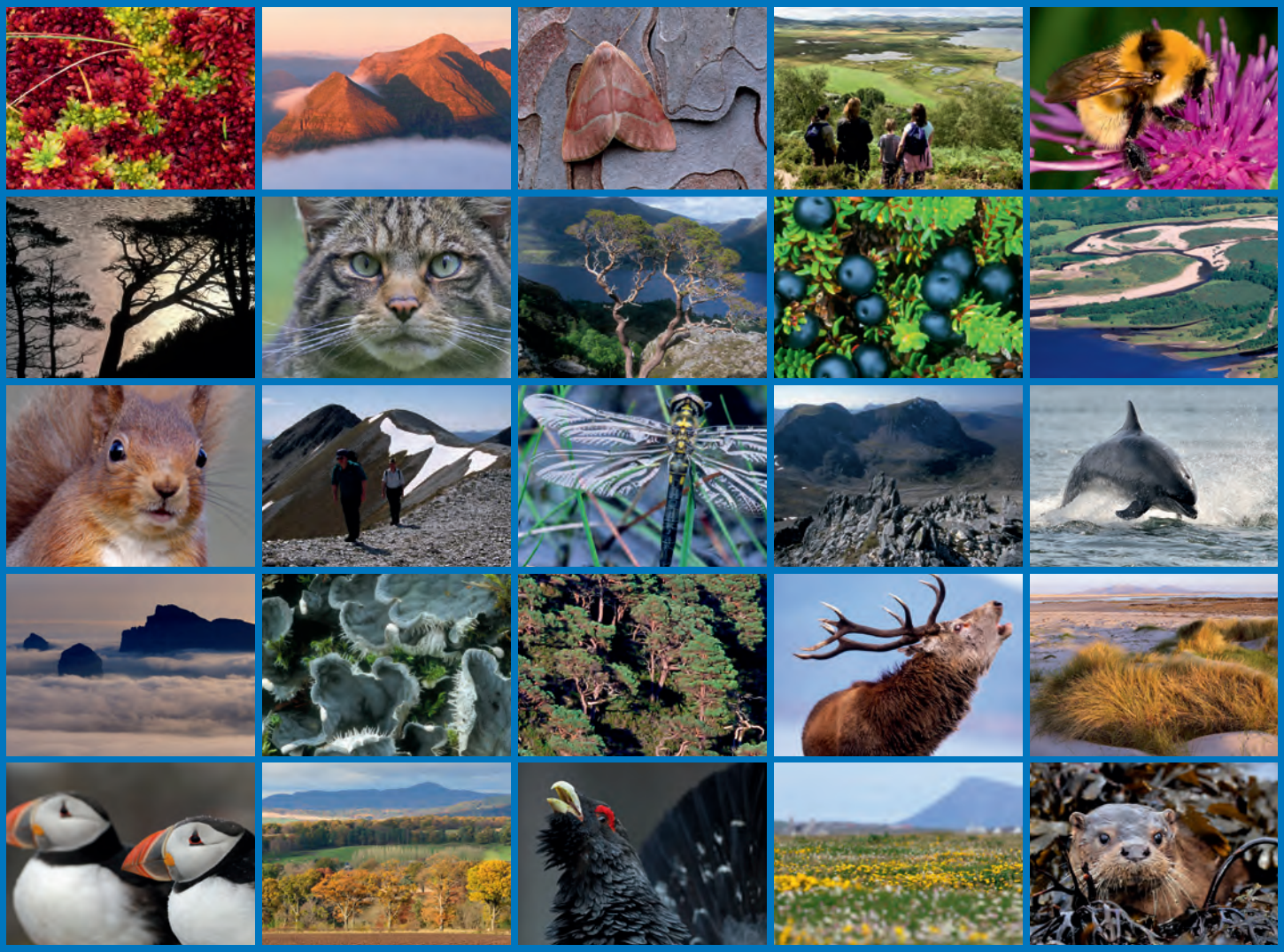
Scottish Natural Heritage
Commissioned Report No. 737

Surveys of waders and wildfowl on East Coast Sanday SPA – November 2012



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COMMISSIONED REPORT

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Surveys of waders and wildfowl on East Coast Sanday SPA – November 2012

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COMMISSIONED REPORT

Summary

Surveys of waders and wildfowl on East Coast Sanday SPA - 2012

Commissioned Report No. 737
Contractor: Orkney Ringing Group
Year of publication: 2014

Keywords

Waders; wildfowl; survey; East Sanday Coast SPA; volunteers; rocky shore.

Background

Sanday is located in the Orkney Islands, and part of the shore is designated as a Special Protection Area. It holds important populations of wintering waders including purple sandpiper, turnstone, ringed plover and bar-tailed godwit. The waders on Sanday have been periodically surveyed since 1982. In November 2012 the waders using the SPA were re-surveyed.

There were three objectives to this work:

1. To undertake co-ordinated wader surveys (repeat counts of the relevant wader survey sections) to inform Site Condition Monitoring.
2. To record general observations of wader movements during the day in relation to existing domestic scale wind turbines on Sanday. Note – the wind turbines being considered are domestic scale generally associated with individual farms and dwellings.
3. To recommend a future monitoring strategy for waders using East Sanday Coast SPA.

Main findings

Wader Counts

- A total of 7,279 waders of 17 species were counted within the SPA boundary in late November 2012;
- The counts were lower than the previous surveys for purple sandpiper, turnstone, ringed plover and sanderling;
- Bar-tailed godwit counts were higher than previous surveys; and
- Differences in the timing of the count from previous surveys may account for the observed changes.

General Observations of waders

- General observations of waders revealed that most species used the farmland;

- Curlew, golden plover, lapwing, snipe and redshank used farmland more frequently than other birds; and
- The narrower sections of the islands were often used as crossing points for waders moving from one beach to another.

Recommendations for future monitoring of waders using East Sanday Coast SPA

- At least three counts should be undertaken using existing count boundaries and methodologies in the late winter;
- Each total count should be undertaken over as short a period as possible to minimise double counting;
- Long count sections and a team of observers should be used;
- Consideration should be given to undertaking spring and autumn passage counts;
- To further our understanding of how waders use farmland on Sanday, structured monitoring should be undertaken. This monitoring should ideally include observing how waders use farmland during the different stages of the tide and day and night; and
- Studies on the food availability may help to inform our understanding of wader distributions on Sanday.

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Acknowledgements

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R. Summers made comments on the draft.

1. BACKGROUND TO WADER SURVEYS ON SANDAY

Sanday is located in the Orkney Islands (Figure 1). Part of the shore is designated as the East Sanday Coast Special Protection Area (SPA)[1] under the Birds Directive (Directive 2009/147/EC). It is recognised for hosting large populations of wintering waders, in particular the Annex 1 listed bar-tailed godwit (*Limosa Lapponica*) and the migratory purple sandpiper (*Calidris maritima*) and turnstone (*Arenaria interpres*) (Stroud *et al.* 2001, Corse and Summers 2009).

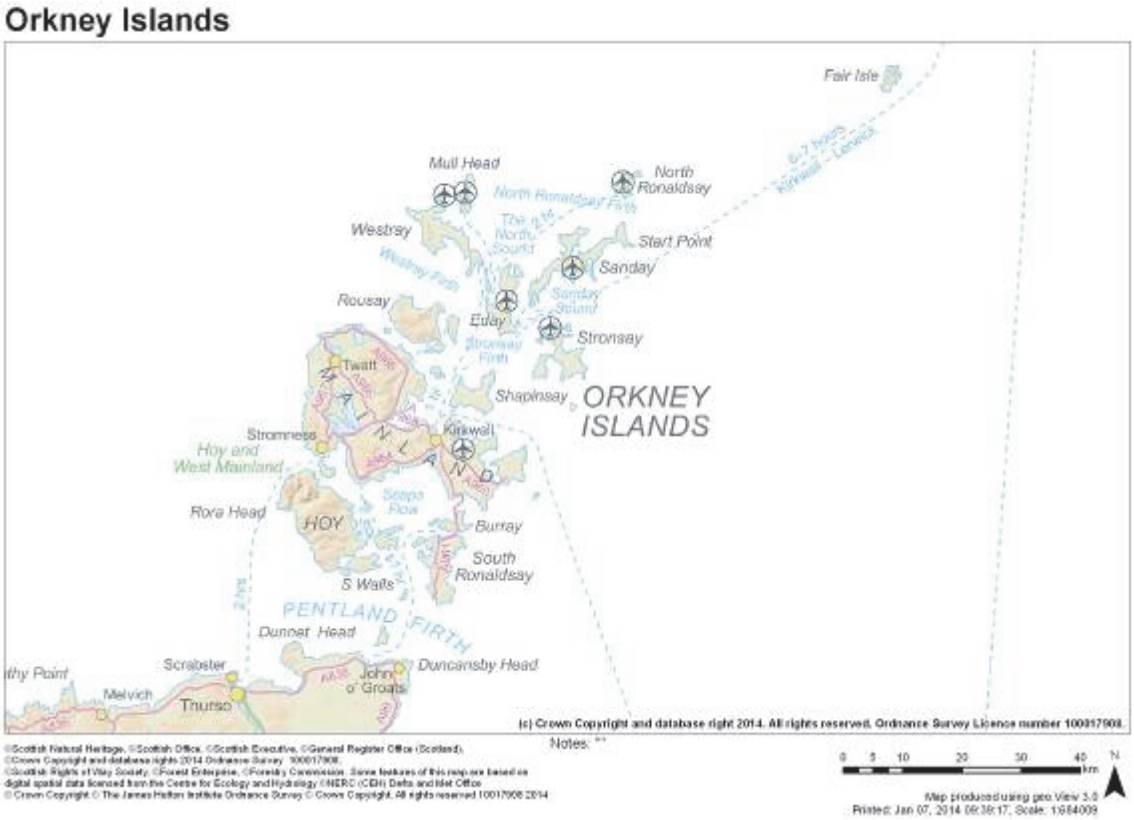

Figure 1. Orkney Islands (© Crown copyright and database right [2014]. All rights reserved. Ordnance Survey Licence number 100017908).

The waders on Sanday were first surveyed in winters 1982/83 and 1983/84 (Tay and Orkney Ringing Groups, 1984). Follow up surveys were made in 1986/87, 1991/92, 1992/93, 2003/04 & 2006/07 (Summers *et al*. 1991; Anderson 1993; Gray & Bainbridge 1994; Robinson-Dean 2007; Corse & Summers 2009).

Although standardised wader surveying methodologies exist, surveying in the northern isles in the winter presents a range of issues. Short day length limits the time available for counting. The island experiences significant tidal variation across short geographic distances. Several species of shorebirds exploit extended feeding opportunities by simply flying across the island making accurate counting difficult.

[1] Link to East Sanday Coast SPA http://jncc.defra.gov.uk/page-1916

1.1 East Sanday Coast Special Protection Area

East Sanday Coast Special Protection Area and Ramsar site is a 55 km stretch of coast on the island of Sanday in Orkney (Figure 2). The coastline consists of rocky and sandy sections and is notable for the presence of sand dune and machair habitats rare outside the Hebrides as well as extensive intertidal sand flats and saltmarsh. The site is further characterised by a series of tombolos, bars, spits and shingle ridges.

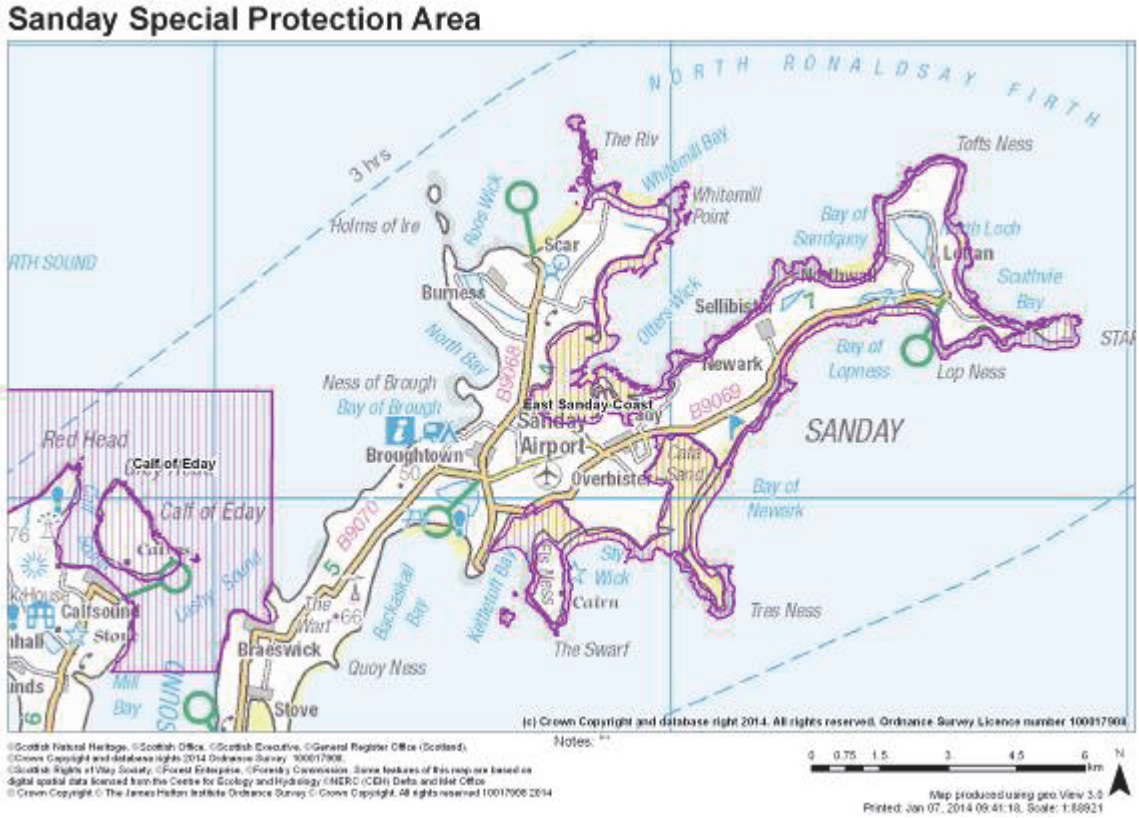

Figure 2. East Sanday Coast Special Protection Area (© Crown copyright and database right [2014]. All rights reserved. Ordnance Survey Licence number 100017908).

It was designated as an SPA in 1996, using population data for the winters 1991/92 to 1993/94.

The SPA consists of the East Sanday Coast SSSI, and includes parts of the existing Northwall and Central Sanday SSSIs.

East Sanday Coast qualifies under **Article 4.1** by regularly supporting, in winter, internationally important populations of the **Annex 1** species bar-tailed godwit (600 individuals, 1.1% of the British population) and under **Article 4.2** by regularly supporting, in winter, internationally important populations of the **migratory** species purple sandpiper (830 individuals; 4% of the British and 2% of the east Atlantic flyway populations) and turnstone (1,400 individuals; 2% of the British and European populations).

As well as its importance for the species mentioned above, the site is also of interest for its overall assemblage of wintering waders including the Annex 1 species golden plover *Pluvialis apricaria* and the regularly occurring migratory species oystercatcher *Haematopus ostralegus*, ringed plover *Charadrius hiaticula*, grey plover *Pluvialis squatarola*, lapwing *Vanellus vanellus*, knot *Calidris canutus*, sanderling *Calidris alba*, dunlin *Calidris alpina*, snipe *Gallinago gallinago*, curlew *Numenius arquata* and redshank *Tringa totanus*.

1.2 Site Condition Monitoring

Site Condition Monitoring (SCM) is Scottish Natural Heritage's programme for monitoring the condition of nature conservation features of special interest on designated sites in Scotland. These features include habitats (e.g. woodland, marine reef, freshwater loch), species populations (e.g. otter, dotterel, marsh fritillary butterfly) and geological formations (e.g. cave, fossil bed, volcanic exposures).

The purpose of SCM is to determine the condition of the designated natural feature within a site. There are in excess of 5,000 individual natural features of special interest hosted on designated sites which are monitored on a rolling programme of monitoring.

1.3 Objectives

There were three objectives to this work:

1. To undertake co-ordinated wader surveys (repeat counts of the relevant wader survey sections) to inform Site Condition Monitoring.
2. To record general observations of wader movements during the day in relation to existing domestic scale wind turbines on Sanday. *Note – the wind turbines being considered are domestic scale generally associated with individual farms and dwellings.*
3. To recommend a future monitoring strategy for waders using East Sanday Coast SPA.

2. METHODS

The survey focussed on the open rocky and sandy shores within the boundary of the Sanday East Coast SPA. To count wintering waders the surveys were conducted between 28 – 29th November 2012. The timing ensures that birds which are wintering and not migrating are counted.

2.1 Wader Surveys

The method for counting linear shores is well recognised (Summers *et al*. 1975, Moser & Summers 1987, Rehfisch *et al*. 2003a). To allow comparisons with the previous surveys in Orkney the same methods were used. To aid surveying the coastline was separated into 30 count sections approximating to habitat i.e. rocky/sandy etc. **Annex 1** provides details of the count sections relevant to the East Sanday Coast SPA. These broadly follow breaks or changes in habitat, for example rocky shore going to sandy shores. Counts were made around low tide up to 3.5 hours before and after the predicted low tide. Each surveyor was allocated a section and walked as near to the water's edge as possible counting all waders and wildfowl. Corse and Summers (2009) provide fuller details to the methods.

Survey sections are shown in Figure 3 and details of the 2012 survey shown in ANNEX 1.

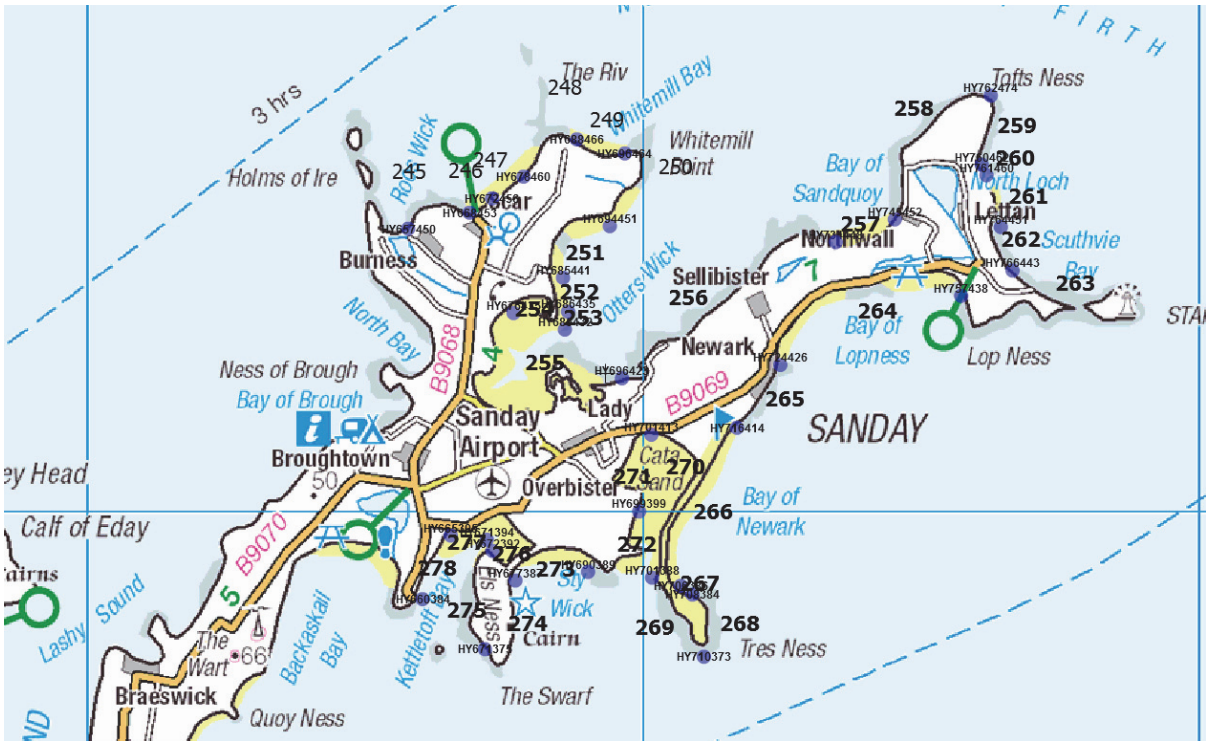

Figure 3. Sanday Wader Count Sections. The numbers are the count sections, boundaries are marked with a blue circle and the relevant Ordnance Survey grid reference. (© Crown copyright and database right [2014]. All rights reserved. Ordnance Survey Licence number 100017908).

2.2 General Observations of Waders

Observers were asked to note any movements of waders from coastal to inland areas.

3. RESULTS

Nine observers surveyed around 55km of coastline during the 28-29th of November 2012. The weather conditions for surveying were largely favourable with a settled period of weather. All counts were made during the optimum time as described in the methods sections. A total of 11,313 birds were counted within the SPA boundary (**Annex 2**). Wader counts are described below. The other birds counted were predominantly waterbirds – ducks; wigeon (1,625), teal (360, eider (331) and mallard (102); and greylag geese (451).

3.1 Wader Counts

A total of 7,279 waders of 17 species were counted within the SPA boundary. **Annex 3** provides details of the waders counted within each of the count sections. Table 1 shows the summarised counts for all of the waders surveyed and the number of sections on which they were recorded. Redshank were the most widespread wader, being present on 27 out of the 30 count sections. Golden plover and bar-tailed godwit were the most numerous, with counts of 2,129 and 1,262 respectively.

*Table 1. East Sanday Coast SPA wader counts November 2012. Species marked with * exceed the GB 1% threshold; species marked with ** exceed the International 1% (thresholds sourced from Holt et al. 2012).*

Species	2012 Count	Number of sections	*GB 1% Threshold*	*International 1% Threshold*
Oystercatcher	115	17	*3200*	*8200*
Ringed plover	89	6	*340*	*730*
Golden plover	2129	6	*4000*	*9300*
Grey plover	55	13	*430*	*2500*
Lapwing	391	6	*6200*	*20000*
Sanderling*	286	8	*160*	*1200*
Purple sandpiper*	225	18	*130*	*710*
Dunlin	547	6	*3500*	*13300*
Common snipe	150	15	*10000*	*20000*
Ruff	1	1	*8*	*12200*
Jack snipe	1	1	*1000*	*20000*
Bar-tailed godwit**	1262	12	*380*	*1200*
Black-tailed godwit	1	1	*430*	*610*
Curlew	749	23	*1400*	*8400*
Whimbrel	1	1	*1*	*3700*
Redshank	553	27	*1200*	*2400*
Turnstone*	724	25	*480*	*1400*

One species exceeded the 1% international threshold, bar-tailed godwit. Three species exceeded the 1% GB threshold – sanderling, purple sandpiper and turnstone.

Otterswick and Cata Sands areas held the majority of waders (Table 2) with 2,033 and 2,892 waders respectively.

Table 2. The number of waders (sum of all wader species) according to count section East Sanday Coast SPA November 2012.

Count Section	Number of Waders	Number of wader species	Locality
K248	59	4	Hucklinstower
K249	80	3	Whitemill Bay
K250	101	7	Whitemill Point
K251	512	7	Otterswick
K252	0	0	Otterswick
K253	25	4	Otterswick
K254	660	6	Otterswick
K255	473	10	Otterswick
K256	363	9	Otterswick
K257	219	9	Bay of Sandquoy
K258	104	7	Tofts Ness
K259	67	5	Tofts Ness
K260	103	7	Hine Greenie
K261	86	7	Hine Greenie
K262	102	9	Hine Greenie
K263	250	8	Start Point
K264	227	8	Lopness
K265	138	7	Newark
K266	7	3	Newark
K267	31	6	Tres Ness
K268	43	5	Tres Ness
K269	54	6	Tres Ness
K270	550	8	Cata Sands
K271	2258	8	Cata Sands
K272	84	5	Cata Sands
K273	45	7	Sty Wick
K274	49	7	Els Ness
K275	432	8	Els Ness
K276	11	2	Kettletoft
K277	146	4	Kettletoft

3.2 General Observations of Waders

Waders were observed actively flying from the shore to fields. Most often the movements were noted during high tide as birds left feeding areas on the shore to either roost or feed in neighbouring fields or to travel to an alternative shore.

The following species were recorded:

- Turnstone – Frequently used farmland when the shoreline was inaccessible.
- Oystercatcher – Frequently used farmland at a range of locations, not always dependent on tidal state, though typically observed flying inland during high tide to either continue feeding or roost.
- Redshank – Observed infrequently flying inland. Birds inland were generally associated with ditches and wet field areas.
- Sanderling – Infrequently recorded flying inland.
- Bar-tailed godwit – Frequently observed flying inland, generally at height and not settling in fields. Several birds noted crossing between Otterswick and Cata Sands
- Golden plover – Predominantly observed in farmland areas and rarely on the coast. Flocks noted on Cata Sands at low tide, as the tide progressed they were noted flying inland at height.
- Curlew – Predominantly observed in farmland areas and rarely on the coast.

Observers noted that some birds crossed the island, particularly at narrower areas such as at Start Point, and between roosting/feeding areas such as the Bay of Lopness and Scuthvie Bay (Figure 4).

Figure 4. Eastern tip of Sanday, an area which observations revealed interchange between coastal feeding/roosting sites. The numbers are the count sections, boundaries are marked with a blue circle and the relevant Ordnance Survey grid reference. (© Crown copyright and database right [2014]. All rights reserved. Ordnance Survey Licence number 100017908).

Around the Otterswick and Cata Sands area (Figure 5) there was considerable interchange of waders. In particular bar-tailed godwit, oystercatcher and golden plover moved between these two sites. This is likely due to the difference in the times of high tide, around 1.5 hours between the two sites, enabling birds to continue feeding throughout the high tide period.

Figure 5. Sanday – Cata Sand and Otterswick, an area which observations revealed interchange between coastal feeding/roosting sites. The bold numbers are the count sections, boundaries are marked with a blue circle and the relevant Ordnance Survey grid reference. (© Crown copyright and database right [2014]. All rights reserved. Ordnance Survey Licence number 100017908).

No large flock movements of waders were observed in the proximity of any domestic wind turbines during the walked wader surveys.

4. DISCUSSION

The favourable weather conditions meant that all sections were counted over two days with nine observers.

Birds were seen to move between sections of the coast but, due to the methods used to count this SPA and the short overall count period, this was not considered to result in any significant errors in total numbers. However birds are also known to move between islands in Orkney (*pers comm.* C Corse), possibly in relation to weather, tidal height or time of year. Hence survey repetition within the winter season gives the best chance of determining this and thereby identifying maximum populations levels of each species using the SPA.

4.1 Comparison with previous counts

For the five selected SPA qualifying species only bar-tailed godwit show an increase from previous surveys (Table 3).

Table 3. Counts of SPA qualifying species.

Winter	Ringed plover	Turnstone	Sanderling	Purple sandpiper	Bar-tailed godwit
1982/83	231	887	434	858	750
1986/87	261	1116	195	970	573
1991/92	102	1866	411	920	412
*2003/04**	*113*	*605*	*436*	*275*	*614*
2006/07	71	852	209	643	450
2012/13	89	724	286	225	1262

* Note the results from 2003/04 used a range of high and low tide counts and therefore cannot be compared to the other counts presented here. They are presented here for indicative purposes only.

Although the counts for most of the qualifying species are lower than has been previously recorded, these figures should be interpreted with caution. One off counts can be of limited use, in particular when trying to determine the population of birds using a site. Observations of waders around Sanday have revealed that there is considerable interchange between different beaches on Sanday and even, for some waders, between islands. Frequently birds will move in relation to weather and sea state conditions, seeking more sheltered feeding sites. Other factors, such as invertebrate availability influences the numbers present on certain beaches and for some waders conditions in other areas of the wintering range may mean that birds will use these sites.

4.1.1 Ringed Plover

The counts show a decline from the peak count in 1986/87. The trends at the local level when compared to the national level are similar. The national trend is one of a steady decline over 20 years (SNH 2013).

4.1.2 Turnstone

Turnstone show a slight decline from the previous recorded total in 2006/07. The variable numbers recorded over the period since 1982/83 contrast to the national trend for Scotland, which has shown a decline of around 68% since 1975/76 (SNH 2013). Ringing studies in the Moray Firth have shown turnstone to have a high degree of site fidelity, returning to the same locations each winter (Rehfisch *et al*. 2003b); whether turnstone exhibit similar site fidelity in Sanday is unknown, thus the change in counts from 2006/07 may be a result of birds shifting or an actual decline.

4.1.3 Sanderling

The counts show a slight increase from the previous count in 2006/07. Nationally sanderling numbers have increased (SNH 2013). Ringing studies have shown that they are site faithful, returning to the same area each year (C. Corse *pers. obs*.). There are records of four birds changing wintering areas. These were all within the same winter 2010/11 and are believed to be linked with the cold winter conditions. Subsequent marking of individuals has not revealed any further changes in wintering areas.

4.1.4 Purple sandpiper

The counts show that there has been a decline in purple sandpiper numbers from mid-1980s. A decline has also occurred at a national scale (SNH 2013). Wintering purple sandpipers originate from different populations (short-billed – originating from Norway and long-billed – originating from the Canadian Arctic). Studies have revealed the short-billed have been disproportionately affected showing the largest declines (Summers *et al*. 2012). A study by Corse and Summers (1999), found that around 87% of birds present in Orkney belonged to the long-billed population. It has recently been found that the total number of Canadian purple sandpipers is not present until the end of December, so our count in November may be an under-estimate, and any decline less.

4.1.5 Bar-tailed godwit

The counts have shown an increase in the numbers of bar-tailed godwit. At the national level, bar-tailed godwit have decreased by around 26%, since 2006. Populations of bar-tailed godwit are known to be highly mobile with considerable inter-change between other areas (Rehfisch *et al*. 2003b).

4.2 Recommendations for future surveys

4.2.1 Winter Counts

Single counts are of limited value for determining the numbers of birds using a site. It is recommended that at least three counts are made during the January to end of February period. Studies on purple sandpipers (R. Summers *pers. comm.*) have shown that they have a late return date to wintering grounds and even counts in December may not actually reveal the true numbers using a site.

Counting within a reasonable weather window can be problematic in the Northern Isles. The approach taken during this survey was to have a large number of volunteer observers allowing the coastline to be surveyed in two days. Previous surveys have also used three to four experienced observers. We would recommend that at least three to four experienced observers are used. Summers *et al*. 1984 found that observer experience may affect precisions and that some of the day to day variations associated with short-distance movements of waders along the shore can be overcome by surveying long sections of coastline by a team working simultaneously. Whilst following this approach opportunities may also exist to provide training for less experienced observers through linking with experienced observers. This may assist in maintaining a pool of potential surveyors for future requirements.

4.2.2 Spring and Autumn Passage Counts

Surveys by Orkney Ringing Group (C. Corse, *pers. obs.*) have shown that Sanday may be of importance for waders on passage during the spring and autumn migration periods. Colour marking sanderling, fitting birds with highly visible colour rings to allow them to be easily re-sighted[2], has shown that birds from different wintering populations are present on the site depending on the time of year. Most birds marked in the winter have left by mid-May. A catch of 29 birds on 19th May 2012, during the spring passage period showed that only one of these birds was re-sighted on Sanday in winter. In contrast 18 of them were seen in Netherlands, France and Portugal in the winter, indicating that birds from these more southerly wintering populations used the site to stop-over on their northerly migration to the Arctic breeding grounds.

To improve our understanding of how birds use the site in the passage periods would require a concentrated effort in spring and autumn. Counts would help reveal the numbers using the site on a given day and by looking at individually colour ringed birds we can help further our understanding of turnover revealing the total number of birds using a site. Whilst the site is already identified as a SPA for waders, further surveys would allow for an assessment on the site's importance during the passage period.

4.2.3 Wader Flight Paths

Ad hoc observations showed that a proportion of waders use the shoreline and then switch to other feeding or roosting sites on farmland. Some of these movements, such as around Cata Sands and Otterswick may possibly be related to birds optimising feeding opportunities and large flock movements were observed well above domestic turbine height between the two areas. Weather conditions and disturbance are known to affect distributions of waders and may partly explain the need for moving. Feeding opportunities in relation to the availability of invertebrate food sources present during different times of the tidal cycle may influence the activity of waders. However, in the absence of any data on food availability and wader distributions the mechanisms for such movements can only be speculated upon. The majority of domestic turbines currently in operation on Sanday appear not to have been placed near high tide roosts and the few that have, are of such a scale that they are not directly visible from the roost. Care should be taken to ensure that any new proposals have adequate separation distances to avoid any potential displacement or disturbance.

It was clear from our observations that a considerable proportion of waders primarily use the farmland areas, in particular curlew, golden plover, lapwing and snipe, spending very little time on the shoreline. Several other species such as turnstone and redshank and to a lesser extent sanderling and purple sandpiper do traverse farmland on a regular basis either as individuals or in small groups. Future studies would help inform potential interaction in specific locations. What would be of particular interest would be to examine if there were any displacement effects from existing turbines on waders. For these studies, vantage point style watches would help to further our understanding of the coastal to inland usage of sites by waders. Further to this, we have little information on the night-time use of fields by waders on Sanday. Elsewhere studies have shown that the choice of sites for feeding and roosting during day and night can differ markedly (e.g. Burton and Armitage 2005). Studies looking into the food availability for waders, on farmland and coastal areas, may also be useful to inform our understanding of the distributions of waders around Sanday.

[2] http://www.waderstudygroup.org/res/project/sand-colrings-en.php

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ANNEX 1: COUNT SECTION DETAILS

Count Boundary	Starting point	Finish point	Survey Date	Observer
K248	HY678460	HY688466	29/11/2012	David Aiton
K249	HY688466	HY696484	29/11/2012	David Aiton
K250	HY696484	HY694451	29/11/2012	Helen Aiton
K251	HY694451	HY685441	29/11/2012	David Aiton
K252	HY685441	HY686435	29/11/2012	Dave Wakefield
K253	HY686435	HY685432	29/11/2012	Dave Wakefield
K254	HY685432	HY676435	29/11/2012	
K255	HY676435	HY696423	29/11/2012	David Aiton/Dave Wakefield
K256	HY696423	HY734448	29/11/2012	Nigel Buxton
K257	HY734448	HY745452	29/11/2012	Lorna Dow
K258	HY745452	HY762474	29/11/2012	Brian Ribbands
K259	HY762474	HY760462	29/11/2012	Brian Ribbands
K260	HY760462	HY761460	28/11/2012	Colin Corse
K261	HY761460	HY764451	28/11/2012	Colin Corse
K262	HY764451	HY766443	28/11/2012	Colin Corse
K263	HY766443	HY757438	29/11/2012	Simon Foster/Kenny Graham
K264	HY757438	HY724426	29/11/2012	Colin Corse/Lorna Dow
K265	HY724426	HY716414	28/11/2012	Lorna Dow
K266	HY716414	HY706386	28/11/2012	Lorna Dow/David Aiton
K267	HY706386	HY708384	28/11/2012	David Aiton
K268	HY708384	HY710373	29/11/2012	Nigel Buxton
K269	HY710373	HY701388	29/11/2012	Nigel Buxton
K270	HY701388	HY701413	29/11/2012	Simon Foster
K271	HY701413	HY699399	29/11/2012	Kenny Graham
K272	HY699399	HY690389	28/11/2012	Helen Aiton
K273	HY690389	HY677387	28/11/2012	Helen Aiton
K274	HY677387	HY671375	28/11/2012	Brian Ribbands
K275	HY671375	HY672392	28/11/2012	Brian Ribbands
K276	HY672392	HY671394	28/11/2012	Brian Ribbands
K277	HY671394	HY665395	29/11/2012	Brian Ribbands

ANNEX 2: 2012 ALL BIRDS RECORDED

(Wildfowl)

Section	GRNDI	MOORH	FULMA	SHAG	CORMO	GREHE	MUTSW	GREGO	MALLA	TEAL	PINTA	SHOVE	TUFDU	WIGEO	EIDER	LOTAD	REBME	SHELD
K248									10					22				
K249																6		
K250									2					130				
K251						1								52				
K252			2															
K253			4						1					12				
K254			9															
K255			4					58	15	72				284			7	
K256				1		2			17					344			7	
K257																		
K258			30	1	2				2					11	4			
K259			26						3					2				
K260																		
K261																		
K262																		
K263		1		1	1	1	7	47	21	59	8	1		67	11			
K264									12					9			2	
K265	1								2							2		
K266																	2	
K267																		
K268					4					50				450				
K269						1				130				17			1	
K270																		
K271						3		346		48			6		316			1
K272																		
K273														2			2	
K274			4		120				2					4				
K275			10		30	1			15	1				150				
K276														29				
K277						1								40				
TOTALS	**1**	**1**	**89**	**3**	**157**	**10**	**7**	**451**	**102**	**360**	**8**	**1**	**6**	**1625**	**331**	**8**	**21**	**1**

(Waders)

Section	OYSTE	RINPL	GOLPL	GREPL	LAPWI	SANDE	PURSA	DUNLI	SNIPE	RUFF	JACSN	BATGO	BLTGO	CURLE	WHIMB	REDSH	TURNS
K248	3						1									20	35
K249	3															14	63
K250					24		33		1			1		6		12	24
K251			230		229				9			19		1		12	12
K252																	
K253	1		5													3	16
K254			553		43							18		36		8	2
K255				8	6		2	20	4			255		24	1	84	69
K256	5			2	81		2		25			29		75		104	40
K257	6	55		4		82	6	18				12				13	23
K258	9			2			37		3					5		31	17
K259	4								1					43		12	7
K260	4	7		1		14	6					16		55			
K261	12					1	1				1			15		3	53
K262	13	19		2		4	10	17				22		7		8	
K263	34				8		29	1	28					24		59	67
K264	7	2				73	42		4			3				2	94
K265	3			3					2	1				83		26	20
K266	2													1			4
K267				2			2					4		2		4	17
K268							17		10					9		4	3
K269	3						15		3					3		8	22
K270			1	25		17		485	1					7		3	11
K271			1200			92			57			800	1	22		58	28
K272				2			3							30		10	39
K273		4		1		3	2	6								5	24
K274	3			2			5		1					15		16	7
K275	3	2	140	1			12							220		27	27
K276														6		5	
K277									1			83		60		2	
TOTALS	**115**	**89**	**2129**	**55**	**391**	**286**	**225**	**547**	**150**	**1**	**1**	**1262**	**1**	**749**	**1**	**553**	**724**

(Other birds)

Section	HENHA	BLHGU	COMGU	HERGU	GBBGU	ROCPI	STARL	RAVEN	TWITE	SNOBU	
K248											
K249											
K250											
K251											
K252											
K253						1					
K254				3		5					
K255				5							
K256		1		13	12	6	4		2		
K257				32	3						
K258				3	6	18	2				2
K259					1						
K260			1	17							
K261											
K262				46							
K263				3	13	2					
K264							11				
K265				8	1	2					
K266				2		1					
K267											
K268							2	48			
K269							5	184			
K270				1	3	3					4
K271			5		7	5			1	212	2
K272											
K273				30		5					
K274				26	25	3	6				
K275				15	1	2	12				
K276											
K277			1	5	1		12				
TOTALS		**1**	**7**	**209**	**73**	**53**	**54**	**232**	**3**	**212**	**8**

ANNEX 3: 2012 WADER COUNTS

Section	Date	OYSTE	RINPL	GOLPL	GREPL	LAPWI	SANDE	PURSA	DUNLI	SNIPE	RUFF	JACSN	BATGO	BLTGO	CURLE	WHIMB	REDSH	TURNS
K248	29/11/2012	3						1									20	35
K249	29/11/2012	3															14	63
K250	29/11/2012					24		33		1			1		6		12	24
K251	29/11/2012			230		229				9			19		1		12	12
K252	29/11/2012																	
K253	29/11/2012	1		5													3	16
K254	29/11/2012			553		43							18		36		8	2
K255	29/11/2012				8	6		2	20	4			255		24	1	84	69
K256	29/11/2012	5			2	81		2		25			29		75		104	40
K257	29/11/2012	6	55		4		82	6	18				12				13	23
K258	29/11/2012	9			2			37		3					5		31	17
K259	29/11/2012	4								1					43		12	7
K260	28/11/2012	4	7		1		14	6					16		55			
K261	28/11/2012	12					1	1				1			15		3	53
K262	28/11/2012	13	19		2		4	10	17				22		7		8	
K263	29/11/2012	34				8		29	1	28					24		59	67
K264	29/11/2012	7	2				73	42		4			3				2	94
K265	28/11/2012	3			3					2	1				83		26	20
K266	28/11/2012	2													1			4
K267	28/11/2012				2			2					4		2		4	17
K268	29/11/2012							17		10					9		4	3
K269	29/11/2012	3						15		3					3		8	22
K270	29/11/2012			1	25		17		485	1					7		3	11
K271	29/11/2012			1200			92			57			800	1	22		58	28
K272	28/11/2012				2			3							30		10	39
K273	28/11/2012		4		1		3	2	6								5	24
K274	28/11/2012	3			2			5		1					15		16	7
K275	28/11/2012	3	2	140	1			12							220		27	27
K276	28/11/2012														6		5	
K277	29/11/2012									1			83		60		2	
TOTALS		**115**	**89**	**2129**	**55**	**391**	**286**	**225**	**547**	**150**	**1**	**1**	**1262**	**1**	**749**	**1**	**553**	**724**

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