Shorebirds on WA's South Coast - 2013

Snap-shot survey, analysis and recommendations for shorebird conservation across the South Coast.

June 2013

Report prepared by

Peter Taylor (consulting ornithologist)

on behalf of

Green Skills and South Coast NRM

This survey project has been supported by the following organisations: Coastwest, South Coast Management Group, South Coast NRM, Birdlife Australia, the Australian Bird Environment Foundation, WA Department of Environment and Conservation, Albany Bird Group, Green Skills, and the Esperance Bird Observers Group.

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Cover: Albany Bird Group members at Morley Beach, Wilson Inlet during a February Shorebird count. Photo; Geoff Taylor.

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Summary

Migratory shorebirds visit Australia via the East Asia-Australasia Flyway and spend their non-breeding cycle here from October to March. Australia has an obligation to protect these birds and their habitats under a number of international treaties. Understanding the movement, behaviour and habitat requirements of shorebirds in Australia is thus paramount.

As with previous surveys in 2011 and 2012, the main focus of this work is on important shorebird habitats with a view to gaining a more informed understanding of the movement and distribution, habitat requirements and threats to both migratory and resident shorebirds present in the South Coast NRM region. This year the study area was expanded further to include areas west of Walpole as far as Augusta and eastwards to Kanidal Beach near the Eyre Bird Observatory.

Specifically, the project has a number of aims:

- To revisit the sites of the 2011 and 2012 snap shot surveys in order to compare shorebird richness and abundance across two and/or three consecutive years;
- To collate and incorporate shorebird richness and abundance data from additional South Coast sites from Augusta to Walpole and from Kanidal Beach obtained in February 2013 and analyse in comparison with the existing survey sites;
- To identify and revisit key sites in March to compare and analyse any differences in species richness and abundance from the February surveys;
- To identify any further potential sites of international and national significance;
- To investigate in more depth particular species identified as exceeding or approaching significance thresholds at any sites;
- To provide recommendations for future conservation activities and research.

Sites throughout the survey region were visited during the period February 9-17 2013 and all shorebirds and other waterbird species were identified and counted with the assistance of numerous volunteers. Data was collected in line with Shorebirds 2020 protocols using the standard Shorebird Count Form (see Appendix 2). Sites where large numbers of birds were recorded in February were identified and a number of these were revisited in follow-up surveys in March (9^{th}-15^{th}). The rationale behind these follow-up surveys was to investigate movement of shorebirds between sites as resource conditions changed or as birds prepared for migration and possibly to determine important refuges.

More than 150 sites were surveyed this year with shorebirds being recorded at 86 of them. Across these sites 24 shorebirds species were recorded and of these, 15 were migratory species and the other nine were residents. The total shorebird count was 13707 with 4488 being migratory and 9219 residents. Almost 2/3 of the shorebirds reported were recorded around Esperance. The

highest species count of 18 however was recorded from Albany as was the highest number of migratory shorebird species (12). However, more resident shorebird species were recorded in the Esperance and Hopetoun count areas (9) compared with only six from Albany. Counts from the added sites in the west around Windy Harbour were fairly low in comparison but similar to the total shorebird counts reported for the Walpole region. Counts for the eastern-most site at Kanidal Beach were also comparatively low with only four species recorded totaling 60 birds. Inland sites were again not productive probably due to the lack of suitable feeding habitat by February.

Results from this year's counts identified two species that exceeded the 1% population thresholds required for potential international significance. Hooded Plover counts at a number of sites in the Esperance region exceeded 60 birds, namely Station Lake WRP005A (186), Davies Lake (113), Kubitch WRP0017B (110) and Lakes Warden WRP013A and Gore WRP016A (86 and 79 respectively). Lake Mortijinup in the Esperance region held 1287 Red-necked Avocets in February, exceeding the 1% threshold of 1110.

Total shorebird numbers around the Albany Harbours were greater than in 2012 but less than 2011 whereas Wilson Inlet shorebird numbers were higher than both the 2011 and 2012 counts most likely due to the slightly lower inlet water level in February 2013. Both migratory and resident shorebird numbers were down on 2012 results at Bremer Bay. Hopetoun resident shorebird numbers were higher this year than in 2012 whereas migratory numbers were down slightly. A similar trend was noted at Esperance where migratory numbers were down slightly but resident numbers were up considerably in the DEC lakes due to the influx of avocets and stilts.

Follow up surveys at priority conducted in March 2013 were mixed in their results. The only significant increases were reported from the Wilson Inlet where Red-necked Stint numbers rose at Morley Beach. Elsewhere, the large numbers of both resident and migratory shorebirds reported in February had disappeared by March, particularly around Esperance where avocets, stilts and Hooded Plovers were scarce. Poor weather during the weekend of the survey and inland rains may have been responsible.

Specific threats to shorebirds and their habitat were documented for over 40 of the sites surveyed. The major threats were from human disturbance (mostly 4WDs and dogs both on and off leash) and invasive species. Evidence of foxes was reported from half of the sites surveyed in the Hopetoun area.

Recommendations of this report include:

1. That community organisations work with land managers and Local Government Agencies to ensure appropriate signage, management regulations & enforcement and neighbourhood education is undertaken as a matter of urgency to improve management of conflicts between recreational use (i.e. dogs, horses, and 4wd vehicles on beaches) and shorebird requirements along the South Coast. There is particular concern for improving management of intense pressures at estuary sand bars and other areas frequented by large numbers of shorebirds such as Denmark, Bremer Bay, Hopetoun and Esperance. Detailed actions (e.g. periodic closures of feeding/nesting sites) and funding requirements for the highest priority sites should be determined
2. That management authorities (including Dept of Water, Dept Environment and Conservation, Water Corporation and Local Government) investigate and undertake integrated control of predatory feral animal, particularly where foxes have been identified as a threat to shorebird survival.
3. That management authorities (including Dept of Water, Dept Environment and Conservation, Water Corporation and Local Government Agencies) adopt policies that include careful consideration of shorebird needs, and in particular maintaining appropriate water levels for priority shorebird habitats in summer through appropriate sand bar opening policies. This applies particularly to Wilson Inlet, but also to other Inlets such as Irwin, Parry and Torbay. In many cases, appropriate water levels required for shorebirds are not known. Installation and monitoring of depth gauges would be a useful precursor to determining this sort of information
4. Installation and monitoring of depth gauges at important and relevant shorebird monitoring sites be undertaken, to assist with data collection required for water level management of some estuaries and wetlands on the south coast. This should be done in collaboration with the Department of Environment and Conservation, Department of Water and Local Government Agencies.
5. In recognizing the importance of community volunteers to comprehensive long-term shorebird monitoring, that State agencies and regional NRM organisations continue to provide suitable resources to assist with costs for coordination, travel, data collation, data distribution and other needs of volunteer counters.
6. That the viability of marking south coast shorebird survey sites be investigated and where appropriate implemented for priority sites. Such signposting could include a simple post as used in dieback interpretation which could include the survey site number and words to the effect it is a shorebird survey site & bird habitat priority area.
7. That from 2014 onwards, Fairy Terns be included in the south coast shorebird surveys and analysis, and that further conservation management efforts be developed to help conserve this vulnerable shore nesting species. This could include preparation of a south coast recovery plan for this species with particular focus on ensuring and protecting suitable breeding habitat.
8. In recognition of the value of bird hides in promoting bird-watching and community shorebird education, that the provision of appropriately sited, designed and approved bird hides be investigated, and where feasible implemented. Potential sites may include Morley Beach and Prawn Rock island (Wilson Inlet, Denmark), Oyster Harbour(Albany), Irwin Inlet(Peaceful Bay), Bremer Bay, Red Lake (Muir-Unicup) and the west Warden Suite west (Esperance).

Introduction

Southern Australia, including the south coast of Western Australia has long been known as a refuge where migratory shorebirds that breed in the Arctic tundra of northern Asia spend their non-breeding months. At least 30 species of shorebirds (waders) are known to utilise the East Asia-Australasia Flyway, departing their northern hemisphere breeding grounds in Siberia after the Arctic summer for southern Australia and returning before the onset of the southern winter (Lane 1987). Adults and juveniles arrive in northern Australia and disperse throughout mainly coastal Australia during September-October to spend the summer months feeding and regaining condition prior to the adults departing in March-April. Juveniles stay on and winter in Australia before they are rejoined by the adults in the spring. Australia is a signatory to several migratory bird agreements with other countries along the Flyway and as such has obligations to the protection and conservation of shorebirds and their habitats.

In addition to the migratory shorebird species there are also a number of resident shorebirds that breed in Australia. While not having to travel vast distances each season to breed, these species still have strict habitat requirements that imperil their existence and survival here in Australia. Migratory and resident shorebirds often co-exist at feeding sites so both groups have been included in this report.

Paramount to shorebird survival in Australia is their need to find adequate food and, for migratory species, to build up sufficient resources to negotiate the arduous return flight to their breeding grounds. Knowledge of wader movements within Australia, their feeding requirements in terms of resources and access as well as an understanding of the threats to those requirements are vital. Together this information can be used to assist the various conservation-related agencies and local communities to develop management strategies that will safeguard resident shorebirds and migratory shorebirds while they are in Australia.

Survey Area

In Western Australia, the southern terminus of the flyway extends over much of the South West from estuaries around Perth, Mandurah and the south coast to numerous suites of permanent and ephemeral inland lakes which range from fresh to saline. In 2011, the western South Coast NRM region, encompassing the south coastal inlets and estuaries from Walpole/Nornalup Inlet in the west to the Albany Harbours (Princess Royal and Oyster) in the east and extended inland from the Lake Muir-Unicup suite in the west, to the lakes of the Upper Kent River catchment and to the lakes of the North Stirlings region in the east was surveyed. In 2012 this was extended to include coastal areas east of Albany, from Bremer Bay and the Fitzgerald River National Park, to Hopetoun and as far as Cape Arid, east of Esperance. For the purposes of this year's study, the area of interest has been extended further to include coastal areas from Augusta to Walpole and Kanidal Beach near the Eyre Bird Observatory.

Aims

The main focus of this work is on important shorebird habitats across the South Coast NRM region with a view to gaining a more informed understanding of the movement and distribution, habitat requirements and threats to both migratory and resident shorebirds present. In 2013 the study area was expanded to include the entire South Coast NRM region from Augusta to Esperance and the eastern outpost of Kanidal Beach near Eyre Bird Observatory. As per a recommendation of last year's report, follow-up surveys at key sites were planned for March in order to target potentially peak numbers and gain further understanding of shorebird movements.

Specifically, the project has a number of aims:

- To revisit the sites of the 2011 and 2012 snap shot surveys in order to compare shorebird richness and abundance across two and/or three consecutive years;
- To collate and incorporate shorebird richness and abundance data from additional South Coast sites from Augusta to Walpole and from Kanidal Beach obtained in February 2013 and analyse in comparison with the existing survey sites;
- To identify and revisit key sites in March to compare and analyse any differences in species richness and abundance from the February surveys;
- To identify any further potential sites of international and national significance;
- To investigate in more depth particular species identified as exceeding or approaching significance thresholds at any sites;
- To provide recommendations for future conservation activities and research.

Site Selection and Methods

Significant Shorebird Sites

The significance of a site to shorebirds is determined according to specific criteria. Table 1 shows the four levels recommended for use in Australia by Bamford et al (2008).

Significance Level	Criteria
International	a) 1% or more of Flyway population estimate of any migratory species
	b) 20,000 or more total abundance of shorebirds (resident and migratory)
National	a) 0.1% or more of Flyway population estimate of any migratory species
	b) 2,000 or more total abundance of shorebirds (resident and migratory)
State	a) significant declines in shorebirds known not to be declining elsewhere in Australia
	b) greater declines than identified elsewhere in Australia
Regional	a) 15 or more migratory species
	b) 20 or more resident and migratory species

Table 1: Recommended Criteria for determining site significance to shorebirds (after Clemens et al 2008)

Throughout the East Asia-Australasia Flyway, 397 internationally important sites are recognized and 118 of these are in Australia (Bamford et al 2008). To qualify for this status, sites must either "regularly support 1% of the individuals in a population of one species or subspecies of a shorebird according to Criterion 6 of the Ramsar Convention or "contain 20,000 or more total abundance of shorebirds (resident and migratory combined)".

Within the survey region three sites of international importance to shorebirds are recognized, namely Albany Harbours, Wilson Inlet and Esperance Bay. Following is a brief explanation of their listings.

Albany Harbours

The Albany Harbours Shorebird Area is a complex of inlets and tidal estuaries and consists of a number of Count Areas, including mudflats at Emu Point, the Kalgan and King River estuaries in

Oyster Harbour and Rushy Point on Princess Royal Harbour. Both these harbours are open to the ocean and are not subject to sandbar influences. However, river inflows can dramatically affect the area of inundation and water salinity in isolation of daily tides.

Shorebird surveys have been undertaken in the Albany Harbours since 1984 and during that time 22 species of migratory shorebird have been recorded. The site is internationally significant because it regularly supports more than 1% of the Flyway population estimate of Red-necked Stint (3,250) and of Curlew Sandpiper (1,800). The maximum count recorded for Red-necked Stint was 4,742 in January 1995. For Curlew Sandpiper the maximum count recorded was 2,054 in January 1996.

By default the site automatically has National significance but also Regional significance because it supports 15 or more migratory species.

Wilson Inlet

The Wilson Inlet Shorebird Area is a complex of Count Areas encompassing shallow mudflats such as Morley Beach, lagoons (Nenamup), rocky shorelines and a sandbar to the ocean at Ocean Beach. The sandbar regularly prevents drainage of the inlet to the sea and, unless it is breached, water levels within the inlet remain high and essential shorebird feeding areas at Morley Beach remain unsuitable during critical summer months.

Shorebird surveys have been undertaken at Wilson Inlet since 1982 and during that time 22 species of migratory shorebird have been recorded. The site is internationally significant because it regularly supports more than 1% of the Flyway population estimate of Red-necked Stint (3,250). The maximum count recorded for Red-necked Stint was 15,252 in March 1986 (Smith 1993: Shorebirds database 2011). Maximum total counts for the migratory species was 16,200 in 1986.

By default the site automatically has National significance but also Regional significance because it supports 15 or more migratory species.

In the years 2008 & 2009 total counts were much reduced, especially Red-necked Stints for which the summer counts were 12 and 368 respectively (Shorebirds Database 2011). As a consequence this site is now listed as significant at the State level because a serious decline in Red-necked Stint numbers has been observed here but not generally elsewhere in Australia.

Esperance Bay and Yokinup Bay, Cape Arid

The Esperance Shorebird Area consists of numerous inlets, estuaries, lakes and shorelines from Stokes Inlet in the west to beyond Cape Arid in the east. A vast complex of lakes exists, with Warden and Gore complex being listed as a Ramsar site (internationally important). Much of the

area is protected in National Parks.

Shorebird surveys have been undertaken around Esperance since 2000 (Shorebirds 2020 database 2012). Both Esperance Bay and Yokinup Bay in Cape Arid National Park are listed as internationally significant because they regularly support more than 1% of the population of Sanderling (*Calidris alba*).

The 2011/2012 Snap-shot Survey Regions

Most of the snap-shot survey sites of 2011 were revisited in February 2012. Shorebird abundance was lower for most areas. Only the Wilson Inlet showed any real increase on 2011 and this was due to a greater number of Red-necked Stints and Red-capped Plovers recorded mostly at Morley Beach. In both years, the Albany Harbours supported more shorebirds in total than the Wilson Inlet and also showed greater species richness.

Walpole Region

The same sites as 2011 and 2012 were revisited in 2013. These were Nornalup, Irwin and Parry Inlets, and Owingup Swamp.

Wilson Inlet and the Denmark Region

Around the Wilson Inlet, the major sites revisited in 2013 were Poddyshot and the sandbar, Morley Beach, Hay River, Nenamup and Young's Lagoon.

Albany Harbours Region

Four major sites around Albany Harbours were again visited in 2013 survey, namely the Kalgan Estuary, Lower King, Rushy Point and Emu Point.

Lake Muir-Unicup Region

All the Muir-Unicup lakes were dry by January so none of these sites were surveyed in 2013.

The Stirlings Region

Only Anderson Lake was considered worth revisiting in 2013 due to the other lakes all being dry before February.

The Upper Kent Area

A reconnaissance visit was made to the Upper Kent region beforehand and determined that all seven sites surveyed in 2011 and 2012 should be revisited.

Survey Regions added in 2012

Bremer Bay

The same sites as in 2012 were surveyed i.e. from Cape Riche and the Beaufort Inlet at the mouth of the Pallinup River in the west to Saint Mary Inlet in the Fitzgerald River National Park in the east. These included various inlets and beaches, primarily the habitat for Hooded Plovers but other shorebirds were recorded at each.

Hopetoun

This year 30 sites were surveyed by John Tucker from Culham Inlet in the Fitzgerald River National Park in the west to the Torradup Estuary in Stokes National Park in the east. These ranged from beaches to sub-coastal lakes to tidal inlets. These included 25 of last year's sites and 5 new sites which were identified due to water level and access changes. Lakes Pallarup and Milarup (dry) were not surveyed this year.

Esperance

Close to Esperance are numerous wetlands within DEC managed reserves which have been surveyed annually since 2007 by Adrian Pinder and others from DEC. This year they surveyed the same suites from the Lake Neridup complex in the east to the Lake Gore complex in the west.

The Esperance Bird Observers Group surveyed the same 15 sites from the Stokes Inlet in the west to Cape Arid, in the east with the exception of Norris Lakes. These ranged from salt lakes to wetlands to beaches and tidal inlets, many of which were on a private property. See Appendix 1 for locations of all sites visited.

Additional Regions Surveyed in 2013

In addition, numerous sites to the west of Walpole from near Augusta to Broke Inlet, and one at Kanidal Beach near Eyre Bird Observatory were surveyed by local volunteers. See Appendix 1 for locations of all sites visited. These new sites have been grouped according to three main geographical regions and are described as follows.

West of Walpole (Windy Harbour)

Coastal sites (9), from Lake Jasper Beach to the mouth of the Gardner River were surveyed by Christine Wilder primarily for Hooded Plover. Two new sites in the Broke Inlet were identified and surveyed by Colin Steele and included in the Walpole group of sites.

Kanidal Beach

Shorebird data has been collected at the Eyre Bird Observatory since 2007 as part of the weekly bird surveys. Data from the count conducted on 6 February 2013 are included in this report.

Coastline Gaps

Due to limitations in the availability of personnel and access, some areas were not surveyed. These included parts of the Fitzgerald River National Park from St Mary Inlet to Culham Inlet and Cape Arid to Kanidal Beach for instance.

Key Species

The surveys were timed to coincide with the National Summer Shorebird Count and the WA Hooded Plover Count. Permission was kindly given to use data obtained from both these projects. Hooded Plover (*Thinornis rubricollis*) is considered to be Australia's most endangered resident shorebird so particular focus is given to this species.

The 2011 and 2012 snap-shot surveys both identified Red-capped Plover (*Charadrius ruficapillus*) as occurring at more sites than any other resident species and Red-necked Stint (*Calidris ruficollis*) as the most reported migratory species. The latter has been present in numbers exceeding 1% flyway populations in the Wilson Inlet and Albany Harbours. Similarly, previous studies have shown that Sanderling (*Calidris alba*) numbers have exceeded the 1% threshold in the Esperance and Cape Arid regions (Shorebird 2020 database). Analysis of the distribution of these species may be useful for understanding shorebird distribution in general so they are again flagged for further discussion in this study.

Survey Methods

Sites throughout the survey region were visited during the period February 9-17 and all shorebirds and other waterbird species were identified and counted with the assistance of numerous volunteers.

Data was collected in line with Shorebirds 2020 protocols using the standard Shorebird Count Form (see Appendix 2).

At each site, other information such as tide height or area under water, wind direction and speed was collected. Any direct disturbance during the counts was documented as were any observed or perceived threats to shorebirds or their habitat.

Sites where large numbers of birds were recorded in February were identified and a number of these were revisited in follow-up surveys in March (9^{th}-15^{th}). The rationale behind these follow-up surveys was to investigate movement of shorebirds between sites as resource conditions changed or as birds prepared for migration and possibly to determine important refuges.

Results and Discussion

Regional Comparison of all South Coast Sites in February 2013

More than 150 sites were surveyed this year with shorebirds being recorded at 86 of them. Across these sites 24 shorebirds species were recorded and of these, 15 were migratory species and the other nine were residents. The total shorebird count was 13707 with 4488 being migratory and 9219 residents. A complete species count for each site is shown in Appendix 1. The distribution and magnitude of the counts are shown graphically in Figures 1, 2 & 3.

A summary of regional counts follows in Table 2.

Region	Migratory Species	Total Migratory	Resident Species	Total Resident	Total Species	Total Shorebirds
Windy Harbour	2	78	4	49	6	127
Walpole	2	9	6	115	8	124
Denmark	4	766	5	806	9	1572
Albany	12	434	6	78	18	512
Bremer Bay	5	275	7	231	12	506
Hopetoun	9	394	9	905	17	1299
Esperance	6	2531	9	6744	15	9275
DEC Lakes	*4*	*1275*	*7*	*4766*	*11*	*6041*
Other	*6*	*1256*	*7*	*1978*	*13*	*3234*
Kanidal Beach	1	1	3	59	4	60
Muir-Unicup	0	0	0	0	0	0
Upper Kent	0	0	2	141	2	141
Stirlings	0	0	3	4	3	4
Total	**15**	**4488**	**9**	**9219**	**24**	**13707**

Table 2: Counts for the eleven regions surveyed in 2013 showing total numbers of species and shorebirds broken down into migratory and residents. The Esperance data is divided into two sections, the Esperance Lakes managed by DEC and other sites surveyed by the Esperance Bird Observers Group.

Table 3 shows the 15 migratory and 9 resident species recorded in order of abundance.

Migratory Species	Number recorded	Resident Species	Number recorded
Red-necked Stint	3332	Banded Stilt	3905
Sanderling	375	Red-necked Avocet	2223
Sharp-tailed Sandpiper	278	Red-capped Plover	1241
Common Greenshank	233	Hooded Plover	720
Great Knot	86	Black-winged Stilt	711
Ruddy Turnstone	33	Pied Oystercatcher	165
Grey Plover	32	Sooty Oystercatcher	133
Curlew Sandpiper	29	Masked Lapwing	77
Common Sandpiper	24	Black-fronted Dotterel	44
Greater Sand Plover	24		
Bar-tailed Godwit	14		
Red Knot	12		
Pacific Golden Plover	8		
Black-tailed Godwit	5		
Whimbrel	3		

Table 3: Migratory and Resident Shorebird Species recorded in order of abundance.

The 2013 total shorebird count of 13707 (9219 resident shorebirds and 4488 migratory) was considerable higher than the 2012 count of 9550 (5057 residents and 4493 migratory). The difference was due to the large numbers of Banded Stilt and Red-necked Avocets reported.

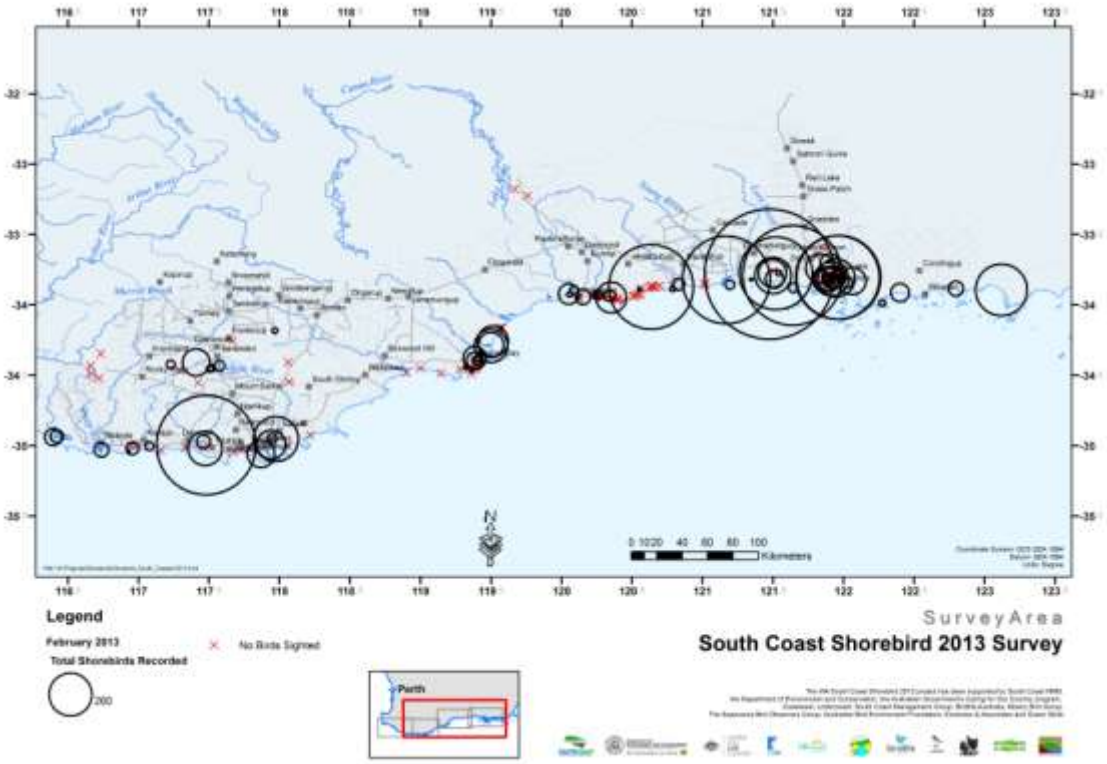
Only 15 migratory species were reported this year compared with 2012 when there were 18 and nine resident species, one less than were recorded last year. Black-tailed Godwits were recorded for the first time this year, five appearing at one of the Jerdacuttup Lakes near Hopetoun. However, Grey-tailed Tattler, Marsh and Wood Sandpiper and Red-kneed Dotterel were not reported in February this year, having been so in 2012. However, during the follow-up surveys in March, a single Grey-tailed Tattler was observed at Rushy Point and four Wood Sandpipers at Jerdacuttup Lake West. All 14 of the other previously recorded migratory shorebirds were seen again as were all nine other previously recorded resident shorebirds.

From Figures 1-3 and the table of regional counts above (Table 2) it can be seen that Esperance was again by far the stronghold for both resident and migratory shorebirds throughout the region. Almost 2/3 of the 13000+ shorebirds reported were recorded around Esperance. The highest species count of 18 however was recorded from Albany as was the highest number of migratory shorebird species (12). However, more resident shorebird species were recorded in the Esperance and Hopetoun count areas (9) compared with only six from Albany.

Counts from the added sites around Windy Harbour were fairly low in comparison but similar to the total shorebird counts reported for the Walpole region. Counts for Kanidal Beach were also comparatively low with only four species recorded totaling 60 birds.

Inland sites were again not productive probably due to the lack of suitable feeding habitat by February. However, large numbers of shorebirds had been seen in December 2012 at Lake Muir, Tordit-gurrup Lagoon, Lake Unicup and Red Lake in the Muir-Unicup suite (e.g. Sharp-tailed Sandpipers possibly in the thousands, Roger Hearn pers. comm.) yet had disappeared completely by the time of the surveys. No evidence of these was picked up during the surveys at any other site. However, there are likely to be other nearby sites which are less accessible but still utilised or alternatively the birds could have returned north. More widespread and intense monitoring would be required to ascertain whether this is the case.

Figure 1: Total Shorebirds distribution and magnitude across South Coast NRM region- Feb 2013 Survey



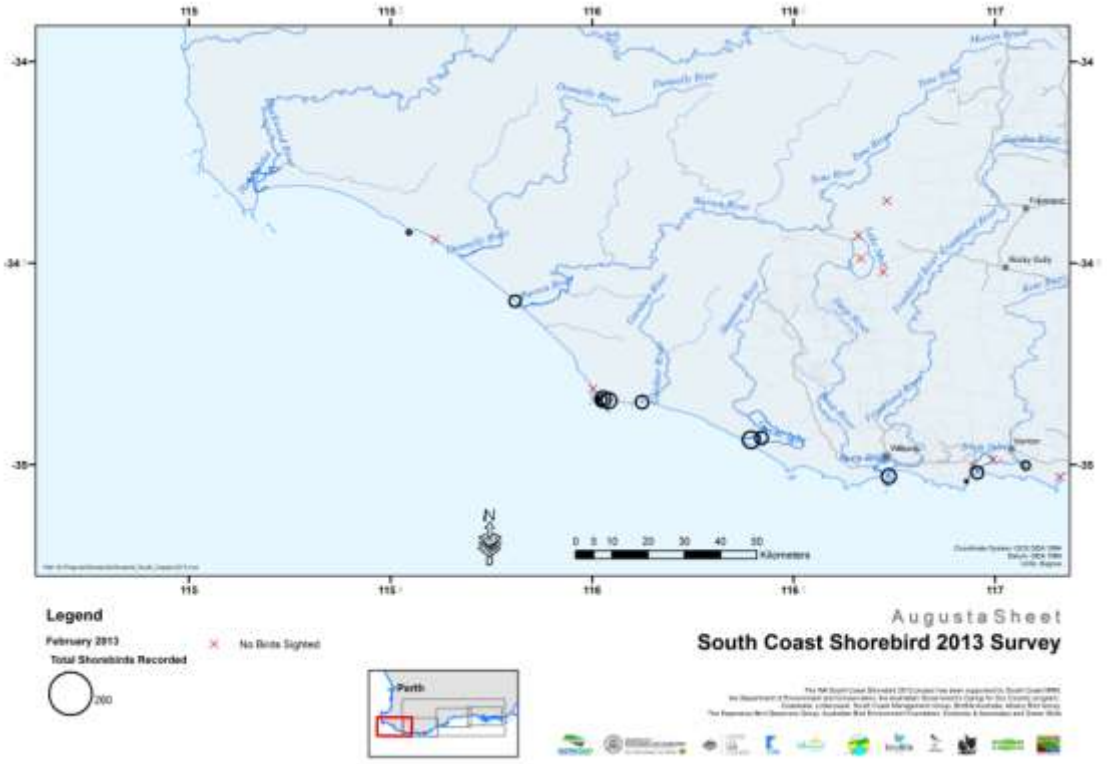


Figure 2: Total Migratory Shorebirds distribution and magnitude across South Coast NRM region - Feb 2013 Survey

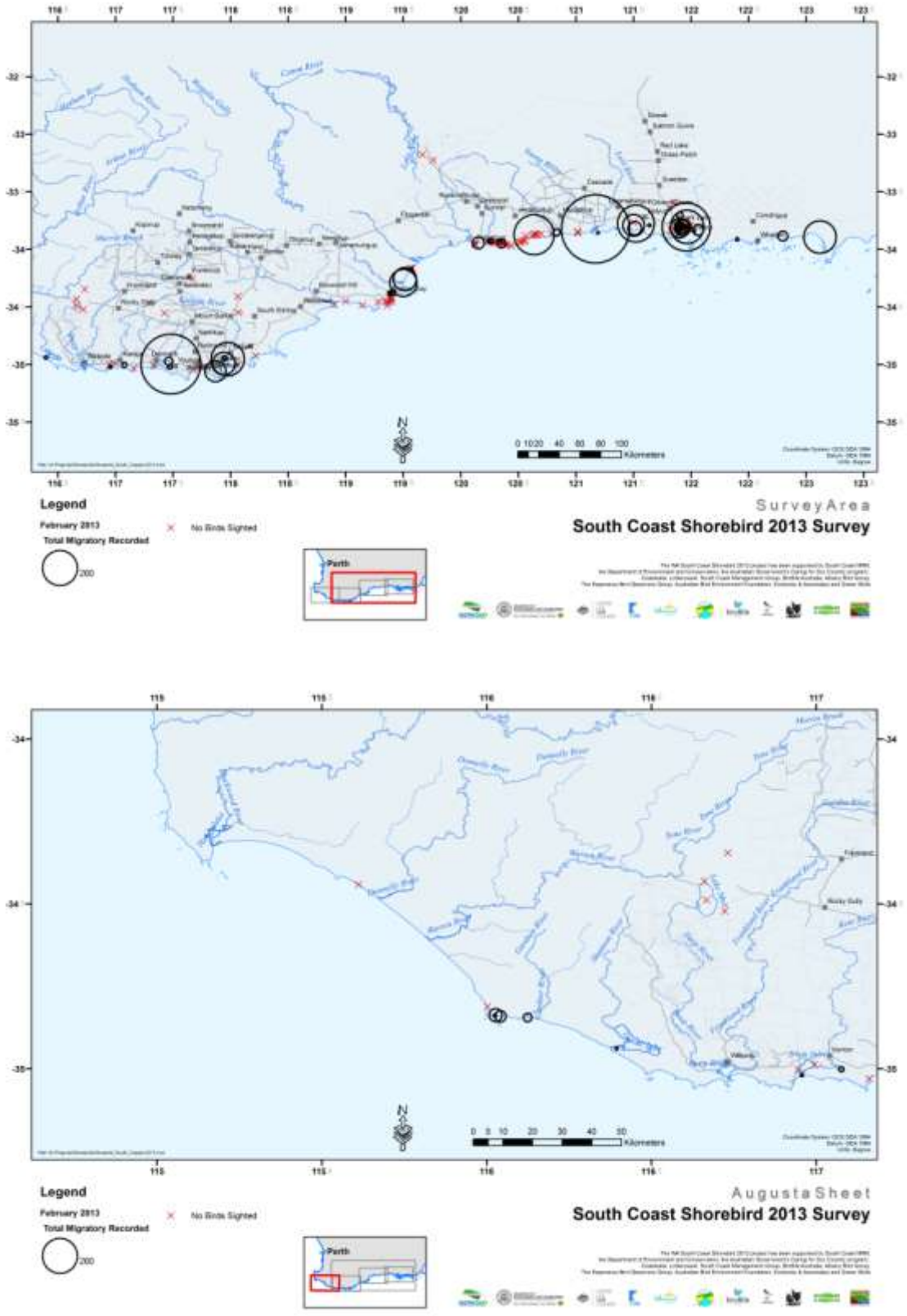
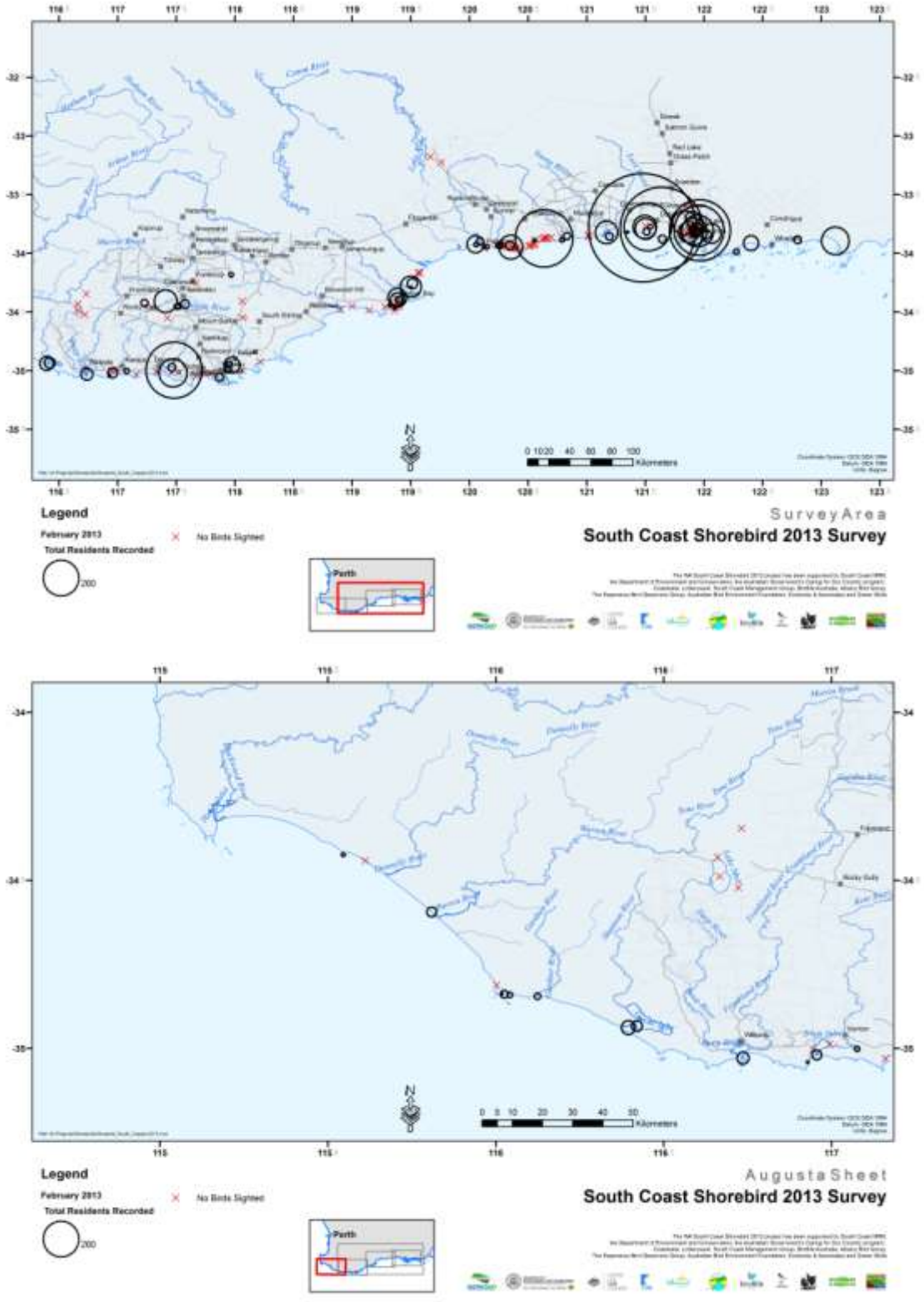


Figure 3: Total Resident Shorebirds distribution and magnitude across South Coast NRM region - Feb 2013 Survey



Looking specifically at the Esperance Lakes, the total shorebird count of 6041 is the highest summer count to date (see Table 4). This was undoubtedly because of the large numbers of Banded Stilt and Red-necked Avocet present. Together, these two species accounted for 2/3 of all the resident shorebirds recorded throughout the survey area.

Year	Total Shorebird Count	No. of Sites reported from
2006 (October)	197	6
2007 (October)	1455	8
2008 (February)	**4241**	**12**
2008 (November)	399	8
2009 (November	2099	25
2010 (February)	**3687**	**20**
2010 (November)	1297	34
2011 (February)	**3638**	**26**
2011 (December)	1335	28
2012 (February)	**3247**	**23**
2013 (February	**6041**	**20**

Table 4: Total Shorebird counts and the number of sites reported as supporting shorebirds from Esperance Lakes region 2006-2012 (original data courtesy Adrian Pinder DEC). Summer counts are in bold type.

Potentially Significant Sites

Results from this year's counts identified two species that exceeded the 1% population thresholds required for potential international significance. Hooded Plover counts at a number of sites in the Esperance region exceeded 60 birds, namely Station Lake WRP005A (186), Davies Lake (113), Kubitch WRP0017B (110) and Lakes Warden WRP013A and Gore WRP016A (86 and 79 respectively). The Gordon Inlet in the Bremer Bay Region came close with 57 individuals.

Lake Mortijinup in the Esperance region held 1287 Red-necked Avocets in February, exceeding the 1% threshold of 1110. Interestingly, all bar 100 of these had moved away by March when a follow-up survey was undertaken. Three other sites exceeded the 0.1% threshold of 111 for National Significance. These were Morley Beach (306) in the Wilson Inlet and Lakes Gidong (311) and Woody (129) in Esperance. Lake Gidong also held high numbers of Banded Stilt (1985), just under the 1% threshold of 2100. Two other Esperance lakes had high counts of Banded Stilt, these being Ewans (734) and Mullet (411) while Lake Shaster in the Hopetoun area held 470.

Although the most populous migratory shorebird, Red-necked Stints were not reported in any numbers great enough to exceed the 1% threshold of 3250. Several sites however were reported exceeding the National Significance threshold of 325. These were Morley Beach (653 in February and 1450 in March), Mullet Lake (400) and Stokes Inlet (951). Red-capped Plovers also exceeded

the 0.1% National Significance threshold of 95 at three sites, namely Morley Beach (223), Lake Shaster (125) and Lake Gore (320).

Time Series Comparison Western South Coast Counts 2011-2013

The original snap-shot survey of sites in the western South Coast NRM region was conducted in 2011 when species numbers and bird counts were recorded for sites from Walpole to Albany on the coast and inland from Lake Muir to the Upper Kent and the North Stirlings. The same sites were compared in 2012 (see Taylor 2012) and similarly, for this survey in February 2013. This year 22 shorebird species (13 migratory and 9 resident) totaling 2274 birds were reported (compared with 965 in 2012 and 1722 in 2011). A summary of species richness and abundance for the three years appears below in Table 5.

The large increase in 2013 can be attributed to the higher number of both migratory and resident shorebirds recorded in the Wilson Inlet. More than 600 Red-necked Stints were reported from Morley Beach along with 300+ Red-necked Avocets and 200+ Red-capped Plovers in February. By March, stint numbers had swelled to over 1400 due to the lower water level in the inlet which exposed more mud, allowing access to a greater feeding area (see later discussion).

In Albany there was a slight increase on 2012 shorebird numbers but still below that reported in 2011. Elsewhere there was little change in numbers except for Lake Nunijup where 85 Banded Stilts were observed. The Muir-Unicup lakes were dry by February 2013 but had large numbers of shorebirds in December 2012 (Roger Hearn, pers.comm.).

Site	Region	Shorebird Species* 2011	Total Shorebirds 2011	Shorebird Species* 2012	Total Shorebirds 2012	Shorebird Species* 2013	Total Shorebirds 2013*
Albany Harbours	South Coast	18 (16)	811	14(13)	443	**18**(12)	**512(434)**
Wilson Inlet	South Coast	8 (5)	113	**10(6)**	**356**	9(4)	**1572(766)**
Irwin Inlet	South Coast	8 (6)	96	4(2)	31	4(1)	22(2)
Tordit-gurrup	Muir-Unicup	5 (2)	206	2(1)	11	0	0
Parry Lagoon	South Coast	4 (1)	109	2(1)	7	0	0
Owingup Swamp	South Coast	4 (2)	26	1(1)	6	**2**(1)	**10(5)**
Lake Carubundup	Upper Kent	3 (1)	16	0	0	0	0
Lake Unicup	Muir-Unicup	2 (1)	243	0	0	0	0
Lake Matilda	Upper Kent	2 (0)	67	0	0	**1**(0)	**15(0)**
Lake Nunijup	Upper Kent	2(1)	3	0	0	**3**(0)	**103(0)**
Nornalup Inlet	South Coast	1(0)	11	**4(1)**	**14**	3(0)	**29(0)**
Lake Powell	South Coast	1(0)	8	1(0)	3	0	0
Anderson Lake	North Stirlings	1 (0)	4	0	0	**1**(0)	**4(0)**
Torbay Inlet	South Coast	1(0)	4	1(0)	3	n/a	n/a
Lake Martagallup	Upper Kent	1(0)	3	2(0)	**10**	1(0)	7(0)
Parry Beach	South Coast	1(0)	2	0	0	n/a	n/a
	Total	23	1722	23	965	22	**2274**

Table 5: Comparison of Snap-shot Survey Sites 2011 - 2013.

*** Number of migratory shorebird species in brackets. Figures in red indicate a reduction in species counts from the previous year. Figures in bold indicate an increase.**

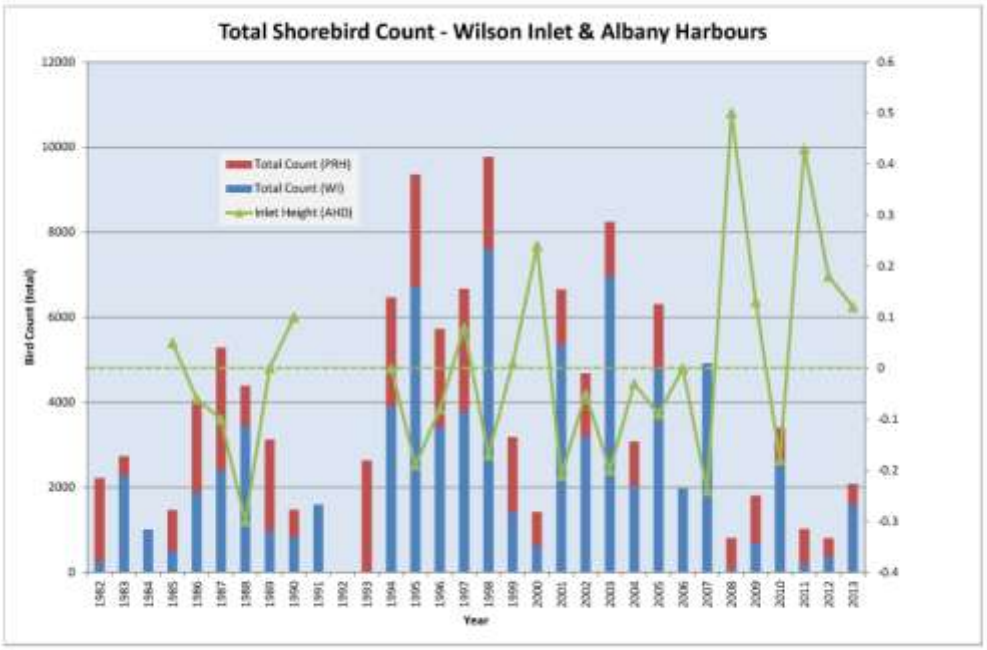
Total counts of all species for Albany Harbours and Wilson Inlet are also tabulated separately in Tables 1 & 2 in Appendix 3 for all years (1982-2013). Charts showing these totals graphically appear in this Appendix also.

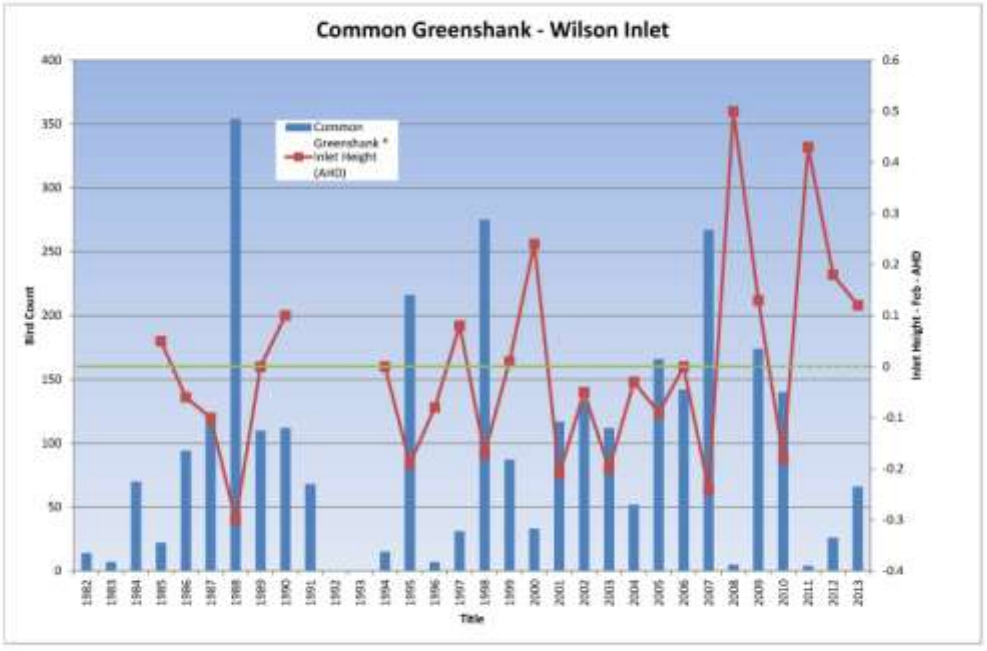
In Table 6 below total shorebird numbers for both Albany Harbours and the Wilson Inlet are shown for the last four years in conjunction with the status of the water level in the inlet. Data from the follow-up surveys conducted in March 2013 are also included for comparison. Once again a clear inverse relationship is apparent between inlet water level and shorebird count for Wilson Inlet. With lower levels this year, shorebird numbers were higher than in previous years when water levels were high. As water levels dropped between February and March due to summer evaporation and continued outflow, the total shorebird count increased from 1572 to 2843. Albany Harbours' counts appear to fluctuate annually but do not appear to explain changes in Wilson Inlet counts.

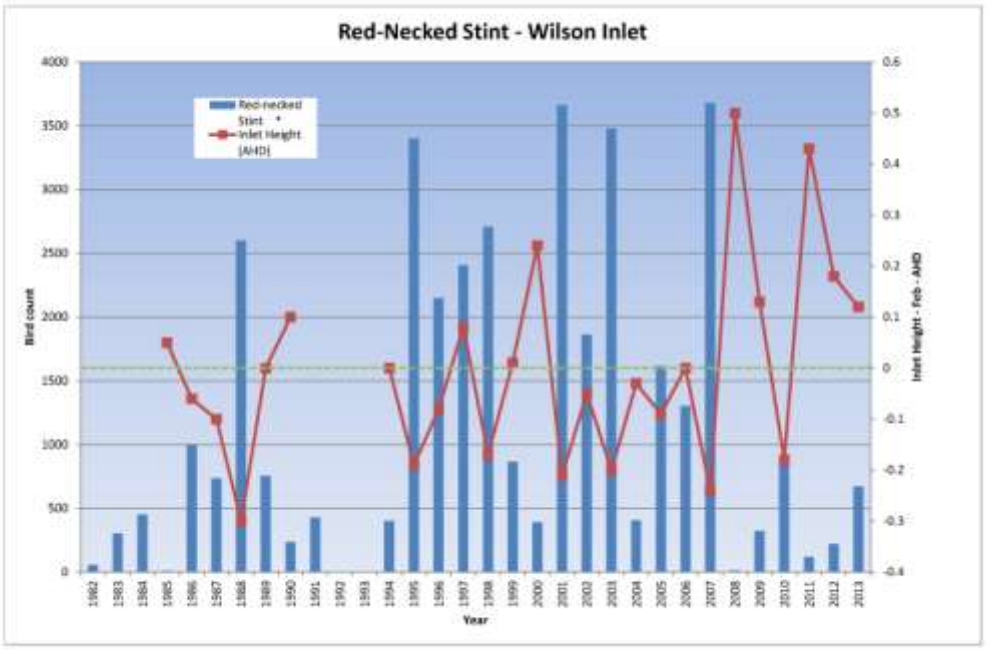
Year	Albany Harbours	Wilson Inlet
2010	852	2645 (low)
2011	816	207 (high)
2012	443	356 (high)
2013 (February)	512	1572 (medium)
2013 (March)	325	2843 (low)

Table 6: A comparison of shorebird numbers at Albany Harbours and Wilson Inlet (water level in brackets) from summer counts in 2010, 2011 & 2012 (Shorebirds Database) and this survey (2013)

The following charts illustrate graphically the relationship between Wilson Inlet water level and shorebird numbers compared to Albany Harbours, specifically for total shorebirds, Common Greenshank and Red-necked Stint.


Total Shorebird Count - Wilson Inlet & Albany Harbours
Total Count (PRH)
Total Count (WI)
Inlet Height (AHD)
Bird Count (total)
Year


Common Greenshank - Wilson Inlet
Common Greenshank *
Inlet Height (AHD)
Bird Count
Inlet Height - Feb - AHD
Title



Time Series Comparison of other South Coast Counts 2012-2013

In 2012 the survey area was extended to include Bremer Bay, Hopetoun and Esperance. Subsequently, data from these areas is only available for two years as shown in Table 7.

Region	Migratory Species	Total Migratory	Resident Species	Total Resident	Total Species	Total Shorebirds
Bremer Bay	5(4)	275(483)	7(7)	231(783)	12(11)	506(1216)
Hopetoun	9(7)	394(500)	9(3)	905(291)	17(10)	1299(791)
Esperance	6(10)	2531(2794)	9(10)	6744(3676)	15(20)	9275(6470)
DEC Lakes	*4(8)*	*1275(1529)*	*7(8)*	*4766(1718)*	*11(14)*	*6041(3247)*
Other	*6(5)*	*1256(1265)*	*7(9)*	*1978(1958)*	*13(13)*	*3234(3223)*

Table 7: 2013 Counts for the regions surveyed previously only in 2012 showing total numbers of species and shorebirds broken down into migratory and residents. The Esperance data is divided into two sections, the Esperance Lakes managed by DEC and other sites surveyed by the Esperance Bird Observers Group. Numbers in brackets indicate 2012 counts.

Both migratory and resident shorebird numbers were down on 2012 results at Bremer Bay. Hopetoun resident shorebird numbers were higher this year than in 2012 whereas migratory numbers were down slightly. A similar trend was noted at Esperance where migratory numbers were down slightly but resident numbers were up considerably in the DEC lakes due to the influx

of avocets and stilts.

Follow-up Surveys March 2013

In the Walpole area all of the sites were revisited in March except for Nornalup Inlet. Four of the Wilson Inlet sites were revisited in the Denmark area and all four of the Albany Harbours sites. In the Hopetoun area, four sites at Culham Inlet, Jerdacuttup Lakes and Lake Shaster were revisited while eleven of the sites in the Esperance area were targeted. Table 8 shows the February and March counts for all the revisited sites and the net differences. The distribution and magnitude of the counts are shown graphically in Figures 4, 5 & 6. Complete March counts are shown in Tables 3 & 4 in Appendix 1.

Site	February Residents	March Residents	Net Change	February Migrants	March Migrants	Net Change
Walpole						
Owingup	5	42	**37**	5	2	-3
Irwin Mouth	19	67	**48**	2	0	-2
Irwin Picnic Area	0	0	0	0	0	0
Parrys Inlet	0	75	**75**	0	2	**2**
Irwin - Geo Ebbett	0	0	0	0	0	0
Peaceful Bay boat ramp	1	6	**5**	0	14	**14**
Broke Inlet Mouth	38	30	-8	2	13	**11**
Broke Inlet Sand Spit	23	21	-2	0	15	**15**
Wilson Inlet						
Morley Beach	635	839	**204**	748	1571	**823**
Nenamup	159	106	-53	4	119	**115**
Poddy Shot	0	99	**99**	0	21	**21**
Hay River	12	83	**71**	14	5	-9
Albany						
Lower King	8	5	-3	4	11	**7**
Kalgan Estuary	51	104	**53**	230	72	-158
Rushy Point	12	6	-6	92	41	-51
Emu Point	7	15	**8**	108	71	-37
Hopetoun						
Culham Inlet Causeway	58	20	-38	0	3	**3**
Lake Shaster 39	666	4	-662	335	0	-335
10 Jerdacuttup Lake W	8	18	**10**	5	53	**48**
15 Jerdacuttup Lake	121	265	**144**	10	67	**57**
Esperance						

Ewans Lake (WRP003) A	752	19	-733	234	0	-234
Mullet Lake (WRP004) A	499	10	-489	484	10	-474
Station Lake (WRP005) A	205	36	-169	0	5	**5**
Lake Warden (WRP013) A	87	0	-87	2	0	-2
Carbul (WRP017) A	0	0	0	0	0	0
Kubitch (WRP017) B	110	0	-110	0	0	0
Gidong (WRP017) C	2366	206	-2160	0	1	**1**
1 Stokes	102	19	-83	976	86	-890
9 Mortijinup	1386	152	-1234	2	164	**162**
11 Bannitup	77	16	-61	25	68	**43**
12 Yokinup	153	27	-126	220	76	-144

Table 8: February and March Counts of resident and migratory shorebirds for revisited sites (increases are shown in bold type, decreases in red text).

Follow up surveys conducted in March were mixed in their results. The only significant increases were reported from the Wilson Inlet where Red-necked Stint numbers rose at Morley Beach and Poddyshot. Elsewhere, the large numbers of both resident and migratory shorebirds reported in February had disappeared by March, particularly around Esperance where avocets, stilts and Hooded Plovers were scarce. Poor weather during the weekend of the survey and inland rains may have been responsible.

Figure 4: Total Shorebirds distribution and magnitude across South Coast NRM region- March 2013 Survey

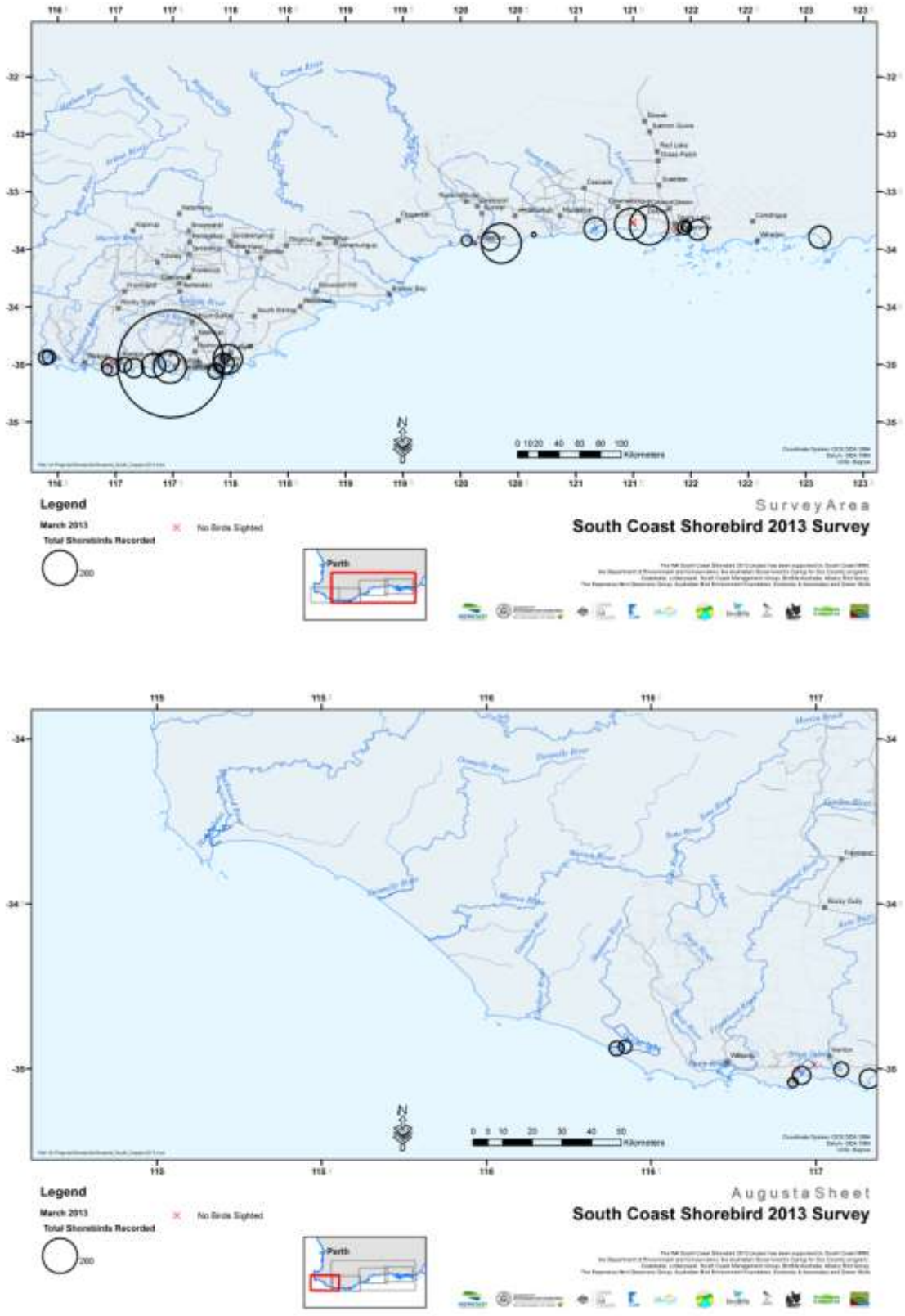
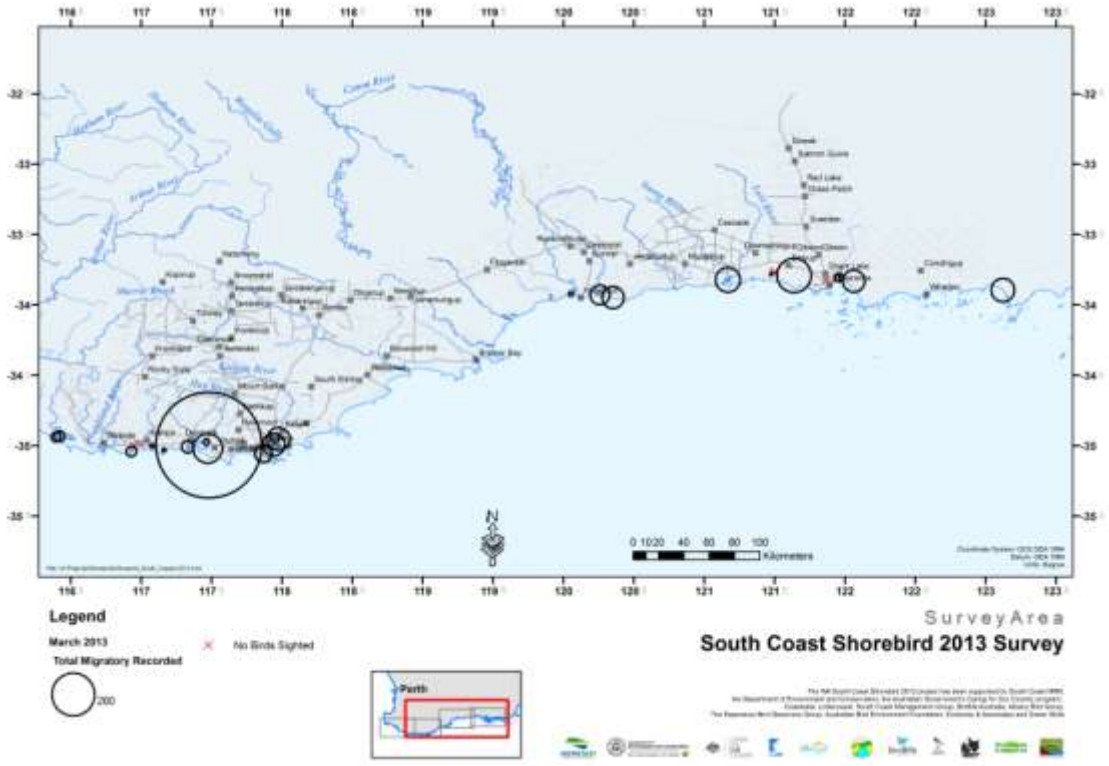


Figure 5: Total Migratory Shorebirds distribution and magnitude across South Coast NRM region - March 2013 Survey



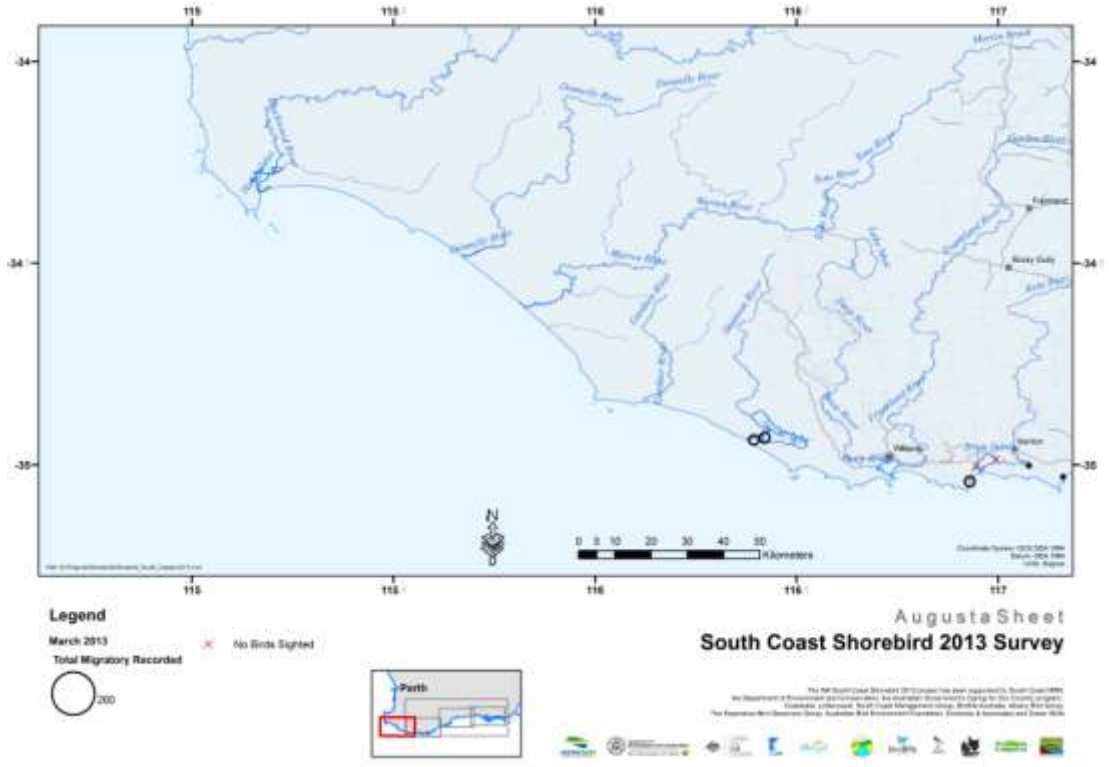
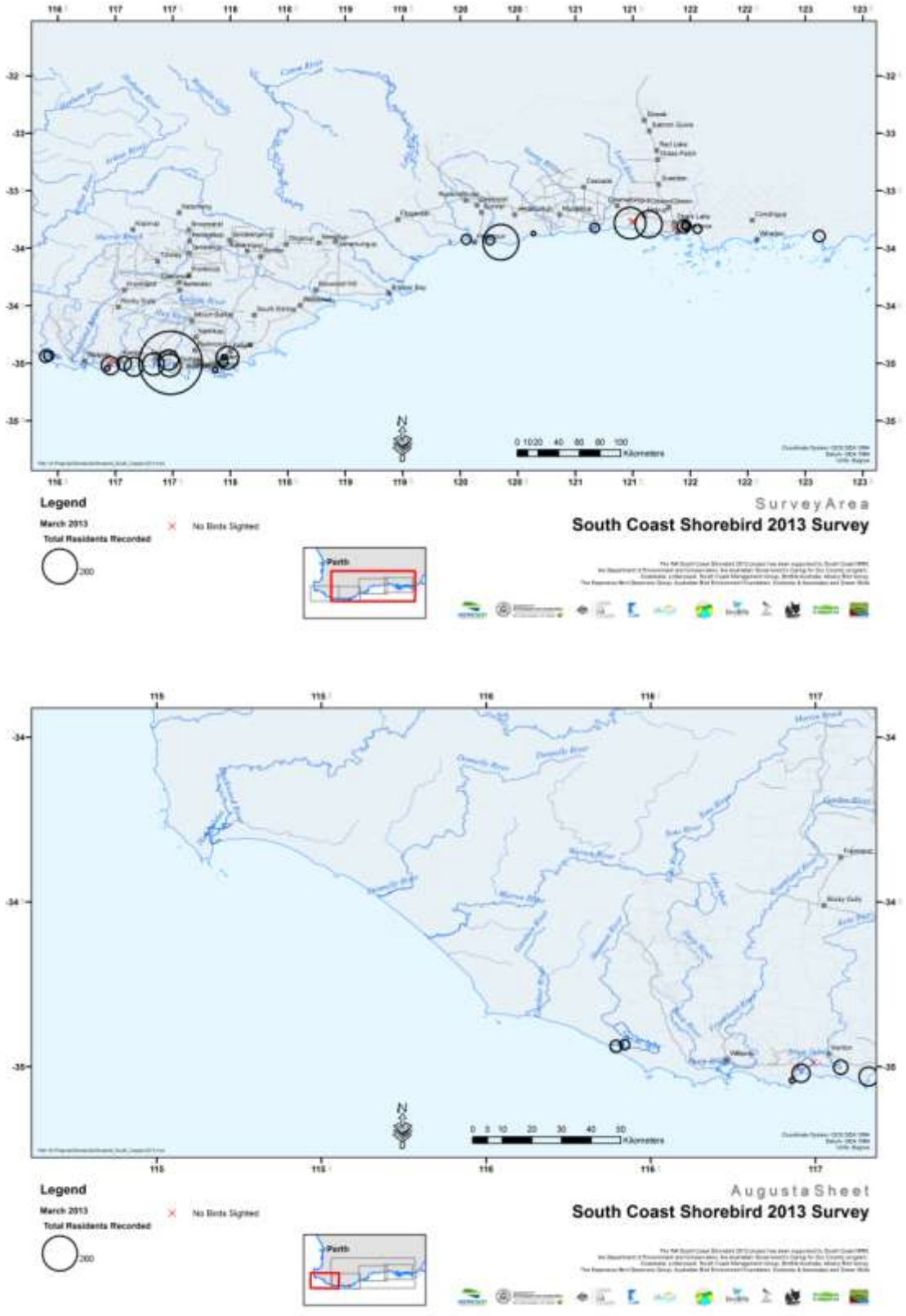


Figure 6: Total Resident Shorebirds distribution and magnitude across South Coast NRM region - March 2013 Survey



Key Species Counts

Counts for Red-capped Plover, Hooded Plover, Sanderling and Red-necked Stint are extracted from the totals and are shown separately in Table 9. The first two are resident shorebirds, the other two migratory.

Region	Red-capped Plover	Hooded Plover	Sanderling	Red-necked Stint
Windy Harbour	19	3	46	0
Walpole	75	2	0	4
Denmark	225	0	0	661
Albany	18	0	0	233
Bremer Bay	27	65	**119**	153
Hopetoun	148	20	**148**	138
Esperance	**677**	**630**	62	**2143**
DEC Lakes	*400*	*478*	*0*	*978*
Other	*277*	*152*	*62*	*1165*
Kanidal Beach	32	0	0	0
Muir-Unicup	0	0	0	0
Upper Kent	18	0	0	0
Stirlings	0	0	0	0
Total	1241(33)	720(20)	375(7)	3332(25)

Table 9: Species counts for five species for each region. Numbers in brackets after the total count refer to the number of sites at which each species was recorded. Numbers in bold type indicate high counts.

The distribution and magnitude of the counts are shown graphically in Figures 7 (Red-capped Plover), 8 (Hooded Plover), 9 (Sanderling) & 10 (Red-necked Stint).

Red-capped Plovers were most plentiful around the Esperance Lakes region and to a lesser extent in the Wilson Inlet and around Hopetoun. Hooded Plover were again in large numbers around Esperance in February but very few were found at the same locations when follow-up surveys were done in March (see later discussion).

Sanderling are most often found on ocean beaches where they forage behind receding waves. This year the highest counts were again around Bremer Bay (119) and Hopetoun (148). Smaller numbers were recorded at Windy Harbour and Esperance beaches.

Red-necked Stints were as expected, the most plentiful of the migratory shorebirds, being found in

large flocks at several lakes and inlets from Denmark to Albany, Bremer Bay, Hopetoun and Esperance. This species is particularly susceptible to changing water level conditions and as a consequence, is highly mobile. Follow-up surveys in March illustrated this where stint numbers increased at Morley Beach in the Wilson Inlet and at Lake Mortijinup near Esperance but decreased at Stokes Inlet.

Figure 7: Red-capped Plover (resident shorebird) distribution and magnitude- South Coast Region - Feb 2013 Survey

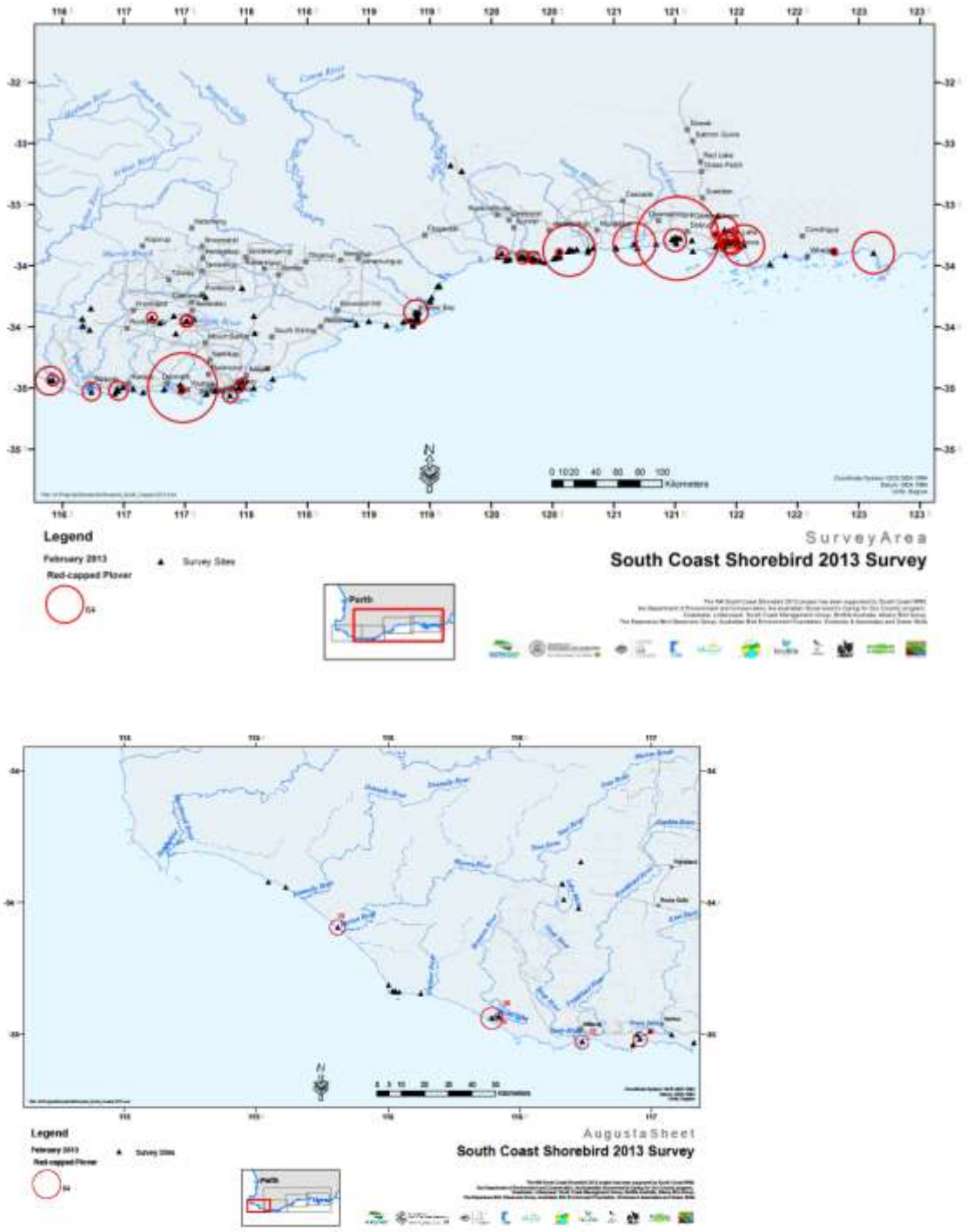
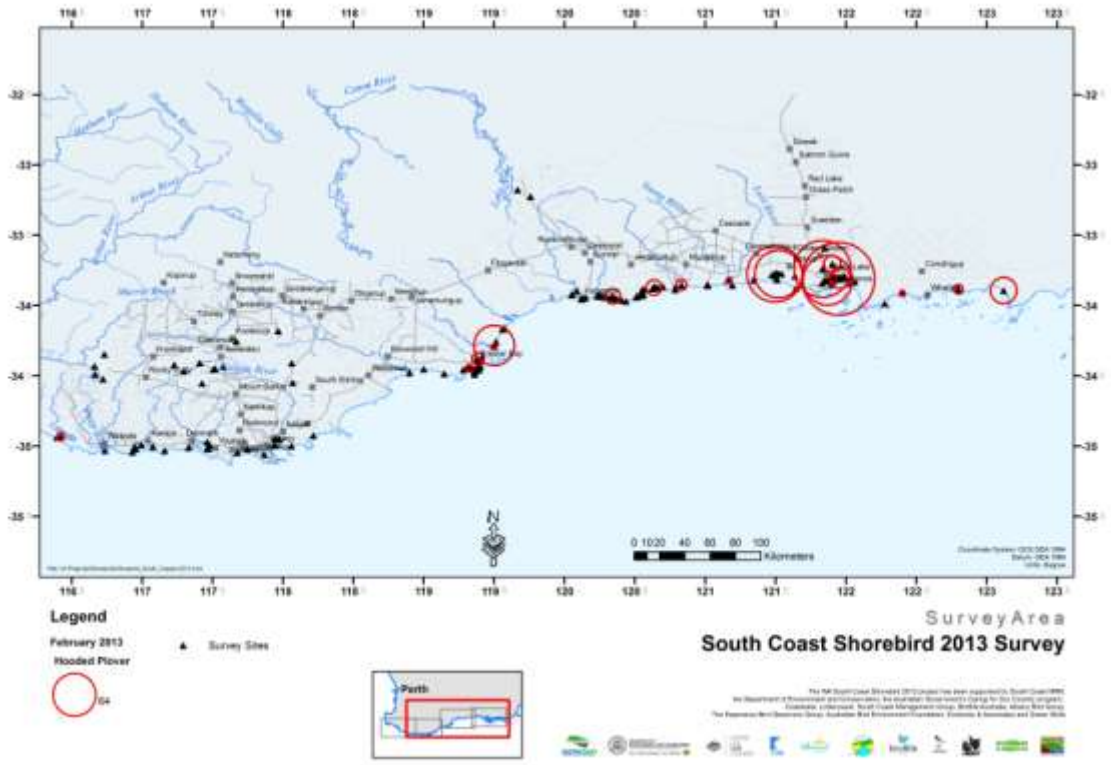


Figure 8: Hooded Plover (resident shorebird) distribution and magnitude- South Coast Region - Feb 2013 Survey



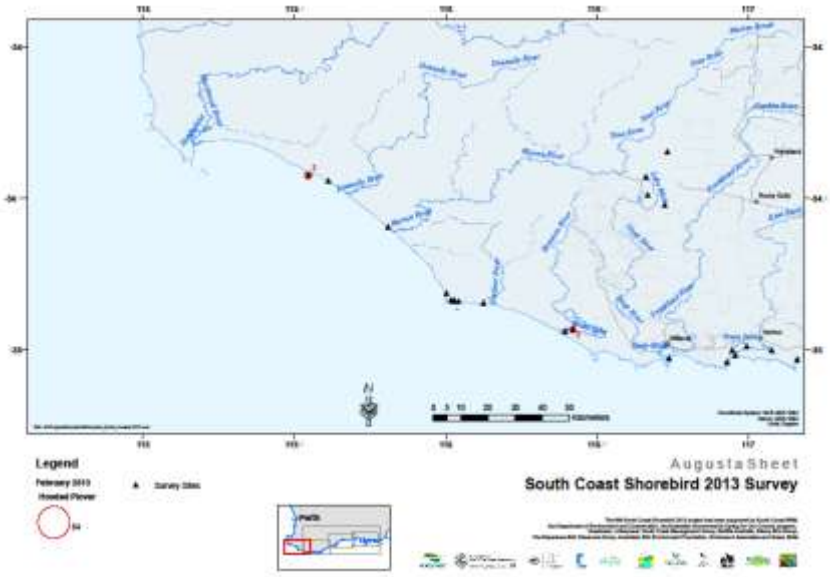


Figure 9: Sanderling (migratory shorebird) distribution and magnitude- central portion -South Coast Region- Feb 2013 Survey

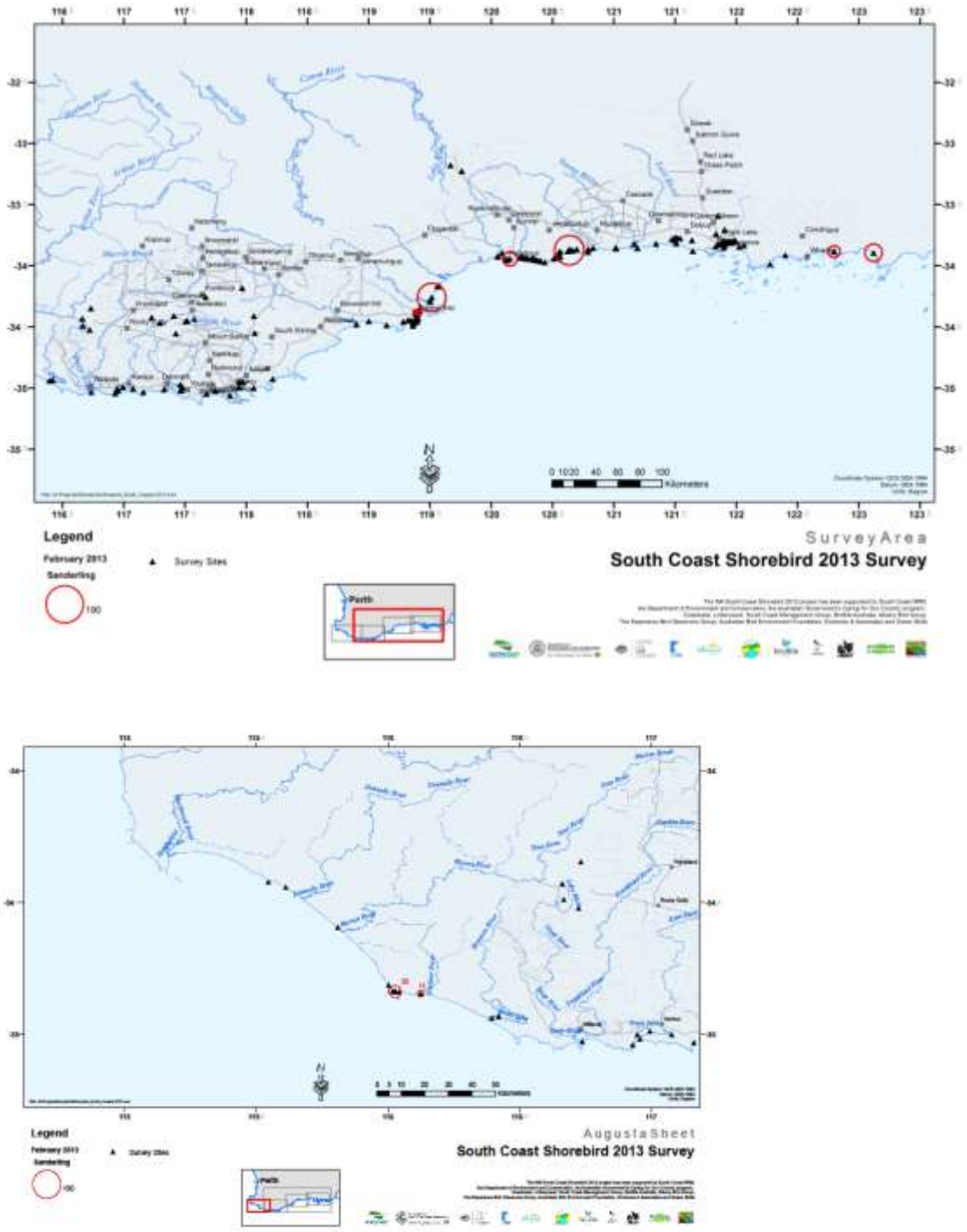
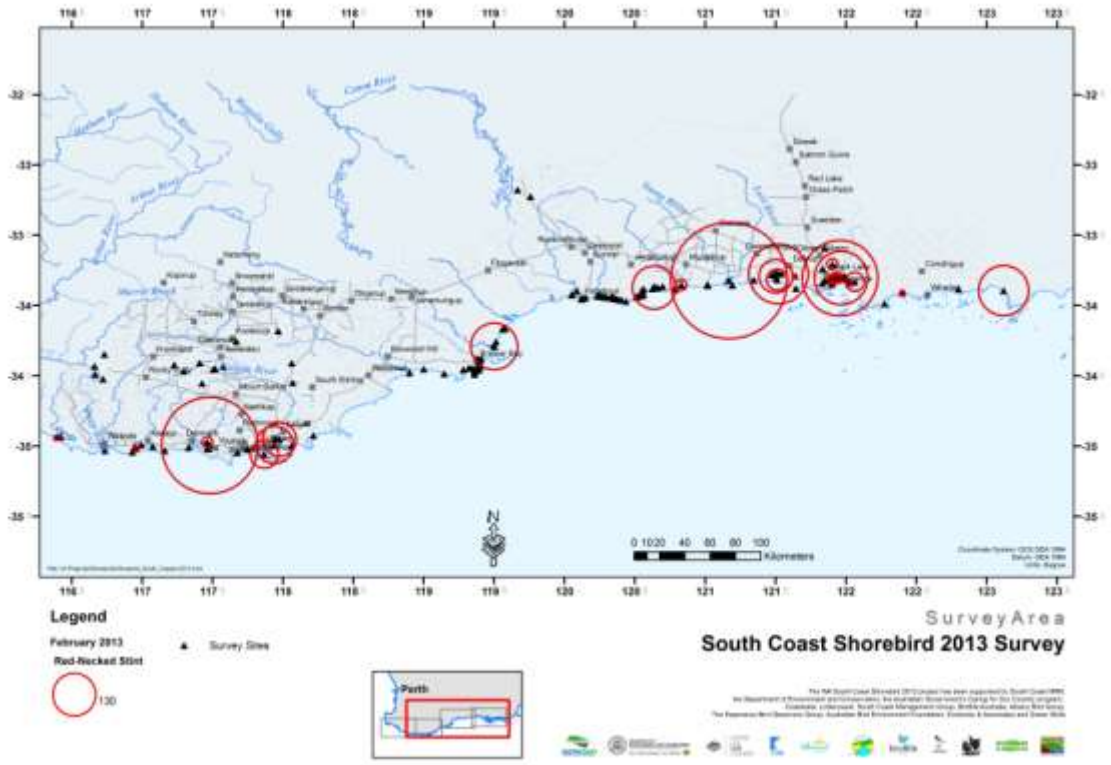
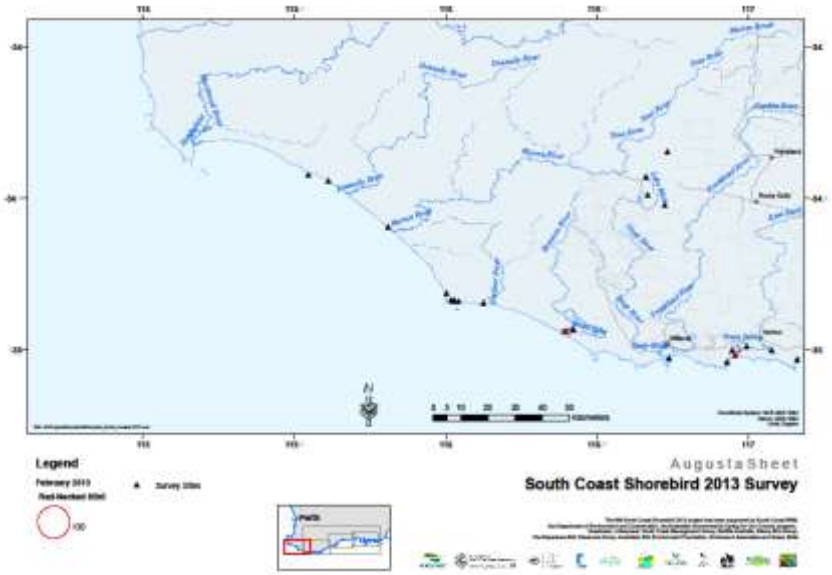


Figure 10: Red-necked Stint (migratory shorebird) distribution and magnitude- whole South Coast NRM Region- Feb 2013 Survey





Threats to Shorebirds and their Habitat

Threats to shorebirds are diverse, ranging from loss of habitat, human disturbance, proliferation of invasive species and pollution. Clemens et al (2008, Table 3, p19) acknowledges all these plus accidental mortality through nest trampling. They also discuss a useful system for scoring key threats that are known to impact shorebirds according to the timing of the threat, the degree of population reduction likely and the likely persistence of the threat into the future.

Human disturbance is related to recreational pursuits such as fishing, driving on beaches and exercising dogs and horses which can all impact on both migratory and resident shorebirds. In the case of resident shorebirds this is particularly a problem for breeding, where constant flushing can upset or expose eggs and fledglings to predators while vehicles and pedestrians can destroy nests. Migratory shorebirds require uninterrupted access to food in order to regain condition for the return flight to breeding sites in the northern hemisphere.

Specific threats to shorebirds and their habitat were documented for over 40 of the sites surveyed. The major threats were from human disturbance (mostly 4WDs and dogs both on and off leash) and invasive species. Evidence of foxes was reported from half of the sites surveyed in the Hopetoun area. These are tabulated below (Table 10).

Threat	No. of sites reported
Human Disturbance	32
Invasive Species (mainly foxes)	21
Pollution	6
Water Level	4

Table 10: Threats to shorebirds (Shorebirds 2020 survey forms)

Many of the sites surveyed are in DEC managed National Parks and Reserves and therefore, to a large degree, protected from direct threats such as uncontrolled 4WDs and dogs off leash. Enforcement of regulations relies on adequate resourcing to land managers. Where sites are within reserves vested in other state or local government authorities, protection may still exist but to a lesser degree. Consultation with such bodies may be useful in raising the awareness of the importance of shorebird habitat and initiating protective actions. Landholders have a strong role to play in the importance of protecting shorebird habitat on private property. In the Esperance region many of the participants in the shorebird surveys are local landholders and already have a passion for protecting species that occur locally. Knowing the tenure characteristics of a site is therefore important in the developing appropriate management options.

Managing threats

Competing and conflicting activities need to be managed by educating users (e.g. signage, information and community displays) and/or by site-specific management (e.g. restricting access by fencing or instituting 'no-go' zones) for shorebirds to survive in the long term. This needs to be done comprehensively and consistently for all coastal shorebird sites and inland wetlands.

This year, there were numerous reports of human disturbance from the Esperance, Hopetoun and Bremer Bay areas. These are popular summer holiday destinations and it is likely that threats to shorebirds and their habitats will increase as population increases in these areas.

Pest plants and animals can impact on shorebirds by reducing available food resources or by predating directly. The introduced reed, *Typha orientalis*, can dominate wetlands once established and consequently prevent shorebirds from accessing suitable habitat. Removal by hand or by spraying is recommended to control this species.

Foxes are a common problem, particularly when birds are nesting or moulting. Baiting is on-going in government managed reserves but on private property, where dogs are present, this is not always the case. Effective control of foxes and cats requires a coordinated effort across land tenures, including baiting consistency in government managed reserves and on private property and community shoots. Evidence of foxes was reported at nearly half the Hopetoun sites by John Tucker during the February surveys this year. Particularly effort should be focused on this area with respect to sustained fox control, noting that an integrated feral animal control plan and monitoring program would be recommended in light of reports of success of fox baiting resulting in an increase in cat populations and increase in predation of birds.

Issues with water levels have been covered in previous reports but it is worth reiterating the importance of incorporating shorebird habitat considerations in tandem with other strategies for managing water levels in inlets and other water bodies. In many cases, appropriate water levels required for shorebirds are not known. Installation and monitoring of depth gauges would be a useful precursor to determining this sort of information. In some of the Muir-Unicup wetlands where depth gauges are already installed, waterbirds numbers are monitored and analysed with respect to water levels (DEC report in prep. Roger Hearn Pers.Comm.).

Recommendations and Further Actions

Recommendations of this study include:

1. That community organisations work with land managers and Local Government Agencies to ensure appropriate signage, management regulations & enforcement and neighbourhood education is undertaken as a matter of urgency to improve management of conflicts between recreational use (i.e. dogs, horses, and 4wd vehicles on beaches) and shorebird requirements along the South Coast. There is particular concern for improving management of intense pressures at estuary sand bars and other areas frequented by large numbers of shorebirds such as Denmark, Bremer Bay, Hopetoun and Esperance. Detailed actions (e.g. periodic closures of feeding/nesting sites) and funding requirements for the highest priority sites should be determined
2. That management authorities (including Dept of Water, Dept Environment and Conservation, Water Corporation and Local Government) investigate and undertake integrated control of predatory feral animal, particularly where foxes have been identified as a threat to shorebird survival.
3. That management authorities (including Dept of Water, Dept Environment and Conservation, Water Corporation and Local Government) adopt policies that include careful consideration of shorebird needs, and in particular maintaining appropriate water levels for priority shorebird habitats in summer through appropriate sand bar opening policies. This applies particularly to Wilson Inlet, but also to other Inlets such as Irwin, Parry and Torbay. In many cases, appropriate water levels required for shorebirds are not known. Installation and monitoring of depth gauges would be a useful precursor to determining this sort of information
4. Installation and monitoring of depth gauges at important and relevant shorebird monitoring sites be undertaken, to assist with data collection required for water level management of some estuaries and wetlands on the south coast. This should be done in collaboration with the Department of Environment and Conservation, Department of Water and Local Government Agencies.
5. In recognizing the importance of community volunteers to comprehensive long-term shorebird monitoring, that State agencies and regional NRM organisations continue to provide suitable resources to assist with costs for coordination, travel, data collation, data distribution and other needs of volunteer counters.
6. That the viability of marking south coast shorebird survey sites be investigated and where appropriate implemented for priority sites. Such signposting could include a simple post as used in dieback interpretation which could include the survey site number and words to the effect it is a shorebird survey site & bird habitat priority area.
7. That from 2014 onwards, Fairy Terns be included in the south coast shorebird surveys and analysis, and that further conservation management efforts be developed to help conserve this vulnerable shore nesting species. This could include preparation of a south coast recovery plan for this species with particular focus on ensuring and protecting suitable breeding habitat.
8. In recognition of the value of bird hides in promoting bird-watching and community shorebird education, that the provision of appropriately sited, designed and approved bird hides be investigated, and where feasible implemented. Potential sites may include Morley Beach and Prawn Rock island (Wilson Inlet, Denmark), Oyster Harbour(Albany), Irwin Inlet(Peaceful Bay), Bremer Bay, Red Lake (Muir-Unicup) and the west Warden Suite west (Esperance).

Further Monitoring

As of this year, sites have been monitored from near Augusta in the west to Kanidal Beach near the Eyre Bird Observatory in the east. Inland, sites have been monitored where appropriate in three areas, namely the Muir-Unicup complex, the Upper Kent wetlands and the North Stirlings. Follow-up surveys were undertaken at a number of sites in order to identify peak numbers. This was problematic for a number of reasons but clearly showed an increase in shorebirds in the Wilson Inlet as summer progressed and water levels in the inlet receded. Elsewhere, weather conditions and general movement of birds between sites made any assessment difficult and highlighted the dynamic but erratic nature of the suitability of bird feeding habitat.

While the follow-up survey of March 2013 showed an increase in shorebird numbers at Wilson Inlet and mixed results elsewhere, other sites may have peak counts at other times e.g. spring arrivals, and extra counting effort could be targeted pre-February.

Continuing to monitor sites in parallel with the national shorebird counts in February is likely to produce the most useful data in terms of overall population estimates across the entire south coast. Further thought should be given to optimizing surveys of inland sites with a view to gaining a better understanding of shorebird movements, particularly migrants, as they arrive in spring and before they depart in autumn.

More detailed concentration on the observed and perceived threats to shorebirds and their habitats, and suggestions for management actions, at important sites will aid in informing decision makers with regard to conservation management actions. It will be worthwhile to include this request for information from the volunteer counters who visit each site prior to next year's surveys.

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Appendix 1: Sites and birds recorded in 2013 survey [South Coast NRM Region]

Table 1: Migratory Shorebirds February

Regions:	Sites	S	E	Pacific Golden Plover	Grey Plover	Double-banded Plover	Lesser Sand Plover	Greater Sand Plover	Black-tailed Godwit	Bar-tailed Godwit	Whimbrel	Eastern Curlew	Terek Sandpiper	Common Sandpiper	Grey-tailed Tattler	Common Greenshank	Marsh Sandpiper	Wood Sandpiper	Ruddy Turnstone	Great Knot	Red Knot	Sanderling	Red-necked Stint	Pectoral Sandpiper	Sharp-tailed Sandpiper	Curlew Sandpiper	Total Migratory
Walpole	Nornalup	-35.028537	116.736467																								0
	Owingup	-35.001806	117.076679													5											5
	Irwin Mouth	-35.013537	116.956386																				2				2
	Irwin Inlet Picnic Area	-35.002963	116.945537																								0
	Parrys Inlet	-35.030034	117.161226																								0
	Irwin - George Ebbett Dr	-34.988720	116.934323																								0
	Peaceful Bay boat ramp	-35.041653	116.923652																								0
	Broke Inlet Mouth	-34.938250	116.934472																				2				2
	Broke Inlet Sand Spit	-34.933028	116.420472																								0
Denmark	Morley Beach	-34.934702	117.480415													56							653		35	4	748
	Nenamup	-35.018863	117.472329													4											4
	Poddy Shot	-35.007518	117.330063																								0
	Lake Powell	-35.020310	117.747548																								0
	Torbay Inlet	-35.044710	117.675952																								0
	Hay River	-34.971353	117.462033													6							8				14
	Young's Lagoon	-35.015859	117.464608																								0
Albany	Lower King	-34.944908	117.948844		2											2											4
	Kalgan Estuary	-34.951580	117.974974	1	17			6		9	3			2		18				82	1		80		11		230
	Rushy Point	-35.057258	117.867841	7	13					5						7			1	4			55				92
	Emu Point	-34.991088	117.941190					9								1							98				108
	Norman's Inlet	-34.923744	118.216589																								0
	Taylor's Inlet	-34.938611	118.061111																								0
Bremer Bay	Gordon Inlet	-34.283617	119.500283																								0
	John Cove	-34.394333	119.393667																								0
	Hunter River	-34.376017	119.403767					1														5					6
	Wellstead Estuary lower sandbar	-34.376750	119.384683																			3					3
	Headland	-34.483383	119.361733																								0
	St Mary bar	-34.164650	119.577833																								0
	St Mary bar 2	-34.163017	119.576350																								0
	St Mary Inlet	-34.164067	119.572000											1													1
	St Mary Inlet south bank	-34.167217	119.560500																								0
	Dillon Bay 1	-34.444150	119.324550																								0
	Dillon Bay 2	-34.444217	119.321217																								0
	Dillon Bay 3	-34.456067	119.282550																								0
	Gordon Inlet 2	-34.290467	119.500450																				153				153
	Triqelow Beach	-34.257500	119.513733																			111					111
	Reef Beach	-34.484167	119.146167																								0
	Yandy Beach	-34.451833	119.001000																								0
	Pallinup Beach	-34.477833	118.900500																								0
	Dillon Bay Beach	-34.445417	119.344200																								0
	Wellstead Estuary Walk south side	-34.392617	119.384683													1											1
	Back Beach	-34.413717	119.391933																								0
	Fishery Beach	-34.426550	119.398550																								0
	Tern Rock	-34.425533	119.400500																								0
	Short Beach	-34.440783	119.397067																								0
	Banky Beach	-34.458617	119.390200																								0
	Little Boat Harbour	-34.469683	119.361733																								0
	Native Dog Beach	-34.455233	119.361733																								0
	Blossom Beach	-34.457583	119.364283																								0

Appendix 1: Sites and birds recorded in 2013 survey [South Coast NRM Region]

Regions:	Sites	S	E	Pacific Golden Plover	Grey Plover	Double-banded Plover	Lesser Sand Plover	Greater Sand Plover	Black-tailed Godwit	Bar-tailed Godwit	Whimbrel	Eastern Curlew	Terek Sandpiper	Common Sandpiper	Grey-tailed Tattler	Common Greenshank	Marsh Sandpiper	Wood Sandpiper	Ruddy Turnstone	Great Knot	Red Knot	Sanderling	Red-necked Stint	Pectoral Sandpiper	Sharp-tailed Sandpiper	Curlew Sandpiper	Total Migratory
Hopetoun	5 Hopetoun Groyne/Seal Is	-33.954032	120.127328																								0
	6 Two Mile Beach (5)	-33.943562	120.151984											1								28					29
	8 Five Mile Beach	-33.932186	120.231422																								0
	11 Seven Mile Beach (9)	-33.934019	120.254064																								0
	16 Mullet Bay (13)	-33.944358	120.299228																								0
	17 Jerdacuttup Lake (east) (14)	-33.933303	120.342970					3																			3
	18 Eighteen Mile Beach	-33.951613	120.360586																								0
	29 West of Starvation Bay (18?)	-33.927056	120.531772																								0
	33 Lake Shaster 33 (23)	-33.866663	120.643895																								0
	34 Oldfield R upstream	-33.862878	120.791982																								0
	35 Oldfield R mouth (28)	-33.886014	120.788424																								0
	37 Lake Shaster 37 (20)	-33.888018	120.553513																								0
	38 Lake Shaster 38 (21)	-33.885067	120.562938																								0
	44 Torradup upstream (30)	-33.848669	121.016815																								0
	45 Torradup mouth (29)	-33.857400	121.018677																								0
	1 Culham Inlet Causeway (2)	-33.922253	120.051772																								0
	2 West Beach (3)	-33.925390	120.056681																								0
	4 Flathead Point	-33.952596	120.119912																								0
	9 Six Mile Beach (8)	-33.933028	120.243216											2													2
	13 Castle Rock (11)	-33.938327	120.279560																								0
	14 Twelve Mile Beach (12)	-33.939749	120.293349																								0
	15 Thirteen Mile Beach	-33.941232	120.299327																								0
	19 East of Eighteen Mile Beach	-33.953069	120.369628																								0
	21 Rocky Beach	-33.958197	120.389843																								0
	22 Next west of Mason's Point	-33.960322	120.403356																								0
	24 Mason's Point (16)	-33.968800	120.437464																								0
	26 2nd beach west of Starvation Bay	-33.940008	120.509655																								0
	28 1st beach west of Starvation Bay (17?)	-33.935816	120.516408																								0
	30 Small salt lake west of Starvation Bay (19)	-33.929660	120.552474																								0
	31 North Powell Point – Starvation Boat Harbo	-33.920321	120.560733																								0
	32 Lake Shaster NR – Lake 32 (22)	-33.865691	120.637848																								0
	36 Lake Shaster – north west corner	-33.864192	120.698252																								0
	39 Lake Shaster NR – Lake 39 (26)	-33.872003	120.635577					5								7					11	120	130		48	14	335
	40 Lake Shaster – Lake 40 (24)	-33.872475	120.647940																								0
	41 Lake Shaster – Lake 41	-33.875299	120.666563																								0
	New (1) Culham Inlet-Steere River	-33.894958	120.089656																								0
	New (10) Jerdacuttup Lake (West)	-33.928556	120.258631																						5		5
	New (15) Jerdacuttup Lake small freshwater	-33.947314	120.351845						5							5											10
	New (25) Shaster Lake 42	-33.880941	120.625169																								0
	New (27) "Shaster "Lake View"	-33.853520	120.831671													2							8				10
	Lake Pallarup	-33.224538	119.759976																								0
	Lake Milarup	-33.177095	119.667300																								0

Appendix 1: Sites and birds recorded in 2013 survey [South Coast NRM Region]

Region:	Site	S	E	Pacific Golden Plover	Grey Plover	Double-banded Plover	Lesser Sand Plover	Greater Sand Plover	Black-tailed Godwit	Bar-tailed Godwit	Whimbrel	Eastern Curlew	Terek Sandpiper	Common Sandpiper	Grey-tailed Tattler	Common Greenshank	Marsh Sandpiper	Wood Sandpiper	Ruddy Turnstone	Great Knot	Red Knot	Sanderling	Red-necked Stint	Pectoral Sandpiper	Sharp-tailed Sandpiper	Curlew Sandpiper	Total Migratory
Esperance	Neridup Suite (WRP001) A	-33.798439	121.994314																								0
	Neridup Suite (WRP001) B	-33.795649	121.994040																								0
	Neridup Suite (WRP001) C	-33.796762	121.991279																								0
	Neridup Suite (WRP001) D	-33.794550	121.991670																								0
	Neridup Suite (WRP001) E	-33.793948	121.989664																								0
	Bandy Creek Complex (WRP002) A	-33.797833	121.987893																								0
	Bandy Creek Complex (WRP002) B	-33.800191	121.982263													1											1
	Bandy Creek Complex (WRP002) C	-33.795216	121.987616																								0
	Bandy Creek Complex (WRP002) D	-33.794628	121.986427																								0
	Bandy Creek Complex (WRP002) E	-33.794177	121.984989																								0
	Evans Lake (WRP003) A	-33.803653	121.964992													28							201		5		234
	Mullet Lake (WRP004) A	-33.804559	121.957556													14							400		70		484
	Station Lake (WRP005) A	-33.809203	121.945848																								0
	Station Lake (WRP005) B-C	-33.806975	121.947800																								0
	Merrivale Suite (WRP005B) A	-33.800304	121.951748																								0
	Gun Club Suite (WRP006) A	-33.806583	121.936706																								0
	Lake Wheatfield Suite (WRP007) A	-33.808208	121.927594											5		9							5		28		47
	Lake Wheatfield Suite (WRP007) B	-33.807004	121.920408																								0
	Lake Wheatfield Suite (WRP007) C	-33.808927	121.919229																								0
	Lake Wheatfield Suite (WRP007) D	-33.807629	121.915893																								0
	Lake Wheatfield Suite (WRP007) E	-33.806521	121.911833																								0
	North Wheatfield Suite (WRP008) A	-33.803476	121.929640													3											3
	North Wheatfield Suite (WRP008) C	-33.803099	121.934332													9							9		14		32
	Woodie Lake Suite (WRP009) A	-33.813878	121.913694											3		9									7		19
	Woodie Lake Suite (WRP009) B	-33.814730	121.911283																								0
	Woodie Lake Suite (WRP009) C	-33.810132	121.910790																								0
	Woodie Lake Suite (WRP009) E	-33.816896	121.917362																								0
	Woodie Lake Suite (WRP009) F	-33.814070	121.910256																								0
	Woodie Lake Suite (WRP009) G	-33.815143	121.920705																								0
	Windabout Suite (WRP010) A	-33.815095	121.900841													15							6		11		32
	Windabout Suite (WRP010) B	-33.816875	121.911027																						4		4
	Windabout Suite (WRP010) C	-33.818456	121.906442																								0
	Windabout Suite (WRP010) D	-33.815677	121.892223																								0
	Windabout Suite (WRP010) E	-33.813567	121.892458											1		2											3
	Windabout Suite (WRP010) F	-33.808897	121.905112																								0
	North Windabout (WRP011) A	-33.805189	121.888908																								0
	Six Mile Hill Suite (WRP012) A	-33.800923	121.903544																								0
	Six Mile Hill Suite (WRP012) B	-33.800264	121.888788																								0
	Six Mile Hill Suite (WRP012) C	-33.800180	121.893576																								0
	Six Mile Hill Suite (WRP012) D	-33.797917	121.895726																								0
	Six Mile Hill Suite (WRP012) E	-33.796724	121.894410																								0
	Lake Warden Suite (WRP013) A	-33.819898	121.869785											2													2
	Lake Warden Suite (WRP013) B	-33.820485	121.884011																								0
	Lake Warden Suite (WRP013) C	-33.820703	121.886125																								0
	Lake Warden Suite (WRP013) D	-33.823852	121.882253																								0
	Burkenup Suite (WRP014) A	-33.820382	121.851695																								0
	Pink Lake (WRP015) A	-33.842592	121.831059																								0
	Lake Gore (WRP 016) A	-33.775465	121.520458											2		6							248		23		279
	Carbul Suite - Carbul (WRP017) A	-33.766324	121.500810																								0
	Carbul Suite - Kubitch (WRP017) B	-33.774883	121.495430																								0
	Carbul Suite - Gideon (WRP017) C	-33.780987	121.475266																								0
	Dalyup (WRP 018) A	-33.773552	121.542343																								0
	Quallilup Lake (WRP019) A	-33.815889	121.510560											2		5							31				38
	Kubitch - Quallilup flow-through (WRP020) A	-33.791229	121.500634													13							78		6		97

*Note that in the Carbul Suite WRP017C Gideon should read Gidong

Appendix 1: Sites and birds recorded in 2013 survey [South Coast NRM Region]

Regions:	Sites	S	E	Pacific Golden Plover	Grey Plover	Double-banded Plover	Lesser Sand Plover	Greater Sand Plover	Black-tailed Godwit	Bar-tailed Godwit	Whimbrel	Eastern Curlew	Terek Sandpiper	Common Sandpiper	Grey-tailed Tattler	Common Greenshank	Marsh Sandpiper	Wood Sandpiper	Ruddy Turnstone	Great Knot	Red Knot	Sanderling	Red-necked Stint	Pectoral Sandpiper	Sharp-tailed Sandpiper	Curlew Sandpiper	Total Migratory
Esperance	1 Stokes	-33.821753	121.168394													4							351		10	11	976
	2 Esperance Beaches West	-33.878472	121.644583																								0
	3 Alexander	-33.836944	122.734722																			20					20
	4 Bandy Creek Wylie	-33.832222	121.392317																				2				2
	5 Barkers	-33.819203	121.345836																								0
	6 Dunns	-33.921806	122.397317																				2				2
	7 Castletown	-33.844298	121.304475																								0
	8 Cape LG	-33.951946	122.390295																								0
	9 Mortijinup	-33.790250	121.638000																				1		1		2
	10 Fanny Cove	-33.855820	121.192810											1													1
	11 Bannitup	-33.830833	122.062500																				25				25
	12 Yokinup	-33.932406	123.042683											2								42	176				220
	13 Benjenup	-33.704467	121.303150																				8				8
	14 Davies	-33.739025	121.832842																								0
	Norris Lakes	-33.531250	121.850833																								0
Muir-Unicup	Tordit-gurrup Lagoon	-34.521886	116.722334																								0
	Red Lake	-34.430724	116.661458																								0
	Lake Muir	-34.488643	116.666327																								0
	Lake Unicup	-34.345679	116.731922																								0
Upper Kent	Lake Kwornicup	-34.553056	117.426217																								0
	West Plantagenet Pony Club	-34.453741	117.506255																								0
	Lake Martagallup	-34.448492	117.518783																								0
	Lake Nunijup	-34.407878	117.409213																								0
	Lake Poorarecup	-34.421680	117.228369																								0
	Lake Carabundup	-34.466201	117.235772																								0
	Lake Matilda	-34.431553	117.574742																								0
Stirlings	Bob's Lake	-34.254800	117.663400																								0
	Chillinup	-34.548520	118.069207																								0
	Tom South Lake	-34.409722	118.062778																								0
	Anderson Lake	-34.181043	117.966893																								0
Windy Harbour	Gardner River Mouth	-34.844737	116.124230																4			11					15
	Windy Harbour creek 1.5kms east	-34.840935	116.042110																26								26
	Windy Harbour Boat ramp	-34.838736	116.024358																2								2
	Windy Harbour Beach	-34.837287	116.027215																			35					35
	Windy Harbour-Cathedral Rocks Beach	-34.838044	116.017474																								0
	Salmon Beach	-34.811676	116.002616																								0
	Yeagarup Track Beach access	-34.594054	115.808310																								0
	Black Point	-34.423433	115.545700																								0
	Lake Jasper Beach	-34.441818	115.611733																								0
Eyre Bird Obs.	Kanidal West Beach	-32.25642	126.31972													1											1
			Total	8	32	0	0	24	5	14	3	0	0	24	0	233	0	0	33	86	12	375	3332	0	278	29	4488
			1% Threshold	1000	1250	500	1400	1100	1600	3250	1000	380	600	250	500	600	1000	1000	350	3800	2200	220	3250		1600	1800	
			0.1%	100	125	50	140	110	160	325	100	38	60	25	50	60	100	100	35	380	220	22	325	0	160	180	
			Sites seen	2	3	0	0	5	1	2	1	0	0	12	0	26	0	0	4	2	2	9	25	0	15	3	

Table 2: Resident Shorebirds February

Regions:	Sites	S	E	Sooty Oystercatcher	Black-winged Stilt	Red-necked Avocet	Banded Stilt	Red-capped Plover	Black-fronted Dotterel	Hooded Plover	Red-kneed Dotterel	Banded Lapwing	Masked Lapwing	Total Residents
Walpole	Nornalup	-35.028537	116.736467	1				15						29
	Owingup	-35.001806	117.076679						5					5
	Irwin Mouth	-35.019597	116.956386					16						19
	Irwin Inlet Picnic Area	-35.002963	116.945537											0
	Parrys Inlet	-35.030034	117.161226											0
	Irwin - George Ebbett Dr	-34.988720	116.994323											0
	Peaceful Bay boat ramp	-35.041653	116.929652	1										1
	Broke Inlet Mouth	-34.938250	116.394472					38						38
	Broke Inlet Sand Spit	-34.933028	116.420472		10			6		2				23
Denmark	Morley Beach	-34.994702	117.480415		35	306	68	223						635
	Nenamup	-35.018863	117.472329		150	6	1	2						159
	Poddy Shot	-35.007518	117.330069											0
	Lake Powell	-35.020310	117.747548											0
	Torbay Inlet	-35.044710	117.675952											0
	Hay River	-34.971353	117.462033			12								12
	Young's Lagoon	-35.015859	117.464608											0
Albany	Lower King	-34.944908	117.948844											8
	Kalgan Estuary	-34.951580	117.974974		1		1	3					1	51
	Rushy Point	-35.057258	117.867841					10						12
	Emu Point	-34.991088	117.941190	2				5						7
	Norman's Inlet	-34.923744	118.216599											0
	Taylor's Inlet	-34.998611	118.061111											0

Appendix 1: Sites and birds recorded in 2013 survey [South Coast NRM Region]

Regions:	Sites	S	E	Sooty Oystercatcher	Black-winged Stilt	Red-necked Avocet	Banded Stilt	Red-capped Plover	Black-fronted Dotterel	Hooded Plover	Red-kneed Dotterel	Banded Lapwing	Masked Lapwing	Total Residents
Bremer Bay	Gordon Inlet	-34.283617	119.500283		32					57				89
	John Cove	-34.394333	119.399667											9
	Hunter River	-34.376017	119.409767											0
	Wellstead Estuary lower sandbar	-34.376750	119.384683		23		15	27		5				70
	Headland	-34.489383	119.361733											0
	St Mary bar	-34.164650	119.577833											0
	St Mary bar 2	-34.163017	119.576350											0
	St Mary Inlet	-34.164067	119.572000											0
	St Mary Inlet south bank	-34.167217	119.560500											0
	Dillon Bay 1	-34.444150	119.324550							2				2
	Dillon Bay 2	-34.444217	119.321217											2
	Dillon Bay 3	-34.456067	119.282550											0
	Gordon Inlet 2	-34.290467	119.500450							1				1
	Trigelow Beach	-34.257500	119.513733	3										21
	Reef Beach	-34.484167	119.146167											0
	Yandy Beach	-34.451833	119.001000											0
	Pallinup Beach	-34.477833	118.900500											0
	Dillon Bay Beach	-34.445417	119.344200											0
	Wellstead Estuary Walk south side	-34.392617	119.384683		17	19								36
	Back Beach	-34.413717	119.391933											0
	Fishery Beach	-34.426550	119.398550											0
	Tern Rock	-34.425533	119.400500											0
	Short Beach	-34.440783	119.397067											0
	Banky Beach	-34.458817	119.390200											0
	Little Boat Harbour	-34.469683	119.361733	1										1
	Native Dog Beach	-34.455233	119.361733											0
	Blossom Beach	-34.457583	119.364283											0

Appendix 1: Sites and birds recorded in 2013 survey [South Coast NRM Region]

Regions:	Sites	S	E	Sooty Oystercatcher	Black-winged Stilt	Red-necked Avocet	Banded Stilt	Red-capped Plover	Black-fronted Dotterel	Hooded Plover	Red-kneed Dotterel	Banded Lapwing	Masked Lapwing	Total Residents
Hopetoun	5 Hopetoun Groyne/Seal Is	-33.954032	120.127328											0
	6 Two Mile Beach (5)	-33.943562	120.151984	2										3
	8 Five Mile Beach	-33.932186	120.231422											0
	11 Seven Mile Beach (9)	-33.934019	120.254064											0
	16 Mullet Bay (13)	-33.944358	120.299228											0
	17 Jerdacuttup Lake (east) (14)	-33.933303	120.342970					7		8				15
	18 Eighteen Mile Beach	-33.951613	120.360586											0
	29 West of Starvation Bay (18?)	-33.927056	120.531772											0
	33 Lake Shaster 33 (23)	-33.866663	120.643895											0
	34 Oldfield R upstream	-33.862878	120.791982											0
	35 Oldfield R mouth (28)	-33.886014	120.788424	4										4
	37 Lake Shaster 37 (20)	-33.888018	120.553513					2						2
	38 Lake Shaster 38 (21)	-33.885067	120.562938											0
	44 Torradup upstream (30)	-33.848669	121.016815											0
	45 Torradup mouth (29)	-33.857400	121.018677											0
	1 Culham Inlet Causeway (2)	-33.922253	120.051772		38	18								58
	2 West Beach (3)	-33.925390	120.056681	4										4
	4 Flathead Point	-33.952596	120.119912											0
	9 Six Mile Beach (8)	-33.933028	120.243216	4										4
	13 Castle Rock (11)	-33.938327	120.279560											0
	14 Twelve Mile Beach (12)	-33.939749	120.293349											0
	15 Thirteen Mile Beach	-33.941232	120.299327											0
	19 East of Eighteen Mile Beach	-33.953069	120.369628											0
	21 Rocky Beach	-33.958197	120.389843											0
	22 Next west of Mason's Point	-33.960322	120.403356											0
	24 Mason's Point (16)	-33.968800	120.437464											0
	26 2nd beach west of Starvation Bay	-33.940008	120.509655											0
	28 1st beach west of Starvation Bay (17?)	-33.935816	120.516408											0
	30 Small salt lake west of Starvation Bay (19)	-33.929660	120.552474											0
	31 North Powell Point – Starvation Boat Harbo	-33.920321	120.560733											0
	32 Lake Shaster NR – Lake 32 (22)	-33.865691	120.637848											0
	36 Lake Shaster – north west corner	-33.864192	120.698252											0
	39 Lake Shaster NR – Lake 39 (26)	-33.872003	120.635577			63	470	125		8				666
	40 Lake Shaster – Lake 40 (24)	-33.872475	120.647940											0
	41 Lake Shaster – Lake 41	-33.875299	120.666563											0
	New (1) Culham Inlet-Steere River	-33.894958	120.089656					6	4					10
	New (10) Jerdacuttup Lake (West)	-33.928556	120.258631					8						8
	New (15) Jerdacuttup Lake small freshwater	-33.947314	120.351845		19		96						6	121
	New (25) Shaster Lake 42	-33.880941	120.625169											0
	New (27) "Shaster "Lake View"	-33.853520	120.831671			6				4				10
	Lake Pallarup	-33.224538	119.759976											0
	Lake Milarup	-33.177095	119.667300											0
Esperance	[illegible]	[illegible]	[illegible]					2						2

Appendix 1: Sites and birds recorded in 2013 survey [South Coast NRM Region]

Region:	Sites	S	E	Sooty Oystercatcher	Black-winged Stilt	Red-necked Avocet	Banded Stilt	Red-capped Plover	Black-fronted Dotterel	Hooded Plover	Red-kneed Dotterel	Banded Lapwing	Hooded Lapwing	Total Birds/site
Esperance	Neridup Suite (WRP001) A	-33.798439	121.994314					2						2
	Neridup Suite (WRP001) B	-33.795649	121.994040											0
	Neridup Suite (WRP001) C	-33.796762	121.991279											0
	Neridup Suite (WRP001) D	-33.794550	121.991670											0
	Neridup Suite (WRP001) E	-33.793948	121.989664											0
	Bandy Creek Complex (WRP002) A	-33.797833	121.987893											0
	Bandy Creek Complex (WRP002) B	-33.800191	121.982263		1			1						2
	Bandy Creek Complex (WRP002) C	-33.795216	121.987616											0
	Bandy Creek Complex (WRP002) D	-33.794628	121.986427											0
	Bandy Creek Complex (WRP002) E	-33.794177	121.984989											0
	Evans Lake (WRP003) A	-33.803653	121.964992		11		734	7						752
	Mullet Lake (WRP004) A	-33.804559	121.957556		44		411	29		15				499
	Station Lake (WRP005) A	-33.809203	121.945848					19		186				205
	Station Lake (WRP005) B-C	-33.806975	121.947800											0
	Merrivale Suite (WRP005B) A	-33.800304	121.951748											0
	Gun Club Suite (WRP006) A	-33.806583	121.936706											0
	Lake Wheatfield Suite (WRP007) A	-33.808208	121.927594						14				8	22
	Lake Wheatfield Suite (WRP007) B	-33.807004	121.920408											0
	Lake Wheatfield Suite (WRP007) C	-33.808927	121.919229											0
	Lake Wheatfield Suite (WRP007) D	-33.807629	121.915893											0
	Lake Wheatfield Suite (WRP007) E	-33.806521	121.911833											0
	North Wheatfield Suite (WRP008) A	-33.803476	121.929640											0
	North Wheatfield Suite (WRP008) C	-33.803099	121.934332		18		20						2	40
	Woodie Lake Suite (WRP009) A	-33.813878	121.913694		5	129			7				4	145
	Woodie Lake Suite (WRP009) B	-33.814730	121.911283											0
	Woodie Lake Suite (WRP009) C	-33.810132	121.910790											0
	Woodie Lake Suite (WRP009) E	-33.816896	121.917362											0
	Woodie Lake Suite (WRP009) F	-33.814070	121.910256											0
	Woodie Lake Suite (WRP009) G	-33.815143	121.920705											0
	Windabout Suite (WRP010) A	-33.815095	121.900841		5				1				45	51
	Windabout Suite (WRP010) B	-33.816875	121.911027											0
	Windabout Suite (WRP010) C	-33.818456	121.906442		1								1	2
	Windabout Suite (WRP010) D	-33.815677	121.892223											0
	Windabout Suite (WRP010) E	-33.813567	121.892458										6	6
	Windabout Suite (WRP010) F	-33.808897	121.905112							2				2
	North Windabout (WRP011) A	-33.805189	121.888908											0
	Six Mile Hill Suite (WRP012) A	-33.800923	121.903544											0
	Six Mile Hill Suite (WRP012) B	-33.800264	121.888788											0
	Six Mile Hill Suite (WRP012) C	-33.800180	121.893576											0
	Six Mile Hill Suite (WRP012) D	-33.797917	121.895726											0
	Six Mile Hill Suite (WRP012) E	-33.796724	121.894410											0
	Lake Warden Suite (WRP013) A	-33.819898	121.869785					1		86				87
	Lake Warden Suite (WRP013) B	-33.820485	121.884011											0
	Lake Warden Suite (WRP013) C	-33.820703	121.886125											0
	Lake Warden Suite (WRP013) D	-33.823852	121.882253											0
	Burkenup Suite (WRP014) A	-33.820382	121.851695											0
	Pink Lake (WRP015) A	-33.842592	121.831059											0
	Lake Gore (WRP016) A	-33.775465	121.520458		59			220		79			4	462
	Carbul Suite - Carbul (WRP017) A	-33.766324	121.500810											0
	Carbul Suite - Kubitch (WRP017) B	-33.774883	121.495430							110				110
	Carbul Suite - Gideon (WRP017) C	-33.780987	121.475266		70	311	1985							2366
	Dalyup (WRP018) A	-33.773552	121.542343			4								4
	Quallilup Lake (WRP019) A	-33.815889	121.510560		3				6					9
	Kubitch - Quallilup flow-through (WRP020) A	-33.791229	121.500634		40	17		23	7					87

*Note that in the Carbul Suite WRP017C Gideon should read Gidong

Appendix 1: Sites and birds recorded in 2013 survey [South Coast NRM Region]

Regions:	Sites	S	E	Australian Pied Oystercatcher	Sooty Oystercatcher	Black-winged Stilt	Red-necked Avocet	Banded Stilt	Red-capped Plover	Black-fronted Dotterel	Hooded Plover	Red-kneed Dotterel	Banded Lapwing	Masked Lapwing	Total Residents
Esperance	1 Stokes	-33.821753	121.168334	4				14	83		1				102
	2 Esperance Beaches West	-33.878472	121.644583	3	9										12
	3 Alexander	-33.836944	122.794722	4	2				2		3				11
	4 Bandy Creek Wylie	-33.832222	121.992917	7	5				2						14
	5 Barkers	-33.819203	121.345836		1										1
	6 Dunns	-33.921806	122.397917	2	7		35				1				45
	7 Castletown	-33.844298	121.304475	1	2										3
	8 Cape LG	-33.951946	122.330295	1	5										6
	9 Mortijinup	-33.790250	121.638000			36	**1287**	3							1386
	10 Fanny Cove	-33.855820	121.192810	2	9										11
	11 Bannitup	-33.830833	122.062500						77						77
	12 Yokinup	-33.932406	123.042683	28	21				80		24				153
	13 Benjenup	-33.704467	121.303150					1	32		10				43
	14 Davies	-33.739025	121.832842						1		**113**				114
	Norris Lakes	-33.591250	121.850833												0
Muir-Unicup	Tordit-gurrup Lagoon	-34.521886	116.722334												0
	Red Lake	-34.430724	116.661458												0
	Lake Muir	-34.488643	116.666327												0
	Lake Unicup	-34.345673	116.731322												0
Upper Kent	Lake Kwornicup	-34.553056	117.426217												0
	West Plantagenet Pony Club	-34.453741	117.506255						6						6
	Lake Martagallup	-34.448492	117.518783						7						7
	Lake Nunijup	-34.407878	117.409213			8	10	85							103
	Lake Poorarecup	-34.421680	117.228369			4		1	5						10
	Lake Carabundup	-34.466201	117.295772												0
	Lake Matilda	-34.431553	117.574742			15									15
Stirlings	Bob's Lake	-34.254800	117.669400												0
	Chillinup	-34.548520	118.063207												0
	Tom South Lake	-34.409722	118.062778												0
	Anderson Lake	-34.181043	117.366833			4									4
Windy Harbour	Gardner River Mouth	-34.844737	116.124230	1	7										8
	Windy Harbour creek 1.5kms east	-34.840935	116.042110		6										6
	Windy Harbour Boat ramp	-34.838736	116.024958	1	11										12
	Windy Harbour Beach	-34.837287	116.027215												0
	Windy Harbour-Cathedral Rocks Beach	-34.838044	116.017474		1										1
	Salmon Beach	-34.811676	116.002616												0
	Yeagarup Track Beach access	-34.594054	115.808310						19						19
	Black Point	-34.423433	115.545700								3				3
	Lake Jasper Beach	-34.441818	115.611793												0
Eyre Bird Obs.	Kanidal West Beach	-32.25642	126.31372		25	2			32						59
			Total	165	133	711	2223	3905	1241	44	720	0	0	77	9219
			1% Threshold	110	40	3000	1110	2100	950	160	60	1000		5000	
			0.1%	11	4	300	111	210	95	16	6	100	0	500	
			Sites seen	37	23	26	14	15	35	7	21	0	0	9	

Table 3: Migratory Shorebirds March

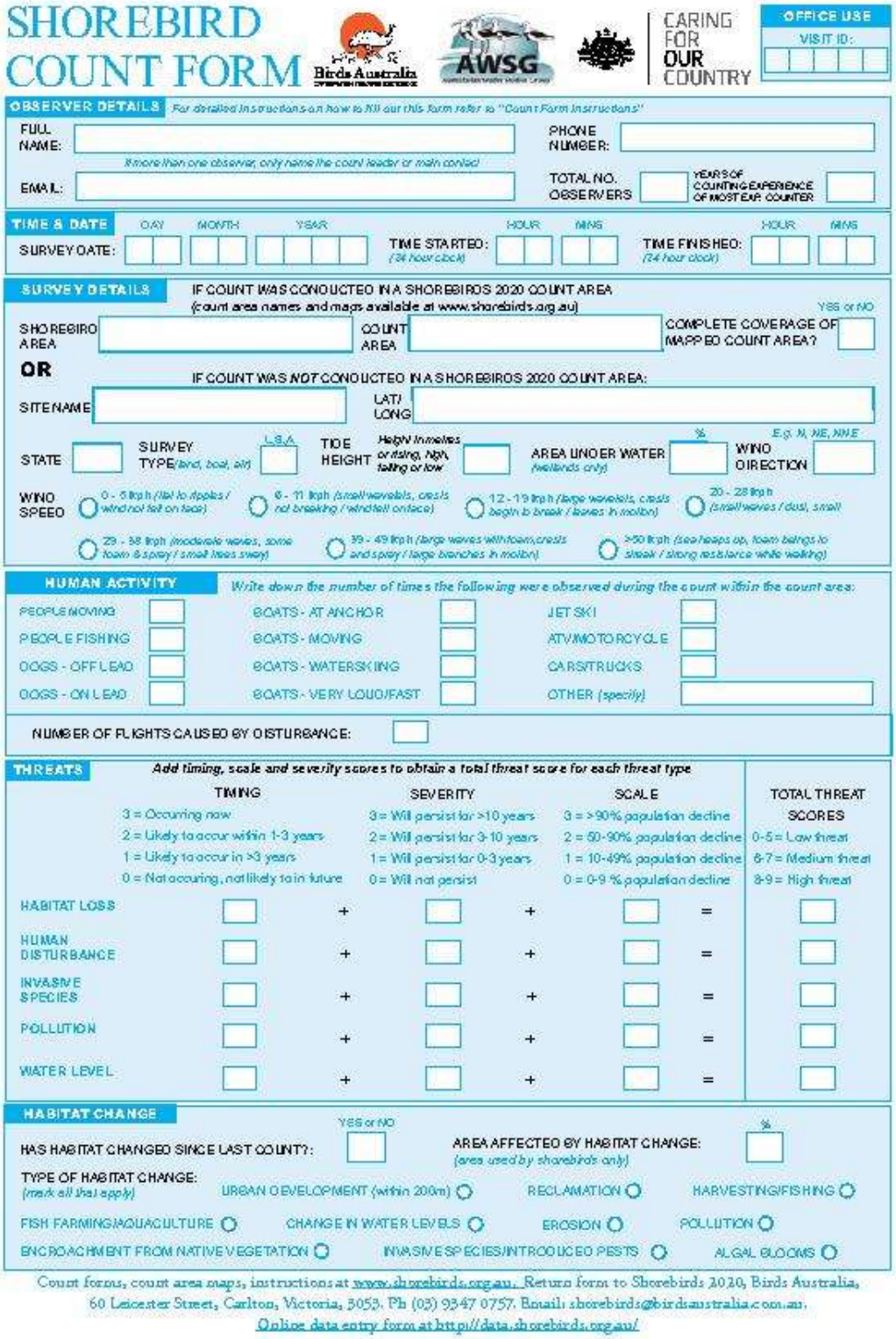
Regions:	Sites	S	E	Pacific Golden Plover	Grey Plover	Double-banded Plover	Lesser Sand Plover	Greater Sand Plover	Black-tailed Godwit	Bar-tailed Godwit	Whimbrel	Eastern Curlew	Terek Sandpiper	Common Sandpiper	Grey-tailed Tattler	Common Greenshank	Marsh Sandpiper	Wood Sandpiper	Ruddy Turnstone	Great Knot	Red Knot	Sanderling	Red-necked Stint	Pectoral Sandpiper	Sharp-tailed Sandpiper	Curlew Sandpiper	Total Migratory
Valpole	Owingup	-35.001806	117.076679																				2				2
	Irwin Mouth	-35.019597	116.956386																								0
	Irwin Inlet Picnic Area	-35.002963	116.945537																								0
	Parrys Inlet	-35.030034	117.161226													2											2
	Irwin - George Ebbett Dr	-34.988720	116.994323																								0
	Peaceful Bay boat ramp	-35.041653	116.929652																2				12				14
	Broke Inlet Mouth	-34.938250	116.394472																				13				13
	Broke Inlet Sand Spit	-34.933028	116.420472				1																14				15
Denmark	Morley Beach	-34.994702	117.480415													37							1450		65	19	1571
	Nenamup	-35.018863	117.472329													12							107				119
	Poddy Shot	-35.007518	117.330069													1							20				21
	Hay River	-34.971353	117.462033													5											5
Albany	Lower King	-34.944908	117.948844		3					7	1																11
	Kalgan Estuary	-34.951580	117.974974	1	8			6		4	2			2		6			2				41				72
	Rushy Point	-35.057258	117.867841		8			5		11					1	6							10				41
	Emu Point	-34.991088	117.941190		21			3								7							40				71
Hopetoun	1 Culham Inlet Causeway (2)	-33.922253	120.051772													3											3
	39 Lake Shaster NR – Lake 39 (26)	-33.872003	120.635577																								0
	New (10) Jerdacuttup Lake (West)	-33.928556	120.258631													9		4					16		24		53
	New (15) Jerdacuttup Lake small freshwater	-33.947314	120.351845																				67				67
Esperance	Ewans Lake (WRP003) A	-33.803653	121.964992																								0
	Mullet Lake (WRP004) A	-33.804559	121.957556													10											10
	Station Lake (WRP005) A	-33.809203	121.945848													5											5
	Lake Warden Suite (WRP013) A	-33.819898	121.869785																								0
	Carbul Suite - Carbul (WRP017) A	-33.766324	121.500810																								0
	Carbul Suite - Kubitch (WRP017) B	-33.774883	121.495430																								0
	Carbul Suite - Gideon (WRP017) C	-33.780987	121.475266													1											1
	1 Stokes	-33.821753	121.168394													3							83				86
	9 Mortijinup	-33.790250	121.638000			1										9							154				164
	11 Bannitup	-33.830833	122.062500																				68				68
	12 Yokinup	-33.992406	123.042683											1								75					76
			Total	1	40	1	1	14	0	22	3	0	0	3	1	116	0	4	4	0	0	75	2097	0	89	19	2490
			1% Threshold	1000	1250			1100		3250	1000			250	500	600	1000	1000	350	3800	2200	220	3250		1600	1800	
			0.1%	100	125	0	0	110	0	325	100	0	0	25	50	60	100	100	35	380	220	22	325	0	160	180	
			Sites seen	1	4	1	1	3	0	3	2	0	0	2	1	15	0	1	2	0	0	1	15	0	2	1	

*Note that in the Carbul Suite WRP017C Gideon should read Gidong

Table 4: Resident Shorebirds March

Regions:	Sites	S	E	Australian Pied Oystercatcher	Sooty Oystercatcher	Black-winged Stilt	Red-necked Avocet	Banded Stilt	Red-capped Plover	Black-fronted Dotterel	Hooded Plover	Red-kneed Dotterel	Banded Lapwing	Masked Lapwing	Total Residents
Walpole	Owingup	-35.001806	117.076679					17	25						42
	Irwin Mouth	-35.019597	116.956386	1				5	60		1				67
	Irwin Inlet Picnic Area	-35.002963	116.945537												0
	Parrys Inlet	-35.030034	117.161226					75							75
	Irwin - George Ebbett Dr	-34.988720	116.994323												0
	Peaceful Bay boat ramp	-35.041653	116.929652		3				2		1				6
	Broke Inlet Mouth	-34.938250	116.394472	1				2	27						30
	Broke Inlet Sand Spit	-34.933028	116.420472	1					20						21
Denmark	Morley Beach	-34.994702	117.480415	**11**		109	**419**	89	**211**						839
	Nenamup	-35.018863	117.472329			9		83	14						106
	Poddy Shot	-35.007518	117.330069	8		17		8	66						99
	Hay River	-34.971353	117.462033			13	65	5							83
Albany	Lower King	-34.944908	117.948844					5							5
	Kalgan Estuary	-34.951580	117.974974	**32**				71						1	104
	Rushy Point	-35.057258	117.867841	6											6
	Emu Point	-34.991088	117.941190	3					12						15
Hopetoun	1 Culham Inlet Causeway (2)	-33.922253	120.051772	2		18									20
	39 Lake Shaster NR – Lake 39 (26)	-33.872003	120.635577				3	1							4
	New (10) Jerdacuttup Lake (West)	-33.928556	120.258631						16					2	18
	New (15) Jerdacuttup Lake small freshwater	-33.947314	120.351845					**263**						2	265
Esperance	Ewans Lake (VRP003) A	-33.803653	121.964992			19									19
	Mullet Lake (VRP004) A	-33.804559	121.957556											10	10
	Station Lake (VRP005) A	-33.809203	121.945848			19			17						36
	Lake Warden Suite (VRP013) A	-33.819898	121.869785												0
	Carbul Suite - Carbul (VRP017) A	-33.766324	121.500810												0
	Carbul Suite - Kubitch (VRP017) B	-33.774883	121.495430												0
	Carbul Suite - Gideon (VRP017) C	-33.780987	121.475266					200						6	206
	1 Stokes	-33.821753	121.168394						17		2				19
	9 Mortijinup	-33.790250	121.638000				100	15	34					3	152
	11 Bannitup	-33.830833	122.062500						14					2	16
	12 Yokinup	-33.992406	123.042683	11	14				1		1				27
			Total	76	17	204	587	839	536	0	5	0	0	26	2290
			1% Threshold	110	40	3000	1110	2100	950	160	60	1000		5000	
			0.1%	11	4	300	111	210	95	16	6	100	0	500	
			Sites seen	10	2	7	4	14	15	0	4	0	0	7	

Appendix 2: Count Forms



SHOREBIRD COUNT FORM

Birds Australia | AWSG | CARING FOR OUR COUNTRY

OFFICE USE — VISIT ID:

OBSERVER DETAILS *For detailed instructions on how to fill out this form refer to "Count Form Instructions"*

FULL NAME: | PHONE NUMBER:

If more than one observer, only name the count leader or main contact

EMAIL: | TOTAL NO. OBSERVERS | YEARS OF COUNTING EXPERIENCE OF MOST EXP. COUNTER

TIME & DATE — DAY | MONTH | YEAR | TIME STARTED: (24 hour clock) HOUR MINS | TIME FINISHED: (24 hour clock) HOUR MINS

SURVEY DATE:

SURVEY DETAILS IF COUNT WAS CONDUCTED IN A SHOREBIRDS 2020 COUNT AREA (count area names and maps available at www.shorebirds.org.au)

SHOREBIRD AREA | COUNT AREA | COMPLETE COVERAGE OF MAPPED COUNT AREA? YES or NO

OR

IF COUNT WAS *NOT* CONDUCTED IN A SHOREBIRDS 2020 COUNT AREA:

SITE NAME | LAT/LONG

STATE | SURVEY TYPE (land, boat, air) | LGA | TIDE HEIGHT (Height in metres or rising, high, falling or low) | AREA UNDER WATER (wetlands only) % | WIND DIRECTION E.g. N, NE, NNE

WIND SPEED

- 0 - 5 kph (ripples / wind not felt on face)
- 6 - 11 kph (small wavelets, crests not breaking / windfelt on face)
- 12 - 19 kph (large wavelets, crests begin to break / leaves in motion)
- 20 - 28 kph (small waves / dust, small)
- 29 - 38 kph (moderate waves, some foam & spray / small trees sway)
- 39 - 49 kph (large waves with foam, crests and spray / large branches in motion)
- >50 kph (sea heaps up, foam beings to streak / strong resistance while walking)

HUMAN ACTIVITY *Write down the number of times the following were observed during the count within the count area:*

PEOPLE MOVING	BOATS - AT ANCHOR	JET SKI
PEOPLE FISHING	BOATS - MOVING	ATV/MOTORCYCLE
DOGS - OFF LEAD	BOATS - WATERSKIING	CARS/TRUCKS
DOGS - ON LEAD	BOATS - VERY LOUD/FAST	OTHER (specify)

NUMBER OF FLIGHTS CAUSED BY DISTURBANCE:

THREATS *Add timing, scale and severity scores to obtain a total threat score for each threat type*

	TIMING	SEVERITY	SCALE	TOTAL THREAT SCORES
	3 = Occurring now	3 = Will persist for >10 years	3 = >90% population decline	
	2 = Likely to occur within 1-3 years	2 = Will persist for 3-10 years	2 = 50-90% population decline	0-5 = Low threat
	1 = Likely to occur in >3 years	1 = Will persist for 0-3 years	1 = 10-49% population decline	6-7 = Medium threat
	0 = Not occuring, not likely to in future	0 = Will not persist	0 = 0-9 % population decline	8-9 = High threat
HABITAT LOSS	+	+	=	
HUMAN DISTURBANCE	+	+	=	
INVASIVE SPECIES	+	+	=	
POLLUTION	+	+	=	
WATER LEVEL	+	+	=	

HABITAT CHANGE

HAS HABITAT CHANGED SINCE LAST COUNT?: YES or NO

AREA AFFECTED BY HABITAT CHANGE: % (area used by shorebirds only)

TYPE OF HABITAT CHANGE: (mark all that apply)

- URBAN DEVELOPMENT (within 200m)
- RECLAMATION
- HARVESTING/FISHING
- FISH FARMING/AQUACULTURE
- CHANGE IN WATER LEVELS
- EROSION
- POLLUTION
- ENCROACHMENT FROM NATIVE VEGETATION
- INVASIVE SPECIES/INTRODUCED PESTS
- ALGAL BLOOMS

Count forms, count area maps, instructions at www.shorebirds.org.au. Return form to Shorebirds 2020, Birds Australia, 60 Leicester Street, Carlton, Victoria, 3053. Ph (03) 9347 0757. Email: shorebirds@birdsaustralia.com.au.

Online data entry form at http://data.shorebirds.org.au/

Shorebird 2020 Count form

Appendix 2: Count Forms Shorebirds 2020

Shorebird 2020 Count form

Appendix 3: Albany Harbours and Wilson Inlet Historical Count Data (1982-3013)

Table 1 Wilson Inlet Shorebird Count Data (Annual Summer Shorebird Count normally conducted in the first week of February)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1994	1995	1996	1997	1% level of flyway population
Australian Pied Oystercatcher	1		1	5	2	5		2	2	2	2			1	110
Sooty Oystercatcher					1										40
Black-winged Stilt	170	94	33	19	73	59	27		13	24	45	180	2	43	3000
Banded Stilt		1800			142	228	250				700	219		62	2100
Red-necked Avocet				148	30	620				180	2000	1150	202	519	1110
Pacific Golden Plover						9									1000
Grey Plover					3	2				2	1				1300
Red-capped Plover	23	77	100	312	144	111	92	86	75	295	150	1053	326	329	950
Lesser Sand Plover															1300
Greater Sand Plover	1		1											4	1000
Black-fronted Dotterel		2													160
Hooded Plover	2	4	2									1			60
Black-tailed Godwit															1600
Bar-tailed Godwit					18	1		10	1	24		2		6	1500
Godwit sp.															
Terek Sandpiper												1			500
Common Sandpiper			1	1											3000
Common Greenshank	14	7	70	22	94	118	354	110	112	68	15	216	7	31	550
Marsh Sandpiper						1		2		1					900
Wood Sandpiper															1000
Ruddy Turnstone											2				1000
Great Knot						17									3800

Appendix 3: Albany Harbours and Wilson Inlet Historical Count Data

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1994	1995	1996	1997	1% level of flyway population
Red Knot									1	1					2200
Red-necked Stint	56	302	450	9	1002	736	2600	754	234	429	400	3402	2148	2406	3200
Long-toed Stint															1000
Pectoral Sandpiper			1												1000
Sharp-tailed Sandpiper		3			20	49	90			67	236	123	1	4	1600
Curlew Sandpiper			350	5	353	431	35	14	330	500	355	389	732	371	1800
unidentified waders									65						
Total count	**267**	**2289**	**1009**	**521**	**1882**	**2387**	**3448**	**978**	**833**	**1593**	**3906**	**6736**	**3418**	**3776**	

Table 1 (cont.) Wilson Inlet shorebird count data (Annual Summer Shorebird Count normally conducted in the first week of February)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	1% level of flyway population
Australian Pied Oystercatcher		3	2			13	4	5	9	4		19	1		12	3	110
Sooty Oystercatcher		2															40
Black-winged Stilt	519	53	2	206	121	274	291	117	140	476	55	78	232	12	9	185	3000
Banded Stilt	767			316	187	1477	132	1095		159			110			69	2100
Red-necked Avocet	1253	59	66	375	360	400	767	781	160	44	12	4	70	6	2	324	1110
Pacific Golden Plover			8			28		14					5		1		1000
Grey Plover					4	4	2		1					2	1		1300
Red-capped Plover	460	69	49	635	456	877	302	825	161	261		79	590	18	60	225	950
Lesser Sand Plover							1	1					1				1300
Greater Sand Plover	2				1												1000
Black-fronted Dotterel																	
Hooded Plover															1		60
Black-tailed Godwit		1			6												1600
Bar-tailed Godwit		2			2		2		2					10			1500
Godwit sp.							1										
Terek Sandpiper																	500
Common Sandpiper																	3000
Common Greenshank	275	87	33	117	133	112	52	166	142	267	5	174	140	4	26	66	550
Marsh Sandpiper																	
Wood Sandpiper							1										1000
Ruddy Turnstone	1																1000
Great Knot													24				3800

Appendix 3: Albany Harbours and Wilson Inlet Historical Count Data

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	1% level of flyway population
Red Knot								3					20				2200
Red-necked Stint	2709	865	390	3663	1861	3478	407	1615	1303	3678	12	322	905	120	220	671	3200
Long-toed Stint						1											1000
Pectoral Sandpiper												1		1			1000
Sharp-tailed Sandpiper	1059	5	3	26	4	33	10	109	24	28		16	446	30	15	35	1600
Curlew Sandpiper	552	262	73	9	2	270	67	32	29				14	4	10	4	1800
unidentified waders					40												
Total count	**7597**	**1408**	**626**	**5347**	**3177**	**6967**	**2039**	**4763**	**1971**	**4917**	**87**	**693**	**2558**	**207**	**357**	**1572**	

Appendix 3: Albany Harbours and Wilson Inlet Historical Count Data

Table 2 Albany Harbours shorebird count data (Annual Summer Shorebird Count normally conducted in the first week of February)

NB. 1983 and 2004 counts were incomplete (not all areas counted)

	1983	1985	1986	1987	1988	1989	1990	1993	1994	1995	1996	1997	1998	1999	2000
Aus. Pied Oystercatcher	8	0	38	20	16	90	13	8	59	62	52	81	51	59	51
Sooty Oystercatcher	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Black-winged Stilt	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0
Red-necked Avocet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Banded Stilt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pacific Golden Plover	2	0	0	3	50	28	0	0	22	0	12	41	0	3	18
Grey Plover	25	29	196	222	45	58	29	82	132	140	58	145	57	51	85
Red-capped Plover	4	10	26	48	50	54	10	6	35	48	15	20	36	3	0
Lesser Sand Plover	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Greater Sand Plover	30	14	82	295	10	30	25	45	60	70	45	96	30	26	7
Sand Plover sp	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Black-fronted Dotterel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bar-tailed Godwit	15	24	48	104	36	78	15	65	74	61	70	74	7	21	0
Whimbrel	0	0	0	1	2	0	4	1	1	4	3	0	0	2	0
Eastern Curlew	1	0	2	0	4	2	1	1	1	0	1	1	1	0	0
Common Sandpiper	0	0	0	4	3	2	2	4	2	1	3	1	0	0	1
Grey-tailed Tattler	0	0	0	0	0	0	0	0	20	0	34	33	0	24	7
Common Greenshank	5	65	230	186	14	88	19	111	66	72	63	47	42	40	57
Ruddy Turnstone	0	1	18	11	3	3	1	3	12	5	8	3	1	0	2
Great Knot	100	200	0	23	100	220	200	450	510	400	450	640	503	312	330
Red Knot	100	150	544	370	230	540	200	395	245	200	200	225	135	89	55
Knot sp	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix 3: Albany Harbours and Wilson Inlet Historical Count Data

	1983	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**
Red-necked Stint	150	450	720	1390	110	720	100	1390	1175	1340	1250	1370	1150	1000	180
Sharp-tailed Sandpiper	0	0	6	119	160	40	10	7	6	3	5	7	59	31	1
Curlew Sandpiper	0	0	268	95	100	190	10	65	135	210	35	107	100	110	2
unidentified birds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**440**	**943**	**2178**	**2891**	**937**	**2143**	**639**	**2633**	**2555**	**2616**	**2304**	**2891**	**2172**	**1771**	**796**

Table 2 (cont.) Albany Harbours shorebird count data (Annual Summer Shorebird Count normally conducted in the first week of February)

NB. 1983 and 2004 counts were incomplete (not all areas counted)

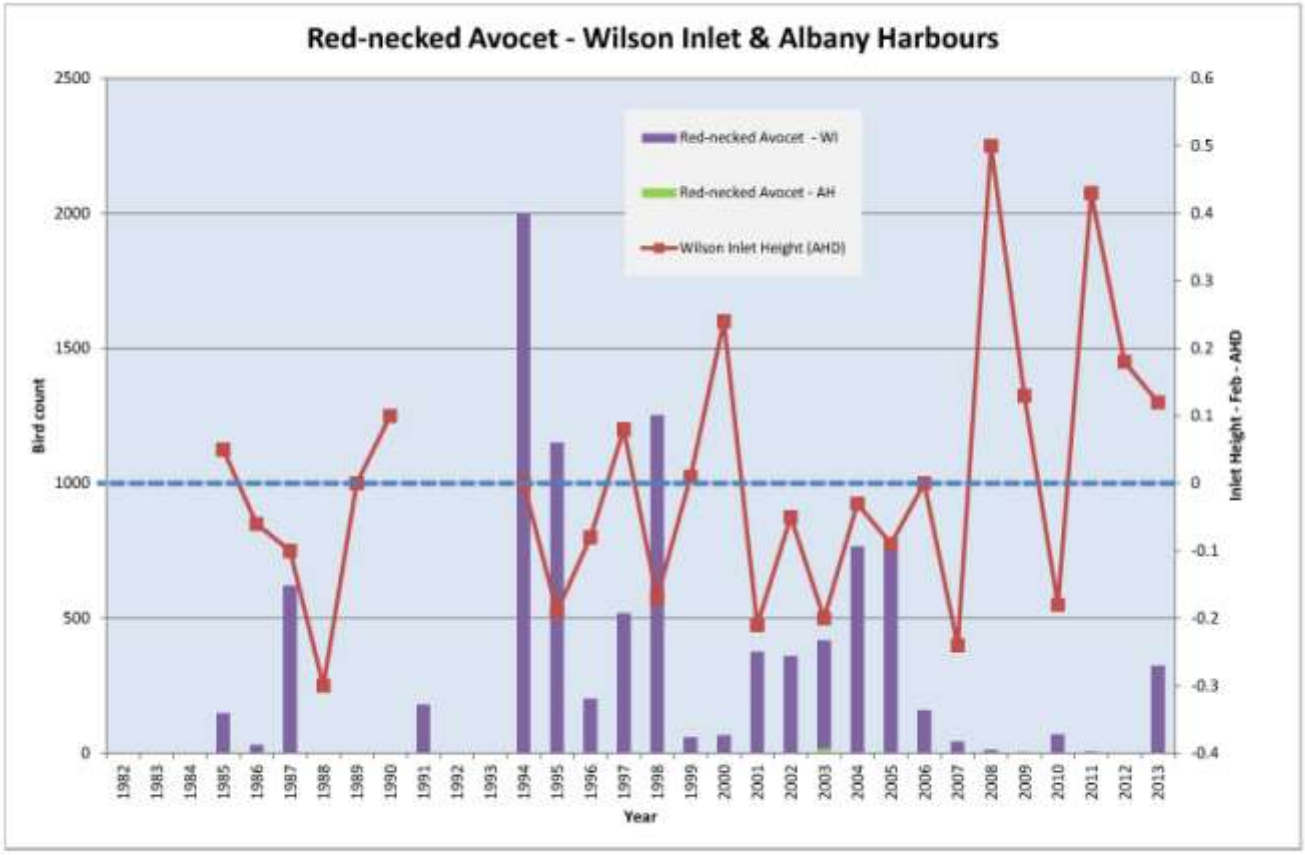
	2001	2002	2003	2004	2005	2008	2009	2010	2011	2012	2013
Aus. Pied Oystercatcher	47	30	6	3	101	108	164	97	117	76	55
Sooty Oystercatcher	3	2	0	1	4	4	1	2	1	0	2
Black-winged Stilt	0	0	445	0	0	0	0	0	0	0	1
Red-necked Avocet	0	0	18	0	2	0	0	0	0	0	0
Banded Stilt	0	0	1	0	450	145	0	0	0	0	1
Pacific Golden Plover	21	36	38	0	13		17	1	24	19	8
Grey Plover	62	140	14	22	67	64	65	71	60	29	32
Red-capped Plover	4	27	0	0	13	10	22	31	8	2	18
Lesser Sand Plover	0	0	15	0	0	0	4	3	7	0	0
Greater Sand Plover	19	12	0	0	7	2	24	31	21	9	15
Sand Plover sp	0	0	0	23	0	0	0	0	0	0	
Black-fronted Dotterel	0	0	0	0	0	0	0	0	0	0	0
Masked Lapwing											1
Bar-tailed Godwit	25	20	29	0	0	11	14	14	30	11	14
Whimbrel	0	0	5	0	5	0	5	5	2	1	3
Eastern Curlew	0	0	0	0	0	1	1	1	1	0	0
Common Sandpiper	3	1	3	0	0	2	7	3	3	3	2
Grey-tailed Tattler	13	5	11	0	4	1	10	7	0	3	0
Common Greenshank	50	43	34	6	48	30	66	24	37	42	28
Ruddy Turnstone	6	28	10	0	12	2	2	1	2	1	1
Great Knot	490	235	260	0	31	43	119	103	68	81	86
Red Knot	115	45	63	0	7	3	1	20	41	10	1

Appendix 3: Albany Harbours and Wilson Inlet Historical Count Data

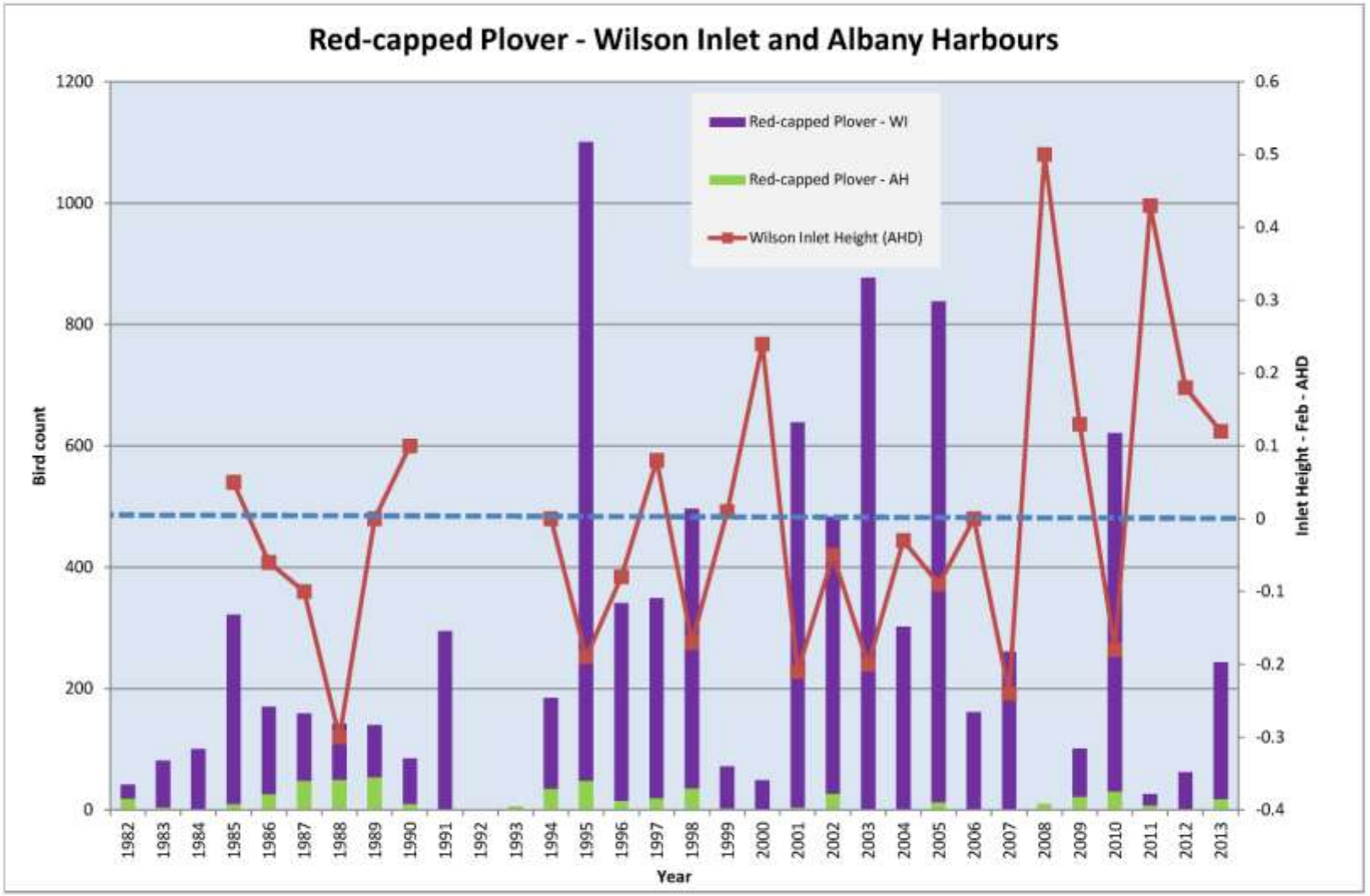
	2001	2002	2003	2004	2005	2008	2009	2010	2011	2012	2013
Knot sp	0	0	0	225	0	0	0	0	20	0	
Red-necked Stint	370	630	235	760	730	237	535	411	327	153	233
Sharp-tailed Sandpiper	0	10	8	0	0	1	56	16	47	0	11
Curlew Sandpiper	80	235	76	0	12	0	0	0	0	1	0
unidentified birds	0	0	0	0	37	55	0	0	0	2	
Total	**1308**	**1499**	**1271**	**1040**	**1543**	**719**	**1113**	**841**	**816**	**443**	

Charts: Albany Harbours and Wilson Inlet Historical Count Data

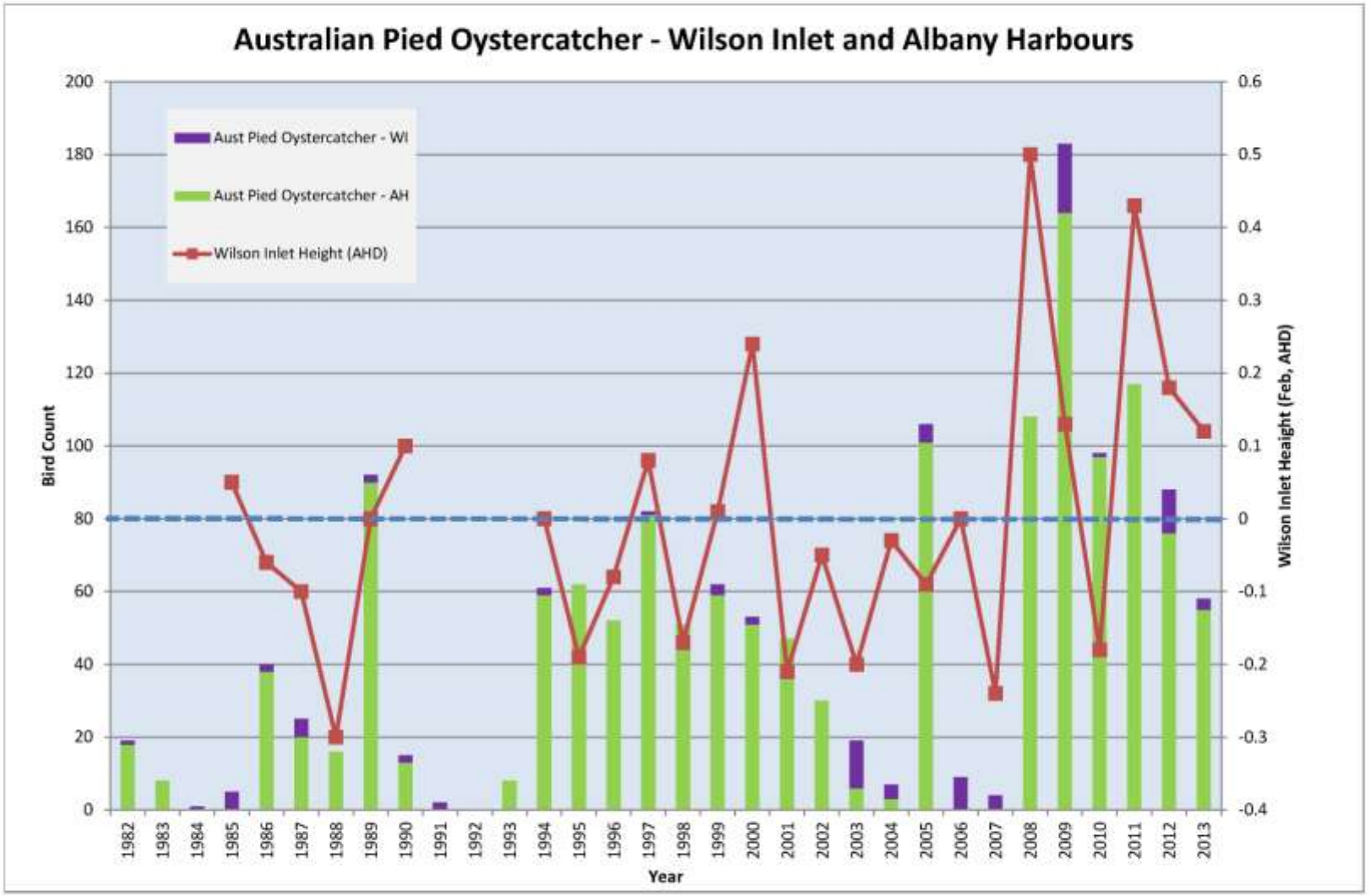
NB All Wilson Inlet survey site data were collated into one dataset. All survey site data for Oyster Harbour and Princess Royal Harbours were collated into a single dataset called Albany Harbours.



Appendix 3: Albany Harbours and Wilson Inlet Historical Count Data



Appendix 3: Albany Harbours and Wilson Inlet Historical Count Data



Appendix 4: photos

Dry Lake Chillinup (Anne Bondin)

Counters at Morley Beach

Counting at Stokes Inlet (Deb Sullivan)

Stint feeding frenzy, Stokes Inlet (Ken Read)

Hooded Plover, Stokes Inlet , March (Rose Ferrell)

Common Sandpiper, Yokinup (Ken Read)

Banded Stilts, Lake Gidong, March (Rose Ferrell)

Avocets, Lake Mortijinup, March (Rose Ferrell)