: THE VICTORIAN WADER STUDY GROUP Finder: BAPAK ADJID | | | | | | | |
| Band no.: 032-36273 Species: 162 RED-NECKED STINT | | | | | CALIDRIS RUFICOLLIS | | |
| Banded: YALLOCK CREEK, NEAR KOOWEERUP VIC | 821204 | +2 | PF | | U | 02 | 13 |
| Latitude: 38 deg 13min 0sec S ; Longitude: 145 deg 28min 0sec E . | | | | | | | |
| Recovered: PABEAN HILIR, CI MANUK ESTUARY, W.JAVA | 851024 | U | | | U | 15 | 05 |
| Latitude: 06 deg 16min 6sec S ; Longitude: 108 deg 18min 30sec E. | | | | | | | |
| Distance: 5151.18 Direction: 303 degs. Time elapsed: 2 yrs 10 mths 20 days | | | | | | | |
| Bander: THE VICTORIAN WADER STUDY GROUP Finder: BAPAK KARDJA | | | | | | | |
| Band no.: 032-10865 Species: 162 RED-NECKED STINT | | | | | CALIDRIS RUFICOLLIS | | |
| Banded: PELICAN POINT, SWAN RIVER WA | 750103 | +1 | U | | U | 02 | 13 |
| Latitude: 31 deg 59min 0sec S ; Longitude: 115 deg 49min 0sec E . | | | | | | | |
| Recovered: GESIK, GREBON DISTRICT, WEST JAVA | 810101 | U | | | U | 15 | 05 |
| Latitude: 06 deg 34min 10sec S ; Longitude: 108 deg 32min 18sec E. | | | | | | | |
| Distance: 2913.46 Direction: 343 degs. Time elapsed: 5 yrs 11 mths 29 days | | | | | | | |
| Bander: MR JAK LANE Finder: LEMAIN | | | | | | | |
| Band no.: 032-29403 Species: 162 RED-NECKED STINT | | | | | CALIDRIS RUFICOLLIS | | |
| Banded: PIPECLAY LAGOON (EAST SIDE) TAS | 811129 | J | U | | U | 05 | 13 |
| Latitude: 42 deg 58min 0sec S ; Longitude: 147 deg 32min 0sec E . | | | | | | | |
| Recovered: TIANJING TANGGU CHINA | 850515 | U | | | U | 01 | 00 |
| Latitude: 36 deg 0min 0sec N ; Longitude: 117 deg 36min 0sec E. | | | | | | | |
| Distance: 9257.31 Direction: 335 degs. Time elapsed: 3 yrs 5 mths 16 days | | | | | | | |
| Bander: THE SHOREBIRD STUDY GROUP (BOAT) Finder: THE NATIONAL BIRD BANDING CENTER | | | | | | | |

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AUSTRALIAN BIRD & BAT BANDING SCHEMES

REPORT ON BAND RECOVERIES

| BANDING AND RECOVERY LOCATIONS | | DATE (YYMMDD) | AGE CODE | HOW AGED | SEX | HOW SEXED | METHOD CODE | STATUS CODE |
|---|---|---|---|---|---|---|---|---|
| Band no.: 032-31696 | Species: 162 RED-NECKED STINT | | | | CALIDRIS RUFICOLLIS | | | |
| Banded: 5 KM SW USELESS LOOP SHARK BAY | WA | 810928 | +3 | PW | U | | 03 | 13 |
| Latitude: 26 deg 13min 0sec S ; Longitude: 113 deg 23min 0sec E . | | | | | | | | |
| Recovered: TAN YONG LU LO E OF PATTANI THAILAND | | 840101 | U | | U | | 15 | 05 |
| Latitude: 1 deg 28min 0sec N ; Longitude: 103 deg 48min 0sec E. | | | | | | | | |
| Distance: 3231.71 Direction: 339 degs. Time elapsed: 2 yrs 3 mths 3 days | | | | | | | | |
| Bander: THE WA WADER STUDY GROUP Finder: MR MA LA TEH | | | | | | | | |
| Band no.: 041-01835 | Species: 163 SHARP-TAILED SANDPIPER | | | | CALIDRIS ACUMINATA | | | |
| Banded: WERRIBEE SEWERAGE FARM (SPIT, PT WILSON) VIC | | 811127 | +2 | PF | U | U | 01 | 13 |
| Latitude: 38 deg 3min 0sec S ; Longitude: 144 deg 32min 0sec E . | | | | | | | | |
| Recovered: TADU R.,COAST OF TAIWAN STRAIT, TAIWAN | | 850502 | U | U | U | U | 01 | 13 |
| Latitude: 24 deg 15min 0sec N ; Longitude: 120 deg 30min 0sec E. | | | | | | | | |
| Distance: 7339.43 Direction: 335 degs. Time elapsed: 3 yrs 5 mths 5 days | | | | | | | | |
| Bander: THE VICTORIAN WADER STUDY GROUP Finder: JOHN SEN-SHYOUNG WU | | | | | | | | |
| Band no.: 050-85436 | Species: 164 RED KNOT | | | | CALIDRIS CANUTUS | | | |
| Banded: WARD SPIT, 10KM WNW PT. GERMAIN | SA | 811227 | +1 | | U | | 05 | 13 |
| Latitude: 33 deg 1min 0sec S ; Longitude: 137 deg 55min 0sec E . | | | | | | | | |
| Recovered: SANDONG, SHOUGGUONG CO. CHINA | | 850501 | U | | U | | 01 | 00 |
| Latitude: 36 deg 48min 0sec N ; Longitude: 118 deg 42min 0sec E. | | | | | | | | |
| Distance: 7982.94 Direction: 343 degs. Time elapsed: 3 yrs 4 mths 5 days | | | | | | | | |
| Bander: MR MH WATERMAN Finder: THE NATIONAL BIRD BANDING CENTER | | | | | | | | |
| Band no.: 051-11472 | Species: 164 RED KNOT | | | | CALIDRIS CANUTUS | | | |
| Banded: WARD SPIT, 10KM WNW PT. GERMAIN | SA | 811227 | +1 | U | U | | 05 | 13 |
| Latitude: 33 deg 1min 0sec S ; Longitude: 137 deg 55min 0sec E . | | | | | | | | |
| Recovered: SHANDONG, YANTAI CHINA | | 840728 | U | | U | | 01 | 00 |
| Latitude: 37 deg 30min 0sec N ; Longitude: 121 deg 24min 0sec E. | | | | | | | | |
| Distance: 7992.55 Direction: 346 degs. Time elapsed: 2 yrs 7 mths 1 days | | | | | | | | |
| Bander: MR MH WATERMAN Finder: THE NATIONAL BIRD BANDING CENTER | | | | | | | | |
| Band no.: 061-38111 | Species: 165 GREAT KNOT | | | | CALIDRIS TENUIROSTRIS | | | |
| Banded: 10 KM SOUTH OF ANNA PLAINS | WA | 820824 | 2 | U | U | | 05 | 13 |
| Latitude: 19 deg 15min 0sec S ; Longitude: 121 deg 20min 0sec E . | | | | | | | | |
| Recovered: HANGZHOU BAY, SHANGHAI SUBURB CHINA | | 850405 | U | | U | | 03 | 13 |
| Latitude: 30 deg 47min 0sec N ; Longitude: 121 deg 25min 0sec E. | | | | | | | | |
| Distance: 5536.32 Direction: 0 degs. Time elapsed: 2 yrs 7 mths 12 days | | | | | | | | |
| Bander: THE WA WADER STUDY GROUP Finder: MR WANG TIANHOU | | | | | | | | |
| Band no.: 061-41973 | Species: 165 GREAT KNOT | | | | CALIDRIS TENUIROSTRIS | | | |
| Banded: SALTWORKS, PORT HEDLAND | WA | 831108 | +3 | U | U | U | 05 | 13 |
| Latitude: 20 deg 11min 0sec S ; Longitude: 118 deg 54min 0sec E . | | | | | | | | |
| Recovered: HANGZHOU BAY, SHANGHAI SUBURB CHINA | | 850328 | U | | U | | 06 | 13 |
| Latitude: 30 deg 47min 0sec N ; Longitude: 121 deg 25min 0sec E. | | | | | | | | |
| Distance: 5646.06 Direction: 2 degs. Time elapsed: 1 yrs 4 mths 20 days | | | | | | | | |
| Bander: THE WA WADER STUDY GROUP Finder: MR WANG TIANHOU | | | | | | | | |

AUSTRALIAN BIRD & BAT BANDING SCHEMES

REPORT ON BAND RECOVERIES

| BANDING AND RECOVERY LOCATIONS | | DATE (YYMMDD) | AGE CODE | HOW AGED | SEX | HOW SEXED | METHOD CODE | STATUS CODE |
|---|---|---|---|---|---|---|---|---|
| Band no.: 061-34373 Species: 169 SWINHOE'S SNIPE | | | | | GALLINAGO MEGALA | | | |
| Banded: 15KM SE OF DARWIN | NT | 841222 | U | | U | | 01 | 13 |
| Latitude: 12 deg 29min 0sec S ; Longitude: 130 deg 55min 0sec E . | | | | | | | | |
| Recovered: CANDELARIA (170KM NW MANILA) PHILIPPINES | | 850911 | U | | U | | 01 | 03 |
| Latitude: 15 deg 38min 0sec N ; Longitude: 119 deg 56min 0sec E. | | | | | | | | |
| Distance: 3336.71 Direction: 338 degs. Time elapsed: 0 yrs 8 mths 20 days | | | | | | | | |
| Bander: MR AL HERTOG Finder: DOROTIO VERGARA | | | | | | | | |
| Band no.: 061-34370 Species: 169 SWINHOE'S SNIPE | | | | | GALLINAGO MEGALA | | | |
| Banded: 15KM SE OF DARWIN | NT | 841222 | U | | U | | 01 | 13 |
| Latitude: 12 deg 29min 0sec S ; Longitude: 130 deg 55min 0sec E . | | | | | | | | |
| Recovered: NEAR BAAO,CAMARINES SUR.PHILIPPINES | | 850828 | U | | U | | 08 | 00 |
| Latitude: 13 deg 27min 0sec N ; Longitude: 123 deg 22min 0sec E. | | | | | | | | |
| Distance: 2986.65 Direction: 343 degs. Time elapsed: 0 yrs 8 mths 6 days | | | | | | | | |
| Bander: MR AL HERTOG Finder: MR GF MAYAO | | | | | | | | |