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Archive Report No. 017

Waders and wildfowl on the Ythan Estuary 2007/2008

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ARCHIVE REPORT

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Waders and wildfowl on the Ythan Estuary 2007/2008

For further information on this report please contact:

Annabel Drysdale
Scottish Natural Heritage
Little Collieston Croft
Collieston
ELLON
AB41 8RU
Telephone: 01358 751330
E-mail: annabel.drysdale@snh.gov.uk

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ARCHIVE REPORT

Summary

Waders and wildfowl on the Ythan Estuary 2007/2008

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Contractor: Aberdeen University
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Background

Counts of waders and wildfowl on the Ythan estuary were made from 7 July 2007 to 27 June 2008, using the same methods as those used in the past, to enable the data to be comparable; a systematic survey from the estuary mouth to Logie Buchan bridge (Figure 1). Fortnightly counts and the distribution of birds over the estuary are shown in detail for each species.

Main findings

- The peak monthly mean count of common eiders *Somateria mollissima* in spring decreased from 2,556 in 2006/07 to 1,935 in 2007/08. The peak monthly mean total of other species, however, increased considerably, from 8,959 (September 2006) to 12,330 (September 2006). The overall mean total of birds other than eiders over the whole autumn and winter (August to February) also increased, from 5,244 in 2006/07 to 7,265 in 2007/08. There was a decrease in both the peak and winter median counts of most individual waterfowl, but increases in most wader species, between 2006/07 and 2007/08.
- As in 2006/07, the distribution of birds over the estuary was determined in greater detail than in previous surveys and the birds' densities in 35 separate sub-sections were calculated. Distribution maps are presented for bar-tailed godwit *Limosa lapponica*, curlew *Numenius arquata*, dunlin *Calidris alpina* and redshank *Tringa totanus*.
- The peak size of the eider population in 2008 (2,739) was 16.0% lower than in 2007 (3,262), while the estimated total population (the sum of the separate peaks of males, females and yearling males) was 10.8% lower. The estimated number of breeding pairs decreased, by 8.9% from 1,151 in 2007 to 1,1048 in 2008. The sex ratio of 1.41 (males per female) was slightly lower than that in 2007 (1.44), while breeding output increased, from 18 in 2007 to 43 in 2008.

For further information on this project contact:
Annabel Drysdale, Scottish Natural Heritage, Little Collieston Croft, Collieston, Ellon, AB41 8RU.
Tel: 01358 751330 or annabel.drysdale@snh.gov.uk
For further information on the SNH Research & Technical Support Programme contact:
Knowledge & Information Unit, Scottish Natural Heritage, Great Glen House, Inverness, IV3 8NW.
Tel: 01463 725000 or research@snh.gov.uk

Table of Contents **Page**

1. INTRODUCTION

This report describes surveys which continue a monitoring programme which started in 1989/90, with the objective of monitoring the bird populations of the Ythan estuary by means of twice-monthly surveys of numbers and distribution. It is envisaged that the monitoring will continue, so this report should be considered as an interim one. A final report will be submitted when the monitoring is brought to an end.

The surveys carried out in 2007/08 fall into three distinct categories:

Counts of waders, wildfowl and other water birds, and their general distribution;
The detailed distribution of selected species, to be related to algal cover;
Detailed monitoring of the common eider *Somateria mollissima* population.

Since these surveys have different methodologies, each survey is presented in a separate section, so that the methodology immediately precedes the results of the survey and can be consulted readily.

In the interests of brevity, and because there is unlikely to be confusion of related species on the Ythan, short forms of bird names (e.g eider for common eider) will be used in the text and tables. Full names, as recently revised by the BOU, are given in Appendix 1.

2. WADER AND WILDFOWL COUNTS ON THE YTHAN ESTUARY 2007/2008

2.1 Introduction

Counts were carried out from 7 July 2007 to 27 June 2008, using the same methods as in previous years. The counts included waders, wildfowl (swans, geese and ducks) and other water birds, such as cormorants and herons, but excluded seabirds, such as gulls. Since eiders are an important qualifying species of the SPA, they were considered separately in the analysis of the data.

2.2 Methods

2.2.1 Field survey

Eiders were counted at high tide, when they were roosting on the shore or in sheltered bays, so that errors due to movement and diving would be minimised. All of the other species were counted at low tide, when they were feeding and so were dispersed over the intertidal area; roost counts at high tide were not practicable because roost sites were dispersed (some of them not known) and because some waders were known to feed in fields at high tide in mid-winter. Eiders were counted by I.J. Patterson and other species by A.W. Thorpe.

All surveys started at the estuary mouth and proceeded upstream, so as to minimise the risk of the count being curtailed by the incoming tide. Counts were made from standard observation points (Figure 1) and the counts were subdivided into nine areas of the estuary (Figure 1), so that the general distribution of each species could be described. The observer moved quickly by car from one observation point to the next, so as to minimise errors due to birds moving between sections during the survey. Any such movements seen while driving were noted and allowed for in the counts.

2.2.2 Data analysis

The count data were recorded on a pro-forma recording sheet and later stored on computer in an Excel spreadsheet. At the end of the survey year (after 30 June) the data were checked, sorted and analysed, using Excel functions.

2.3 Results

The count data are tabulated by species in Appendix 1. This section presents the results of analyses of the data.

2.3.1 Total number of birds on the estuary

The total number of birds of all species was calculated for each count date and the mean taken for each month. Eiders were considered separately from the other species (Table 2.1).

Table 2.1 *The monthly mean numbers of eiders and birds of other species on the Ythan estuary in 2007/08*

Month	Eiders	Other species	Total
2007			
July	1,049	2,470	3,519
August	791	7,458	8,249
September	834	12,330	13,164
October	886	11,068	11,954
November	459	7,624	8,083
December	475	3,760	4,235
2008			
January	318	4,064	4,382
February	330	4,553	4,883
March	355	1,954	2,309
April	954	1,041	1,995
May	1,935	399	2,334
June	1,054	821	1,875

The total number of birds of all species on the estuary was higher in September and October than in any other month (Figure 2), due mainly to large numbers of golden plovers *Pluvialis apricaria* and lapwings *Vanellus vanellus*.

2.3.2 Comparison between 2006/07 and 2007/08

2.3.2.1 Total number of birds

The monthly mean numbers of birds of all species (including eiders) were higher in 2007/08 than in the previous year in eight of the 12 months (July to February). The peak of 13,164 birds in September 2007 was also much higher than the peak in September 2006 (9,544).

Eiders decreased between the two years, with numbers lower in 2007/08 than in the previous year in all but three of the 12 months. Species other than eiders, in contrast, had higher mean numbers in 2007/08 in eight months. However, as was emphasised in previous reports, such peak monthly values may be affected by year-to-year differences in the timing

and extent of migratory movements and so may not be meaningful in making comparisons between years.

A less variable measure, however, the mean monthly total of species other than eiders over the whole autumn and winter (August to February), also showed an increase, from 5,244 in 2006/07 to 7,265 in 2007/08.

2.3.2.2 Individual species

For each of the commonly-recorded species (those which in most years were recorded on at least 10 of the 14 winter count dates), the mean of the three highest counts in 2007/08 was compared with the same measure for the previous year (Table 2.2).

Table 2.2 *The mean of the three highest counts of each common species in 2007/08, compared to 2006/07.*

Species	*2006/07*	*2007/08*	*Change*
Waterfowl			
Mute Swan	48	28	-
Shelduck	192	175	-
Wigeon	497	445	-
Teal	52	17	-
Mallard	94	63	-
Eider	2,584	2,069	-
Goldeneye	23	26	+
Merganser	22	19	-
Cormorant	59	45	-
Heron	41	33	-
Waders			
Oystercatcher	537	539	+
Ringed plover	32	41	+
Golden plover	3,309	4,804	+
Lapwing	3,476	4,705	+
Knot	120	564	+
Dunlin	449	858	+
Bar-tailed godwit	42	50	+
Curlew	1,983	1,296	-
Redshank	1,009	1,198	+
Turnstone	43	53	+

All of the eight wildfowl species except goldeneye *Bucephala clangula* showed decreases between 2006/07 and 2007/08. In contrast, all of the 10 wader species except curlew *Numenius arquata* increased. The data are of course subject to the difficulty that some species (e.g. golden plover and lapwing) occurred in unusually large numbers in only a few counts out of the whole year, so that peak counts can be misleading. Peak counts were, however, appropriate for eiders and shelduck *Tadorna tadorna*, which reached predictable seasonal peak numbers in the nesting season (usually in May).

An alternative measure, the median of the winter counts (1 September to 31 March; Table 2.3) is not affected by the size of isolated peak counts (Patterson and Cosgrove 1998).

Table 2.3 *The median of the winter counts of each common species in 2007/08, compared to 2006/07.*

Species	Median 2006/07	2007/08	Change
Mute Swan	25	6	-
Wigeon	189	180	-
Teal	0	0	=
Mallard	20	9	-
Goldeneye	11	9	-
Merganser	11	11	=
Cormorant	8	6	-
Heron	9	9	=
Waterfowl total	273	230	-
Oystercatcher	345	318	-
Ringed plover	6	3	-
Golden plover	661	1,067	+
Lapwing	1,711	1,470	-
Knot	56	315	+
Dunlin	214	452	+
Bar-tailed godwit	28	32	+
Curlew	351	366	+
Redshank	572	582	+
Turnstone	14	16	+
Wader total	3,958	4,621	+
Overall total	4,231	4,851	+

Of the six species of wildfowl which normally have their highest numbers in winter (ie excluding eider and shelduck), four showed a decrease in their median counts, while two remained the same. Of the 10 wader species, seven increased and three decreased. The totals of the median values decreased for waterfowl and increased for waders, with an increase overall.

2.4 Discussion

As in previous years, the large month-to-month fluctuations in the numbers of some of the most abundant species on the estuary makes it difficult to compare overall bird numbers between 2006/07 and 2007/08, especially since many of the fluctuations may have been the result of large-scale movements, e.g. cold-weather effects or post-breeding dispersal, not related to conditions on the Ythan itself. Year-to-year comparisons must therefore be interpreted cautiously.

There was an overall increase in total bird numbers between the two years, with numbers higher in 2007/08 than in 2006/07 in eight of the 12 months. The mean total number of birds of species other than eiders between August and February was also higher than in the previous year. In spite of this general increase, almost all of the individual waterfowl species showed a decrease in both their peak and winter median numbers. The two main breeding duck species also both showed a decrease in their peak counts. In contrast to the waterfowl, almost all of the common wader species showed an increase in both their peak and winter median numbers. It is not clear what factors might be associated with this general picture of decrease in wildfowl and increase in waders. It may be associated with a national trend, but this cannot be checked until the national WeBS count data are published. There may have been lower amounts of green algae in summer 2007, but data on the area covered by algae was available. However, the lower eider numbers may well be related to a decline in mussels associated with algal cover of the musselbeds (section 4).

3. THE DISTRIBUTION OF WATERFOWL ON THE YTHAN ESTUARY

3.1 Introduction

There has been concern for many years about the growth of green algae on the intertidal areas of the Ythan estuary and the effects of the algal cover on the ecosystem (Raffaelli *et al*. 1999). The situation has been monitored by regular aerial photographic survey of the extent of the algae in summer and by counts of waterfowl throughout the year. Regular twice-monthly low tide counts of wildfowl, waders and other waterbirds started in 1989 and have continued without a break until the present. During these counts, the estuary was divided into nine sections (Figure 1), so that the birds' distribution, in addition to their total numbers, could be monitored. The division of the estuary into only nine sections, however, gave only a coarse distribution, capable of detecting changes only if they were fairly major. A detailed comparison of the birds' distribution with that of the algae in any given year was also limited to a rather coarse scale. Consequently, SNH decided to implement a more detailed survey of bird distribution, using a much finer scale.

The aim of the present survey was to monitor the distribution of waterfowl on the Ythan estuary by twice-monthly low tide counts which distinguished a much larger number of subdivisions than the original nine, and to calculate the mean density of each species in each subdivision. These data could then be used to compare the bird distribution with that of green algae over the same set of subdivisions.

3.2 Methods

3.2.1 Bird counts and mapping

The division of the estuary into arbitrary grid squares was not considered to be practicable, since it would be difficult to identify the boundaries of the squares in the field and thus very difficult to allocate members of widespread diffuse flocks to particular squares. In addition, it was found in trials with different grid systems (e.g. one-hectare; four-hectare), that many squares had part of their area in the river or above the high water mark. Instead of using a grid system, the original nine sections (apart from the three smallest ones) were divided into two or more (up to five) sub-sections (Figure 3). Wherever possible, the divisions between sub-sections were made at visible features, such as tributary streams, bridges, etc, which were easily identifiable in the field.

The sub-section naming system was based on the names of the original nine sections (Figure 1), with the first two letters of each name used as its abbreviation in data tables. Within each subdivided section (i.e. omitting Tarty, Machar and Logie, which were not subdivided), the subsections were numbered from their downstream end. Within each

subsection, its two intertidal areas, i.e. east and west of the low tide river channel, were distinguished as separate count units. Thus, the first pair of count units at the mouth of the estuary were MO1W (Mouth, subsection1, west) and MO1E (Mouth, subsection1, east). In the data tables (Appendix 2, Tables 1 – 5), the resulting 35 count units are listed in order from the estuary mouth upstream, in the direction followed during the counts.

The bird counts were carried out in the same way as in previous years, starting at the estuary mouth at low tide and proceeding upstream, so as to minimise the risk of the count being curtailed by the incoming tide. Counts were made from standard observation points (Figure 1), with the observer moving quickly by car from one point to the next, so as to minimise errors due to birds moving between areas during the survey. Any such movements seen while driving were noted and allowed for in the counts.

The bird counts were recorded in the field on outline maps which showed the section and subsection divisions, using standard two-letter codes for species names. Although only common, widespread mudflat-feeding species, namely bar-tailed godwit *Limosa lapponica* (referred to in error as black-tailed godwit in the statement of requirements), curlew, dunlin *Calidris alpina* and redshank *Tringa totanus*, were required by the survey specification to be investigated in detail, it was found to be more convenient to record all of the bird species on the same system.

3.2.2 Analysis

Following each count, the number of each species in each count unit was entered into an Excel spreadsheet, which allowed the data to be sorted by species at the end of the season. The mean number of each species over the winter (September to March inclusive) in each of the 35 count units was then calculated. The use of median rather than mean values might have been more appropriate, but it was found that the large number of zero counts in many of the count units meant that many median values were zero, even when a species had occurred in the count units concerned on several occasions. Mean values were thus found to be more sensitive to intermittent occurrences and were considered to give a better measure of distribution. These analyses were confined to the commoner bird species found on the estuary, i.e. those recorded on at least 10 of the 14 count dates in the winter period, since the less common species had a large majority of zero counts in their data sets.

The boundaries of the count units were mapped as polygons in ArcView GIS and their individual areas (in hectares) were measured. These values were then used to calculate the mean density of each bird species in each count unit, by dividing the mean number by the area of the unit.

Finally, the bird density data were entered into the attributes table of the subsection map in ArcView, so that they could be plotted on an outline map of the estuary.

3.3 Results

3.3.1 Count unit area

The areas of the count units varied considerably (Appendix 2, Table 1), from 1.3 ha (Inches, subsection 2, east) to 18.6 ha (Sleek, subsection 2, west), with a mean of 5.7 ha and a median of 4.5 ha.

3.3.2 Bird numbers and densities

Both the mean numbers (Appendix 2, Tables 2 and 3) and the mean densities (Appendix 2, Tables 4 and 5) of each bird species in each count unit have been tabulated, since the two types of data allow different assessments of the birds' distribution. The mean number of birds in a count unit indicates the importance of that area of the estuary to the species concerned, whereas the mean density can be taken to indicate the intensity of use of the area by the species. Of these two measures of bird distribution, the density value is considered to be the most appropriate for comparison with the proportion of the count unit covered with green algae.

3.3.3 Plotting of bird distributions

The distributions of the four wader species identified in the specification for the survey, namely bar-tailed godwit, curlew, dunlin and redshank, are plotted in Figures 4 to 7. In these maps, the shading indicates relative density within the range of densities exhibited by the species, with darker shades showing relatively higher densities. The same shade does not indicate comparable densities between species.

The highest densities of bar-tailed godwits were found in the downstream parts of the estuary (Figure 4), with intermediate densities in two count units in the Sleek and Haddo sections. Curlews, in contrast were more widespread, with most high densities in the upper estuary, but with high densities also in the Inches section (Figure 5). Dunlin had their highest densities in the upper estuary (Figure 6). Redshanks had their highest densities throughout a wide area in Machar, Snub and Haddo, in the upper part of the estuary, but there were also high densities in Inches (Figure 7).

3.3.4 Comparison of bird and algal distributions

If the coverage of the estuary by green algae can be provided as ArcView files, the count unit polygons can be superimposed on the algal coverage to determine the proportion of each unit covered by algae. These values for coverage can then be compared with the bird number and density data in Appendix 2, Tables 2 to 5 (using their electronic (Excel) files). No data on algal coverage in summer 2007 was available, so this analysis cannot be carried out with the 2007/08 bird distribution data. However, a system for doing so is now in place, so the analysis can proceed if algal coverage data become available.

It is perhaps significant that of the four species whose distributions are plotted in Figures 4 to 7, three had their highest densities largely in the upper parts of the estuary, where algal coverage is generally considered to be less than on the downstream mudflats (Raffaelli *et al*. 1999). This might suggest that the birds were avoiding the areas with the greatest algal cover. However, in the absence of data on algal coverage in summer 2007, this suggestion must remain speculative.

4. THE EIDER POPULATION

4.1 Introduction

Since the eider is an important qualifying species of the Ythan Estuary, Sands of Forvie and Meikle Loch SPA, with an unusually large mainland-nesting population, additional counts were undertaken to determine the population size, sex ratio and breeding output of this species. Since part of the SPA eider population occurs on the sea coast between Collieston and the mouth of the Ythan estuary, it was necessary to count the birds in this area in addition to those on the estuary itself. Counts in previous years have shown that the annual peak in numbers can be brief, so weekly counts were made over the period when the peak was likely to occur.

4.2 Methods

The counting methods remained the same as in previous years, namely a direct count of the birds while they were roosting at high tide, in separate sections of the estuary (Figure 1), distinguishing males, females and yearling males (Patterson and Laing 1991). Counts of sea coast between Collieston and the estuary mouth were carried out on six occasions between 22 April and 26 May 2008, the period when the seasonal peak in numbers was expected to occur. The sex ratio, after the arrival of sufficient birds and before most females began to incubate, was determined from counts on 22 and 27 April. The number of fledged juveniles was counted by walking down the east shore of the estuary just before high tide on 31 July 2008. Most birds were coming ashore to roost on the east bank and so were within 20-30 m in good light, so that large juveniles could readily be distinguished from adult females, even moulting ones, by the adults' worn and faded wing covert and tail feathers. The juveniles on the sea coast between Collieston and the estuary mouth were counted on the same day.

4.3 Results

4.3.1 Population size

The total number of eiders, including the coast north to Collieston as well as the Ythan estuary, reached a peak of 2,739 on 19 May (Table 4.1), the same week as in 2007 (15 May). Adult males and yearling males reached their peak numbers of 1,827 and 18 respectively on the same date (19 May), but the peak in female numbers (1,066) was on 12 May (Table 4.1). The sum of the separate peak values (the estimated total population) was 2,911. The breeding population, estimated from the peak number of females less the estimated number of yearling females (assumed to be the same as that of yearling males) on the same day (i.e. 6 on 12 May), was 1,060 pairs. No correction could be made for the number of females which were incubating on that date, since there was no detailed study of nesting in 2008.

Table 4.1 *Counts of eiders on the Ythan Estuary and the coastline between Collieston and the estuary mouth in 2008. The peak count for each category is shown in bold.*

Date	Adult Males	Females	Yearling Males	Total
22 April	797	550	5	1,352
27 April	888	649	6	1,543
7 May	1,317	935	9	2,261
12 May	1,576	**1,066**	6	2,648
19 May	**1,827**	894	**18**	**2,739**
26 May	1,599	822	18	2,439

4.3.2 Sex ratio

The mean ratio of adult males (1,685) to all females (1,199) counted on 22 and 27 April was 1.41. If it is assumed that the number of yearling females was the same as that of yearling males (11) counted on the same days, the ratio among older birds was 1.42.

4.3.3 Number of young reared

The number of fledged young counted on 31 July 2008 was 43, including nine on the sea coast between Collieston and the estuary mouth. All but a few had reached the fully-feathered stage and were very likely to survive.

4.4 Discussion

The peak count of eiders in 2008 (2,739, on 19 May) was 16.0% lower than the peak in 2007 (3,262; Patterson and Thorpe 2007), while the estimated total population was 10.8% lower. The peak number of males (1,827) was 11.7% lower than that in 2007 (2,069), and there were also 9.0% fewer females in 2008 (1,066, compared to 1,172 in 2007). The estimated breeding population (the peak count of females less the estimated number of yearling females) also decreased, by 7.9%, from 1,151 pairs in 2007 to 1,060 in 2008. The peak number of yearling males (18) was also lower than in 2007 (21).

This year (2008) is the third successive year with a decline in the Ythan eider population, although the percentage decrease was only about half that between 2006 and 2007 (Patterson and Thorpe 2007). It is not possible to determine whether this decrease was due to over-winter mortality or a failure to return to the area to breed. However, since this, it is clear that there has not been a rapid recovery from the low numbers in 2006 (as happened in 1997 following a very low peak number (2,098) in 1996) and it is possible that the very low breeding output in recent years is beginning to affect adult numbers.

The percentage of the eider population which was found on the sea coast between Collieston and the estuary mouth in late April 2008 (34%) was double that recorded in 2007 (17%), which might suggest that birds were already dispersing from the estuary early in the breeding season. Also, as in 2007, the peak in numbers in 2008 was much less sharp than in recent years, with only a few hundred birds more on 19 May than in the counts in the previous and succeeding weeks (Table 1). This may also indicate that birds which might have contributed to a sharp peak in numbers were moving through the area more rapidly than usual.

The sex ratio (1.41:1) was similar to that in 2007 (1.44), lower than the ratio in 2006 (1.56) and more similar to the ratios in 2005 (1.33), 2004 (1.36) and 2003 (1.35). The estimated ratio among adult birds (1.46) was also lower than the equivalent ratio in 2006 (1.64;

Patterson 2006). This suggests that the sex ratio is returning closer to the level recorded in previous years.

Breeding output in 2008 (43 ducklings) was higher than in 2007 (18 ducklings), reversing a trend in declining output in the last few years (from 222 in 2003, 104 in 2004, 96 in 2005, 56 in 2006 and 18 in 2007). Since nesting success was not monitored in detail during the 2008 nesting period, it is not possible to determine whether the output was influenced mainly by low hatching success or high duckling mortality after hatching.

As was pointed out in the two previous years (Patterson 2006; Patterson and Thorpe 2007), a potentially very important factor in the decline in the eider population may be the considerable growth of algae on the major musselbeds near the mouth of the estuary, where most of the eiders feed. As a result, the eiders' food supply must have declined substantially, and is likely to have been a factor in the decrease in numbers. It would be highly desirable to have a survey of both the intertidal and sublittoral musselbeds, to quantify the area of the beds and the density of the mussels, and compare these with earlier surveys. The survey could also attempt to identify the cause of any decline in mussel abundance.

5. REFERENCES

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6. FIGURES

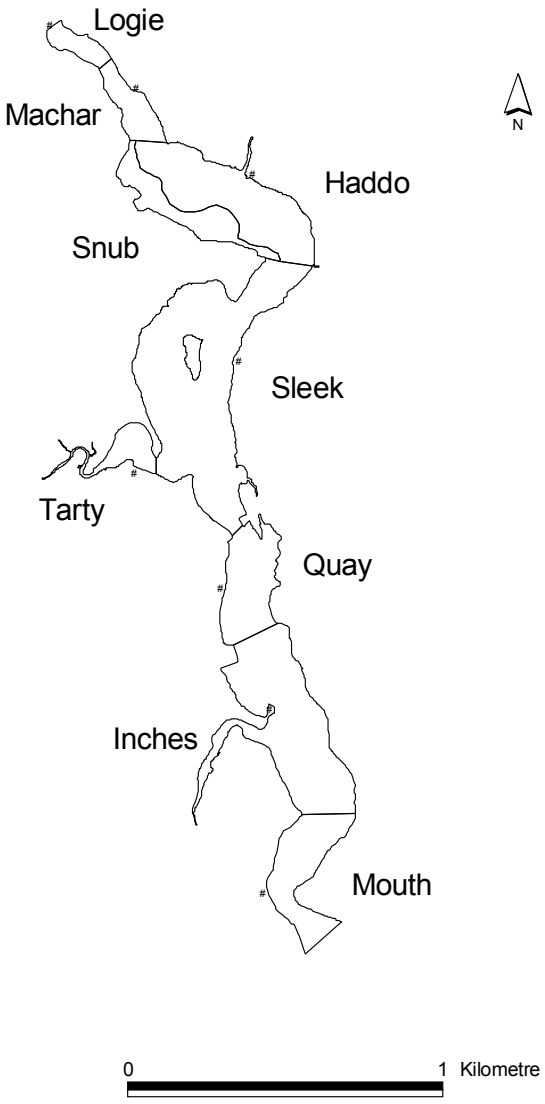

Figure 1. *The Ythan estuary, showing the counting sections (named) and count points (spots). The division between the Snub and Haddo sections is the centre of the low-water channel*.

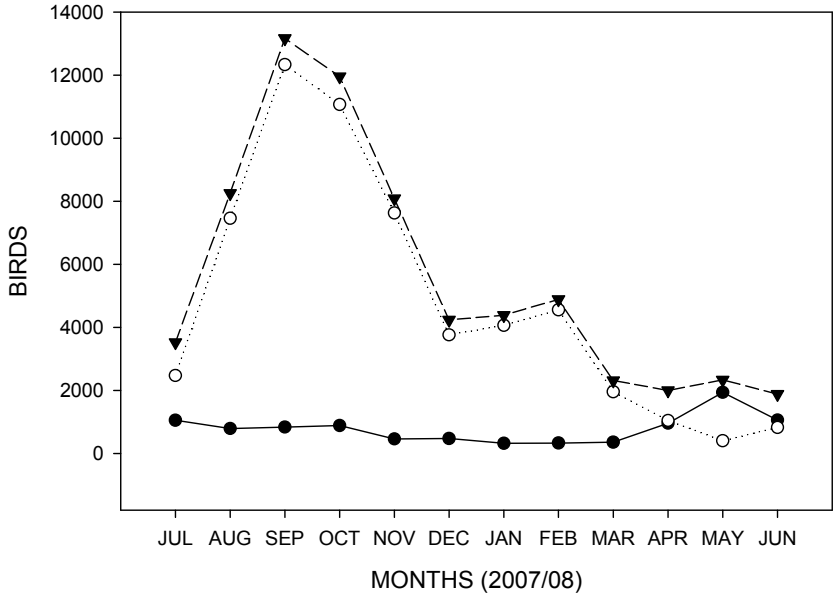

Figure 2. *The mean number of eiders (closed circles), birds of other species (open circles) and the total of birds of all species (inverted triangles) on the Ythan estuary in 2007/08*

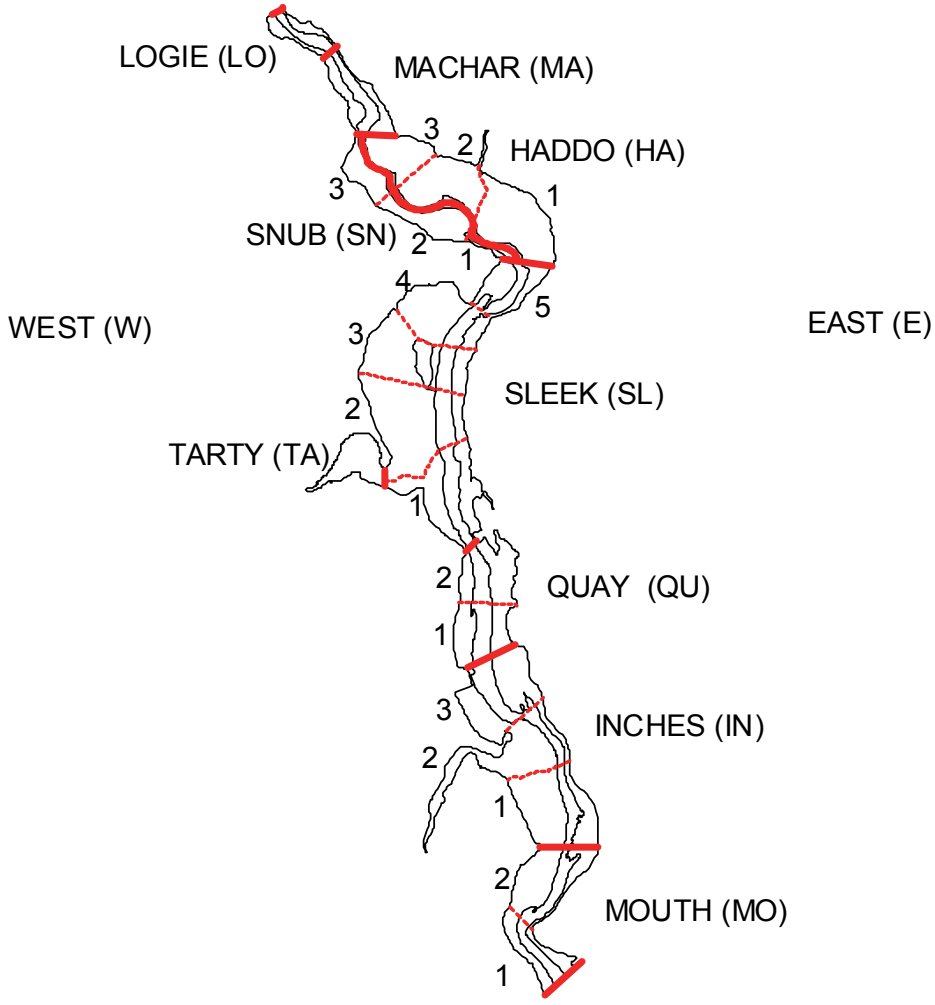

Figure 3. *The counting sections (named, with abbreviations used in Tables) and their sub-sections (numbered). Sections are separated by solid red lines and sub-sections by dotted red lines. Within each sub-section, the east and west shores are considered separately*.

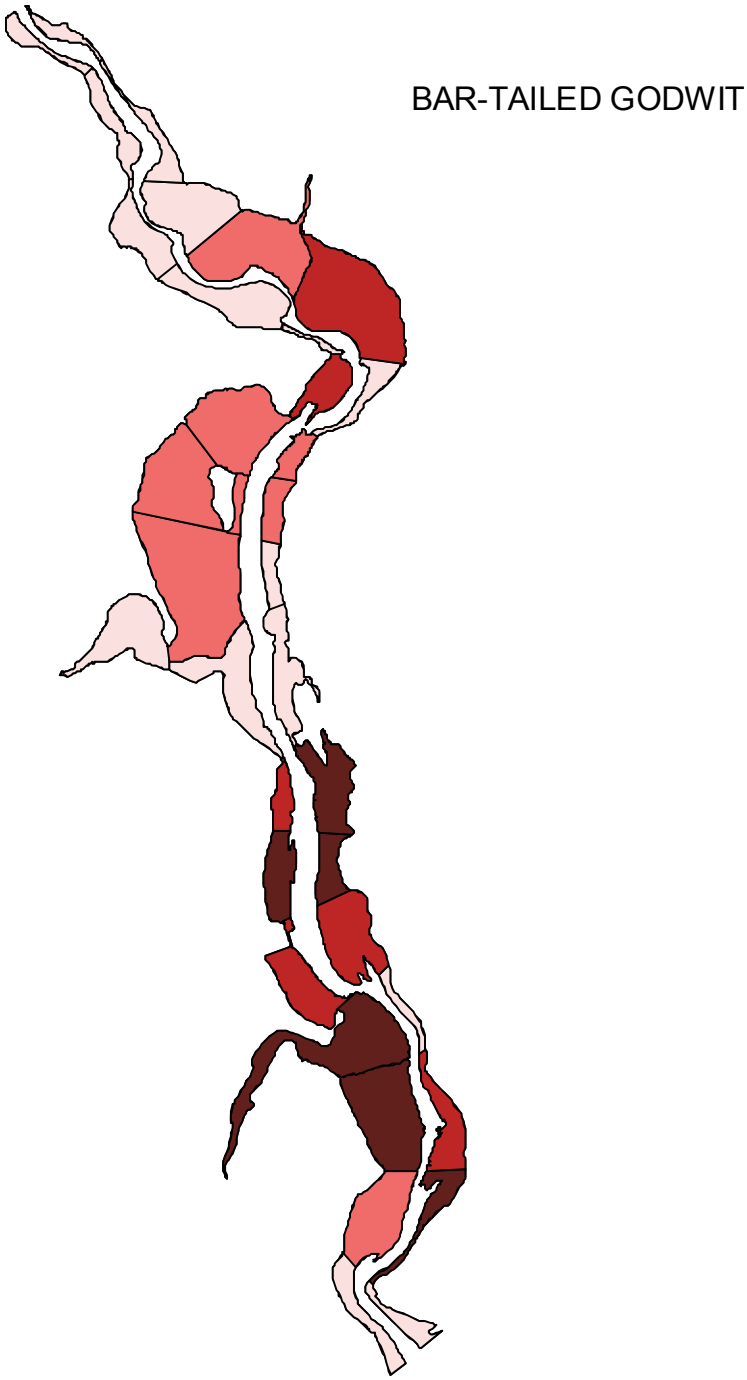

Figure 4. *The density of bar-tailed godwits (birds per hectare) on the Ythan estuary, September 2007 to March 2008. Darker colours show higher densities (values shown in Appendix 2, Table 5)*.

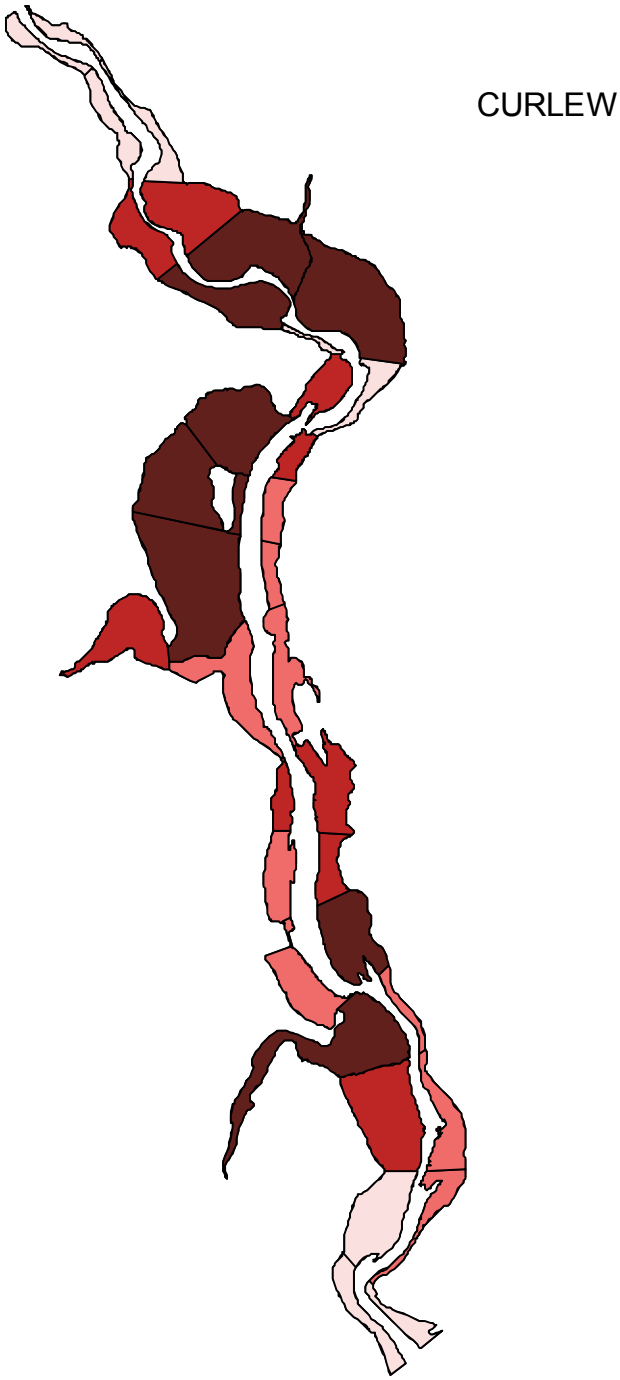

Figure 5. *The density of curlews (birds per hectare) on the Ythan estuary, September 2007 to March 2008. Darker colours show higher densities (values shown in Appendix 2, Table 5)*.

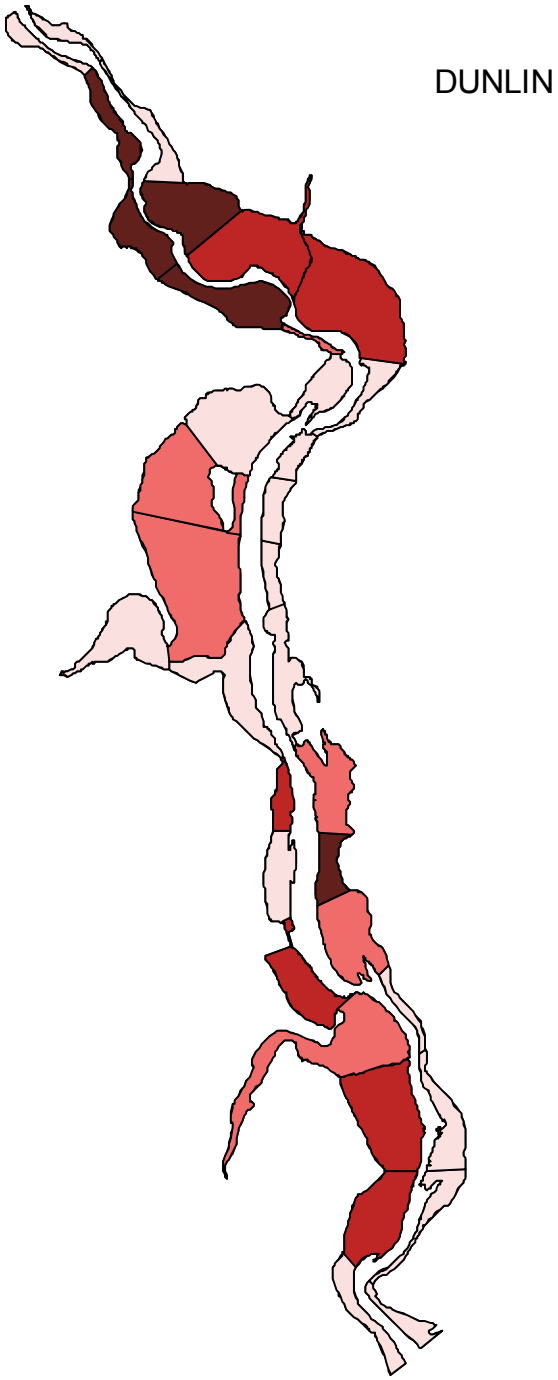

Figure 6. *The density of dunlin (birds per hectare) on the Ythan estuary, September 2007 to March 2008. Darker colours show higher densities (values shown in Appendix 2, Table 5)*.

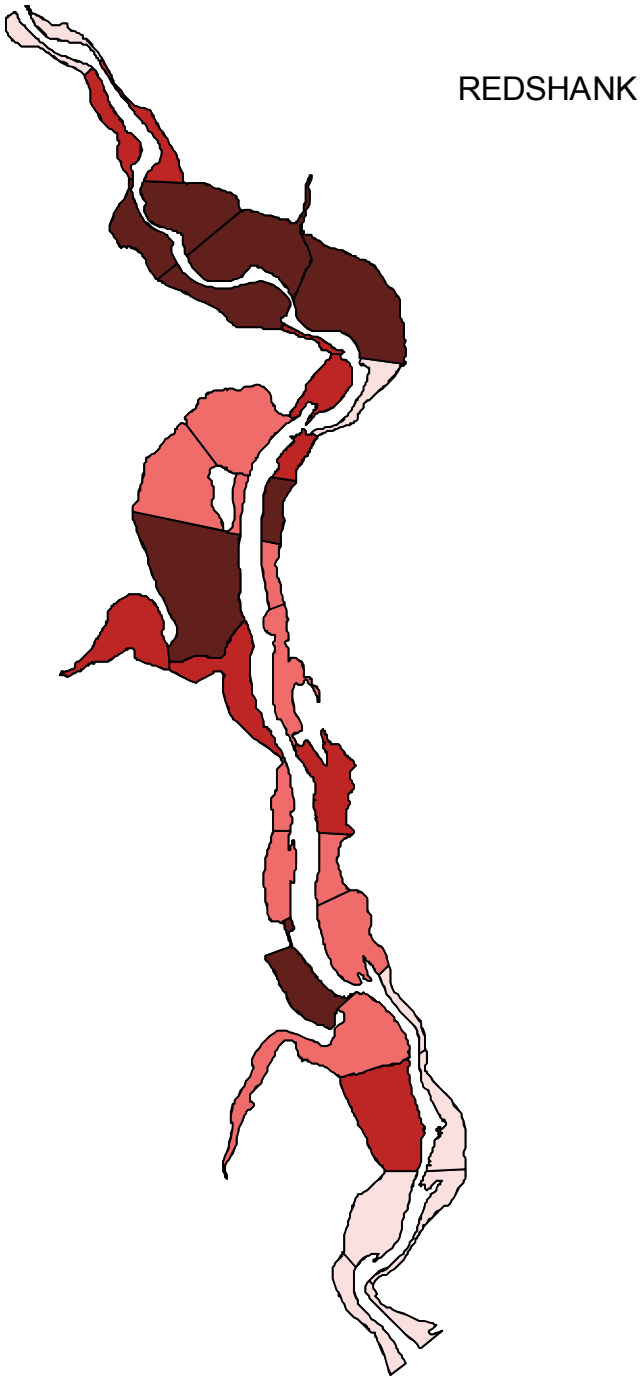

Figure 7. *The density of redshanks (birds per hectare) on the Ythan estuary, September 2007 to March 2008. Darker colours show higher densities (values shown in Appendix 2, Table 5)*.

7. APPENDICES

APPENDIX 1. The number of birds of each species in each section of the Ythan estuary on each count date in 2007/08.

As in previous reports, the data are presented in separate species accounts, arranged in taxonomic order (as recently revised by the British Ornithologists' Union). For each species, a table shows the number of birds found in each section of the estuary from the mouth upstream (ie, Mouth, Inches, Quay, Tarty, Sleek, Haddo, Snub, Machar, and Logie), as defined in Figure 1, and the total on the whole estuary, on each count date. Information which is not obvious from the data tables is appended and peak numbers of the commoner species are compared with those in the previous year.

MUTE SWAN *Cygnus olor*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
7 7 2007	0	0	0	0	6	12	4	0	0	22
21 7 2007	0	0	0	0	0	0	23	0	0	23
5 8 2007	0	0	0	0	0	5	0	0	0	5
24 8 2007	0	9	0	0	0	0	0	0	0	9
2 9 2007	0	0	0	0	3	2	0	0	0	5
19 9 2007	0	2	1	0	0	2	0	0	1	6
3 10 2007	0	0	4	0	2	0	0	0	0	6
20 10 2007	0	0	7	0	0	0	0	0	6	13
15 11 2007	0	1	3	0	5	0	0	0	0	9
27 11 2007	0	0	0	0	8	3	2	0	4	17
15 12 2007	0	1	0	0	6	3	0	0	2	12
27 12 2007	0	0	0	0	5	5	0	0	0	10
20 1 2008	0	3	0	0	3	3	1	0	0	10
27 1 2008	0	0	0	0	1	2	0	2	0	5
9 2 2008	0	0	0	0	1	0	0	1	0	2
22 3 2008	0	0	0	0	1	0	0	0	0	1
13 4 2008	0	0	0	0	2	0	0	0	0	2
25 4 2008	0	2	0	0	10	4	0	0	0	16
10 5 2008	0	4	0	0	8	0	2	0	1	15
25 5 2008	4	2	0	4	3	6	0	1	0	20
8 6 2008	0	2	0	0	33	2	2	0	0	39
27 6 2008	0	0	0	0	0	12	0	0	0	12

Peak; 39: (2006/07 peak; 52)

WHOOPER SWAN *Cygnus cygnus*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
7 7 2007	0	0	0	0	1	0	0	0	0	1
21 7 2007	0	0	0	0	0	0	1	0	0	1
15 12 2007	0	0	0	0	0	4	0	0	0	4

PINK-FOOTED GOOSE *Anser brachyrhychus*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
20 10 2007	0	0	0	0	0	0	3	0	0	3
9 2 2008	0	0	0	0	0	307	0	0	0	307
13 4 2008	0	0	0	0	20	0	0	0	0	20
25 4 2008	0	0	0	0	0	15	0	3	0	18

GREYLAG GOOSE *Anser anser*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
27 11 2007	0	0	0	0	0	0	0	23	0	23
9 2 2008	0	0	0	0	0	5	0	0	0	5
24 2 2008	0	0	0	0	0	0	1	0	0	1

CANADA GOOSE *Branta canadensis*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
27 11 2007	0	0	0	0	0	0	0	2	0	2

BRENT GOOSE *Branta bernicla*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
19 9 2007	4	0	0	0	0	0	0	0	0	4

COMMON SHELDUCK *Tadorna tadorna*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
7 7 2007	0	3	0	0	20	11	7	2	0	43
21 7 2007	0	2	2	0	8	9	0	0	0	21
5 8 2007	0	16	0	0	12	0	17	0	5	50
24 8 2007	0	3	0	0	0	0	3	0	0	6
2 9 2007	0	1	0	6	2	4	2	0	3	18
19 9 2007	0	3	0	0	0	0	0	0	1	4
3 10 2007	0	0	0	1	4	4	0	0	0	9
20 10 2007	0	0	0	0	1	0	0	0	2	3
15 11 2007	0	0	0	0	0	1	0	0	2	3
27 11 2007	0	4	0	0	0	11	0	0	0	15
15 12 2007	0	16	0	0	17	1	0	0	0	34
27 12 2007	0	10	0	0	23	20	0	0	0	53
20 1 2008	0	19	0	11	38	0	0	0	4	72
27 1 2008	0	23	0	0	73	11	4	5	0	116
9 2 2008	1	16	1	0	92	31	1	5	3	150
24 2 2008	0	21	0	0	92	19	0	11	2	145
11 3 2008	0	20	11	5	57	7	2	8	2	112
22 3 2008	0	29	4	4	102	12	8	1	0	160
13 4 2008	2	26	6	4	87	8	5	2	3	143
25 4 2008	0	2	6	4	22	17	2	0	1	54
10 5 2008	2	4	7	6	76	62	15	2	2	176
25 5 2008	0	11	6	2	48	39	8	2	9	125
8 6 2008	0	12	7	26	69	24	4	2	14	158
27 6 2008	0	17	3	5	109	36	22	0	0	192

Peak; 192: (2006/07 peak; 232)

EURASIAN WIGEON *Anas penelope*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
21 7 2007	0	0	0	0	0	10	0	0	0	10
24 8 2007	0	0	0	0	13	0	0	0	0	13
2 9 2007	0	0	0	0	8	4	0	0	0	12
19 9 2007	0	28	0	0	5	0	5	0	0	38
3 10 2007	0	40	71	0	145	0	13	0	6	275
20 10 2007	1	146	30	0	2	0	0	0	0	179
15 11 2007	10	27	15	0	0	0	0	0	0	52
27 11 2007	16	367	342	0	50	0	0	0	0	775
15 12 2007	6	23	0	0	7	0	0	0	0	36
27 12 2007	10	56	112	0	2	0	0	0	0	180
20 1 2008	35	95	130	0	25	0	0	0	0	285
27 1 2008	0	63	90	0	60	0	3	0	0	216
9 2 2008	0	99	7	0	87	0	0	0	0	193
24 2 2008	0	78	25	0	85	0	0	0	0	188
11 3 2008	0	37	5	0	0	0	86	0	0	128
22 3 2008	2	3	0	0	50	0	20	0	0	75
13 4 2008	0	15	13	0	67	0	0	0	0	95
25 4 2008	0	2	0	0	0	0	1	0	0	3
8 6 2008	0	0	0	0	0	0	1	0	0	1
27 6 2008	0	0	0	0	0	0	4	0	0	4

Peak; 775: (2006/07 peak; 649)

EURASIAN TEAL *Anas crecca*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
19 9 2007	5	0	0	0	7	0	0	0	0	12
15 12 2007	0	2	0	0	0	0	0	0	0	2
24 2 2008	0	0	0	0	0	0	0	5	12	17
11 3 2008	0	0	0	0	0	0	5	0	16	21
22 3 2008	0	0	0	0	0	2	0	0	2	4
13 4 2008	0	0	0	0	0	0	2	0	2	4
25 4 2008	0	0	0	0	0	0	0	2	5	7

Peak; 21: (2006/07 peak; 60)

MALLARD *Anas platyrhynchos*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
7 7 2007	0	2	0	0	0	0	0	12	0	14
21 7 2007	0	3	0	0	0	7	0	0	0	10
24 8 2007	0	0	0	0	0	0	13	0	0	13
3 10 2007	0	0	0	0	0	0	6	0	0	6
20 10 2007	0	1	0	0	0	0	0	0	0	1
15 11 2007	0	6	2	0	0	0	0	0	0	8
27 11 2007	0	4	0	0	0	0	0	0	0	4
15 12 2007	0	3	0	0	2	0	0	0	0	5
27 12 2007	0	12	0	0	0	7	0	0	0	19
20 1 2008	0	15	5	0	0	0	0	18	0	38
27 1 2008	0	54	2	0	0	0	0	0	0	56
9 2 2008	0	9	0	0	0	0	0	0	0	9
24 2 2008	0	3	0	0	0	6	8	0	4	21
11 3 2008	0	4	4	0	0	0	44	6	0	58
22 3 2008	0	5	0	0	3	28	0	0	0	36
13 4 2008	0	7	0	0	0	34	8	0	2	51
25 4 2008	0	4	2	0	0	3	14	0	0	23
10 5 2008	0	4	0	0	2	14	17	0	1	38
25 5 2008	0	2	0	2	0	14	4	0	2	24
8 6 2008	4	9	2	0	1	39	19	2	0	76
27 6 2008	0	1	0	0	2	10	37	0	0	50

Peak; 76: (2006/07 peak; 196)

NORTHERN PINTAIL *Anas acuta*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
13 4 2008	0	0	0	0	2	2	0	0	0	4

NORTHERN SHOVELLER *Anas clypeata*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
13 4 2008	0	0	0	0	2	0	0	0	0	2

TUFTED DUCK *Aythya fuligula*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
20 10 2007	0	0	0	0	0	0	0	0	2	2
15 11 2007	0	0	1	0	0	0	0	0	0	1
27 11 2007	0	1	0	0	0	0	0	0	0	1
15 12 2007	0	2	0	0	0	0	0	0	0	2
10 5 2008	0	0	0	0	0	2	0	0	0	2

GREATER SCAUP *Aythya marila*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
27 11 2007	0	6	0	0	0	0	0	0	0	6
20 1 2008	0	6	0	0	0	0	0	0	0	6
27 1 2008	0	3	0	0	0	0	0	0	0	3
9 2 2008	0	3	0	0	0	0	0	0	0	3
24 2 2008	0	2	0	0	0	0	0	0	0	2
22 3 2008	0	1	0	0	0	0	0	0	0	1

COMMON EIDER *Somateria mollissima*

Date	Mo	In	Qu	Ta	Sl	Ha	Total
7 7 2008	1013	60	8	0	0	0	1081
21 7 2008	1010	6	0	0	0	0	1016
2 8 2008	653	0	0	0	8	0	661
22 8 2008	844	73	0	0	4	0	921
4 9 2008	568	103	14	0	7	0	692
20 9 2008	897	72	6	0	0	0	975
9 10 2008	599	439	4	0	0	0	1042
22 10 2008	368	342	3	17	0	0	730
6 11 2008	3	234	206	0	7	0	450
23 11 2008	5	133	330	0	0	0	468
7 12 2008	2	448	48	0	0	0	498
21 12 2008	10	379	5	0	58	0	452
8 1 2008	0	0	280	0	45	0	325
22 1 2008	0	238	41	0	31	0	310
8 2 2008	0	290	43	0	21	0	354
18 2 2008	0	0	286	0	19	0	305
12 3 2008	33	196	65	0	1	0	295
17 3 2008	62	159	32	0	30	0	283
31 3 2008	294	144	22	0	28	0	488
22 4 2008	515	70	217	0	89	0	891
27 4 2008	587	92	247	0	90	0	1016
7 5 2008	824	323	335	0	47	4	1533
12 5 2008	560	1212	210	0	148	0	2130
19 5 2008	922	862	220	0	101	13	2118
26 5 2008	926	759	126	0	122	26	1959
2 6 2008	772	301	137	0	51	0	1261
16 6 2008	595	151	94	0	6	0	846

Peak; 2,130: (2006/07 peak; 2,676)

No Eiders were seen at Snub, Machar or Logie

The total number of ducklings reared in 2008 was 43, including nine on the sea coast between Collieston and the mouth of the estuary.

LONG-TAILED DUCK *Clangula hyemalis*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
27 11 2007	0	0	0	0	1	0	0	0	0	1
27 12 2007	0	0	1	0	0	0	0	0	0	1
24 2 2008	0	2	0	0	0	0	0	0	0	2
11 3 2008	0	1	1	0	0	0	0	0	0	2
13 4 2008	0	5	0	0	0	0	0	0	0	5
25 4 2008	0	1	0	0	0	0	0	0	0	1

GOLDENEYE *Bucephala clangula*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
5 8 2007	0	0	0	0	1	0	0	0	0	1
24 8 2007	0	0	0	0	0	5	2	0	0	7
2 9 2007	0	5	0	0	0	20	4	0	0	29
19 9 2007	0	0	0	0	0	0	27	0	0	27
3 10 2007	0	0	0	0	0	0	5	0	0	5
20 10 2007	0	0	0	0	13	0	9	0	0	22
15 11 2007	0	2	2	0	5	0	0	0	0	9
27 11 2007	1	2	3	0	3	0	0	0	0	9
15 12 2007	0	1	0	0	0	0	0	0	0	1
27 12 2007	1	0	2	0	1	0	0	2	1	7
20 1 2008	0	8	1	0	6	0	0	0	2	17
27 1 2008	0	0	0	0	3	0	1	1	0	5
9 2 2008	0	1	2	0	0	2	2	1	1	9
24 2 2008	0	1	0	0	6	0	1	0	1	9
11 3 2008	0	1	0	0	5	2	1	0	0	9
22 3 2008	0	0	0	0	6	0	3	0	2	11
13 4 2008	0	1	0	0	7	0	0	0	0	8
25 4 2008	0	1	0	0	0	0	0	0	0	1
25 5 2008	0	0	0	0	0	0	0	0	1	1

Peak; 29: (2006/07 peak; 27)

RED-BREASTED MERGANSER *Mergus serrator*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
19 9 2007	2	0	0	0	16	0	0	0	0	18
3 10 2007	0	2	3	0	2	0	0	0	0	7
20 10 2007	1	1	6	0	5	0	0	0	0	13
15 11 2007	5	2	13	0	3	0	1	0	0	24
27 11 2007	1	5	4	0	5	0	0	0	0	15
15 12 2007	5	5	2	0	1	0	0	0	0	13
27 12 2007	0	4	2	0	1	1	0	0	0	8
20 1 2008	1	3	0	0	2	0	0	0	0	6
27 1 2008	0	6	0	0	2	0	0	0	0	8
9 2 2008	2	1	1	0	2	0	0	0	0	6
24 2 2008	2	2	2	0	2	0	0	0	0	8
11 3 2008	2	5	1	0	5	0	0	0	0	13
22 3 2008	0	8	4	0	2	0	0	0	0	14
13 4 2008	5	0	2	0	2	0	0	0	0	9
25 4 2008	1	0	4	0	9	0	0	0	0	14
10 5 2008	0	1	0	0	0	0	0	0	0	1

Peak; 24: (2006/07 peak; 33)

RED-THROATED DIVER *Gavia stellata*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
20 10 2007	1	0	0	0	0	0	0	0	0	1
15 11 2007	0	1	0	0	0	0	0	0	0	1
15 12 2007	0	0	2	0	0	0	0	0	0	2
27 12 2007	0	0	1	0	0	0	0	0	0	1

LITTLE GREBE *Podiceps ruficollis*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
27 12 2007	0	0	0	0	0	0	0	0	1	1

SLAVONIAN GREBE *Podiceps auritus*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
3 10 2007	0	1	0	0	0	0	0	0	0	1
15 11 2007	0	1	0	0	0	0	0	0	0	1

GREAT CORMORANT *Phalacrocorax carbo*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
7 7 2007	0	1	1	0	1	6	3	0	0	12
21 7 2007	4	4	2	0	7	0	21	3	0	41
5 8 2007	7	8	3	0	19	8	7	2	0	54
24 8 2007	0	2	4	0	10	0	4	0	1	21
2 9 2007	2	0	6	0	23	6	3	0	1	41
19 9 2007	0	1	1	0	6	5	0	0	0	13
3 10 2007	0	2	2	0	3	2	4	0	0	13
20 10 2007	0	1	0	0	2	0	0	0	0	3
15 11 2007	0	1	0	0	2	0	0	0	1	4
27 11 2007	0	0	0	0	2	0	0	0	0	2
15 12 2007	0	1	0	0	1	1	4	1	0	8
27 12 2007	1	1	0	0	1	3	0	0	0	6
20 1 2008	0	1	0	0	1	0	0	0	0	2
27 1 2008	0	1	0	0	2	0	0	2	1	6
9 2 2008	0	1	0	0	0	1	4	0	0	6
24 2 2008	1	0	2	0	0	0	6	0	0	9
11 3 2008	0	0	0	0	1	0	0	5	0	6
22 3 2008	0	2	0	0	1	0	1	5	0	9
13 4 2008	2	3	0	0	11	0	0	0	0	16
25 4 2008	0	1	2	0	10	0	2	0	0	15
10 5 2008	0	0	1	0	2	0	0	0	0	3
25 5 2008	0	2	0	0	2	0	2	1	0	7
8 6 2008	0	4	1	0	2	0	0	0	0	7
27 6 2008	0	0	1	0	2	0	1	0	0	4

Peak; 54: (2006/07 peak; 73)

GREY HERON *Ardea cinerea*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
7 7 2007	0	0	0	16	20	0	0	0	0	36
21 7 2007	0	2	1	7	8	0	1	0	1	20
5 8 2007	2	6	2	0	6	2	9	5	1	33
24 8 2007	0	0	0	2	5	0	1	0	0	8
2 9 2007	0	6	1	2	12	0	0	0	0	21
19 9 2007	2	3	2	0	0	0	0	0	2	9
3 10 2007	1	6	0	0	3	0	0	0	0	10
20 10 2007	2	6	2	1	2	0	0	0	0	13
15 11 2007	0	5	1	0	4	0	0	0	0	10
27 11 2007	3	3	0	1	4	0	0	0	0	11
15 12 2007	0	5	0	0	2	0	0	0	1	8
27 12 2007	1	2	0	0	0	0	1	0	0	4
20 1 2008	2	2	1	0	1	0	0	0	0	6
27 1 2008	0	1	0	1	3	0	0	0	1	6
9 2 2008	0	3	1	0	2	0	0	0	1	7
24 2 2008	0	0	0	9	1	0	0	0	0	10
11 3 2008	0	2	0	0	5	0	2	0	0	9
22 3 2008	0	1	0	0	0	0	0	0	1	2
13 4 2008	0	0	1	0	1	0	1	0	1	4
25 4 2008	0	1	0	0	5	0	0	0	0	6
10 5 2008	0	3	0	1	2	0	0	0	1	7
25 5 2008	1	1	0	0	2	0	0	0	0	4
8 6 2008	1	7	2	0	4	0	0	0	0	14
27 6 2008	3	7	7	0	11	0	1	0	0	29

Peak; 36: (2006/07 peak; 55)

OSPREY *Pandion haliaetus*

10	5	2008	0	0	0	0	0	0	1	0	0	1

OYSTERCATCHER *Haematopus ostralegus*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
7 7 2007	34	74	11	3	71	0	0	3	0	196
21 7 2007	66	110	12	4	15	5	7	0	0	219
5 8 2007	95	241	20	0	43	0	0	0	0	399
24 8 2007	121	304	15	0	4	0	0	0	0	444
2 9 2007	159	348	25	4	15	0	0	0	0	551
19 9 2007	113	239	17	0	36	0	1	0	0	406
3 10 2007	375	211	7	0	10	4	0	0	0	607
20 10 2007	79	252	30	1	96	0	0	0	0	458
15 11 2007	86	129	23	4	37	6	0	0	0	285
27 11 2007	103	133	28	1	41	3	0	0	0	309
15 12 2007	70	137	40	1	33	0	0	0	0	281
27 12 2007	74	166	43	3	35	0	5	0	0	326
20 1 2008	69	151	59	2	29	0	0	0	0	310
27 1 2008	84	138	62	1	55	4	9	0	0	353
9 2 2008	55	142	41	5	43	3	2	2	0	293
24 2 2008	66	134	36	0	101	3	0	0	0	340
11 3 2008	63	56	17	7	80	12	43	3	2	283
22 3 2008	63	94	20	0	43	15	42	0	3	280
13 4 2008	54	55	17	2	51	1	0	0	0	180
25 4 2008	8	44	4	2	53	6	0	0	0	117
10 5 2008	5	28	7	0	31	9	1	4	0	85
25 5 2008	3	19	4	0	21	0	16	1	0	64
8 6 2008	14	17	14	1	27	15	8	2	1	99
27 6 2008	45	54	11	4	24	12	0	1	0	151

Peak; 607: (2006/07 peak; 644)

RINGED PLOVER *Charadrius hiaticula*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
7 7 2007	0	1	0	0	0	0	0	0	0	1
21 7 2007	0	1	0	0	0	0	0	0	0	1
5 8 2007	16	0	0	0	0	0	0	0	0	16
24 8 2007	0	7	0	0	0	1	0	0	0	8
2 9 2007	66	8	0	0	0	0	0	0	0	74
19 9 2007	1	0	0	0	0	1	0	0	0	2
20 10 2007	0	0	0	0	16	3	1	0	0	20
27 11 2007	0	0	0	0	0	4	0	0	0	4
15 12 2007	0	0	0	0	0	3	0	0	0	3
27 12 2007	0	0	0	0	0	10	0	0	0	10
9 2 2008	1	0	0	0	1	0	0	0	0	2
24 2 2008	2	3	0	0	3	0	0	0	0	8
11 3 2008	0	0	0	0	2	0	0	0	0	2
22 3 2008	0	6	0	0	14	0	0	0	0	20
13 4 2008	2	8	0	0	0	0	0	0	0	10
25 4 2008	0	6	0	0	0	0	0	0	0	6
10 5 2008	0	28	0	0	0	0	0	0	0	28
27 6 2008	1	0	0	0	0	0	0	0	0	1

Peak; 74: (2006/07 peak; 54)

EUROPEAN GOLDEN PLOVER *Pluvialis apricaria*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
21 7 2007	0	450	0	0	10	0	0	0	0	460
5 8 2007	0	6	0	0	1000	0	0	0	0	1006
24 8 2007	0	604	0	0	55	0	0	0	0	659
2 9 2007	0	9	0	0	2500	0	1400	0	0	3909
19 9 2007	0	100	0	0	0	3300	0	0	0	3400
3 10 2007	0	190	0	0	2000	3414	0	0	0	5604
20 10 2007	0	100	0	0	0	4800	0	0	0	4900
15 11 2007	0	30	0	0	0	2500	0	0	0	2530
27 11 2007	0	70	0	0	0	0	3000	0	0	3070
15 12 2007	0	640	0	0	0	0	0	0	0	640
27 12 2007	1	970	0	0	0	0	0	0	0	971
20 1 2008	0	50	0	0	0	150	0	0	0	200
27 1 2008	0	0	0	0	0	800	0	0	0	800
9 2 2008	0	562	0	0	0	600	0	0	0	1162
24 2 2008	0	0	0	0	0	120	0	0	0	120

Peak; 5,604: (2006/07 peak; 3,700)

GREY PLOVER *Pluvialis squatarola*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
20 10 2007	0	1	1	0	6	0	0	0	0	8
15 11 2007	0	3	0	0	0	0	0	0	0	3
27 11 2007	1	3	0	0	0	0	0	0	0	4
15 12 2007	2	0	0	0	0	0	0	0	0	2
27 12 2007	0	8	0	0	0	0	0	0	0	8
27 1 2008	0	14	0	0	0	0	0	0	0	14
9 2 2008	0	8	0	0	0	0	0	0	0	8
24 2 2008	0	8	0	0	0	0	0	0	0	8
11 3 2008	0	8	0	0	0	0	0	0	0	8
22 3 2008	0	2	0	0	0	0	0	0	0	2
25 4 2008	0	2	0	0	0	0	0	0	0	2

NORTHERN LAPWING *Vanellus vanellus*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
7 7 2007	0	4	4	1	38	200	220	6	0	473
21 7 2007	0	4	3	125	85	495	620	40	2	1374
5 8 2007	0	15	20	130	1890	1000	900	45	0	4000
24 8 2007	0	41	160	350	925	650	840	170	110	3246
2 9 2007	0	48	172	140	1565	1720	2450	0	1	6096
19 9 2007	0	14	150	0	1335	2250	200	70	0	4019
3 10 2007	0	15	52	400	1170	2100	150	0	0	3887
20 10 2007	0	13	30	0	230	600	430	0	0	1303
15 11 2007	0	175	350	0	95	1600	512	3	0	2735
27 11 2007	0	340	730	0	260	530	0	15	0	1875
15 12 2007	0	40	0	0	0	120	105	1	0	266
27 12 2007	0	130	20	0	612	850	25	0	0	1637
20 1 2008	0	17	150	0	83	162	0	0	0	412
27 1 2008	0	6	12	0	80	720	0	60	0	878
9 2 2008	0	8	25	0	350	1330	290	30	0	2033
24 2 2008	0	0	55	0	2	90	0	150	0	297
11 3 2008	0	0	0	0	0	85	15	0	0	100
10 5 2008	0	0	1	0	0	0	0	6	0	7
25 5 2008	0	0	0	0	0	4	12	0	0	16
8 6 2008	0	0	0	0	1	55	53	0	3	112
27 6 2008	0	2	9	0	18	365	70	3	0	467

Peak; 6,096: (2006/07 peak; 4,840)

RED KNOT *Calidris canutus*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
5 8 2007	0	1	0	0	15	0	0	0	0	16
24 8 2007	40	535	0	0	70	0	0	0	0	645
2 9 2007	150	45	0	0	260	0	0	0	0	455
19 9 2007	0	120	0	0	27	15	0	0	0	162
3 10 2007	0	0	0	0	40	200	0	0	0	240
20 10 2007	0	185	80	0	20	100	0	0	0	385
15 11 2007	0	369	0	0	0	0	0	0	0	369
27 11 2007	120	30	0	0	0	0	0	0	0	150
15 12 2007	300	0	0	0	0	0	0	0	0	300
27 12 2007	80	250	0	0	0	0	0	0	0	330
20 1 2008	0	45	0	0	0	0	0	0	0	45
27 1 2008	450	0	0	0	0	0	0	0	0	450
24 2 2008	0	560	0	0	0	0	0	0	0	560
11 3 2008	0	486	0	0	0	0	0	0	0	486
22 3 2008	280	7	0	0	0	0	0	0	0	287
13 4 2008	130	10	0	0	0	0	0	0	0	140
25 4 2008	0	0	0	0	10	0	0	0	0	10
10 5 2008	0	4	0	0	0	0	0	0	0	4
8 6 2008	0	5	0	0	0	0	0	0	0	5

Peak; 645: (2006/07 peak; 130)

SANDERLING *Calidris alba*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
3 10 2007	1	0	0	0	0	0	0	0	0	1

DUNLIN *Calidris alpina*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
7 7 2007	0	0	0	0	3	0	0	0	0	3
5 8 2007	0	0	0	0	24	0	0	0	0	24
24 8 2007	0	70	0	0	1	20	4	1	0	96
2 9 2007	720	76	0	0	0	0	0	0	0	796
19 9 2007	0	1	12	0	0	56	14	0	0	83
3 10 2007	0	1	0	0	45	310	65	0	0	421
20 10 2007	0	20	400	0	0	210	390	0	0	1020
15 11 2007	0	0	2	0	0	620	135	2	0	759
27 11 2007	0	0	0	0	0	138	300	0	0	438
15 12 2007	0	0	0	0	0	90	170	0	0	260
27 12 2007	0	25	0	0	0	440	0	0	0	465
20 1 2008	0	0	0	0	0	590	0	0	0	590
27 1 2008	0	0	0	0	0	60	0	0	0	60
9 2 2008	0	0	0	0	0	10	620	0	0	630
24 2 2008	0	0	0	0	0	0	160	550	0	710
11 3 2008	0	1	0	0	0	0	90	0	0	91
22 3 2008	0	0	0	0	0	30	0	0	0	30
13 4 2008	0	1	0	0	0	0	0	0	0	1
25 4 2008	0	3	0	2	0	0	0	0	0	5

Peak; 1,020: (2006/07 peak; 580)

RUFF *Philomachus pugnax*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
24 8 2007	0	0	0	0	0	5	0	0	0	5

COMMON SNIPE *Gallinago gallinago*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
19 9 2007	0	0	0	0	0	0	0	0	6	6
20 1 2008	0	12	0	0	0	0	0	0	0	12

BLACK-TAILED GODWIT *Limosa limosa*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
7 7 2007	0	0	1	0	0	0	0	0	0	1
5 8 2007	0	0	0	0	0	4	0	0	0	4
24 8 2007	0	1	0	0	18	2	0	0	0	21
2 9 2007	0	6	0	0	12	0	0	0	0	18
19 9 2007	0	0	0	0	0	1	0	0	0	1
3 10 2007	0	29	2	0	0	0	0	0	0	31
20 10 2007	0	25	3	0	0	0	0	0	0	28
15 12 2007	0	16	0	0	0	0	0	0	0	16
27 12 2007	0	12	0	0	0	0	0	0	0	12
11 3 2008	0	0	0	0	1	0	0	0	0	1
22 3 2008	0	0	0	0	5	0	0	0	0	5
13 4 2008	0	2	0	0	5	0	0	0	0	7
25 5 2008	0	0	10	0	7	0	9	0	4	30
8 6 2008	0	0	0	0	0	0	0	13	0	13

BAR-TAILED GODWIT *Limosa lapponica*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
7 7 2007	0	0	1	0	0	0	0	0	0	1
21 7 2007	0	1	3	0	0	0	0	0	0	4
5 8 2007	0	6	3	0	3	0	0	0	0	12
24 8 2007	0	2	10	0	0	0	0	0	0	12
2 9 2007	0	10	1	0	0	0	0	0	0	11
19 9 2007	1	8	0	0	0	0	0	0	0	9
3 10 2007	2	5	0	0	0	0	0	0	0	7
20 10 2007	0	41	0	0	2	0	0	0	0	43
15 11 2007	4	19	15	0	0	0	0	0	0	38
27 11 2007	0	7	13	0	0	0	0	0	0	20
15 12 2007	1	30	3	0	2	0	0	0	0	36
27 12 2007	6	27	7	0	0	0	0	0	0	40
20 1 2008	0	12	16	0	5	18	0	0	0	51
27 1 2008	0	9	11	0	1	0	0	0	0	21
9 2 2008	1	10	15	0	6	0	0	0	0	32
24 2 2008	0	0	5	0	15	11	0	0	0	31
11 3 2008	0	2	0	0	8	26	0	0	0	36
22 3 2008	0	0	0	0	9	0	0	0	0	9
13 4 2008	0	9	0	0	0	0	0	0	0	9
25 4 2008	0	0	0	0	7	0	0	0	0	7
10 5 2008	0	2	0	0	24	0	15	14	0	55
25 5 2008	0	0	11	0	0	0	0	0	0	11
8 6 2008	0	0	10	0	0	0	0	0	0	10
27 6 2008	0	4	4	0	0	0	0	5	0	13

Peak; 55: (2006/07 peak; 47)

EURASIAN CURLEW *Numenius arquata*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
7 7 2007	0	107	3	0	87	53	15	0	1	266
21 7 2007	0	133	1	0	541	477	2	1	1	1156
5 8 2007	4	140	15	0	817	201	2	2	1	1182
24 8 2007	6	136	10	2	797	64	18	0	0	1033
2 9 2007	4	108	28	8	696	75	22	1	1	943
19 9 2007	6	95	12	5	423	66	300	0	0	907
3 10 2007	5	83	4	0	216	6	15	1	1	331
20 10 2007	2	61	5	100	201	57	5	1	1	433
15 11 2007	8	59	15	0	26	2	4	0	0	114
27 11 2007	5	60	8	3	153	20	150	1	1	401
15 12 2007	0	58	6	4	39	52	10	1	1	171
27 12 2007	6	88	4	1	47	71	85	3	0	305
20 1 2008	2	117	31	0	461	282	1	0	1	895
27 1 2008	0	93	14	0	991	280	2	0	0	1380
9 2 2008	5	92	26	30	238	38	20	0	0	449
24 2 2008	2	55	7	2	94	30	10	1	1	202
11 3 2008	5	55	6	0	56	74	7	0	0	203
22 3 2008	2	40	8	4	41	30	0	0	0	125
13 4 2008	0	17	2	2	6	15	0	0	0	42
25 4 2008	0	12	0	0	44	15	16	0	0	87
10 5 2008	0	14	5	1	5	0	0	0	0	25
25 5 2008	0	11	1	1	11	2	2	0	0	28
8 6 2008	0	11	1	0	15	2	15	0	0	44
27 6 2008	2	11	3	2	41	26	4	0	1	90

Peak; 1,380: (2006/07 peak; 2,951)

COMMON REDSHANK *Tringa totanus*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
7 7 2007	0	1	6	0	67	6	26	0	2	108
21 7 2007	0	75	123	0	177	20	13	15	0	423
5 8 2007	0	218	37	6	406	85	29	8	0	789
24 8 2007	0	100	93	1	408	117	279	67	0	1065
2 9 2007	0	116	46	30	370	317	289	57	0	1225
19 9 2007	11	141	41	21	299	599	139	49	3	1303
3 10 2007	2	26	15	19	177	506	121	5	0	871
20 10 2007	0	138	17	36	99	357	232	10	0	889
15 11 2007	8	77	35	52	162	217	85	8	2	646
27 11 2007	0	43	16	25	74	204	102	2	0	466
15 12 2007	4	75	5	31	200	120	42	2	1	480
27 12 2007	3	66	6	55	127	110	86	16	1	470
20 1 2008	2	46	17	16	130	131	2	33	1	378
27 1 2008	0	51	23	8	58	199	40	8	0	387
9 2 2008	0	33	27	4	84	314	93	5	1	561
24 2 2008	0	38	24	15	32	225	183	3	1	521
11 3 2008	5	39	3	0	78	274	221	5	1	626
22 3 2008	3	61	24	81	145	259	24	5	0	602
13 4 2008	3	64	39	65	269	167	92	1	0	700
25 4 2008	0	27	1	11	27	50	48	3	0	167
10 5 2008	0	0	0	1	1	2	0	0	0	4
25 5 2008	0	0	0	0	0	0	15	1	0	16
8 6 2008	0	0	0	0	0	0	5	3	0	8
27 6 2008	0	0	0	0	1	8	31	3	0	43

Peak; 1,303: (2006/07 peak; 1,086)

COMMON GREENSHANK *Tringa nebularia*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
7 7 2007	0	0	0	0	3	0	0	0	0	3
21 7 2007	0	0	0	0	3	2	0	0	0	5
5 8 2007	0	0	0	0	3	2	1	0	1	7
24 8 2007	0	0	0	0	5	0	0	0	0	5
2 9 2007	0	1	0	1	0	1	0	0	0	3
19 9 2007	1	0	0	0	0	1	1	0	1	4
3 10 2007	1	0	0	0	1	1	0	0	0	3
25 4 2008	0	1	0	0	0	0	0	0	0	1

COMMON SANDPIPER *Actitis hypoleucos*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
7 7 2007	0	0	0	0	1	0	0	2	0	3

RUDDY TURNSTONE *Arenaria interpres*

Date	Mo	In	Qu	Ta	Sl	Ha	Sn	Ma	Lo	Total
24 8 2007	1	0	0	0	0	0	0	0	0	1
2 9 2007	15	0	0	0	0	0	0	0	0	15
19 9 2007	2	2	0	0	0	0	0	0	0	4
3 10 2007	2	3	0	0	0	0	0	0	0	5
20 10 2007	41	15	0	0	0	0	0	0	0	56
15 11 2007	6	11	0	0	1	0	0	0	0	18
27 11 2007	4	5	0	0	2	0	0	0	0	11
15 12 2007	15	19	3	0	2	0	0	0	0	39
27 12 2007	5	30	0	0	0	0	0	0	0	35
20 1 2008	6	9	0	0	1	0	0	0	0	16
27 1 2008	0	13	0	0	0	0	0	0	0	13
9 2 2008	2	13	1	0	2	0	0	0	0	18
24 2 2008	1	11	0	0	0	0	0	0	0	12
11 3 2008	0	15	0	0	20	2	0	0	0	37
22 3 2008	0	4	0	0	0	0	0	0	0	4
13 4 2008	58	6	0	0	0	0	0	0	0	64
25 4 2008	0	5	0	0	0	0	0	0	0	5

Peak; 64: (2006/07 peak; 60)

APPENDIX 2. The distribution of waterfowl on the Ythan estuary in 2007/08

Table 1. *The sub-sections of the Ythan estuary and the area of each (in hectares).*

Sub-section	Area(ha)
MO1W	3.2923
MO1E	1.9681
MO2W	7.3799
MO2E	2.8838
IN1W	10.6650
IN1E	4.2135
IN2W	12.4207
IN2E	1.2733
IN3W	5.5024
IN3E	7.2483
QU1W	3.9751
QU1E	2.7631
QU2W	1.9818
QU2E	5.8719
TA1	7.0329
SL1W	7.1739
SL1E	4.7832
SL2W	18.6217
SL2E	1.7148
SL3W	11.2433
SL3E	2.4216
SL4W	10.0400
SL4E	1.7751
SL5W	3.0076
SL5E	2.3540
HA1	15.0968
HA2	11.3584
HA3	7.6713
SN1	5.3940
SN2	6.4612
SN3	4.5350
MA1W	3.0060
MA1E	2.6229
LO1W	1.6673
LO1E	1.3551
Mean	5.7364
Median	4.5350
Maximum	18.6217
Minimum	1.2733

Table 2. *The mean number of waterfowl in each sub-section of the Ythan estuary; September to March 2007/08. The species codes are: MS – Mute Swan; SU – Shelduck; WG – Wigeon; MA – Mallard; RM – Red-breasted Merganser; CA – Cormorant; H. – Heron.*

	Species						
Section	MS	SU	WG	MA	RM	CA	H.
MO1W	0.00	0.00	2.64	0.00	0.14	0.00	0.00
MO1E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MO2W	0.00	0.00	0.14	0.00	0.50	0.14	0.21
MO2E	0.00	0.07	2.93	0.00	0.86	0.14	0.57
IN1W	0.00	2.57	37.07	0.07	0.79	0.29	0.50
IN1E	0.14	0.00	3.50	0.00	0.57	0.00	0.29
IN2W	0.29	6.14	17.93	7.79	0.50	0.21	1.07
IN2E	0.00	0.00	0.00	0.00	0.29	0.00	0.14
IN3W	0.07	2.14	16.64	0.29	0.36	0.14	0.43
IN3E	0.00	0.71	0.71	0.14	0.64	0.21	0.79
QU1W	0.00	0.00	0.14	0.00	0.43	0.00	0.21
QU1E	0.29	0.14	27.86	0.14	0.21	0.50	0.07
QU2W	0.50	0.29	2.50	0.50	0.00	0.00	0.07
QU2E	0.29	0.71	28.57	0.29	2.07	0.29	0.21
TA1	0.00	1.93	0.00	0.00	0.00	0.00	1.00
SL1W	0.50	2.14	8.00	0.00	0.07	0.64	0.43
SL1E	0.07	0.86	1.71	0.14	0.57	0.29	1.21
SL2W	0.07	20.93	10.86	0.00	1.79	0.57	0.36
SL2E	0.07	0.00	0.00	0.00	0.29	0.14	0.07
SL3W	0.57	9.07	5.57	0.00	0.14	0.14	0.14
SL3E	0.00	1.36	0.50	0.00	0.07	0.07	0.00
SL4W	0.00	1.14	10.93	0.14	0.07	1.21	0.00
SL4E	0.21	0.00	0.00	0.00	0.07	0.00	0.00
SL5W	0.43	0.29	0.00	0.07	0.21	0.07	0.43
SL5E	0.57	0.00	0.00	0.00	0.14	0.07	0.14
HA1	0.36	7.86	0.29	2.50	0.00	0.07	0.00
HA2	0.93	0.43	0.00	0.43	0.07	0.14	0.00
HA3	0.14	0.36	0.00	0.00	0.00	1.07	0.00
SN1	0.00	0.29	2.43	1.79	0.00	1.29	0.00
SN2	0.07	0.71	4.71	0.79	0.07	0.21	0.07
SN3	0.14	0.21	1.93	1.57	0.00	0.07	0.14
MA1W	0.21	1.57	0.00	1.29	0.00	0.57	0.00
MA1E	0.00	0.57	0.00	0.43	0.00	0.36	0.00
LO1W	0.86	0.93	0.00	0.29	0.00	0.14	0.14
LO1E	0.07	0.43	0.43	0.00	0.00	0.07	0.29

Table 3. *The mean number of waders in each sub-section of the Ythan estuary; September to March 2006/08. The species codes are: OC – Oystercatcher; GP – Golden Plover; L. – Lapwing; KN – Knot; DN – Dunlin; BA – Bar-tailed Godwit; CU – Curlew; RK – Redshank; TT – Turnstone.*

	Species								
Section	OC	GP	L.	KN	DN	BA	CU	RK	TT
MO1W	10.36	0.00	0.00	27.14	0.00	0.00	0.36	0.71	0.07
MO1E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MO2W	44.93	0.00	0.00	38.57	51.43	0.21	1.86	1.86	6.86
MO2E	48.93	0.07	0.00	32.86	0.00	0.86	1.50	0.14	0.14
IN1W	61.71	2.14	0.00	77.14	5.79	7.43	18.79	21.00	2.36
IN1E	9.86	0.00	0.00	0.00	0.00	0.57	1.64	0.21	0.14
IN2W	56.29	47.93	5.57	2.21	1.57	2.71	35.36	16.29	5.50
IN2E	3.93	0.00	0.00	0.00	0.00	0.00	0.36	0.00	0.00
IN3W	11.57	0.00	26.43	62.57	1.14	0.71	3.57	24.00	0.21
IN3E	23.07	144.29	25.57	7.86	0.36	1.43	16.29	6.36	2.50
QU1W	1.14	0.00	18.07	0.00	0.00	1.00	1.71	4.14	0.00
QU1E	14.14	0.00	44.29	5.71	28.57	2.50	2.93	2.43	0.00
QU2W	4.07	0.00	12.21	0.00	0.86	0.29	1.57	1.93	0.29
QU2E	12.64	0.00	50.14	0.00	0.14	2.36	6.21	12.86	0.00
TA1	2.07	0.00	38.57	0.00	0.00	0.00	11.21	28.07	0.00
SL1W	4.50	0.00	80.14	0.00	0.00	0.00	3.43	18.50	0.00
SL1E	2.93	0.00	35.00	0.00	0.00	0.00	1.71	3.64	0.00
SL2W	21.71	321.43	32.86	10.14	2.86	1.43	76.07	74.86	0.00
SL2E	0.29	0.00	9.64	0.00	0.00	0.00	0.79	1.57	0.14
SL3W	7.50	0.00	0.00	12.86	0.36	1.07	128.36	9.50	1.50
SL3E	1.36	0.00	36.57	0.00	0.00	0.14	1.14	12.36	0.07
SL4W	5.07	0.00	11.43	1.79	0.00	0.14	45.00	11.71	0.00
SL4E	1.43	0.00	28.79	0.00	0.00	0.21	1.21	3.43	0.00
SL5W	1.93	0.00	178.57	0.00	0.00	0.43	4.71	9.21	0.29
SL5E	0.00	0.00	0.00	0.00	0.00	0.00	0.57	0.57	0.00
HA1	2.00	765.71	386.07	21.07	47.36	3.14	38.07	101.07	0.14
HA2	0.57	346.00	168.93	1.43	62.50	0.79	30.57	113.71	0.00
HA3	1.00	8.57	313.36	0.00	72.57	0.00	8.71	58.93	0.00
SN1	0.00	0.00	21.21	0.00	0.29	0.00	0.71	12.00	0.00
SN2	2.79	314.29	120.36	0.00	67.50	0.00	41.29	78.57	0.00
SN3	4.50	0.00	156.79	0.00	71.07	0.00	3.07	27.93	0.00
MA1W	0.14	0.00	18.50	0.00	39.43	0.00	0.50	9.93	0.00
MA1E	0.21	0.00	5.00	0.00	0.00	0.00	0.14	4.93	0.00
LO1W	0.14	0.00	0.07	0.00	0.00	0.00	0.43	0.36	0.00
LO1E	0.21	0.00	0.00	0.00	0.00	0.00	0.07	0.43	0.00

Table 4. *The mean density of waterfowl (number per hectare) in each sub-section of the Ythan estuary; September to March 2007/08. The species codes are: MS – Mute Swan; SU – Shelduck; WG – Wigeon; MA – Mallard; RM – Red-breasted Merganser; CA – Cormorant; H. – Heron.*

	Species						
Section	MS	SU	WG	MA	RM	CA	H.
MO1W	0.00	0.00	0.80	0.00	0.04	0.00	0.00
MO1E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MO2W	0.00	0.00	0.02	0.00	0.07	0.02	0.03
MO2E	0.00	0.02	1.02	0.00	0.30	0.05	0.20
IN1W	0.00	0.24	3.48	0.01	0.07	0.03	0.05
IN1E	0.03	0.00	0.83	0.00	0.14	0.00	0.07
IN2W	0.02	0.49	1.44	0.63	0.04	0.02	0.09
IN2E	0.00	0.00	0.00	0.00	0.22	0.00	0.11
IN3W	0.01	0.39	3.02	0.05	0.06	0.03	0.08
IN3E	0.00	0.10	0.10	0.02	0.09	0.03	0.11
QU1W	0.00	0.00	0.04	0.00	0.11	0.00	0.05
QU1E	0.10	0.05	10.08	0.05	0.08	0.18	0.03
QU2W	0.25	0.14	1.26	0.25	0.00	0.00	0.04
QU2E	0.05	0.12	4.87	0.05	0.35	0.05	0.04
TA1	0.00	0.27	0.00	0.00	0.00	0.00	0.14
SL1W	0.07	0.30	1.12	0.00	0.01	0.09	0.06
SL1E	0.01	0.18	0.36	0.03	0.12	0.06	0.25
SL2W	0.00	1.12	0.58	0.00	0.10	0.03	0.02
SL2E	0.04	0.00	0.00	0.00	0.17	0.08	0.04
SL3W	0.05	0.81	0.50	0.00	0.01	0.01	0.01
SL3E	0.00	0.56	0.21	0.00	0.03	0.03	0.00
SL4W	0.00	0.11	1.09	0.01	0.01	0.12	0.00
SL4E	0.12	0.00	0.00	0.00	0.04	0.00	0.00
SL5W	0.14	0.09	0.00	0.02	0.07	0.02	0.14
SL5E	0.24	0.00	0.00	0.00	0.06	0.03	0.06
HA1	0.02	0.52	0.02	0.17	0.00	0.00	0.00
HA2	0.08	0.04	0.00	0.04	0.01	0.01	0.00
HA3	0.02	0.05	0.00	0.00	0.00	0.14	0.00
SN1	0.00	0.05	0.45	0.33	0.00	0.24	0.00
SN2	0.01	0.11	0.73	0.12	0.01	0.03	0.01
SN3	0.03	0.05	0.43	0.35	0.00	0.02	0.03
MA1W	0.07	0.52	0.00	0.43	0.00	0.19	0.00
MA1E	0.00	0.22	0.00	0.16	0.00	0.14	0.00
LO1W	0.51	0.56	0.00	0.17	0.00	0.09	0.09
LO1E	0.05	0.32	0.32	0.00	0.00	0.05	0.21

Table 5. *The mean density of waders (number per hectare) in each sub-section of the Ythan estuary; September to March 2007/08. The species codes are: OC – Oystercatcher; GP – Golden Plover; L. – Lapwing; KN – Knot; DN – Dunlin; BA – Bar-tailed Godwit; CU – Curlew; RK – Redshank; TT – Turnstone.*

	Species									
Section	OC	GP	L.	KN	DN	BA	CU	RK	TT	
MO1W	3.29	3.15	0.00	0.00	8.24	0.00	0.00	0.11	0.22	0.02
MO1E	1.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MO2W	7.38	6.09	0.00	0.00	5.23	6.97	0.03	0.25	0.25	0.93
MO2E	2.88	16.97	0.02	0.00	11.39	0.00	0.30	0.52	0.05	0.05
IN1W	10.67	5.79	0.20	0.00	7.23	0.54	0.70	1.76	1.97	0.22
IN1E	4.21	2.34	0.00	0.00	0.00	0.00	0.14	0.39	0.05	0.03
IN2W	12.42	4.53	3.86	0.45	0.18	0.13	0.22	2.85	1.31	0.44
IN2E	1.27	3.09	0.00	0.00	0.00	0.00	0.00	0.28	0.00	0.00
IN3W	5.50	2.10	0.00	4.80	11.37	0.21	0.13	0.65	4.36	0.04
IN3E	7.25	3.18	19.91	3.53	1.08	0.05	0.20	2.25	0.88	0.34
QU1W	3.98	0.29	0.00	4.55	0.00	0.00	0.25	0.43	1.04	0.00
QU1E	2.76	5.12	0.00	16.03	2.07	10.34	0.90	1.06	0.88	0.00
QU2W	1.98	2.05	0.00	6.16	0.00	0.43	0.14	0.79	0.97	0.14
QU2E	5.87	2.15	0.00	8.54	0.00	0.02	0.40	1.06	2.19	0.00
TA1	7.03	0.29	0.00	5.48	0.00	0.00	0.00	1.59	3.99	0.00
SL1W	7.17	0.63	0.00	11.17	0.00	0.00	0.00	0.48	2.58	0.00
SL1E	4.78	0.61	0.00	7.32	0.00	0.00	0.00	0.36	0.76	0.00
SL2W	18.62	1.17	17.26	1.76	0.54	0.15	0.08	4.09	4.02	0.00
SL2E	1.71	0.17	0.00	5.62	0.00	0.00	0.00	0.46	0.92	0.08
SL3W	11.24	0.67	0.00	0.00	1.14	0.03	0.10	11.42	0.84	0.13
SL3E	2.42	0.56	0.00	15.10	0.00	0.00	0.06	0.47	5.10	0.03
SL4W	10.04	0.51	0.00	1.14	0.18	0.00	0.01	4.48	1.17	0.00
SL4E	1.78	0.80	0.00	16.22	0.00	0.00	0.12	0.68	1.93	0.00
SL5W	3.01	0.64	0.00	59.37	0.00	0.00	0.14	1.57	3.06	0.09
SL5E	2.35	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.24	0.00
HA1	15.10	0.13	50.72	25.57	1.40	3.14	0.21	2.52	6.69	0.01
HA2	11.36	0.05	30.46	14.87	0.13	5.50	0.07	2.69	10.01	0.00
HA3	7.67	0.13	1.12	40.85	0.00	9.46	0.00	1.14	7.68	0.00
SN1	5.39	0.00	0.00	3.93	0.00	0.05	0.00	0.13	2.22	0.00
SN2	6.46	0.43	48.64	18.63	0.00	10.45	0.00	6.39	12.16	0.00
SN3	4.54	0.99	0.00	34.57	0.00	15.67	0.00	0.68	6.16	0.00
MA1W	3.01	0.05	0.00	6.15	0.00	13.12	0.00	0.17	3.30	0.00
MA1E	2.62	0.08	0.00	1.91	0.00	0.00	0.00	0.05	1.88	0.00
LO1W	1.67	0.09	0.00	0.04	0.00	0.00	0.00	0.26	0.21	0.00
LO1E	1.36	0.16	0.00	0.00	0.00	0.00	0.00	0.05	0.32	0.00

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Policy and Advice Directorate, Great Glen House,
Leachkin Road, Inverness IV3 8NW
T: 01463 725000

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