

HUNTER ESTUARY POPULATION COUNTS 1999-2010

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INTRODUCTION

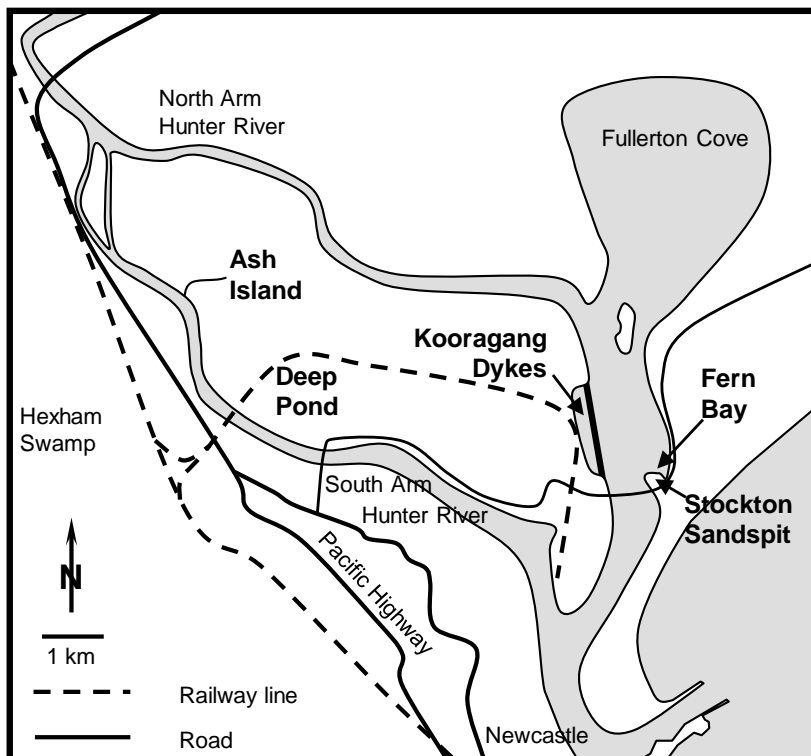
In the recent report on Australian shorebird population counts for winter 2009 and summer 2010 (Scholten *et al.* 2012), most of the available data for the Hunter Estuary were inadvertently omitted. Data for just two of the Hunter Estuary monitoring sites were presented in the Tables in the report. Since the Hunter Estuary is consistently the most important shorebird site in New South Wales, in this supplementary report we present the missing Hunter Estuary data. We also take the opportunity to describe the monitoring protocols used in the Hunter Estuary since early 1999, and to present January and July count data for 1999-2010; this will thereby align Hunter Estuary reporting with future Shorebirds 2020 reports.

METHODS

Data Collection

Regular monthly monitoring of Hunter Estuary shorebird sites commenced in April 1999. 38 count sites around the Hunter Estuary have been registered in the Shorebirds 2020 database. For simplified reporting purposes we have since consolidated some of the smaller sites and now report on 17 sites that are surveyed every month (see **Figure 1** for locations of the main sites). Some other registered sites are ephemeral wetlands or generally are more suitable for waterbirds than they are for shorebirds; surveys of them are done on an opportunistic basis and when shorebirds are present, the results are included into the overall Estuary numbers.

Figure 1. Main shorebird survey sites in the Hunter Estuary



The 17 sites are visited during the same high tide event except when circumstances such as unfavourable weather or access restrictions (e.g. through privately-owned land) cause some sites to be surveyed on the day before or the day after the main survey day. Four teams survey sub-sections of the Hunter Estuary simultaneously, each team visiting 2-5 sites during a period of ~3 hours centred around the time of the peak tide. The sites in three of the Hunter Estuary sub-sections are all surveyed from land. The Kooragang Dykes, a major shorebird roost site, is only accessible by boat.

Each team always includes at least one core member familiar with the general methodology and with the sub-section being surveyed. At each site the numbers of all waterbirds, including shorebirds, are recorded. In 2012, two sites adjoining the Hunter Estuary (Hexham Swamp, Tomago Wetlands) began to be suitable for shorebirds. Currently these continue to be surveyed by teams on a different day to the main survey day.

Data Management

After each survey, the data are collated and circulated to the leaders of the sub-section surveys for review. Considerable care is taken to prevent the possibility of any double-counting occurring due to movements of birds between sites during the survey. To facilitate that process, the start and finish times for the counts at each site are recorded, and the times of any departures/arrivals of birds are noted as well as the direction they flew in.

Once confirmed, the data are archived in the Hunter Bird Observers Club's database. Key stakeholders, e.g. local natural resource managers, receive an annual summary and the results are published in the annual Bird Reports for the Hunter Region. Because we record all waterbirds, the results are sent to the BirdLife Australia Atlas database to be shared with Shorebirds 2020.

Detailed analyses of data for some specific sites / species have been reported in other forums (for example, Herbert 2007, Lindsey 2008, Crawford and Herbert 2009) and further articles containing such analyses are anticipated.

RESULTS

134 monthly surveys were carried out in the Hunter Estuary between April 1999 and June 2010. Only one month has been missed (June 2007, when prolonged severe storm conditions prevented access to many of the key sites). 28 species have been recorded in the January surveys over 2000-2010. Details are given in **Table 1** (which uses the current BirdLife Australia taxonomic order). On average, nearly 4,000 shorebirds have been present in the Hunter Estuary in January. In the July surveys over 1999-2009, 22 species have been recorded at an average count of over 2,600 birds (**Table 2**). The January and July counts generally are consistent with the counts in adjacent months, and hence are a reliable estimate of the Hunter Estuary shorebird population. However, the peak counts in the non-breeding and breeding seasons do not always occur in January and July respectively.

Of the 17 sites surveyed regularly, 90-95% of the shorebird numbers in the Estuary at any given date are found at just five of them (Kooragang Dykes, Stockton Sandspit, Fern Bay, Ash Island Swan Pond, Kooragang Island Deep Pond).

DISCUSSION

The significance of the Hunter Estuary for shorebirds in both the New South Wales and national context is readily apparent from comparing the July 2009 and January 2010 data with those published for other sites in Australia (Scholten *et al.* 2012). In July 2009, the Hunter Estuary had 1845 shorebirds present in 12 species (545 birds plus 1300 Red-necked Avocet *Recurvirostra novaehollandiae*). Every other site in NSW had <11 species present and the highest count at any of them was 529 birds in the Shoalhaven Estuary. In a national context, only six other sites around Australia had >1,000 birds present in July 2009 and only four sites had >12 species present.

In January 2010, the Hunter Estuary had 2645 shorebirds present in 21 species (and with only a few Red-necked Avocets). All other NSW sites had <18 species and only Port Stephens had >800 shorebirds present. Around Australia, although more than 20 sites recorded >2,000 shorebirds, only 11 of them had >20 species present.

Two species have regularly been recorded in numbers greater than 1% of their total population. On average, over 1,000 Red-necked Avocet have been present in January and more than 1,800 birds in July. The average January count for Eastern Curlew *Numenius madagascariensis* over 2000-2010 is 303 birds.

CONCLUSIONS

The Hunter Estuary is the most important site for shorebirds in NSW and it is significant in a national context. It is essential that shorebird numbers in the Hunter Estuary continue to be monitored and that all possible steps be taken to maintain existing habitat and restore lost habitat in such a highly industrialised area that is subject to frequent threats from additional industrial development.

ACKNOWLEDGEMENTS

73 members of Hunter Bird Observers Club and visiting birdwatchers have participated in surveys. Since mid-2006, the Kooragang Wetland Rehabilitation Project (KW RP) has provided the boat we use and KW RP has also assisted in other ways throughout the entire program. Some of the surveyed sites lie within the Hunter Wetlands National Park and we thank the NSW National Parks and Wildlife Service for their cooperation. Some sites are on private land and we thank the landowners for access permission and in some cases, for providing an escort. Thanks also go to Mike Newman who stimulated us into action to produce this report.

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Table 1. Details of January shorebird counts in Hunter Estuary, 2000-2010.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Mean ¹	SD
Aust. Pied Oystercatcher <i>Haematopus longirostris</i>	2	5	5	10	10	12	4	2	4	11	21	8	6
Sooty Oystercatcher <i>Haematopus fuliginosus</i>					2		2	5	19	10		8	7
Black-winged Stilt <i>Himantopus himantopus</i>	345	222	617	728	356	141	226	423	9	12	303	307	225
Red-necked Avocet <i>Recurvirostra novaehollandiae</i>	31		1499	2686	1555	82	2266	2151	70	101	5	1045	1093
Banded Stilt <i>Cladorhynchus leucocephalus</i>			1										
Pacific Golden Plover <i>Pluvialis fulva</i>	88	60	63	146	73	86	22	264	161	155	225	122	75
Grey Plover <i>Pluvialis squatarola</i>						1							
Red-capped Plover <i>Charadrius ruficapillus</i>		4		12	51	44	31	18	18	6	3	21	18
Lesser Sand Plover <i>Charadrius mongolus</i>					3	1		3			1	2	1
Black-fronted Dotterel <i>Elseyaornis melanops</i>		14	1	4	1	1		2		2	4	4	4
Red-kneed Dotterel <i>Erythrogonys cinctus</i>										37			
Masked Lapwing <i>Vanellus miles</i>	53	67	70	86	106	96	116	81	116	72	75	85	21
Latham's Snipe <i>Gallinago hardwickii</i>										8			
Black-tailed Godwit <i>Limosa limosa</i>	300	200	223	425	219	155	141	170	212	142	106	208	89
Bar-tailed Godwit <i>Limosa lapponica</i>	1601	1204	1020	750	734	641	1000	1077	764	799	1002	963	274
Whimbrel <i>Numenius phaeopus</i>	10	6	24	41	162	4	65	76	71		22	48	48
Eastern Curlew <i>Numenius madagascariensis</i>	571	492	136	372	307	89	357	325	276	178	225	303	146
Terek Sandpiper <i>Xenus cinereus</i>	50	68	38	3		28	18	7	16		12	27	22
Common Sandpiper <i>Actitis hypoleucos</i>		2	2		2	6	4					3	2
Grey-tailed Tattler <i>Tringa brevipes</i>	16	13	26		16	31	28	20	52		19	25	12
Common Greenshank <i>Tringa nebularia</i>	170	152	140	194	295	153	115	151	104	119	109	155	54
Marsh Sandpiper <i>Tringa stagnatilis</i>	176	13	161	31	140	124	160	143	42	47	49	99	62
Ruddy Turnstone <i>Arenaria interpres</i>			1				1		1				
Great Knot <i>Calidris tenuirostris</i>	9		7	30	15	2	4			2	1	9	10
Red Knot <i>Calidris canutus</i>		10	32		54	28	10		8	3	2	18	18
Red-necked Stint <i>Calidris ruficollis</i>	53	25	78	50	85	70	44	23	19		6	45	27
Sharp-tailed Sandpiper <i>Calidris acuminata</i>	25	51	205	432	325	665	54	683		1	264	271	255
Curlew Sandpiper <i>Calidris ferruginea</i>	400	350	407	812	200	381	200	276	260	185	241	337	178
Total number of birds	3900	2958	4756	6812	4711	2841	4868	5900	2222	1890	2695	3959	1584

¹Mean count when present

Table 2. Details of July shorebird counts in Hunter Estuary, 1999-2009.

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Mean ¹	SD
Aust. Pied Oystercatcher <i>Haematopus longirostris</i>	2	2	1	17	3	8	8	4	2	2	18	6	6
Sooty Oystercatcher <i>Haematopus fuliginosus</i>							2	9	2	1		4	4
Black-winged Stilt <i>Himantopus himantopus</i>	1	99	495	542	415	502	321	360	32	238	270	298	190
Red-necked Avocet <i>Recurvirostra novaehollandiae</i>	2001	6	1725	2500	4963	853	2315	3650	49	1500	1300	1897	1471
Red-capped Plover <i>Charadrius ruficapillus</i>		14		10	6	41	44	17	48	41	6	25	18
Double-banded Plover <i>Charadrius bicinctus</i>						6							
Black-fronted Dotterel <i>Elseyornis melanops</i>	42		3	6	47	48	30	2	36	17	4	24	19
Red-kneed Dotterel <i>Erythrogonys cinctus</i>	2		9	7	8	3		1			3	5	3
Masked Lapwing <i>Vanellus miles</i>	30	49	31	45	33	54	40	37	30	54	32	40	9
Latham's Snipe <i>Gallinago hardwickii</i>	2												
Black-tailed Godwit <i>Limosa limosa</i>	6	5	1	1	3	11	7	2	2		1	4	3
Bar-tailed Godwit <i>Limosa lapponica</i>	370	370	250	90	163	142	163	215	305	201	164	221	93
Whimbrel <i>Numenius phaeopus</i>	11	19		32	7	45	6	46			4	21	17
Eastern Curlew <i>Numenius madagascariensis</i>	88	80	126	130	85	108	75	56	74	59	38	84	29
Terek Sandpiper <i>Xenus cinereus</i>				1									
Grey-tailed Tattler <i>Tringa brevipes</i>	2	2	6			1	4	2				3	2
Common Greenshank <i>Tringa nebularia</i>		3	2	14		11		20	1	9	5	8	7
Marsh Sandpiper <i>Tringa stagnatilis</i>					14								
Great Knot <i>Calidris tenuirostris</i>		1			3	4						3	2
Red Knot <i>Calidris canutus</i>				3	11	8	1					6	5
Red-necked Stint <i>Calidris ruficollis</i>						5	26		9			13	11
Curlew Sandpiper <i>Calidris ferruginea</i>							3						
Total number of birds	2557	650	2649	3398	5761	1850	3045	4421	590	2122	1845	2626	1528

¹Mean count when present