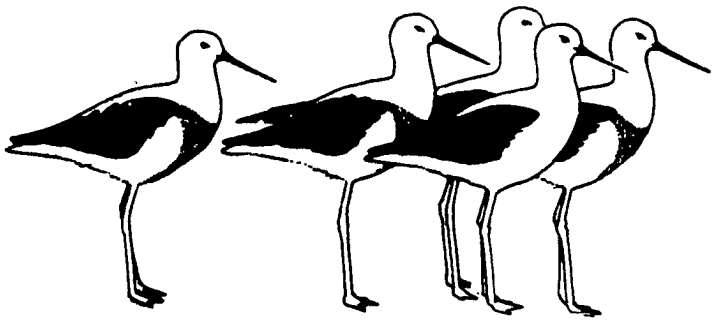
The Stilt



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

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NO. 1 *SPRING, 1981*

INTRODUCING THE STILT

Are you the sort of person who likes wet feet, mud under the toenails and a peculiar sunburn mark around the neck, suggestive of a strange piece of supportive underwear when seen, out of context, by those to whom 8 x 50 means 400? If you are, don't worry. Hundreds of others share your interest in waders. There is no cure for the condition, but we hope you will find that reading *THE STILT* will ease your burden, while contributing to it may prove positively therapeutic.

Whether you are interested in what waders do, where they go, how many there are, how much they weigh, what they look like, how many you can band, how they breed, what they eat or, like most of us, you just enjoy watching them, then *THE STILT* is yours for $3 a year, paid to the Australian Wader Studies Group of the RAOU. The success of *THE STILT* will be assessed chiefly by whether people read it and keep on reading it! If you are someone interested by waders but not by *THE STILT*, then something will be amiss and we should like to know what you think we can do about it! (ED.)

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ABSTRACTS FROM PAPERS PRESENTED AT THE 1981 RAOU SCIENTIFIC DAY, HELD AT THE AUSTRALIAN MUSEUM, SYDNEY, ON 16 MAY.

WADER BANDING NEAR AUCKLAND

by Dr. Dick Veitch, N.Z.

Recent counts of waders in the Auckland area have revealed that approximately 37,000 Bar-tailed Godwits, 14,000 Red Knots and many less numerous Palaearctic migrants are present in midsummer between Kaipara Harbour, Manukau Harbour and the Firth of Thames. 10-20% of these waders overwinter, together with New Zealand waders, which include 5,000 Wrybills and 50,000 Pied Oystercatchers.

During 1979-81, 3,013 waders have been trapped and banded in the area, mostly on the Firth of Thames. Wrybill (1871) and Knot (903) predominate in the catches, with Red-necked Stint (1) and Curlew Sandpiper (5) as the two least-caught species.

Problems and constraints encountered during the banding programme include adverse weather (1,470mm average annual rainfall), soft substrates at roosting sites, a lack of short-term flexibility in the ongoing programme, difficulties in predicting tides and too large nets. At Manukau Harbour, there are special problems associated with the juxtaposition of Auckland International Airport's runways and inter-tidal areas favoured by waders, so no catching is attempted.

The banding is programmed to compliment and not to obstruct other ornithological work in the area.

STUDIES ON PALAEARCTIC WADERS AT GEORGE TOWN, TASMANIA.

by David Henderson, Tas.

Monthly counts of waders in the Tamar estuary indicate that mudflats below the George Town sewerage works support 10 species of summering Palaearctic waders. Commonest are Red-necked Stint, Curlew Sandpiper, Ruddy Turnstone and Eastern Curlew. Maximum numbers are similar in consecutive summers, but numbers overwintering are small and more variable. Overwintering birds are thought to be mostly first year individuals. Returning adults arrive from late August; peak numbers occur January to March.

In 1979-81, 172 waders were mist-netted at roosts on rocky islets in the estuary, from 100 man-hours of efforts in netting over shallow water. Problems encountered include windy nights, condensation on the nets and variations in high tide. Curlew Sandpipers and Red-necked Stints gained weight from February onwards, carrying up to two-thirds of lean weights as fat.

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A COMPARISON OF WADER DISTRIBUTION IN BOTANY BAY AND PORT STEPHENS.

by Joy Pegler, N.S.W.

Botany Bay and Port Stephens are estuaries with many geographical similarities. Their substrates can be treated under the headings 1. sandy beach with waves; 2. sandspits; 3. degraded beach; 4. muddy sand/sandy mud; 5. mud. Botany Bay (BB) has much more of types 4 and 5 than Port Stephens (PS) but only half the summer biomass of waders, due mainly to fewer Eastern Curlews and Whimbrels. Most species use substrate 4. Grey-tailed Tattlers occurred in sites near mangroves and seagrass; Bar-tailed Godwits also used sandy sites in BB but not in PS, perhaps because of distance from nearest roost. Sharp-tailed Sandpipers were associated with samphire-covered flats at both. There was some correlation between species' use of sandy substrate in PS and the airstrip at BB.

Overall, wader distribution in the two areas cannot be predicted by a knowledge of the geography of feeding habitats alone.

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WADER COUNTING IN SOUTH AUSTRALIA by Dr David Close & Roger Jaensch, S.A.

Regular counts have been made at the ICI saltfields, near Adelaide, and on Gibson Peninsula near Streaky Bay. At the saltfields, counts are made during highest tides, when waders are at roost. Birds are particularly associated with limited areas of freshwater feeding habitat. After high numbers in summer, some Australian species (as well as Palaearctics) decline in winter. Sharp-tailed Sandpipers (9,000+ in summer) disappear completely in winter. The numbers are related to those in Buckland Park's freshwater habitat. Not all Palaearctic species become less common after summer: Black-tailed Godwits increased as late as April 1979 and Red Knots increased in winter 1979 to numbers high even by summer standards. At Gibson Peninsula, there are a variety of less modified habitats, where overwintering Grey Plovers, Turnstones and Red-necked Stints are of particular interest.

A general count of S. coastal areas was made as part of the first national count, in February 1981. It revealed 199,333 migratory waders: sites in the Coorong and Gulf of St. Vincent held the largest numbers. In many places, numbers were smaller than in previous years.

Points of interest for future wader conservation include eutrophication and salinity problems found in the Coorong wetlands, heavy metal pollution in the Gulf of St. Vincent and Spencer Gulf; also the apparent declines of Hooded Plovers and Eastern Curlews.

Coverage of the state's wader populations is difficult with few observers; it is planned to concentrate efforts on different areas in different years.

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RESOURCE ALLOCATION AMONG 3 CONGENERIC SPECIES OF SANDPIPER

by Peter Dann, Vic.

The feeding ecologies of Red-necked Stint, Curlew Sandpiper and Sharp-tailed Sandpiper have been studied at the mouth of the Little River in Port Phillip Bay. The aims were:

1. to determine how the food resources were used by each species
2. to evaluate the sandpipers' predation on prey organisms
3. to measure the role of sandpipers in the energy flow of the intertidal habitat.

All 3 species fed at low tide by day and by night. Feeding time available to RnS and CS was regulated by tidal exposure of habitat. Horizontal feeding dispersion was not random: CS mostly in shallow water, StS mostly at water's edge and RnS mostly on wet mud. RnS fed mostly from the surface of the sediments, StS 0-1.3cm below the surface and CS mostly from 2-4cm deep. A polychaete worm *Ceratonereis eurythraeensis* was the main prey of all 3 species, especially so for CS. Dietary overlaps were greater between StS-RnS and RnS-CS than between CS-StS. RnS took smaller prey animals than the other two, which took larger worms of the same size range.

In spring and early summer, RnS feed on smaller size classes of *Ceratonereis* which otherwise grow to be potential prey for the larger species in late summer. Together the sandpipers take an estimated 56.5% of the net annual production of the main prey, in about equal shares. Feeding patterns minimize interference when feeding alongside other species, lowering competition for available prey.

Are the species different because they must co-exist or can they co-exist because they are different?

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WADER BANDING IN AUSTRALIA, EAST ASIA AND THE PACIFIC by David Purchase, A.C.T.

About 45,000 waders have been banded under the auspices of the Australian Bird Banding Scheme, begun in 1953. Numbers being banded have risen steadily. Up to the mid-1960's, nearly two-thirds were Australian breeding species. From 1966 to 1972, numbers banded fell, before banding programmes aimed expressly at waders were begun in N.S.W., W.A. and S.A. In 1975, a wader-banding project began in Victoria, later to be intensified and to give rise to the Victorian Wader Study Group. In 1979/80, VWSG assisted banding projects begun in Tasmania and mainland S.A. (the original South Australian venture was on Kangaroo I.).

About 3,000 (7%) of the ABBS-banded waders have been recovered after their banding. Among these are 17 overseas recoveries:-

Ruddy Turnstone	Russia
Eastern Curlew	South Korea, Papua-New Guinea
Grey-tailed Tattler	Russia, Japan
Terek Sandpiper	China
Latham's Snipe	Japan
Red Knot	N.Z. (2)
Sharp-tailed Sandpiper	Russia, China
Red-necked Stint	Russia, Indonesia
Curlew Sandpiper	China (2), Hong Kong, India

Despite the large numbers of waders which have been banded in the east Asian/Pacific region, only 13 waders banded overseas have been recovered in Australia. These are:-

Lesser Golden Plover	Alaska
Grey-tailed Tattler	Japan (3)
Terek Sandpiper	Japan
Latham's Snipe	Japan (4)
Red-necked Stint	Russia, Japan, Hong Kong
Curlew Sandpiper	Singapore

Wader banding schemes are known to be currently operating in New Zealand, PNG, India, Malaysia, Brunei, Thailand, Japan, Siberia and Alaska; possibly also in Singapore and the Solomon Is. but details are often sketchy.

The results being obtained from studying the waders which are being banded and recovered within Australia, usually at their place of banding, together with wader counts, provides information on procedures effective for the conservation of this group of birds within Australia. Reports of Australian-banded palaearctic waders being recovered overseas can be increased if numbers banded are increased. This can be most usefully achieved by the development of research projects which involve catching and banding.

Conservation of palaearctic waders needs to be undertaken at the international level, with a clearer understanding of the migrations involved. The most effective way to obtain this information is to combine bird-banding with regular monitoring of wader numbers at sites throughout Australia. To know what are the dangers which face waders on migration, we must find out more about migration routes. There seems little point in spending time and effort in conserving palaearctic waders in Australia if they are to be killed by various dangers (e.g. the destruction of feeding areas) while on migration.

THE FORRESTDALE PHENOMENON

by Peter Curry, W.A.

Lake Forrestdale is one of several small to medium-sized freshwater lakes that provide habitat for waders on the Swan Coastal Plain. Forrestdale measures roughly 2 x 1.5km but is only 1m deep at maximum height after winter rainfall. Perth's summers are reliably free of significant rain, so lakes dry out steadily over several months. Forrestdale dries out completely most years. Waders other than Black-winged Stilts occur there only when maximum depth falls below 0.4m and margins are exposed below the rush zones. Thousands of waders use the lakebed as it dries up over about 9 weeks, irrespective of when this happens (late spring to autumn).

In summer 1980-81, counts at weekly intervals or less during the drying indicated that: 1. 7 Australian and 11 Palaearctic species used the lakebed in one season; 2. transient populations of Australian species peaked earlier than Palaearctic species i.e. when water levels were higher, with single exceptions of Wood Sandpiper (early) and Inland Dotterel (dry lakebed); 3. patterns of numerical build-up and decline versus time differed considerably between species but were of 4 broad types; 5. Palaearctic populations fell rapidly as the last surface water dried up; 6. on 22 Feb., Forrestdale harboured the second largest concentration of waders on the Swan Coastal Plain, including 67 of the 73 Long-toed Stints found in sub-tropical Australia during the national wader count.

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FINDINGS FROM BIOMETRIC AND MOULT DATA

by Dr. Clive D.T. Minton, Vic.

Wader banders are encouraged to record such data whenever conditions allow. The value of recording such information from waders caught for banding was emphasized. To illustrate, some examples were quoted from data taken by the Victorian Wader Studies Group (VWSG).

(a) Weight (or Mass)

Most species of migrant Palaearctic waders have a relatively constant weight and are almost fat-free between their arrival (late Aug-Oct) until the commencement of premigratory fattening (Feb-Mar). When fattening weights increase by up to 2% per day and most species exhibit total weight increases of 45-70% prior to departure (late Mar-Apr). Fat deposits enable flights of 3000-5000km without "refuelling", sufficient for a bird from Vic to reach PNG, Eastern Indonesia or Solomon Is. without stopping. Exceptions to this generalization include (i) Red-necked Stints: maximum range 2500km - sufficient only to reach northern Australia; (ii) Sharp-tailed Sandpipers: relatively small weight increases (15%) would enable most to reach only the southern edge of the average extent of the tropical wet season, where perhaps main premigratory fattening occurs (?).

(b) Wing length

Helps age/sex determination in some species (usually females larger, but male Sharp-tailed Sandpipers larger; juveniles generally shorter average wing length); also an ingredient of flight range calculations. Abrasion caused decreases of 1-4% between moults; this and other variations in measuring technique necessitate standardising measurement errors.

(c) Bill length

In conjunction with (b) can help determine if sex differences exist in population samples (e.g. if one sex arrives/departs earlier) since females' bills average longer. Also indicates maximum probing depth at which prey is accessible.

(d) Moult

The energy costs of moult imply that moult processes must be 'fitted into' a wader's annual cycle so as not to drain reserves needed for other purposes at various times (e.g. breeding, fattening). Most Palaearctic waders begin primary moult after arriving in Australia (Sep-Oct) and finish Jan-Feb; primary moult duration is frequently 120+ days - much longer than in corresponding waders moulting in N. Hemisphere. Adult Double-banded Plovers show very different pattern: primary moult in NZ (Dec-Feb) before migrating to Australia. Many first-year Curlew Sandpipers moult outer primaries in Feb-Apr, but Sharp-tailed Sandpipers unusual in complete wing moult in 1st year. States of moult and feather wear are useful indicators of age, once the basic moult pattern is known for a species.

(e) Age-composition

Adult: 1st year ratio varies markedly in samples caught. Causes include 1. variations in annual breeding success in the Arctic (1978 v.good, 1979 v. poor, 1980 moderate); 2. differing uses of feeding/roosting areas - young birds compete unsuccessfully with adults for best sites; mist-netting bias towards first year birds, much less so in cannon-netting; 3. some over-wintering populations mainly or entirely young birds.

(f) Retraps

Palaearctic waders show strong attachment to favoured sites in successive years. Some Australian species e.g. Pied Oystercatcher change locations up to 80km regularly.

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SPECIAL GUEST LECTURE:

WADERS AND THEIR MICROBES

by Professor N.F. Stanley, DSc, FRCPA (Hon.), MASM
Head, Department of Microbiology, University of WA; Director, Combined Microbiological Services, The Queen Elizabeth II Medical Centre, WA.

To place the wader and its microbes in ecological perspective, it was also necessary to examine 'non-waders' and their microbes. This examination took into account (1) birds as vertebrate host reservoirs of microbes pathogenic for man and animals, and (2) bird movement as a means of transporting microbes around the planet. After giving an account of the major groups of microbes, three groups were selected for 'wader'/'non-wader' comparisons, viz. -

(1) Salmonella bacteria;
(2) Influenza A viruses;
(3) Encephalitis viruses that are mosquito-transmitted.

This selection was made because of the current investigations being undertaken in W.A. by a large number of people.

(1) *Salmonella*

These are ubiquitous Gram-negative bacteria which, with the exception of typhoid, are zoonotic and comprise about 2,000 distinct serotypes. They may cause food poisoning and gastroenteritis, with a high rate of infection among Aboriginal people in the Kimberley. The major contribution in W.A. has come from John Iveson of the State Health Laboratory Services, which has shared rectal and cloacal swabs with University staff for bacterial and viral studies. Mr. Iveson has shown that Salmonella can be isolated from 90-100% reptiles, about 40% of marsupials, and 6% of 40 species of birds. From avian sources he has characterized 60 serotypes from 844 isolates. Although Silver Gulls in the metropolitan area reached 16% positive, only 2 of 227 waders examined yielded salmonellae. Both positives were from Kununurra - a Black-fronted Plover and a Black-winged Stilt.

(2) *Influenza A viruses*

Man, pigs, horses and birds are the principal hosts of influenza A viruses. All influenza A viruses, regardless of their host or origin, share serologically similar internal matrix and ribonucleoprotein antigens, but considerable antigenic variation is found among their external surface proteins - the haemagglutinin and neuraminidase antigens (shift and drift).

The influenza virus study has been carried out by Associate Professor John Mackenzie and Elizabeth Edwards of the University Department of Microbiology. A total of 51 avian influenza viruses and 14 Newcastle disease virus (NDV) strains have been isolated from 4,878 cloacal swabs collected from 70 species of wild birds and domestic poultry in W.A. Numerous avian influenza viruses have been isolated from domestic poultry, where the infection may cause death and/or dramatic drops in egg production. Wild birds have been incriminated as the source of these viruses (75 species; up to 25%+). The virus can remain viable in faecal material at least 8 days and virus excreted into water for up to 30 days. The fowl plague outbreak in Victoria in 1978 was almost certainly caused by transmission from a wild bird source, and a subsequent serological study provided evidence of the same antigenic profile (H7N7) in pelagic birds on the Great Barrier Reef.

The major study sites for collection in W.A. were Perth, Rottnest Island, Moora, Lancelin, Mandurah, Albany, Augusta, Sandy Island and Denmark in S.W., Pelsart Island in the Abrolhos Group, the Pilbara and various sites in the Kimberley.

Table 1. ISOLATIONS OF AVIAN INFLUENZA AND NEWCASTLE DISEASE VIRUSES IN W.A.

Region	Total no. samples	No. of influenza isolates	No. of NDV isolates
Kimberley	1,237	6	2
Pilbara	99	11	0
Abrolhos	1,607	14	8
South-West	1,935	20	4

The samples collected in the Kimberley and in the South-West were from a wide range of avian species, including waders, water-birds, passerines and a few domestic birds. In the Pilbara, all samples were from domestic chickens. On Pelsart Island, they were all pelagic species - terns, noddies and shearwaters.

Table 2 shows that 51 avian influenza isolations were made from non-waders; but there was no isolation made from any of the waders examined.

(2) contd.

TABLE 2. SOURCES OF INFLUENZA A ISOLATIONS IN W.A.

SPECIES	REGION	SWABS	ISOLATES
VIRUS ISOLATED FROM			
Black Duck	S.W.	207	12
Australian Shelduck	S.W.	72	3
Grey Teal	S.W.	104	3
Coot	S.W.	2	1
Pelican	AB	162	1
Common Noddy	AB	327	1
Lesser Noddy	AB	233	2
Wedge-tailed Shearwater	AB	312	5
Sooty Tern	AB	282	6
Plumed whistling-Duck	KIM	55	1
domestic duck	KIM	48	5
domestic fowl	PIL	99	11
VIRUS NOT ISOLATED FROM			
Australian waders (6 species)		182	0
Palaearctic waders (10 species)		157	0

(3) *Mosquito-borne encephalitis viruses*

These viruses replicate in a vertebrate host and a mosquito, with the mosquito acting as a vector. The water bird, because of its habitat, is frequently an important vertebrate host reservoir for these viruses. Two important arbovirus pathogens in Australia are Murray Valley encephalitis (MVE) and Ross River Virus (RRV) - the latter produces a benign but often prolonged illness with fever, arthritis and rash. Although these viruses are easily isolated from mosquitoes, their movement and activity is more easily established by looking for the specific antibody in the blood of the vertebrate host reservoirs. This approach is called 'sero-epidemiology' and is one which our arbovirus team (P. Liehne, A. Wright and H. Sambrailo) uses. Many thousands of birdsera have been studied for MVE; Table 3 shows the positivity for a few selected species. Again the waders are very low.

TABLE 3. ENCEPHALITIS VIRUSES

(SEROLOGY)

	% +ve
Rufous Night Heron	100
Darter	100
Magpie Goose	70
Little Corella	58
Galah	54
honeyeaters	43
ducks	38
waders (8 spp.)	4

Conclusion

It is intriguing to speculate on the reasons why three major groups of microbes are so rarely seen in waders examined in W.A. Each microbial group should be assessed separately, as each has a markedly different ecology. An adequate explanation of these findings is not yet available.

. . . . . and now, a special report from JOHN MARTINDALE in Melbourne, on the subject of progress so far in

AWSG WADER COUNTS IN AUSTRALIA

Over the years it has become obvious that, with the ratification of the Australia-Japan agreement on the protection of migratory birds and their habitats and with the increasing developmental pressures on these areas, a national coordinated approach to wader studies has become essential.

In conducting wader counts the Australasian Wader Study Group is aiming at two approaches. The first seeks to obtain data on changes in species numbers and composition in defined and important areas. These intensive "sample" counts may allow estimation of the effects of industrial development etc. as well as providing information on the movements of population peaks along the coastline or through inland areas. These movements might result from migration or dispersal of overwintering birds. At present there are a number of successful counts of this nature under way in each state.

To assess the importance of these areas, however, they must be considered in relation to the total Australasian situation. This is the reason for the second approach. It aims at conducting twice-yearly comprehensive counts over as many areas as possible given the available manpower. One count is held at the peak of the summer season to give an estimate of the total birds present whilst the other occurs during winter to estimate the overwintering numbers of immature birds and of Double-banded Plovers from New Zealand.

Following a successful count along the Victorian coastline in December 1979 by the Bird Observers Club and the Victorian Wader Study Group (organised by Peter Dann), the A.W.S.G. held a second count, this time on a national scale, in February, 1981. No less than 303 observers participated (Vic 142, SA 60, Tas 20+, Qld 27, NSW 30, NT 1, WA 23) in finding over 400,000 waders in one weekend!

A state-by-state, species by species, breakdown of the count is attached here. If you require a detailed table of waders and localities for a state other than your own, write to me or to the representative in that state.

THE VALUE OF SAMPLE COUNTS

Results from Cairns and the Darwin area are not directly comparable with the others, as the former were counted in December, 1980; that is, one month earlier in the same season.

Although these two results represent but a small fraction of all the waders to be found in Northern Australia they are included as they show the importance of the north for Mongolian Plovers. More Mongolian Plovers were counted in these two areas alone (674) than in the whole of South-eastern Australia in February (389) despite the fact that the latter was well covered.

These results highlight the importance of maintaining regular "sample" counts in the more remote and inaccessible regions of Australia. Further they reflect the movements of population peaks as results from Roger Guard in Cairns well illustrate. Numbers of Bar-tailed Godwits are shown to be relatively stable over the summer season; they are probably resident there during this time. Conversely, the Whimbrel appears to be a passage migrant, with peaks appearing at Cairns only during the spring arrival and the autumn departure. Similar trends have been noted in other areas but for different species. At the Eyre Bird Observatory, for example, virtually all species are absent but for these peaks of arrival and departure.

To know when peak numbers of waders occur in different localities is an important factor in the planning of their conservation. There are not enough counts of this nature in Australia at present. If you can help in your area or have results accumulated over the years that you would like to see published please contact your state representative, the national organiser or the Editor.

THE COMPREHENSIVE COUNT IN FEBRUARY 1981

South-eastern Australia was well-covered for the summer count. The region is recognised as the endpoint of migration for many species. It contains many areas of suitable wader habitat, flanked to the west by the cliff system of the Great Australian Bight and to the north by the mountainous coastline of southern New South Wales. For these reasons and the more obvious ones of logistics, it is a realistic area to study and consider as a whole.

The results of the Victorian counts and those obtained the previous season show that the numbers of most species have been very similar in two consecutive years. An exception is the Curlew Sandpiper which was up by some 30% in numbers over the previous season. This confirms qualitative observations to this effect made by many people. Whether the increase is due to

(1) a good breeding season or
(2) a shift in the emphasis of migratory patterns

is unknown. If the former, then one would expect the numbers of juvenile birds in the population to have increased. Since many of these spend their first Australian winter along our coastline, counts during winter allow us to make another estimate of their numbers. Winter counts will also allow us to estimate the number of Double-banded Plovers migrating to us from New Zealand. The first national winter count was held in July this year, but the results have not yet been analysed.

The importance of Corner Inlet in Victoria for large waders, the Eastern Curlew and Bar-tailed Godwit (79% of the Victorian population), has already been documented in a submission to the Land Conservation Council of Victoria by the Bird Observers Club and later by the R.A.O.U. over proposals for coal-mining in the area.

There are several other interesting results in south-east Australia.

(1) The Victorian inland region held some 17% of the Sharp-tailed Sandpiper population in that state.

(2) The Victorian inland populationsheld more birds than did Westernport and should pose an interesting conservation problem on the management of wetlands.

Note: (a) not all inland areas were covered and
(b) many of them were dry at the time.

The inland counts are therefore conservative.

(3) There were no Sharp-tailed Sandpipers recorded in Tasmania, despite good coverage. Over 60,000 were seen in Victoria and South Australia.

(4) Mongolian Plover, Red and Great Knot are localised to three areas in these two states.

(5) The south-east of South Australia and Western Victoria are strongholds for Sanderling (89%), Ruddy Turnstone (72%) and Hooded Plover (87%). The distribution of Sanderling is also reflected in the R.A.O.U. Field Atlas. These are in marked contrast to widespread species such as the Red-necked Stint and the Curlew Sandpiper.

(6) With the exception of Corner Inlet, Grey Plover seem to become commoner on the western coast of South Australia and beaches further west.

CONCLUSION

The above are just some of the trends apparent in the results of the summer count. Further analysis of other areas will no doubt reveal more. The continuation of these counts is the only way we will establish their validity and to render them valuable for conservation purposes. It is only when results are available in a published form that they are most useful. We've made a good start: maintain the effort!

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OPEN NOTEBOOK
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You are invited to contribute short notes on any subject connected with waders.

Waders varied reactions to a rainstorm

On 21 January 1981, at Botany Bay, I was watching waders feeding alongside the airport runway. At about 1755hrs, the heavens opened and I stayed to see what the waders would do during the rainstorm. Two Bar-tailed Godwits present continued feeding as if nothing was happening, but 30 Red-necked Stints all ran towards the road and hid underneath the bank along with a Mongolian Plover. Curlew Sandpipers (20) packed into about 4 groups and stood behind small rocks, with their bills pointing *skywards*, looking very hunched up. One Red Knot joined them, but faced horizontally into the back of a Curlew Sandpiper. Three Lesser Golden Plovers stood on top of rocks in their usual resting posture. In other words, the smallest species seemed most adversely affected by the squall, and the largest waders not at all.

ALAN McBRIDE, Sydney.

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Unusual leg-colour in Red-capped Plovers

While watching waders at Lake Forrestdale, near Armadale W.A., I was somewhat taken aback by the sight of two, otherwise quite normal-looking fully grown Red-capped Plovers with bright carmine-red legs. I have never previously seen this species with legs anything other than grey or black and I wonder if other observers have noticed individuals with coloured legs.

PETER CURRY, Kelmscott

AUSTRALASIAN WADER STUDY GROUP

Its History and Progress to Date:

MAY-1980

Royal Australasian Ornithologists Union invited by the Australian National Parks and Wildlife Service to participate in an international wader study program involving Japan, China, New Zealand, South Korea and the South-east Asian archipelago. This resulted from

1. the ratification of an agreement between the Australian and Japanese Governments on the protection of migratory birds and their habitat and

2. recommendations from a meeting of the International Waterfowl Research Bureau.

AUGUST-1980

Royal Australasian Ornithologists Union sponsored a meeting of representatives from all states, Papua-New Guinea, New Zealand, the Aust. Bird Banding Scheme and the A.N.P.W.S. It noted the above and resolved to establish a national wader study group and to appoint an organiser.

DECEMBER-1980

Organiser appointed and meetings held to decide in detail his role in coordinating counting, banding, publication of results etc.

JANUARY-1981

Meeting of interested people in Victoria to discuss the structure of the Australasian Wader Study Group. Results circulated interstate for comment.

FEBRUARY-1981

National Summer Count: good support by some 340 people who counted some 400,000 waders.

MARCH-1981

Further invitations for comment on national group structure published in RAOU newsletter. Final proposals drawn up and subscriptions invited. Fund seeking for national projects.

MAY-1981

Wader Scientific Day held in Sydney. Number of members equals 50. Proposals for AWSG approved by the RAOU Council. Nominations called for Office Bearers.

JUNE-1981

Election of Office Bearers. Membership equals 100.

JULY-1981

National winter count (results still to analyse).

AUGUST-1981

Counting and banding expedition, preliminary aerial survey of WA northern coastline. Anticipated funding for beginning of national projects.

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Australasian Wader Study Group, contd.

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***

DATES FOR YOUR DIARY
****

Next summer national wader count 6-7 February 1982

Victorian Wader Study Group A.G.M.: 3 October

Look out for dye-marked waders (from NW W.A.) September onwards

THE STILT, NO.2

depends on YOU! Items will include:

REPORT ON THE FIRST NATIONAL WINTER WADER COUNT

NOTES ON THE AGEING OF RED-NECKED STINTS AND CURLEW SANDPIPERS - IN THE HAND AND IN THE FIELD

contributions from the eastern states to Brett Lane,
from elsewhere to Peter Curry.

BY NOV 15 - PLEASE

***

THE STILT

collated by Brett Lane
edited by Peter Curry
typed by Ellen Pole
"The Stilt" insignia designed by Jim MacNamara & Perry de Rebeira

***

****STOP PRESS***

Roebuck Bay (nr Broome) WA 2 Sep: AWSG expedition has caught, banded and dye-marked over 1000 Palaearctic waders of 10+ species from 3 net-firings so far; catching and counting still in progress. (from Grant Pearson via radio message)

APPENDIX: SOME RESULTS AND INTERPRETATIONS OF COUNTS.

Summary: Summer Count 1981

STATE	BIRDS	OBSERVERS
Victoria	131,088	142
South Australia	237,035	60
Tasmania	9838	20+
Queensland (inc. Cairns, Dec.80)	10,251	27
New South Wales	3025	30
Northern Territory (Dec.80)	951	1
West Australia	13,530	23
TOTAL:	405,718	303
(excluding Dec.result)	402,630	

Notes:

1/ Figures require rounding off. The accepted mathematical approach to this will be described in the next newsletter as part of a series on statistics.

2/ December results from Cairns and The Northern Territory included as they show some interesting trends. They cannot be compared directly with the counts held in Febuary.

3/ Cairns results courtesy Roger Guard.
Northern Territory courtesy Tony Hertog.

DISTRIBUTION OF MEMBERS INVOLVED

IN WADER COUNTS-June,1981.

VICTORIA: SUMMER COUNT 1981. (February).

	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
Painted Snipe	-	-	-	1	-	-	-	-	-	-	-	-	1
Pied Oystercatcher	12	9	47	64	56	-	124	7	823	19	21	-	1182
Sooty Oystercatcher	-	-	-	1	1	-	-	-	242	-	2	-	247
Masked Lapwing	4	37	188	371	349	149	464	54	41	55	12	927	2651
Banded Lapwing	-	-	-	-	-	-	-	-	-	1	-	14	15
Grey Plover	-	-	-	30	1	-	-	-	433	-	-	-	464
Lesser Golden Plover	-	71	-	184	47	-	74	92	-	-	-	-	468
Red-kneed Dotterel	-	-	-	10	12	10	-	-	-	42	-	122	196
Hooded Plover	35	100	33	16	-	-	4	-	3	7	3	-	201
Mongolian Plover	-	-	6	83	-	-	-	-	172	-	-	-	261
Double-banded Plover	3	26	-	11	6	-	2	11	2	-	-	-	61
Large Sand Plover	-	-	-	2	-	-	-	-	11	-	-	-	13
Red-capped Plover	8	102	129	253	220	-	68	72	2	106	72	931	1963
Black-fronted Plover	-	-	-	5	3	-	-	-	-	72	-	53	133
Black-winged Stilt	-	-	100	267	297	55	-	12	-	122	-	1047	1900
Banded Stilt	-	-	-	260	873	-	-	-	-	-	-	107	1240
Red-necked Avocet	-	-	-	16	159	-	-	-	-	-	-	472	647
Ruddy Turnstone	-	29	80	61	1	-	82	-	21	-	-	-	274
Eastern Curlew	-	-	-	104	9	0	914	170	1563	-	22	-	2782
Whimbrel	-	-	-	-	-	-	7	-	21	-	-	-	28
Little Curlew	-	-	-	-	-	-	-	-	-	-	-	3	3
Wood Sandpiper	-	-	-	-	1	2	-	-	-	-	-	-	3
Grey-tailed Tattler	-	3	4	8	-	-	21	-	-	-	-	-	36
Common Sandpiper	-	-	9	1	-	3	4	-	1	1	-	-	19
Greenshank	-	-	69	347	118	-	117	384	147	149	-	32	1363
Marsh Sandpiper	-	-	-	47	28	-	-	-	-	-	-	132	207
Terek Sandpiper	-	-	7	-	-	-	4	-	-	-	-	-	11
Latham's Snipe	-	-	1	66	-	26	-	-	-	4	-	-	97
Black-tailed Godwit	-	-	-	3	44	-	-	-	-	-	-	4	51
Bar-tailed Godwit	-	-	1	187	-	-	280	-	4965	-	52	-	5485
Red Knot	-	-	-	421	5	-	-	-	850	-	3	-	1279
Great Knot	-	-	-	216	-	-	-	-	74	-	1	-	291
Sharp-tailed Sandpiper	-	3	402	5437	5456	182	213	405	80	3187	1	3038	18404
Pectoral Sandpiper	-	-	-	-	1	5	-	-	-	-	-	1	7
Red-necked Stint	863	240	786	12250	16905	5	3337	1456	14527	5397	107	2091	57964
Long-toed Stint	-	-	-	-	1	-	-	-	-	-	-	-	1
Curlew Sandpiper	-	-	-	6505	13584	10	3222	123	5728	13	-	1256	30441
Dunlin	-	-	-	-	1	-	-	-	-	-	-	-	1
Sanderling	232	40	339	-	-	-	-	-	80	-	-	-	691
Ruff	-	-	-	-	2	1	-	-	-	-	-	2	5
Wilsons Phalarope	-	-	-	-	1	-	-	-	-	-	-	-	1
Ringed Plover	-	-	-	1	-	-	-	-	-	-	-	-	1
TOTAL "migratory"	1098	412	1705	25980	36211	234	8277	2641	28675	8751	186	6559	120729
"resident"	59	248	497	1248	1970	214	660	145	1111	424	110	3673	10359

A: South Aust. Border to Portland
B: Portland to Port Fairy
C: Port Fairy to Warnambool
D: Bellarine Peninsula/Mud Island)
E: Western Side) Port Phillip Bay.
F: Eastern Side)

G: Western Port Bay
H: Andersons Inlet
I: Shallow Inlet/Corner Inlet
J: Gippsland Lakes
K: Snowy River/Mallacoota
L: Inland Habitats

SOUTH AUSTRALIA: SUMMER COUNT 1981.(24th. Jan.-1st.Mar).

	A	B	C	D	E	F	G	H	I	J	K	L	M	TOTAL
Pied Oystercatcher	14	17	-	559	22	86	-	12	15	-	-	6	13	744
Sooty Oystercatcher	2	3	-	18	-	-	-	102	-	15	-	6	19	165
Masked Lapwing	562	123	79	82	409	182	40	339	71	23	-	25	10	1945
Banded Lapwing	-	-	22	-	-	-	-	-	-	-	-	-	-	22
Grey Plover	-	-	-	4	1	-	-	580	431	39	100	131	529	1815
Lesser Golden Plover	189	260	-	-	48	241	-	10	40	11	19	8	-	826
Red-kneed Dotterel	-	-	6	-	-	14	-	9	-	-	-	-	-	29
Hooded Plover.	11	89	-	61	-	-	-	-	-	-	-	-	-	161
Mongolian Plover	-	-	-	-	-	-	-	-	5	-	-	-	41	46
Double-banded Plover	2	2	5	1	-	-	-	1	-	-	-	-	-	11
Large Sand Plover	-	-	-	-	-	-	-	-	16	-	-	-	-	16
Oriental Plover	-	-	-	-	18	-	-	-	-	-	-	-	-	18
Red-capped Plover	248	116	710	521	2831	1846	-	2481	991	205	-	314	227	10500
Black-fronted Plover	3	-	4	-	-	-	50	-	-	-	-	-	-	57
Black-winged Stilt	-	-	-	-	226	12	7	280	58	-	-	22	-	605
Banded Stilt	-	-	415	-	13745	39	-	3997	1361	2	-	1006	-	20563
Red-necked Avocet	-	-	179	-	1339	110	-	447	820	-	-	6	-	2901
Ruddy Turnstone	880	637	-	-	-	-	-	14	148	91	7	2	328	2027
Eastern Curlew	-	-	-	-	2	15	-	8	145	9	8	3	4	194
Whimbrel	1	-	-	-	-	-	-	20	70	-	-	-	-	91
Wood Sandpiper	-	-	4	-	-	-	-	-	-	-	-	-	-	4
Grey-tailed Tattler	10	-	-	-	-	-	38	18	10	-	-	-	22	98
Common Sandpiper	3	5	2	-	8	5	1	12	2	1	-	6	-	45
Greenshank	53	1	147	-	286	313	-	579	372	225	70	59	79	2185
Marsh Sandpiper	-	-	-	-	-	-	5	23	25	-	-	-	-	53
Terek Sandpiper	-	-	-	-	-	-	-	-	2	-	-	-	-	2
Latham's Snipe	-	-	6	-	-	-	-	-	-	-	-	-	-	6
Black-tailed Godwit	-	-	-	-	1	132	-	137	12	-	-	-	-	282
Bar-tailed Godwit	-	-	-	-	-	15	-	395	1266	60	-	11	38	1785
Red Knot	-	-	-	-	-	57	-	-	770	303	-	-	167	1297
Great Knot	-	-	-	-	-	3	-	-	630	-	-	-	31	664
Sharp-tailed Sandpiper	451	40	995	-	17670	7201	-	76	12849	874	300	225	153	44495
Pectoral Sandpiper	-	-	13	-	-	-	1	-	-	-	-	-	-	14
Red-necked Stint	4550	896	3706	54	44504	10739	281	15079	7410	2558	800	197	1893	92667
Long-toed Stint	-	-	1	-	-	-	-	1	-	-	-	-	-	2
Curlew Sandpiper	1215	60	452	-	30670	9214	10	3018	3141	884	60	550	63	49337
Sanderling	235	558	-	311	80	33	-	-	-	-	-	-	135	1352
Ruff	-	-	-	-	-	-	-	-	-	-	-	1	-	1
TOTAL "resident"	840	348	1415	1241	18570	2289	97	7677	3316	245	-	1385	269	37692
"migratory"	7509	2459	5331	370	93289	27968	374	32764	18164	5065	1364	1193	3483	199933

SOUTH-EAST:
A: State border-Lak. Bonney Outlet
B: Latter - Kingston
C: South-east Lakes-George,Hawdon N&S.,Eliza, Robe,Hog Lake,Mullins Swamp,Bool Lagoon,Pub Lake.

COORONG AREA:
D: Kingston - Goolwa Beaches
E: Magrath Flat area to Pelican Point
F: Latter - Goolwa Barrage
G: Sites in Lake Alexandrina

GULF ST.VINCENT:
H: Aldinga - Parham, inc. ICI saltfields
I: Lorne - Price, inc. Price saltfields
J: Ardrossan - Edithburgh, inc. Troubridge Shoal

KANGAROO ISLAND:
K: West Bay, Reeves Point, Cygnet Estuary, Nepean Bay.

EYRE PENINSULA:
L: Western Spencer Gulf-Kinaird Beach, 11 Mile Creek, Whyalla Saltfields.
M: Western Eyre Peninsula-Streaky Bay area, Yanerby Reef Baird Bay.

NOTES:
Many larger figures need rounding. Complete coverage achieved of: coast from Goolwa (near Murray Mouth) to State border, northern Coorong, and Gulf St.Vincent. Coverage of other regions was very incomplete. In all these figures may represent under half the real state total.

QUEENSLAND: SUMMER COUNT 1981(February)

	A	B	C	TOTAL
Beach Thick-knee	7	-	-	7
Pied Oystercatcher	37	5	-	42
Masked Lapwing	10	35	-	45
Grey Plover	26	7	-	37
Lesser Golden Plover	-	168	-	168
Mongolian Plover	21	174	139	324
Large Sand Plover	1	-	12	13
Red-capped Plover	45	324	19	388
Black-fronted Plover	-	3	-	3
Black-winged Stilt	2	140	4	146
Red-necked Avocet	-	24	-	24
Ruddy Turnstone	12	124	-	136
Eastern Curlew	47	50	33	130
Whimbrel	68	277	10	355
Tattler	97	399	15	511
Common Sandpiper	1	-	-	1
Greenshank	4	99	27	130
Marsh Sandpiper	-	103	-	103
Terek Sandpiper	-	111	15	126
Black-tailed Godwit	15	141	76	232
Bar-tailed Godwit	401	2138	196	2735
Red Knot	90	4	-	94
Great Knot	78	233	29	340
Sharp-tailed Sandpiper	4	555	78	637
Red-necked Stint	18	1714	1400	3132
Curlew Sandpiper	1	360	17	378
Broad-billed Sandpiper	-	-	66	66
TOTAL: "resident"	101	531	23	655
"migratory"	819	6663	2114	10196

A: Magnetic Island-Townesville-Ayr.
B: Brisbane-Moreton Bay
C: Cairns (these results from Roger Guard in December,1980.)

NEW SOUTH WALES: SUMMER COUNT 1981(February).

	A	B	C	D	E	TOTAL
Pied Oystercatcher	-	19	2	10	10	41
Sooty Oystercatcher	2	13	-	7	-	22
Masked Lapwing	6	23	40	12	18	99
Lesser Golden Plover	-	96	-	25	53	174
Mongolian Plover	-	28	-	3	42	73
Double-banded Plover	-	11	-	-	-	11
Large Sand Plover	-	-	-	-	4	4
Red-capped Plover	1	20	-	8	15	44
Black-fronted Plover	-	8	-	1	-	9
Black-winged Stilt	-	34	13	-	1	48
Ruddy Turnstone	-	74	-	11	71	156
Eastern Curlew	-	119	23	24	13	179
Whimbrel	2	18	1	4	43	68
Little Curlew	-	1	-	-	-	1
Wood Sandpiper	-	1	-	-	-	1
Tattler	-	51	-	8	63	122
Common Sandpiper	-	-	-	-	1	1
Greenshank	-	9	-	7	9	25
Marsh Sandpiper	-	-	-	60	-	60
Terek Sandpiper	-	-	-	4	59	63
Latham's Snipe	-	5	-	-	-	5
Black-tailed Godwit	-	1	-	-	1	2
Bar-tailed Godwit	-	536	14	40	167	757
Red Knot	-	-	-	-	8	8
Great Knot	-	-	-	-	15	15
Sharp-tailed Sandpiper	-	56	22	38	123	239
Red-necked Stint	-	422	-	14	125	561
Curlew Sandpiper	-	145	-	4	86	235
Ruff	-	2	-	-	-	2
TOTAL: "resident"	9	117	55	38	44	263
"migratory"	2	1575	60	242	883	3002

A: Durras
B: Botany Bay-Sydney-The Entrance
C: Nambucca River
D: Woody Head-Sandon
E: Brunswick Heads-Richmond River

WEST AUSTRALIA: SUMMER COUNT 1981 (February).

	A	B	C	D	E	TOTAL
Pied Oystercatcher	12	-	-	30	-	42
Banded Lapwing	-	-	-	5	-	5
Grey Plover	4	130	1	49	73	257
Lesser Golden Plover	-	-	-	-	5	5
Red-kneed Dotterel	-	-	19	-	-	19
Large Sand Plover	-	-	-	1	12	13
Red-capped Plover	4	13	1642	89	48	1796
Black-fronted Plover	-	-	68	-	1	69
Black-winged Stilt	-	40	1696	1	23	1760
Banded Stilt	-	2	827	152	-	981
Red-necked Avocet	2	-	886	7	1	896
Ruddy Turnstone	9	-	234	-	-	243
Wood Sandpiper	-	-	12	-	-	12
Tattler	1	-	-	4	1	6
Common Sandpiper	3	4	5	4	-	16
Greenshank	-	1	224	1	7	233
Terek Sandpiper	-	-	-	-	1	1
Bar-tailed Godwit	11	4	-	12	72	99
Great Knot	-	-	-	16	-	16
Sharp-tailed Sandpiper	-	-	528	-	2	530
Pectoral Sandpiper	-	-	1	-	-	1
Red-necked Stint	-	16	4797	1220	26	6059
Long-toed Stint	-	-	70	-	-	70
Curlew Sandpiper	-	-	135	127	-	262
Sanderling	-	-	-	146	-	146
Oriental Pratincole	-	-	1	-	-	1
Little Ringed Plover	-	-	1	-	-	1
TOTAL "resident"	6	55	5318	284	73	5736
"migratory"	40	155	5595	1798	215	7803

A: Ocean Beaches near Perth
B: The Swan Estuary
C: Lakes of the Swan coastal plain
D: Carnac and Rottnest Islands
E: Southern Leschenault Inlet

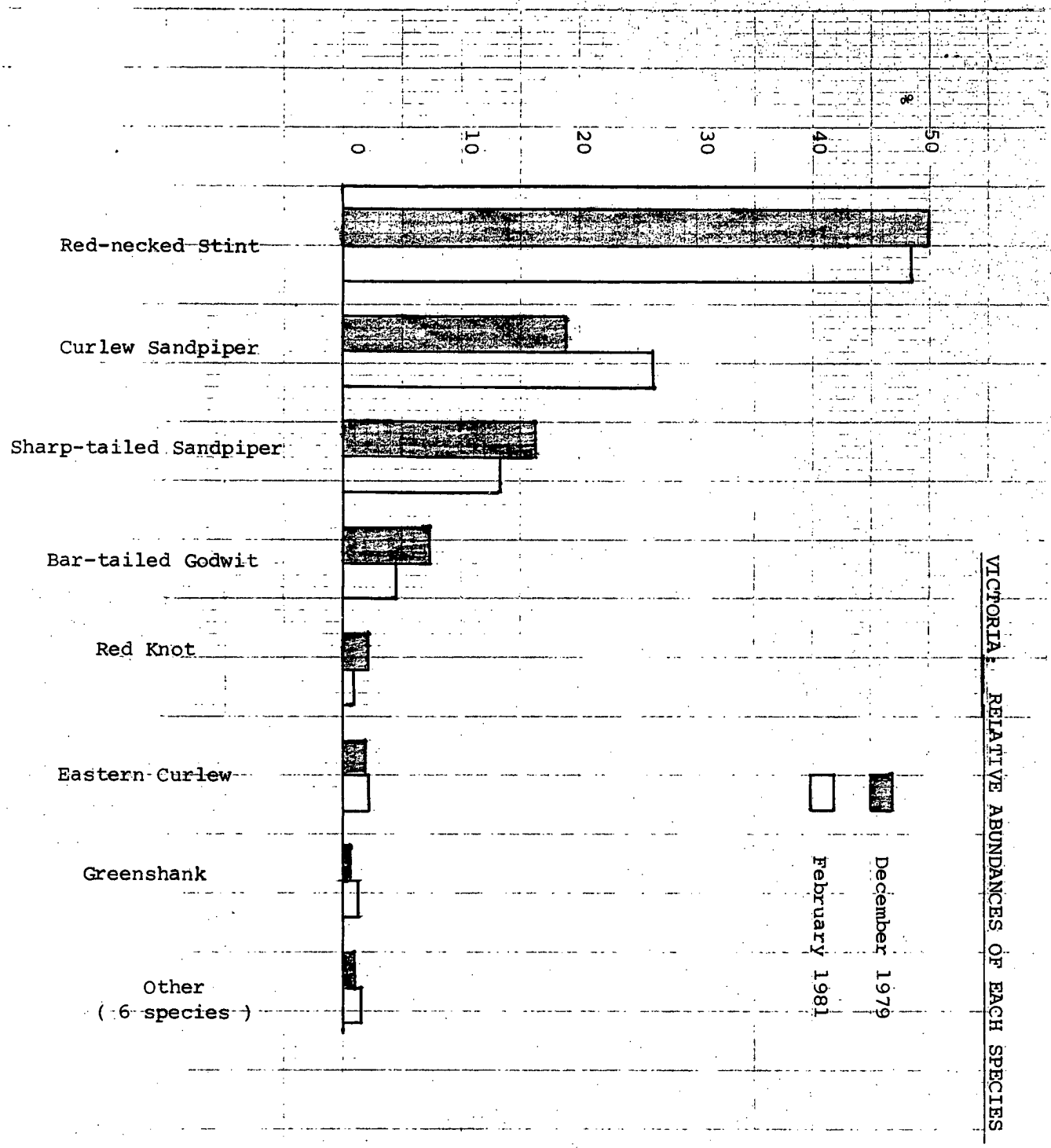
TASMANIA: SUMMER COUNT 1981(February)

	A	B	C	TOTAL
Pied Oystercatcher	342	182	84	608
Sooty Oystercatcher	4	11	41	56
Masked Lapwing	244	73	77	394
Lesser Golden Plover	176	-	78	254
Hooded Plover	7	6	5	18
Mongolian Plover	-	-	9	9
Double-banded Plover	25	4	11	40
Red-capped Plover	143	-	25	168
Black-fronted Plover	17	-	-	17
Ruddy Turnstone	-	14	217	231
Eastern Curlew	153	9	168	330
Whimbrel	-	-	6	6
Grey-tailed Tattler	-	-	2	2
Greenshank	48	-	24	72
Bar-tailed Godwit	113	-	64	177
Red Knot	5	-	8	13
Great Knot	2	-	-	2
Red-necked Stint	3912	254	1964	6130
Curlew Sandpiper	1131	-	180	1311
TOTAL "resident"	757	272	232	1261
"migratory"	5565	281	2731	8577

A: Derwent River Area.
B: North-west Montegue Passage to Pebby Bay.
C: North-east Port Sorell to Little Musselroe Bay.

NORTHERN TERRITORY December 1980. Darwin Area. Tony Hertog.

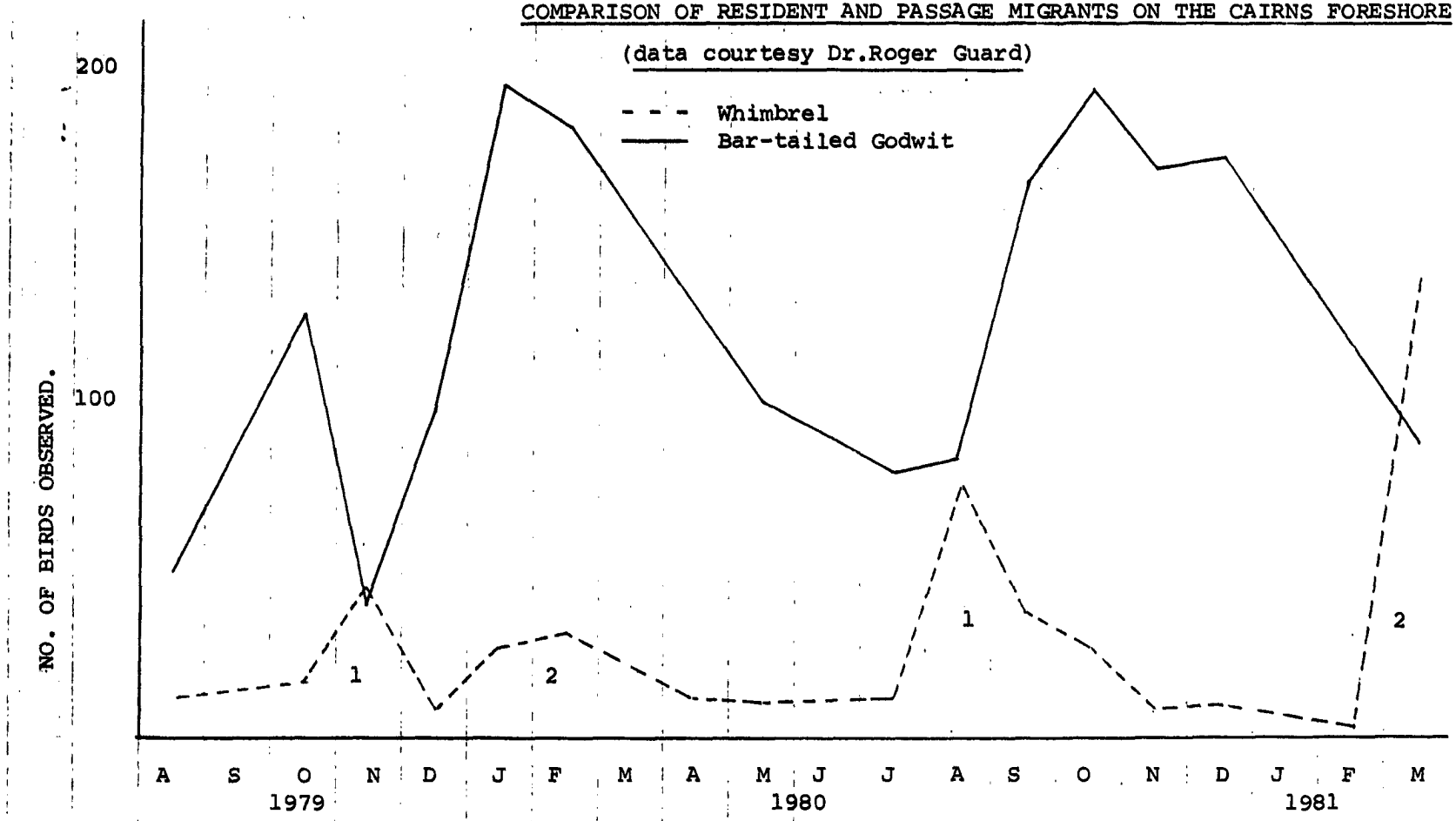
Pied Oystercatcher	1
Grey Plover	15
Mongolian Plover	350
Large Sand Plover	13
Red-capped Plover	74
Black-winged Stilt	2
Ruddy Turnstone	20
Eastern Curlew	10
Whimbrel	21
Tattler	20
Common Sandpiper	6
Greenshank	20
Marsh Sandpiper	1
Terek Sandpiper	1
Black-tailed Godwit	4
Bar-tailed Godwit	50
Red Knot	5
Great Knot	51
Sharp-tailed S'piper	6
Red-necked Stint	254
Curlew Sandpiper	2
Sanderling	20
Broad-billed S'piper	4
TOTAL "migrant"	874
"resident"	77



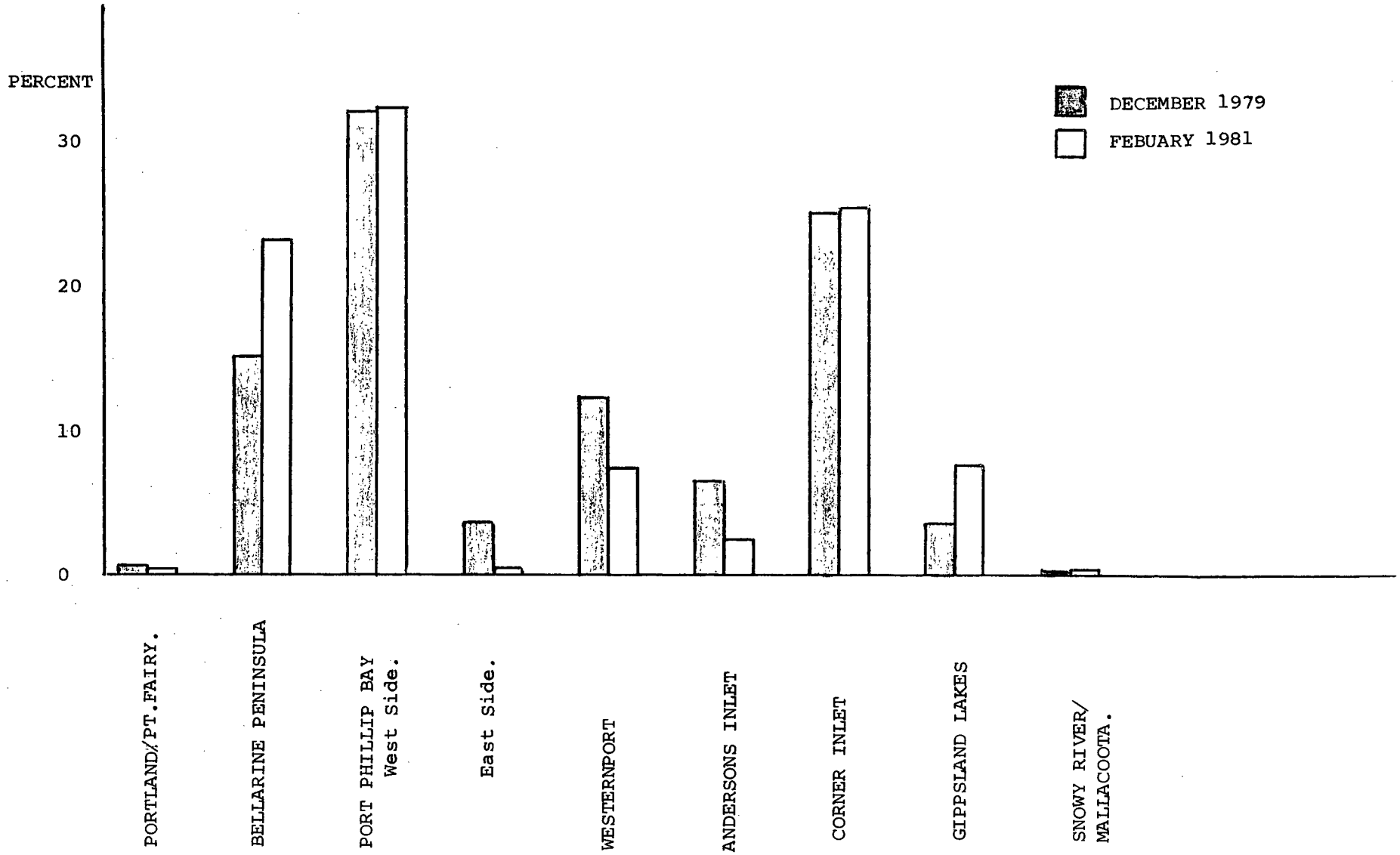
VICTORIA: RELATIVE ABUNDANCES OF EACH SPECIES

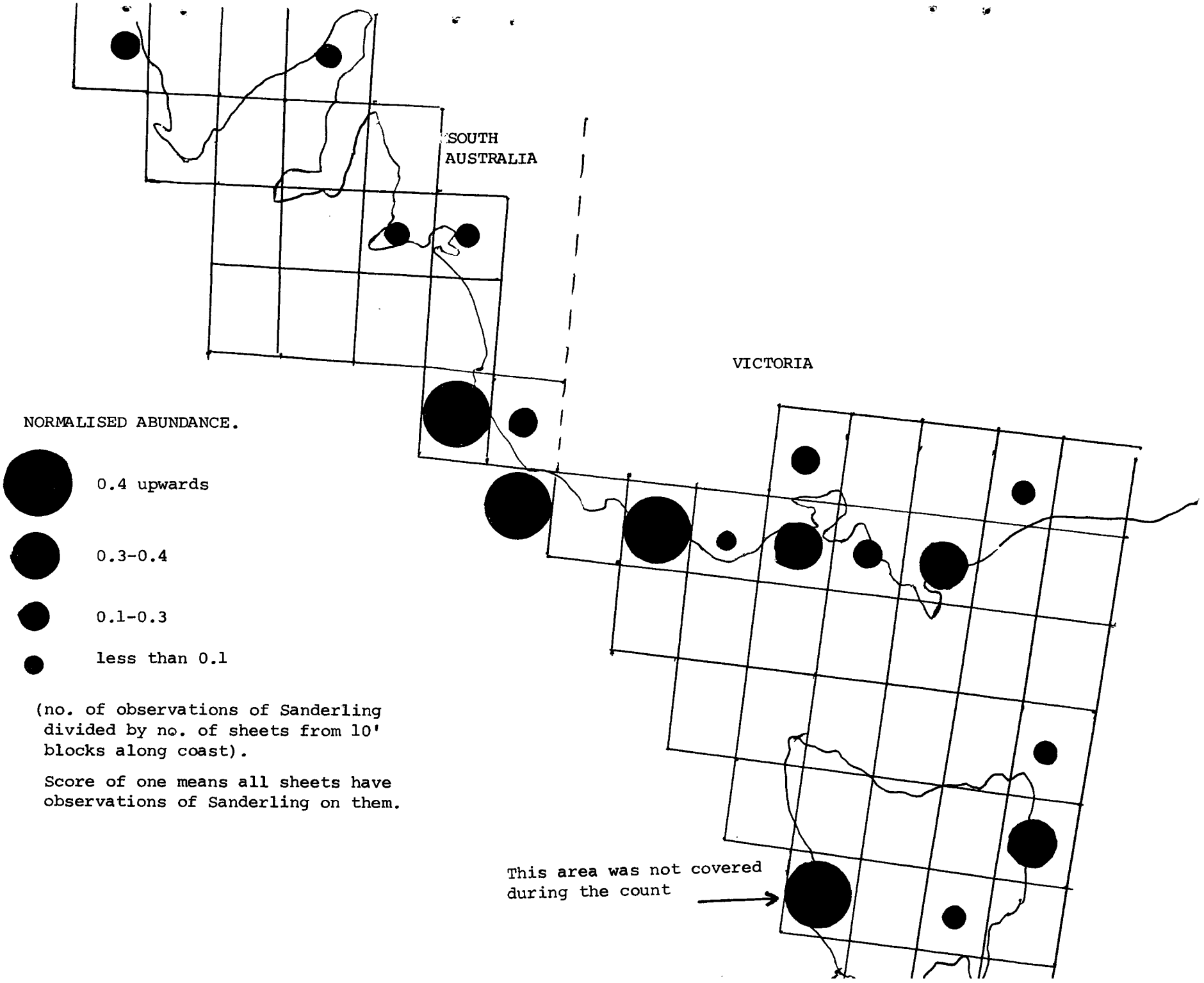
COMPARISON OF RESIDENT AND PASSAGE MIGRANTS ON THE CAIRNS FORESHORE

(data courtesy Dr.Roger Guard)



DISTRIBUTION OF WADER NUMBERS ALONG THE VICTORIAN COASTLINE.




SOUTH
AUSTRALIA
VICTORIA
NORMALISED ABUNDANCE.
0.4 upwards
0.3-0.4
0.1-0.3
less than 0.1
(no. of observations of Sanderling divided by no. of sheets from 10' blocks along coast).
Score of one means all sheets have observations of Sanderling on them.
This area was not covered during the count