

Surveys of waterbirds in Port Stephens, 2004-2006

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The population of migratory and resident shorebirds in Port Stephens in New South Wales has been surveyed in three successive summers, in surveys carried out using boats at high tide. All the other waterbirds present were also counted in the surveys. Over 2004-2006, the counts of migratory shorebirds have ranged from 689 to 2,053 birds, representing 19 species, and the other waterbird numbers have ranged from 749 to 2,417 birds representing 28 species. Two species, Eastern Curlew and Pied Oystercatcher, have been present in numbers representing 1% or more of their total world population. More than 4% of the Australian population of Whimbrel have been present, and around 0.5% of the Australian populations of Bar-tailed Godwit and Sooty Oystercatcher. The survey results, coupled with historical records, show that Port Stephens is an important habitat for several species of migratory and breeding resident shorebirds and has been for more than 20 years.

INTRODUCTION

Port Stephens in New South Wales (see **Figure 1**) is a popular tourist and recreational area located approximately 200km north of Sydney. The south-eastern part of Port Stephens has undergone substantial development especially over the past 20 years or so and the north-eastern area has also seen considerable growth in holiday and retirement housing. Boating, swimming and other water-based activities are very popular particularly during weekends and school holidays. The utilisation of Port Stephens by migratory and resident shorebirds is well known albeit not very systematically studied or documented. A review of the available historic information (Stuart 2004, 2005) highlighted some noteworthy records from the 1980s and 1990s, such as counts of up to 400 Eastern Curlew in summer and up to 150 Double-banded Plover in winter at an area now included in the Worimi Nature Reserve (see **Figure 1** for location), and at least 235 Grey-tailed Tattler around the shoreline of Pindimar Bay in summer. Smith (1991) described Port Stephens as the most important site in NSW for Whimbrel and one of the two most important sites in the state for Eastern Curlew. He noted that both these species and the Pacific Golden Plover had been recorded in Port Stephens in numbers above 1% of their national population. On this basis, Smith nominated Port Stephens as a Priority 2 site for shorebird habitat protection in NSW – one of only 5 such sites in NSW (and with the only nominated Priority 1 site for protection being the Hunter estuary some 50km to the south of Port Stephens).

Since the mid 1980s there had been no systematic surveying of Port Stephens for shorebirds, apart from monthly high tide visits to the Worimi Nature Reserve since September 2000 (Stuart 2004). To redress this and establish a current understanding of the relative importance of Port Stephens, high tide surveys were undertaken in the summers of 2004-2006.

METHODS

Two of the surveys were carried out in February, before migratory shorebirds can be expected to have started their return journey to their breeding grounds. The 2005 survey was delayed until mid March due to a combination of weather and logistics difficulties. All three surveys have been carried out by boat, with counting done from the boats using binoculars. Four to six boats have been used each time, allowing several sub-areas of Port Stephens to be surveyed simultaneously (see **Figure 1** for the sub-area routes). Between 10 and 14 experienced observers have participated in each survey, with 2-4 observers per vessel (plus a dedicated skipper). Port Stephens is often subject to strong north-easterly sea breezes, particularly in the afternoon, so days with early high tides were chosen to have more opportunity to take advantage of the morning calm. In the 2006 survey, the boats were supplemented by kayaks to obtain much closer approach to the shallow waters of Winda Woppa point - consequently some small shorebirds roosting further back from the water's edge were able to be detected that had been out of sight from further offshore.

The south-east portion of Port Stephens was not included in the area of the surveys, principally because on Sundays in summer, when the surveys have been conducted, this part of Port Stephens is full of people and previous reconnaissance had indicated no shorebirds to be present. The general area surveyed is indicated in **Figure 1**. In general, the methodology has

been the same each time. However in March 2005 a combination of strong winds and a mechanical problem with one boat prevented the full area being surveyed - in particular, area B (indicated in **Figure 1**) was not surveyed except for Fame Cove, and parts of area C also were not covered.

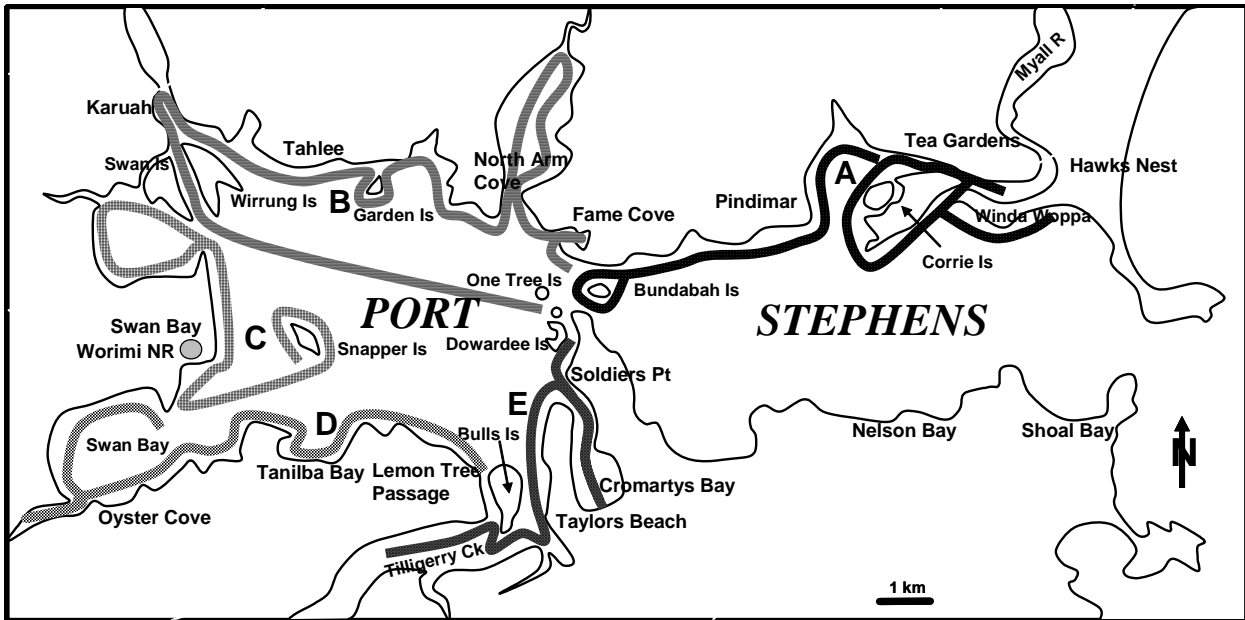


Figure 1. Areas of Port Stephens targeted for surveying.

Table 1. Shorebirds recorded at Port Stephens 2004 – 2006.

Species	February 8 2004	March 12 2005	February 26 2006
Black-tailed Godwit <i>Limosa limosa</i>	51	0	0
Bar-tailed Godwit <i>Limosa lapponica</i>	888	268	515
Whimbrel <i>Numenius phaeopus</i>	218	248	424
Eastern Curlew <i>Numenius madagascariensis</i>	649	80	303
Common Greenshank <i>Tringa nebularia</i>	0	8	15
Terek Sandpiper <i>Xenus cinereus</i>	6	0	4
Common Sandpiper <i>Actitis hypoleucos</i>	1	0	1
Grey-tailed Tattler <i>Heteroscelus brevipes</i>	44	9	32
Ruddy Turnstone <i>Arenaria interpres</i>	8	20	9
Red-necked Stint <i>Calidris ruficollis</i>	20	2	6
Sharp-tailed Sandpiper <i>Calidris acuminata</i>	0	0	40
Beach Stone-curlew <i>Esacus neglectus</i>	0	0	1
Pied Oystercatcher <i>Haematopus longirostris</i>	112	30	77
Sooty Oystercatcher <i>Haematopus fuliginosus</i>	18	5	9
Pacific Golden Plover <i>Pluvialis fulva</i>	0	0	38
Grey Plover <i>Pluvialis squatarola</i>	0	0	1
Red-capped Plover <i>Charadrius ruficapillus</i>	0	0	26
Lesser Sand Plover <i>Charadrius mongolus</i>	5	4	15
Masked Lapwing <i>Vanellus miles</i>	33	15	11
TOTAL	2,053	689	1,527

Table 2. Other waterbirds recorded in Port Stephens 2004 – 2006.

Species	February 8 2004	March 12 2005	February 26 2006
Black Swan <i>Cygnus atratus</i>	1056	208	200
Australian Wood Duck <i>Chenonetta jubata</i>	0	0	30
Pacific Black Duck <i>Anas superciliosa</i>	3	0	8
Chestnut Teal <i>Anas castanea</i>	7	8	10
Little Penguin <i>Eudyptula minor</i>	0	4	0
Darter <i>Anhinga melanogaster</i>	0	0	1
Little Pied Cormorant <i>Phalacrocorax melanoleucos</i>	46	44	112
Pied Cormorant <i>Phalacrocorax varius</i>	458	47	402
Little Black Cormorant <i>Phalacrocorax sulcirostris</i>	27	2	13
Great Cormorant <i>Phalacrocorax carbo</i>	31	7	38
Australian Pelican <i>Pelecanus conspicillatus</i>	162	40	175
White-faced Heron <i>Egretta novaehollandiae</i>	8	27+	27
Little Egret <i>Egretta garzetta</i>	1	0	0
White-necked Heron <i>Ardea pacifica</i>	1	0	0
Great Egret <i>Ardea alba</i>	4	4	9
Intermediate Egret <i>Ardea intermedia</i>	1	0	2
Striated Heron <i>Butorides striatus</i>	4	0	1
Nankeen Night Heron <i>Nycticorax caledonicus</i>	2	0	0
Australian White Ibis <i>Threskiornis molucca</i>	30	31	64
Straw-necked Ibis <i>Threskiornis spinicollis</i>	0	3	1
Royal Spoonbill <i>Platalea regia</i>	4	0	0
Arctic Jaeger <i>Stercorarius parasiticus</i>	5	0	0
Silver Gull <i>Larus novaehollandiae</i>	377	170	287
Gull-billed Tern <i>Sterna nilotica</i>	1	0	0
Caspian Tern <i>Sterna caspia</i>	7	5	0
Crested Tern <i>Sterna bergii</i>	178	149	146
Common Tern <i>Sterna hirundo</i>	2	0	9
Little Tern <i>Sterna albifrons</i>	2	0	3
TOTAL	2,417	749	1,538

RESULTS

Shorebirds

Nineteen shorebird species were recorded at least once in the 3 years of surveying, including 14 migratory species. Table 1 summarises the species found each year, including the numbers of birds that were present. Ten species were present every year: Bar-tailed Godwit, Whimbrel, Eastern Curlew, Grey-tailed Tattler, Ruddy Turnstone, Red-necked Stint, Pied Oystercatcher, Sooty Oystercatcher, Lesser Sand Plover and Masked Lapwing.

Other Waterbirds

28 waterbird species were recorded at least once in the 3 years of surveying, and the results are summarised in Table 2. Twelve species were present every year: Black Swan, Chestnut Teal, Little Pied Cormorant, Pied Cormorant, Little Black Cormorant, Great Cormorant, Australian Pelican, White-faced Heron, Great Egret,

Australian White Ibis, Silver Gull, Crested Tern. The Little Tern, which is classified as Endangered under the NSW Threatened Species Act, was recorded in small numbers in two of the surveys.

Important Roosting Areas

Because the surveys have been made at high tide, the shorebird species have been roosting at various locations around Port Stephens. So too have many of the other waterbirds, including the cormorants and terns that have been sitting on emergent posts. The main roosting locations for the 2004 survey have been described previously (Stuart 2004, 2005a) and will not be discussed again in detail here. What has become clear from the 3 years of surveying is that some locations consistently service large numbers of shorebirds and sometimes other waterbirds. These more significant roosting locations are: Winda Woppa point, Corrie Island, Swan Bay (near Worimi NR), Oyster Cove village and Tilligerry Creek.

DISCUSSION

Far fewer birds were recorded in 2005 than in the other two years. Although area B was not able to be surveyed in 2005, the extent to which that gap contributed to the lower count is uncertain, since in both 2004 and 2006, area B had the least birds of the five areas surveyed (for example, in 2004 it had around 7% of the total shorebirds). Much of its shoreline is rocky or else fringed with trees and is not habitat where shorebirds and waterbirds typically would be expected to roost. Other explanations for the low 2005 count have been considered. Although the survey was conducted relatively late in the season, the low numbers of shorebirds in 2005 are not obviously linked with a mass departure of birds to the northern breeding grounds, nor to the Hunter estuary, since analysis of data in the 2005 Hunter Region Bird Report shows that shorebird numbers in the Hunter estuary were fairly stable over the February and March surveys, and that the counts at Worimi Nature Reserve actually increased somewhat in March compared to February (Stuart 2006). The counts for 2005 of all other waterbirds (which are non-migratory) were similarly reduced compared to the 2004 and 2006 surveys. Thus there was a general large decrease in the numbers both of shorebirds and other waterbirds. Possibly, the foraging and/or roosting conditions in Port Stephens were sufficiently different in the 2004/05 summer compared with the two other summers such that the number of birds that Port Stephens could support became significantly different.

The 2004 and 2006 results compare well with shorebird numbers counted by Hunter Bird Observers Club members in 1982. In the 1982 land-based survey of the main known roosting sites (not including Corrie Island) a total of 1750 shorebirds were recorded (Stuart 2004). This shows that Port Stephens has been an important habitat for migratory as well as Australian resident shorebirds for more than 20 years, and adds weight to the theory that numbers in 2005 were low due to poor conditions for feeding or roosting.

The data for four shorebird species in particular merit discussion, as the surveys (plus the available prior records) suggest Port Stephens is an important area for them. The particular species are: Whimbrel, Bar-tailed Godwit, Eastern Curlew and Pied Oystercatcher.

Port Stephens is more important for Whimbrel than the Hunter estuary, where the peak count in the past 7 years of monthly surveying is of 185 birds

but with numbers more typically being below 100 birds (Hunter Region Bird Reports 1999-2005). The three successive years of counts of several hundred birds in Port Stephens presented in this paper are consistent with a record of 260 birds in Port Stephens in 1982 (Smith 1991). The 2006 record of 424 Whimbrel represents around 4% of the Australian migrating population (sub-species *variegatus*) and more than 50% of the previously estimated NSW population of 700 birds (Watkins 1993).

The counts of many hundreds of Bar-tailed Godwit in all three surveys confirm that this species is a common and abundant shorebird of Port Stephens. The numbers are consistent with the count of 600+ birds by Hunter Bird Observers Club in a partial survey of Port Stephens for the Australasian Wader Studies Group in 1982 (Stuart 2004). The 2004 count of 888 birds represents >0.5% of the total population of the sub-species *baueri* that visits Australia each summer (Delany & Scott 2002).

The count of 649 Eastern Curlew in 2004 represents 1.7% of the total world population for this species, and is consistent with past records of 700-960 birds in Port Stephens (Stuart 2004, 2005a). Port Stephens continues to be an internationally significant location for Eastern Curlew, particularly in the context of its declining world population (Smith 1991). However, the much lower counts for the species in 2005 and 2006 are cause for concern. An ongoing monitoring program will be essential.

The 2004 count of 112 Pied Oystercatcher is a notable increase from the previous maximum count of 63 birds for Port Stephens (Smith 1991), and the 2006 count of 77 birds confirms the importance of the area in modern times. The count in 2004 of 112 birds corresponds to just on 1% of the total world population of the species (Delany & Scott 2002), and to around 40% of the estimated NSW population (Watkins 1993).

Five shorebirds that are classified as Vulnerable under the NSW Threatened Species Act were recorded in at least one of the surveys: Black-tailed Godwit, Terek Sandpiper, Pied Oystercatcher, Sooty Oystercatcher and Lesser Sand Plover. Also, a single Beach Stone-curlew was present (on Corrie Island) in 2006 - this species is classified as Endangered in NSW. The 2004 and 2006 counts for Sooty Oystercatcher exceed all previous known counts (Stuart 2004) and the 18 birds recorded in the 2004 survey represent around 0.5% of the total population of

the southern Australian sub-species (*Haematopus fuliginosus fuliginosus*).

The counts for Grey-tailed Tattler in the surveys may be under-estimates. Some historic records are of greater counts and with one record of at least 235 birds (Pegler 1980). The latter birds were observed to fly to mangrove areas around Pindimar Bay to roost - close access to those areas is difficult by boat and birds might have been overlooked. In December 2004, the author made a survey by foot of the western side of Pindimar Bay and 75+ birds were present (Stuart 2005b).

The counts of 400+ Pied Cormorant in the 2004 and 2006 surveys are notable for the Hunter Region, since there are few other records of more than 20 birds ever reported. The counts of Black Swan, Little Pied Cormorant, Australian Pelican, Silver Gull and Crested Tern are also notable for the Region, on at least some of surveys. However, it must be taken into consideration that the above counts derive from what is by far the largest area survey in the Region done in an integrated manner. The counts probably reflect the nature of the undertaking as much as the number of birds.

CONCLUSIONS

Port Stephens is an important habitat for several species of migratory and breeding resident shorebirds, and has been for more than 20 years. A total of 2,053 shorebirds were recorded there in February 2004 and 1,527 birds in February 2006; these counts are comparable to one of 1,750 birds from a partial survey of the area in 1982. Port Stephens is a significant habitat for Eastern Curlew and Pied Oystercatcher (1-2% of the total world populations of both species present there in February 2004) and Whimbrel (2-4% of the Australian population) and an important habitat for both Bar-tailed Godwit and Sooty Oystercatcher (0.5% of the Australian population of both species present in 2004).

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