Population status of waders wintering on Europe's non-estuarine coasts

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A total of nearly 800,000 waders of 27 species were estimated to winter on the non-estuarine coasts of the 12 countries that participated in the European Non-Estuarine Coastal Waterbird Survey (Europe-NEWS) (note, this is a minimum estimate as in some countries, counts were not extrapolated or regions were not covered). Most were found in the north-west of Europe, the UK (including the Isle of Man) holding 49.8% of the total estimate, France 19.3%, Germany 13.6% and Ireland 11.5%. The most abundant species were Eurasian Oystercatcher *Haematopus ostralegus,* Dunlin *Calidris alpina,* Northern Lapwing *Vanellus vanellus* and Eurasian Curlew *Numenius arquata*, though key species – those for which the non-estuarine habitats in the participant 12 countries were estimated to hold over 25% of biogeographic populations – were Common Ringed Plover *Charadrius hiaticula,* Sanderling *Calidris alba,* Purple Sandpiper *C. maritima* and Ruddy Turnstone *Arenaria interpres*. Omissions from these estimates and population trends are discussed.

Introduction

Monitoring of wintering wader populations on Europe's non-estuarine coasts has previously been highly variable between countries, both in terms of spatial and temporal coverage and how results have been reported. In Belgium (Devos 2008), the Netherlands (van Roomen *et al.* 2008) and Germany (Blew *et al.* 2008), much of the non-estuarine coast is effectively covered by the International Waterbird Census (IWC) counts undertaken each January and thus the numbers of waders recorded on these habitats are included in the totals presented in other reports. However, in many countries, monitoring of the coast has previously been limited away from estuarine sites and thus the sizes of the populations of waders wintering in non-estuarine habitats are poorly known. In the United Kingdom, the 1984/85 Winter Shorebird Count provided the first estimates of wader numbers found on the coast away from those estuarine sites covered by annual monitoring (Moser 1987, Rehfisch *et al.* 2003). Elsewhere, for example in Spain (Hortas *et al.* 2008), studies had provided useful information on numbers found on non-estuarine coasts at a regional scale, though no national overview.

The results reported in this volume thus represent a considerable step towards our knowledge of the populations of waders (and other waterbirds) that winter on Europe's non-estuarine coasts. As the first co-ordinated survey of waders wintering on the continent's non-estuarine coasts, the European Non-Estuarine Coastal Waterbird Survey (Europe-NEWS) has greatly increased the spatial coverage of non-estuarine wader surveys and it is good to note that, in several countries, this has led to an increase in annual IWC coverage. Secondly, by bringing together results from different countries in one volume, it is possible to evaluate for the first time the importance of the non-estuarine coasts of Europe for wintering waders.

This paper draws together the results from the country texts (Blew *et al.* 2008, Colhoun *et al.* 2008, Cortes 2008, Deceuninck *et al.* 2008, Devos 2008, Hortas *et al.* 2008, Mendes *et al.* 2008, Nilsson 2008, Radović *et al.* 2008, Rehfisch *et al.* 2003, van Roomen *et al.* 2008, Soldatini *et al.* 2008, Thorup *et al.* 2008) to appraise the sizes and trends of wader populations on the non-estuarine coasts covered by the survey.

Population sites and context

Estimated populations (and their accuracy) of waders wintering on non-estuarine habitats in each of the 12 countries (and one UK crown dependency and one overseas territory) that participated in Europe-NEWS are summarized in Table 1. Table 2 relates these totals to species' estimated biogeographic population sizes (taken from Wetlands International 2006). Note, due to the lack of previously published information for non-estuarine habitats, these biogeographic population sizes may underestimate some species' actual populations.

In total, 25 wader species were recorded during Europe-NEWS, though population estimates were made for a further two recorded by previous studies (Black-winged Stilt *Himantopus himantopus* and Grey Phalarope *Phalaropus fulicarius*). The most widespread species (occurring in 10 or more of the 12 countries) were Eurasian Oystercatcher *Haematopus ostralegus,* Grey Plover *Pluvialis squatarola,* Sanderling *Calidris alba,* Purple Sandpiper *C. maritima,* Dunlin *C. alpina,* Common Redshank *Tringa totanus and* Ruddy Turnstone *Arenaria interpres*. In total, nearly 800,000 waders were estimated to winter on the non-estuarine coasts

of the participant countries – note, though, this is an underestimate as in four countries, counts were not extrapolated or regions were not covered. The most abundant species were Eurasian Oystercatcher, Dunlin, Northern Lapwing *Vanellus vanellus* and Eurasian Curlew *Numenius arquata*, all with a minimum estimated population of ca. 100,000 birds or more. However, key species – defined here as those for which the non-estuarine habitats in the participant 12 countries were estimated to hold over 25% of biogeographic populations – were Common Ringed Plover *Charadrius hiaticula*, Sanderling, Purple Sandpiper and Ruddy Turnstone.

The great majority of the waders reported to occur on non-estuarine habitats in these countries were found in the north-west of Europe. The UK (including the Isle of Man) held 49.8% of the total estimate, France 19.3%, Germany 13.6% and Ireland 11.5%. This broad pattern applied for most species, though Kentish Plover *Charadrius alexandrinus*, Little Stint *Calidris minuta* and Whimbrel *Numenius phaeopus* had more southerly distributions, with notable numbers of the former species in Portugal.

It should be noted, however, that the summed estimates from Europe-NEWS underestimate total populations on European non-estuarine habitats due to the methodology used in some instances, as well as a lack of data from some key countries. Countries/regions for which accurate population estimates are still lacking for wintering waders specifically using non-estuarine habitats include Finland, Estonia, Latvia, Lithuania, Russia (Baltic coast), Poland, Norway, the Faeroes, Iceland, the Channel Isles, the Mediterranean coast of France and the whole of the Mediterranean east of Croatia. As indicated by the accounts for Germany, Denmark and Sweden, numbers of waders wintering on non-estuarine habitats in the Baltic are likely to be low in comparison to the total NEWS estimate. Likewise, the same is likely to be true for the eastern Mediterranean, though this region may be important for Kentish Plover, for instance.

The key omissions, however, are Norway, Iceland (where NEWS coverage was insufficient to obtain meaningful population estimates: K-B. Strann, A. Petersen pers. comm.) and to a lesser extent, the Faeroes. These countries are known to hold significant populations of Purple Sandpipers, though more accurate estimates are required (Stroud *et al.* 2004). As a consequence of the omission of Norway and the Faeroes (current estimated winter populations: 40,000–80,000 and 1,000 respectively: Nygård 1994, Stroud *et al.* 2004) the combined Europe-NEWS estimate of 26,000 Purple Sandpipers only accounted for 34.3% of the estimated 75,000 (50,000–100,000) birds believed to winter in the East Atlantic, even though the species' preferred habitat is rocky shore (for example, the UK's non-estuarine coast is estimated to hold ca. 97% of the country's total population of Purple Sandpipers: Rehfisch *et al.* 2003). The Icelandic wintering population is currently believed to be 90,000 birds (Stroud *et al.* 2004).

Population trends

For three of the participant countries – Belgium (Devos 2008), the Netherlands (van Roomen *et al.* 2008; van Roomen in litt.) and the UK (Rehfisch *et al.* 2003) – it was possible to determine trends in the numbers of waders wintering on non-estuarine coasts through comparison with data from previous surveys (Table 3). Trends were calculated for periods from the 1970s/1980s to the late 1990s and were broadly comparable between countries (though due to the length of its coastline, numbers of birds wintering in the UK far exceeded those in the other countries). For example, the numbers of Oystercatcher wintering on non-estuarine coasts were found to have increased in all three countries and those of Grey Plover, Dunlin and Common Redshank in two countries (Belgium and the UK). In contrast, numbers of Sanderling and Purple Sandpiper declined in all three countries, while Common Ringed Plover numbers also fell in Belgium and the UK. Only trends for Eurasian Curlew and Ruddy Turnstone differed between countries.

Rehfisch *et al.* (2003) reported similarities between species' trends on non-estuarine and estuarine sites in the UK. Possible reasons for the declines of five non-estuarine species, included (as on estuarine sites) the trend towards milder winters which may have resulted in large-scale redistributions of waders, particularly to areas to the north and east of the UK, i.e. closer to species' breeding grounds (see also Rehfisch *et al.* 2004, Austin & Rehfisch 2005). If this trend continues, areas such as Iceland, Scandinavia, the Wadden Sea and even the Baltic may become increasingly attractive to wintering waders (Rehfisch *et al.* 2004, Maclean *et al.* 2008). It was also suggested that declines in wader numbers may have been linked to the loss of organic inputs from sewage following the implementation of the EC's Bathing Water and Urban Waste Water Treatment Directives (Burton *et al.* 2002, 2004). Organic matter from outfalls may considerably enhance invertebrate populations and consequently the decline in inputs following increased sewage treatment may have led to declines in waders, not just in the UK but throughout Europe. Other factors affecting wintering wader populations across Europe (and elsewhere) include habitat loss due to coastal land claim and erosion (associated with sea level rise), disturbance from recreation and hunting and shellfishing (Stroud *et al.* 2004, 2006).

Key species

Common Ringed Plover

A total of 39,000 Common Ringed Plover was estimated to winter on the non-estuarine coasts of the participant countries, representing 53.9% of the biogeographic (hiaticula Europe and North Africa) population. An estimated 33.0% of the biogeographic population wintered on the non-estuarine coasts of the UK (with a further 1.2% on those of the Isle of Man), 10.6% in Ireland and 8.5% in France (Table 2). The large UK non-estuarine total was estimated to have declined by 4,180 birds (14.8%) between 1984/85 and 1997/98 (Table 3).

Sanderling

An estimated 38,000 Sanderling wintered on non-estuarine coasts in the participant countries, representing 31.0% of the biogeographic (East Atlantic, West & South Africa wintering) population. An estimated 11.0% of the biogeographic population wintered on the non-estuarine coasts of the UK, 8.0% in France, 3.4% in Ireland, 3.1% in Portugal, 3.0% in the Netherlands and 1.2% in Spain (Table 2). The large UK non-estuarine total was estimated to have declined by 3,370 birds (19.8%) between 1984/85 and 1997/98, with declines also noted in Belgium and the Netherlands over approximately the same period (Table 3).

Purple Sandpiper

A total of 26,000 Purple Sandpipers was estimated to winter on the non-estuarine coasts of the participant countries, though this only represented 34.3% of the biogeographic

(maritima East Atlantic wintering) population due to the lack of data from Norway and the Faeroes (see above). An estimated 23.0% of the biogeographic population wintered on the non-estuarine coasts of the UK, 4.0% in Sweden, 3.6% in Ireland, 1.9% in France and 1.0% in Spain (Table 2). The large UK non-estuarine total declined by 4,440 (20.5%) birds between 1984/85 and 1997/98, with declines additionally noted among the small numbers wintering in Belgium and the Netherlands over approximately the same period (Table 3). The species' UK distribution has shifted to the north – associated with milder winters – suggesting that Scandinavian countries may become more important for the species in the future (Rehfisch *et al.* 2004). It is important that the size of the Norwegian winter population is clarified, therefore, not only due to its own importance, but also so that the size of the biogeographic population can be better estimated and other country's numbers put in context. This would also provide a better baseline for understanding climate change induced redistributions.

Ruddy Turnstone

A total of 60,000 Ruddy Turnstones was estimated to winter on the non-estuarine coasts of the participant countries, representing 40.0% of the biogeographic (interpres North-east Canada, Greenland/West Europe & North-West Africa) population. An estimated 26.4% of the biogeographic population wintered on the non-estuarine coasts of the UK (excluding the Isle of Man), 4.0% in Ireland, 3.8% in France, 2.8% in Portugal and 1.2% in Spain (Table 2). The large UK non-estuarine total was estimated to have declined by 7,360 birds (15.7%) between 1984/85 and 1997/98, though in contrast numbers in Belgium increased over approximately the same period (Table 3).

Conclusions and recommendations

The results reported in this volume highlight the importance of Europe's non-estuarine coasts for wintering waders, though also gaps in survey coverage. It is clearly important that attempts are made to accurately estimate the sizes of wader populations wintering on those coasts not covered by Europe-NEWS. This is particularly the case for Norway, the Faeroes and Iceland due to their likely importance for Purple Sandpipers. Although some non-estuarine sites are now covered by the regular IWC counts (e.g. in addition to sites previously covered in Belgium: Devos 2008, the Netherlands: van Roomen *et al.* 2008 and Germany: Blew *et al.* 2008, in Italy: Soldatini *et al.* 2008 and the UK: Rehfisch *et al.* 2003), it is also important that a greater proportion of the continent's non-estuarine coast is surveyed on a more regular, preferably annual basis, in order to be able to detect change (Rehfisch *et al.* 2008).

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Tables . . .

Table 1. Population estimates for waders wintering on non-estuarine coasts in participant countries in the European Non-Estuarine Coastal Waterbird Survey.

Species	Belgium[a,e]	Croatia[c]	Denmark[d]	France[c]	Germany[d]	Gibraltar[a]	Ireland[b]	Italy[c]	Nether-lands[a]	Portugal[b]	Spain[d]	Sweden[c,f]	UK[b]	Isle of Man[b]	Total[g]
Eurasian Oystercatcher *Haematopus ostralegus*	1,478		219	17,400	39,506		16,160		6,347	39	551	0–100	70,790	3,565	160,000
Black-winged Stilt *Himantopus himantopus*[h]				5											5
Pied Avocet *Recurvirostra avosetta*	48			1,350					78						1,476
Common Ringed Plover *Charadrius hiaticula*	17		3	6,200			7,734		50	244	85		24,110	887	39,000
Kentish Plover *Charadrius alexandrinus*		80–100		5				322		986	192				1,595
Eurasian Golden Plover *Pluvialis apricaria*				1,800	454		9,985		65		933	0–300	28,670	420	42,000
Grey Plover *Pluvialis squatarola*	267	50–80	1	8,200	506		1,496	60	231	556	111	0–5	2,175	52	14,000
Northern Lapwing *Vanellus vanellus*		150–250		38,000	270		16,573		207		1,756	0–300	41,180		98,000
Red Knot *Calidris canutus*	5			800	33,109				57		9	0–50	7,625		42,000
Sanderling *Calidris alba*	307		561	9,800	757		4,186	48	3,629	3,768	1,434	0–5	13,660		38,000
Little Stint *Calidris minuta*				150				60			4				214
Purple Sandpiper *Calidris maritima*	127		170	1,400	97		2,700		205	28	758	1,000–5,000	17,220		26,000
Dunlin *Calidris alpina*	1,285	200–400	126	53,500	25,190		9,667	369	594		138	100–3,000	27,880	574	120,000
Ruff *Philomachus pugnax*											1				1
Jack Snipe *Lymnocryptes minimus*		1–2										10–50	7		39
Common Snipe *Gallinago gallinago*		50			7		660					10–200	2,930		3,752
Black-tailed Godwit *Limosa limosa*	1			750									116		867
Bar-tailed Godwit *Limosa lapponica*	52	1–2		2,150	1,638		573		314		13		3,670		8,412
Whimbrel *Numenius phaeopus*						1				108	143				252
Eurasian Curlew *Numenius arquata*	101	100		3,850	6,067		11,871		838		231	50–200	66,330	8,895	98,000
Spotted Redshank *Tringa erythropus*				45							1		3		49
Common Redshank *Tringa totanus*	71	20–30	1	1,700	70		3,268		145		18	20–100	33,820	342	40,000
Common Greenshank *Tringa nebularia*		1–2		80			548						330		960
Green Sandpiper *Tringa ochropus*				10							10				20
Common Sandpiper *Actitis hypoleucos*		109		30				71		13	919		9		1,151
Ruddy Turnstone *Arenaria interpres*	1,112	1–2	48	5,700	186		5,956	24	1,210	4,159	1,763	0–5	39,560	267	60,000
Grey Phalarope *Phalaropus fulicarius*[h]											120	0–3			122
Total	**4,871**	**945**	**1,129**	**152,925**	**107,857**	**1**	**91,377**	**954**	**13,970**	**9,901**	**9,190**	**5,254**	**380,085**	**15,002**	**790,000**

[a] Complete count
[b] Statistical extrapolation
[c] Expert extrapolation
[d] Minimum estimate
[e] To be consistent with other countries, the estimates presented for Belgium are those from the January count
[f] Estimates for Sweden are for the whole country, though it is not thought that many waders winter away from the country's southern, non-estuarine coast
[g] Totals rounded according to convention in Stroud *et al.* (2004)
[h] Not recorded by Europe-NEWS

Table 2. Percentages of the biogeographic populations of waders wintering on non-estuarine coasts in participant countries in the European Non-Estuarine Coastal Waterbird Survey.

Species	Biogeographic population size[a]	1% threshold	Belgium	Croatia	Denmark	France	Germany	Gibraltar	Ireland	Italy	Nether-lands	Portugal	Spain	Sweden	UK	Isle of Man	Total %
Eurasian Oystercatcher	1,020,000	10,200	0.1		0.0	1.7	3.9		1.6		0.6	0.0	0.1	0.0	6.9	0.3	15.3
Black-winged Stilt	71,000–82,000	770				0.0											0.0
Pied Avocet	73,000	730	0.1			1.8					0.1						2.0
Common Ringed Plover	73,000	730	0.0		0.0	8.5			10.6		0.1	0.3	0.1		33.0	1.2	53.9
Kentish Plover[b] *alexandrinus* East Atlantic & West Mediterranean	62,000–70,000	660				0.0				0.5		1.5	0.3				2.3
Kentish Plover[b] *alexandrinus* Black Sea & East Mediterranean	32,000–49,000	410		0.2													0.2
Eurasian Golden Plover[c] *altifrons* Iceland, Faeroes & Greenland	930,000	9,300				0.2			1.1				0.1		3.1	0.0	4.5
Eurasian Golden Plover[c] *apricaria* Britain, Ireland, S Scandinavia, Germany & Baltic States	140,000–210,000	1,750					0.3				0.0			0.1			0.4
Grey Plover	247,000	2,500	0.1	0.0	0.0	3.3	0.2		0.6	0.0	0.1	0.2	0.0	0.0	0.9	0.0	5.6
Northern Lapwing	5,100,000–8,400,000	20,000		0.0		0.6	0.0		0.2		0.0		0.0	0.0	0.6		1.5
Red Knot	450,000	4,500	0.0			0.2	7.4				0.0		0.0	0.0	1.7		9.3
Sanderling	123,000	1,200	0.2		0.5	8.0	0.6		3.4	0.0	3.0	3.1	1.2	0.0	11.1		31.0
Little Stint	200,000	2,000				0.1				0.0			0.0				0.1
Purple Sandpiper	50,000–100,000	750	0.2		0.2	1.9	0.1		3.6		0.3	0.0	1.0	4.0	23.0		34.3
Dunlin	1,330,000	13,300	0.1	0.0	0.0	4.0	1.9		0.7	0.0	0.0		0.0	0.1	2.1	0.0	9.1
Ruff	1,000,000–1,500,000	12,500											0.0				0.0
Jack Snipe	>1,000,000			0.0										0.0	0.0		0.0
Common Snipe	>2,500,000	20,000		0.0			0.0		0.0					0.0	0.1		0.1
Black-tailed Godwit	47,000	470	0.0			1.6									0.3		1.8
Bar-tailed Godwit	120,000	1,200	0.0	0.0		1.8	1.4		0.5		0.3		0.0		3.1		7.0
Whimbrel	190,000–340,000	2,700						0.0				0.0	0.1				0.1
Eurasian Curlew	700,000–1,000,000	8,500	0.0	0.0		0.5	0.7		1.4		0.1		0.0	0.0	7.8	1.0	11.5
Spotted Redshank	60,000–120,000	900				0.1							0.0		0.0		0.1
Common Redshank[d] *robusta* Iceland & Faeroes	150,000–400,000	2,800	0.0		0.0	0.6	0.0		1.2		0.1			0.0	12.3	0.1	14.4
Common Redshank[d] *totanus* East Atlantic	250,000	2,500											0.0				0.0
Common Redshank[d] *totanus* East Europe	223,000–464,000	3,400		0.0													0.0
Common Greenshank	190,000–270,000	2,300		0.0		0.0			0.2						0.1		0.4
Green Sandpiper	1,000,000–2,400,000	17,000				0.0							0.0				0.0
Common Sandpiper	1,500,000–2,000,000	17,500		0.0		0.0				0.0		0.0	0.1		0.0		0.1
Ruddy Turnstone[e] *interpres* NE Canada & Greenland	100,000–200,000	1,500	0.7		0.0	3.8	0.1		4.0		0.8	2.8	1.2	0.0	26.4	0.2	40.0

Table 2. continued

Species	Biogeographic population size[a]	1% threshold	Belgium	Croatia	Denmark	France	Germany	Gibraltar	Ireland	Italy	Nether-lands	Portugal	Spain	Sweden	UK	Isle of Man	Total %
Ruddy Turnstone[e] *interpres* SW Asia & E & S Africa	100,000	1,000		0.0													0.0
Ruddy Turnstone[e] *interpres* Fennoscandia & NW Russia	45,000–120,000	830								0.0							0.0
Grey Phalarope	1,000,000	10,000											0.0	0.0			0.0

[a] Wetlands International (2006)
[b] Population size of 62,000–70,000 and 1% threshold of 660 (*alexandrinus* East Atlantic & West Mediterranean) assumed for France, Italy, Portugal and Spain; population size of 32,000–49,000 and 1% threshold of 410 (*alexandrinus* breeding in Black Sea & East Mediterranean) assumed for Croatia
[c] Population size of 930,000 and 1% threshold of 930 (*altifrons* breeding in Iceland, Faeroes & Greenland) assumed for France, Ireland, Spain and UK (including Isle of Man); population size of 140,000–210,000 and 1% threshold of 1,750 (*apricaria* breeding in Britain, Ireland, south Scandinavia, Germany & Baltic States) assumed for Germany, Sweden and the Netherlands. (Following Ramsar guidelines, the relative importance of these countries for the species is gauged relative to the estimated population size of the more numerous subspecies/population)
[d] Population size of 150,000–400,000 and 1% threshold of 2,800 (*robusta* breeding in Iceland & Faeroes) assumed for Belgium, Denmark, France, Germany, Ireland, Sweden, the Netherlands and UK (including Isle of Man); population size of 250,000 and 1% threshold of 2,500 (*totanus* wintering in East Atlantic) assumed for Spain; population size of 223,000–464,000 and 1% threshold of 3,400 (*totanus* breeding in East Europe) assumed for Croatia. (Following Ramsar guidelines, the relative importance of these countries for the species is gauged relative to the estimated population size of the more numerous subspecies/population)
[e] Population size of 100,000–200,000 and 1% threshold of 1,500 (*interpres* breeding in NE Canada & Greenland) assumed for Belgium, Denmark, France, Germany, Ireland, Portugal, Spain, Sweden and UK (including Isle of Man); population size of 100,000 and 1% threshold of 1,000 (*interpres* wintering mainly in SW Asia & E & S Africa) assumed for Croatia; population size of 45,000–120,000 and 1% threshold of 830 (*interpres* breeding in Fennoscandia & NW Russia) assumed for Italy

Table 3. Winter wader population trends on European non-estuarine coasts.

	Belgium (20 years)[a]			The Netherlands (24 years)[b]			UK (13 years)[c]		
	NEWS estimate	1970–79 to 1989–2000	% change p.a.	NEWS estimate	1977 to 2001	% change p.a.	NEWS estimate	1984/85 to 1997/98	% change p.a.
Eurasian Oystercatcher	1,478	+223	+6.0	6,347	+175	+4.3	70,790	+11	+0.8
Pied Avocet	48	+187	+5.4						
Common Ringed Plover	17	–50	–3.5				24,110	–15	–1.2
Eurasian Golden Plover							28,670	+158	+7.6
Grey Plover	267	+273	+6.8				2,175	+40	+2.6
Northern Lapwing							41,180	+173	+8.0
Red Knot							7,625	+145	+7.1
Sanderling	307	–46	–3.0	3,629	–16	–0.7	13,660	–20	–1.7
Purple Sandpiper	127	–56	–4.0	205	–23	–1.1	17,220	–21	–1.7
Dunlin	1,285	+45	+1.9				27,880	+11	+0.8
Bar-tailed Godwit							3,670	–44	–4.4
Eurasian Curlew	101	–57	–4.1				66,330	+33	+2.2
Common Redshank	71	+13	+0.6				33,820	+35	+2.4
Ruddy Turnstone	1,112	+70	+2.7	1,210	–11	–0.5	39,560	–16	–1.3

[a] Devos (2008)
[b] van Roomen *et al.* (2008), van Roomen (in litt.)
[c] Rehfisch *et al.* (2003)