

The 1997/98 Non-Estuarine Coastal Waterbird Survey in Denmark

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The Non-Estuarine Coastal Waterbird Survey in Denmark was undertaken in the winter of 1997/98. In total, seven species were recorded, Sanderling *Calidris alba* being the most numerous, followed by Eurasian Oystercatcher *Haematopus ostralegus* and Dunlin *C. alpina*. The highest densities of waders were found on the coast between south Rømø and Vejers, bordering the more estuarine shores of the Wadden Sea. Although reasonable coverage was obtained, no attempt was made to calculate complete non-estuarine population estimates, due to difficulties in site and habitat definition.

Length of non-estuarine coast	Coverage	Representative of	Winter	Population estimate	Reliability
1,405 km ^a	11.5%	Whole country	1997/98	Minimum estimate	Poor

^a This figure is a minimum and represents the length of coast which was clearly definable as non-estuarine.

Introduction and methods

The Non-Estuarine Coastal Waterbird Survey in Denmark (Denmark-NEWS) was undertaken in the winter of 1997/98. Counts were undertaken between 13 December 1997 and 28 January 1998. The weather during this period was mild, with frosts only in the last week of counts.

Although reasonable coverage was obtained, data analysis was problematic due to two main reasons. Firstly, many of the sites counted were poorly defined and thus it was not possible to accurately assess the total length of the coast that was covered. Secondly, particularly for the coasts bordering the Wadden Sea and the less tidally influenced Baltic, it was difficult to define what was estuarine or non-estuarine (see also Blew *et al.* 2008).

As a result of these factors, only limited results are presented here. For three regions with predominant sandy beaches of varying width – the shallow North Sea coast bordering the Wadden Sea from south Rømø to Vejers, the more exposed North Sea coast from Vejers to Skagen and the Kattegat coast of Jylland, Fyn and North Sjælland (Figure 1) – totals and densities are presented for count sections of known length. Due to the uncertainties in defining habitats, though, it was thought imprudent to extrapolate these figures to provide non-estuarine population estimates.

Results

In total, it was possible to present results for 161.5 km of an estimated non-estuarine coast length of 1,405 km. This included 24 km of 65 km long coast bordering the Wadden Sea between south Rømø and Vejers, 56.5 km of the 340 km long North Sea coast between Vejers and Skagen and 81 km of the approximately 1,000 km long Kattegat coast of Jylland, Fyn and North Sjælland (the latter figure is probably an under-

estimate due to the numerous islands in the Kattegat).

Numbers and densities of waders counted within defined stretches of the coast are presented in Table 1 (numbers of other waterbirds also counted are summarised in Table 2 in the Appendix). In total, seven species were recorded, Sanderling *Calidris alba* being the most numerous, followed by Eurasian Oystercatcher *Haematopus ostralegus* and Dunlin *C. alpina*. The highest densities of waders were found along the south North Sea coast between south Rømø and Vejers, on sandy coasts bordering the more estuarine shores of the Wadden Sea.



Figure 1. Locations in Denmark named in the text.

Table 1. Numbers and densities (birds/km, given in parentheses) of waders counted on defined stretches of non-estuarine coast in Denmark in 1997/98.

	Shallow North Sea coast south Rømø to Vejers	Exposed North Sea coast Vejers to Skagen	Kattegat non-estuarine coast Jylland, Fyn & N Sjælland	Total
Distance covered (km)	24	56.5	81	161.5
Estimated length of non-estuarine coast (km)	65	340	1,000	1,405
Eurasian Oystercatcher <i>Haematopus ostralegus</i>	214 (8.92)	4 (0.07)	1 (0.01)	219
Common Ringed Plover <i>Charadrius hiaticula</i>	0	0	3 (0.04)	3
Grey Plover <i>Pluvialis squatarola</i>	0	0	1 (0.01)	1
Sanderling <i>Calidris alba</i>	544 (22.67)	0	17 (0.21)	561
Dunlin <i>Calidris alpina</i>	8 (1.17)	98 (1.73)	0	126
Common Redshank <i>Tringa totanus</i>	1 (0.04)	0	0	1
Ruddy Turnstone <i>Arenaria interpres</i>	45 (1.88)	1 (0.02)	2 (0.02)	48
Total	832 (12.80)	103 (0.30)	24 (0.02)	959

Discussion

The survey provided a reasonable oversight of the range of wader species that use Danish non-estuarine coasts during winter, though could not be used to provide meaningful population estimates. In part, this was because the length of the count stretches were poorly defined. There were also difficulties in separating estuarine and non-estuarine habitats. The southern North Sea coast in Denmark is dominated by the Wadden Sea, which may be considered largely estuarine (Blew *et al.* 2008). Elsewhere, the Danish coast is dominated by sandy beaches, with areas of rocky coast on islands in the Kattegat.

The majority of waders wintering on Denmark's coast are found in the important feeding and roosting areas of the Wadden Sea (Heath & Evans 2000) and away from this area the numbers of waders that winter in Denmark are small. Meltofte (1993) estimated that 2,000–3,000 Dunlin were present in Denmark in midwinter away from the Wadden Sea coast, though numbers depend on the severity of winter weather (in contrast, between 5,000–20,000 were estimated to winter in the Danish Wadden Sea). Concentrations of over 1,000 Sanderling may also occur on sandy shores in the Blåvandshuk/Vejers area just north of the Wadden Sea (Meltofte 1993). In addition to the species listed, the Danish Kattegat and North Sea coasts also support small numbers of Purple Sandpiper *Calidris maritima* in winter (see also Nilsson 2008). The Danish bird report for 1999 and 2000, for example, gives January totals of 64 and 275 for the respective

years (Lange *et al.* 2002). In addition to the counts presented in Table 1, therefore, a minimum estimate of 170 Purple Sandpipers wintering in Denmark is also suggested.

Acknowledgements

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APPENDIX
Other waterbirds counted during the non-estuarine coastal waterbird survey in Denmark
(Denmark-NEWS) in 1997/98

Table 2. Numbers and densities (in parentheses) of other waterbirds counted on defined stretches of non-estuarine coast in Denmark in 1997/98.

	Shallow North Sea coast south Rømø to Vejers	Exposed North Sea coast Vejers to Skagen	Kattegat non-estuarine coast Jylland, Fyn & N Sjælland	Total
Distance covered (km)	24	56.5	81	161.5
Estimated length of non-estuarine coast (km)	65	340	1,000	1,405
Red-throated Loon (Diver) <i>Gavia stellata</i>	2 (0.08)	0	0	2
Arctic Loon (Black-throated Diver) <i>Gavia arctica</i>	0	0	4 (0.05)	4
Unspecified species of diver	0	4 (0.07)	1 (0.01)	5
Great Crested Grebe <i>Podiceps cristatus</i>	0	0	1 (0.01)	1
Great Cormorant <i>Phalacrocorax carbo</i>	0	7 (0.12)	917 (11.32)	924
Grey Heron <i>Ardea cinerea</i>	0	0	1 (0.01)	1
Whooper Swan <i>Cygnus cygnus</i>	0	0	6 (0.07)	6
Common Eider <i>Somateria mollissima</i>	525 (21.88)	19 (0.34)	12,254 (151.28)	12,798
Long-tailed Duck <i>Clangula hyemalis</i>	5 (0.21)	0	0	5
Black (Common) Scoter <i>Melanitta nigra</i>	46 (1.92)	0	6,064 (74.86)	6,110
White-winged (Velvet) Scoter <i>Melanitta fusca</i>	8 (0.33)	0	2 (0.02)	10
Common Goldeneye <i>Bucephala clangula</i>	2 (0.08)	125 (2.21)	105 (1.30)	232
Red-breasted Merganser <i>Mergus serrator</i>	1 (0.04)	0	160 (1.98)	161
Common Merganser (Goosander) <i>Mergus merganser</i>	5 (0.21)	0	0	5
Razorbill <i>Alca torda</i>	0	0	1 (0.01)	1
Razorbill / Common Murre (Guillemot) <i>Uria aalge</i>	0	0	2 (0.02)	2
Dovekie (Little Auk) <i>Alle alle</i>	0	0	14 (0.17)	14
Atlantic Puffin <i>Fratercula arctica</i>	0	1 (0.02)	0	1