# *WeBS Low Tide Counts*

## AIMS

Despite involving only a relatively small number of sites, estuaries collectively represent the most important habitat for non-breeding waterbirds in the UK. The influence of the tide means that the birds have to be much more mobile, both within and between sites. WeBS Core Counts on estuaries have, in general, been based around high tide roosts. Although important in themselves, roost sites are usually secondary in importance to the manner in which waterbirds make use of a site for feeding. Therefore, information gathered about these sites at high tide will only provide part of the picture. The WeBS Low Tide Counts scheme, which was initiated in the winter of 1992/93, aims to monitor, assess and regularly update information on the relative importance of intertidal feeding areas of UK estuaries for wintering waterbirds and thus to complement the information gathered by WeBS Core Counts on estuaries.

WeBS Low Tide Counts provide the crucial information needed to assess the potential effects on waterbird populations of a variety of human activities which affect the extent or value of intertidal habitats, such as proposals for dock developments, recreational activities, tidal power barrages, marinas and housing schemes. The data gathered contribute greatly to the conservation of waterbirds by providing supporting information for the establishment and management of the UK network of Ramsar sites and Special Protection Areas (SPAs), other site designations and estuary conservation plans. In addition, WeBS Low Tide Counts enhance our knowledge of the low water distribution of waterbirds and provide the data that highlight regional variations in habitat use. In particular, WeBS Low Tide Counts should help us to understand, predict and possibly plan for compensation for the effects of sea-level rise on the UK's internationally important estuarine waterbird populations.

## METHODS

The scheme provides information on the numbers of waterbirds feeding on subdivisions of the intertidal habitat within estuaries. Given the extra work that Low Tide Counts entail, often to the same counters that carry out the Core Counts, WeBS aims to cover most individual estuaries about once every six years, although on some sites more frequent counts are made. Co-ordinated counts of feeding and roosting waterbirds are made by volunteers each month between November and February on pre-established subdivisions of the intertidal habitat in the period two hours either side of low tide.

## DATA PRESENTATION

*Tabulated statistics*

Tables 12 & 13 present three statistics for 18 of the more numerous waterbird species present on 17 estuaries covered during the 2001/02 winter and 15 estuaries covered during the 2002/03 winter: the peak number of a species over the whole site counted in any one month; an estimate of the mean number present over the winter for the whole site (obtained by summing the mean counts of each species for each count section) and the mean density over the site (in birds per hectare), which is the mean number divided by the total area surveyed (in hectares). The area value used for these calculations is the sum of the inter-tidal and non-tidal components of each count section but omits the sub-tidal areas (i.e. those parts of the count section which are under water on a mean low tide).

*Dot density maps*

WeBS Low Tide Count data are presented as dot density maps, with subdivision of count sections into basic habitat elements. The reason for such a subdivision is to overcome the situations encountered in the past in which, for example, flocks of Great Crested Grebes are plotted on mudflats or flocks of Dunlin are plotted on open water. Both of these cases obviously look wrong but more importantly can give an unrealistic density value by using a nonsensical area for the calculations. To deal with this issue, each section for which a count has been made has been divided into up to three different habitat components:

| | |
|---|---|
| Inter-tidal: | Counted areas which lie between mean high water and mean low water. |
| Sub-tidal: | Counted areas which lie below mean low water. In more 'open-coast'-type situations, a subtidal zone reaching 500 m out from the intertidal sections has been |

Sub-tidal: created arbitrarily, to indicate the approximate extent of visibility offshore from land-based counts.

Non-tidal: Counted areas which lie above mean high water (usually saltmarsh although some grazing marshes are also counted).

The mean count for the sector is then divided amongst a varying number of the different components, dependent on the species involved. For example, Dunlin dots are plotted exclusively on inter-tidal sections whereas Wigeon dots are spread across inter-tidal, sub-tidal and non-tidal areas (in proportion with the relative areas of these three components).

Currently, throughout all WeBS Low Tide Count analyses, mean low tide and mean high tide are taken from the most recent Ordnance Survey Pathfinder maps. It is recognised, unfortunately, that these maps represent the current real shape of the mudflats, water channels and saltmarshes to varying degrees of accuracy. However, in the interests of uniformity across the UK, the Ordnance Survey outlines are adhered to throughout the analyses.

The maps display the average number of birds in each count section as dots spread randomly across habitat components of count sections, thus providing an indication of both numbers and density. **It is important to note that individual dots do not represent the precise position of individual birds; dots have been arbitrarily assigned to habitat components and are then randomly placed within those areas. No information about the distribution of birds at a finer scale than the count sector level should be inferred from the dot density maps.** For all maps in the present report, one dot is equivalent to one bird. The size of individual dots has no relevance other than for clarity. Additionally, any count sections that were not counted are marked with an asterisk. It is hoped that dot density distributions and habitat components will lead to an easier and fuller appreciation of low tide estuarine waterbird distribution. Where maps appear in colour (Internet version only), the following conventions apply: blue = water; yellow = intertidal habitat (e.g. mudflat, sandflat); green = non-tidal habitat (e.g. saltmarsh, reedbed); grey = not counted. More detailed information concerning analysis and presentation of WeBS Low Tide Counts can be obtained from the National Organiser (WeBS Low Tide Counts) at the BTO.

## COVERAGE

WeBS Low Tide Counts were carried out in winter 2001/02 at 23 sites, with accounts for 17 presented here. Other counts were made on Breydon Water (partial), Killough Harbour, Langstone Harbour (partial), Morecambe Bay (partial, mid-tide count) and the Severn Estuary (partial). In 2002/03, 19 estuarine sites were counted at low tide with 15 site accounts presented. Additional data available for the Adur Estuary, Dornoch Firth (partial), Langstone Harbour (partial) and Morecambe Bay (partial, mid-tide count) can be obtained from the WeBS Low Tide Count National Organiser.

In both winters, data were collected during the period November to February. Assessment of national and international importance is based on five-year peak mean counts from Core Counts (as presented in this report). Figure 79 shows the location of the sites discussed, and a site description is presented for each estuary. Distribution maps are presented for selected species, with two maps for sites visited in one winter and four for sites visited in both winters. The report first discusses those sites counted in 2001/02 only, then those in 2002/03 only, then finally those sites counted in both winters.

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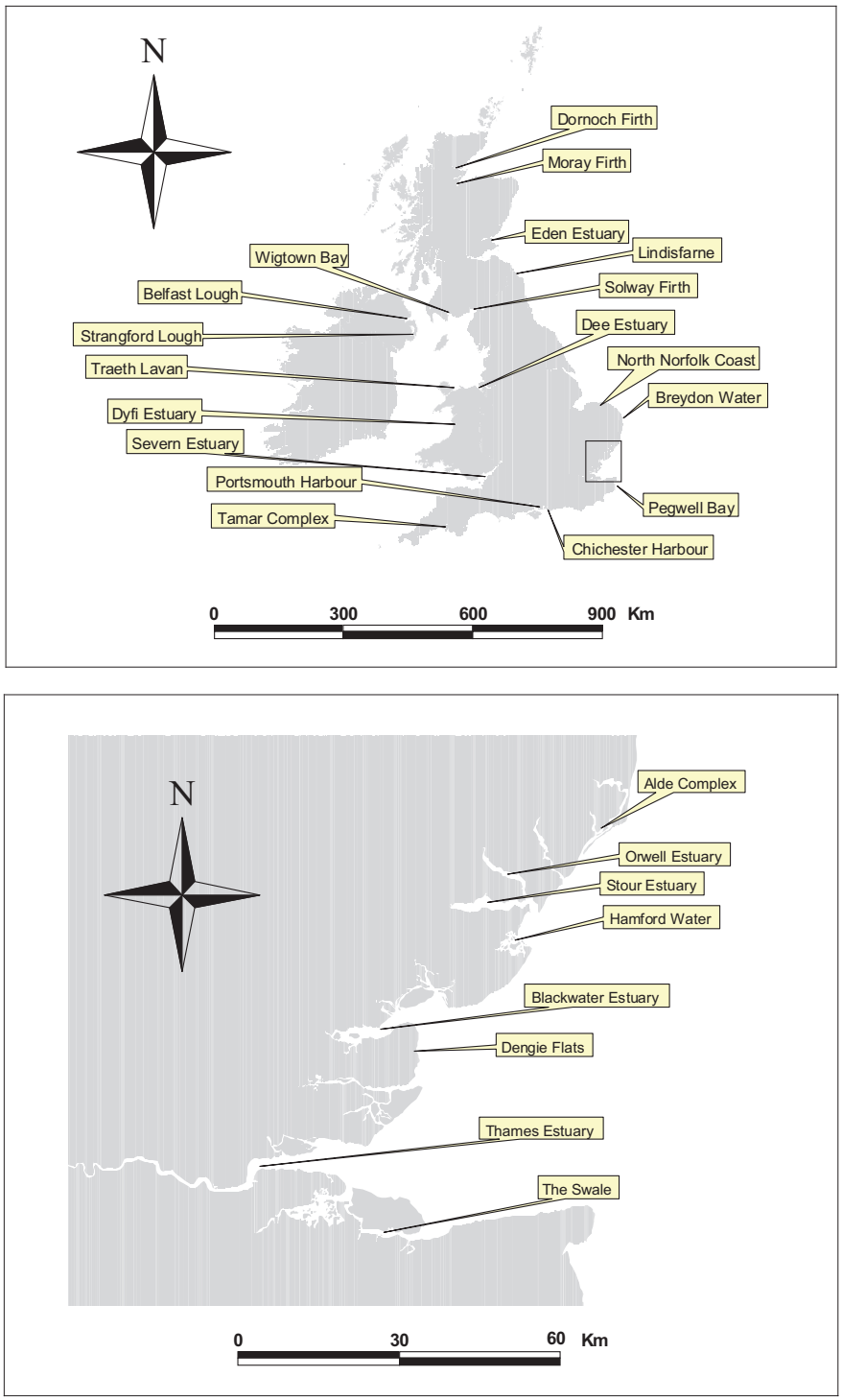



**Figure 79.** Sites surveyed for WeBS Low Tide Counts in 2001/02 and 2002/03. The lower map shows detail of area within rectangle in the top figure.

**Table 12.** Peak and mean counts, and mean density (birds per hectare) of 18 waterbird species present on estuaries covered by the 2001/02 WeBS Low Tide Counts. '+' indicates non-zero densities of <0.01 birds per hectare.

| | Alde Complex | | | Belfast Lough | | | Chichester Harbour | | |
|---|---|---|---|---|---|---|---|---|---|
| **Species** | **Peak** | **Mean** | **Density** | **Peak** | **Mean** | **Density** | **Peak** | **Mean** | **Density** |
| Brent Goose | 135 | 71 | 0.02 | 3 | 2 | + | 5,695 | 3,632 | 1.44 |
| Shelduck | 866 | 821 | 0.19 | 310 | 227 | 0.49 | 1,014 | 704 | 0.28 |
| Wigeon | 6,647 | 4,919 | 1.12 | 120 | 110 | 0.24 | 1,036 | 728 | 0.29 |
| Teal | 2,039 | 1,773 | 0.4 | 278 | 260 | 0.56 | 1,752 | 1,096 | 0.43 |
| Mallard | 445 | 360 | 0.08 | 282 | 224 | 0.48 | 341 | 301 | 0.12 |
| Pintail | 632 | 435 | 0.1 | 0 | 0 | 0 | 180 | 113 | 0.04 |
| Oystercatcher | 232 | 111 | 0.03 | 4,276 | 4,026 | 8.62 | 484 | 438 | 0.17 |
| Ringed Plover | 85 | 42 | 0.01 | 154 | 125 | 0.27 | 78 | 65 | 0.03 |
| Golden Plover | 460 | 283 | 0.06 | 0 | 0 | 0 | 914 | 654 | 0.26 |
| Grey Plover | 45 | 30 | 0.01 | 2 | 1 | + | 590 | 480 | 0.19 |
| Lapwing | 2,241 | 1,844 | 0.42 | 2,086 | 1,776 | 3.8 | 2,922 | 1,847 | 0.73 |
| Knot | 401 | 139 | 0.03 | 80 | 40 | 0.09 | 1,094 | 564 | 0.22 |
| Dunlin | 6,730 | 3,486 | 0.79 | 698 | 615 | 1.32 | 17,947 | 14,824 | 5.88 |
| Black-tailed Godwit | 64 | 39 | 0.01 | 308 | 247 | 0.53 | 467 | 364 | 0.14 |
| Bar-tailed Godwit | 20 | 12 | + | 26 | 19 | 0.04 | 626 | 442 | 0.18 |
| Curlew | 937 | 758 | 0.17 | 258 | 253 | 0.54 | 608 | 476 | 0.19 |
| Redshank | 2,071 | 1,771 | 0.4 | 1,766 | 1,574 | 3.37 | 855 | 714 | 0.28 |
| Turnstone | 31 | 13 | + | 167 | 145 | 0.31 | 33 | 26 | 0.01 |

| | Dee Estuary | | | Dengie Flats | | | Dornoch Firth | | |
|---|---|---|---|---|---|---|---|---|---|
| **Species** | **Peak** | **Mean** | **Density** | **Peak** | **Mean** | **Density** | **Peak** | **Mean** | **Density** |
| Brent Goose | 35 | 18 | + | 628 | 610 | 0.2 | 0 | 0 | 0 |
| Shelduck | 9,624 | 5,642 | 0.41 | 362 | 209 | 0.07 | 213 | 164 | 0.04 |
| Wigeon | 4,941 | 3,517 | 0.25 | 79 | 31 | 0.01 | 8,417 | 6,371 | 1.51 |
| Teal | 6,887 | 4,548 | 0.33 | 878 | 552 | 0.18 | 2,493 | 1,928 | 0.46 |
| Mallard | 1,865 | 1,215 | 0.09 | 398 | 297 | 0.1 | 1,032 | 1,036 | 0.25 |
| Pintail | 4,698 | 1,988 | 0.14 | 0 | 0 | 0 | 264 | 203 | 0.05 |
| Oystercatcher | 31,851 | 26,904 | 1.95 | 7,061 | 6,523 | 2.18 | 1,563 | 1,522 | 0.36 |
| Ringed Plover | 119 | 70 | 0.01 | 98 | 61 | 0.02 | 154 | 148 | 0.04 |
| Golden Plover | 18 | 12 | + | 910 | 712 | 0.24 | 43 | 17 | + |
| Grey Plover | 2,201 | 1,561 | 0.11 | 1,170 | 1,051 | 0.35 | 41 | 29 | 0.01 |
| Lapwing | 7,835 | 4,814 | 0.35 | 622 | 280 | 0.09 | 10 | 3 | + |
| Knot | 35,138 | 19,853 | 1.44 | 3,980 | 3,903 | 1.3 | 3,113 | 1,441 | 0.34 |
| Dunlin | 34,448 | 24,151 | 1.75 | 4,992 | 4,235 | 1.42 | 3,105 | 3,355 | 0.8 |
| Black-tailed Godwit | 4,624 | 3,365 | 0.24 | 20 | 5 | + | 9 | 5 | + |
| Bar-tailed Godwit | 12,163 | 8,778 | 0.64 | 758 | 769 | 0.26 | 1,136 | 678 | 0.16 |
| Curlew | 4,305 | 3,849 | 0.28 | 408 | 372 | 0.12 | 920 | 899 | 0.21 |
| Redshank | 8,579 | 6,692 | 0.49 | 1,002 | 837 | 0.28 | 939 | 766 | 0.18 |
| Turnstone | 286 | 188 | 0.01 | 103 | 79 | 0.03 | 88 | 58 | 0.01 |

**Table 12.** WeBS Low Tide Counts in 2001/02 (continued).

| | Dyfi Estuary | | | Eden Estuary | | | Hamford Water | | |
|---|---|---|---|---|---|---|---|---|---|
| **Species** | **Peak** | **Mean** | **Density** | **Peak** | **Mean** | **Density** | **Peak** | **Mean** | **Density** |
| Brent Goose | 0 | 0 | 0 | 4 | 2 | + | 3,813 | 2,282 | 2.85 |
| Shelduck | 135 | 125 | 0.06 | 578 | 489 | 0.51 | 1,737 | 1,157 | 1.45 |
| Wigeon | 1,921 | 1,219 | 0.63 | 523 | 408 | 0.42 | 2,826 | 1,962 | 2.45 |
| Teal | 203 | 147 | 0.08 | 98 | 57 | 0.06 | 9,055 | 4,936 | 6.17 |
| Mallard | 318 | 307 | 0.16 | 114 | 86 | 0.09 | 242 | 193 | 0.24 |
| Pintail | 304 | 301 | 0.15 | 15 | 5 | 0.01 | 233 | 123 | 0.15 |
| Oystercatcher | 426 | 415 | 0.21 | 2,122 | 1,610 | 1.67 | 1,903 | 1,555 | 1.94 |
| Ringed Plover | 31 | 27 | 0.01 | 32 | 14 | 0.01 | 1,302 | 794 | 0.99 |
| Golden Plover | 800 | 760 | 0.39 | 1,410 | 513 | 0.53 | 1,863 | 673 | 0.84 |
| Grey Plover | 26 | 24 | 0.01 | 186 | 131 | 0.14 | 3,063 | 2,291 | 2.86 |
| Lapwing | 1,105 | 968 | 0.5 | 257 | 129 | 0.13 | 2,474 | 1,096 | 1.37 |
| Knot | 0 | 0 | 0 | 310 | 174 | 0.18 | 397 | 339 | 0.42 |
| Dunlin | 585 | 534 | 0.27 | 1,498 | 899 | 0.93 | 10,686 | 7,101 | 8.88 |
| Black-tailed Godwit | 3 | 2 | + | 221 | 184 | 0.19 | 366 | 162 | 0.2 |
| Bar-tailed Godwit | 20 | 15 | 0.01 | 378 | 203 | 0.21 | 628 | 330 | 0.41 |
| Curlew | 615 | 489 | 0.25 | 559 | 290 | 0.3 | 401 | 318 | 0.4 |
| Redshank | 142 | 106 | 0.05 | 573 | 428 | 0.44 | 2,575 | 2,033 | 2.54 |
| Turnstone | 0 | 0 | 0 | 4 | 1 | + | 642 | 432 | 0.54 |

| | Lindisfarne | | | North Norfolk Coast | | | Orwell Estuary | | |
|---|---|---|---|---|---|---|---|---|---|
| **Species** | **Peak** | **Mean** | **Density** | **Peak** | **Mean** | **Density** | **Peak** | **Mean** | **Density** |
| Brent Goose | 3,224 | 3,199 | 1.08 | 6,148 | 5,083 | 0.81 | 1,215 | 731 | 0.59 |
| Shelduck | 1,546 | 1,546 | 0.52 | 2,012 | 1,450 | 0.23 | 754 | 522 | 0.42 |
| Wigeon | 2,362 | 2,362 | 0.8 | 6,618 | 2,426 | 0.39 | 2,576 | 1,841 | 1.47 |
| Teal | 438 | 438 | 0.15 | 3,302 | 2,310 | 0.37 | 698 | 575 | 0.46 |
| Mallard | 479 | 479 | 0.16 | 1,660 | 1,118 | 0.18 | 415 | 336 | 0.27 |
| Pintail | 272 | 272 | 0.09 | 1,171 | 528 | 0.08 | 473 | 202 | 0.16 |
| Oystercatcher | 801 | 801 | 0.27 | 3,744 | 3,271 | 0.52 | 1,679 | 1,234 | 0.99 |
| Ringed Plover | 27 | 27 | 0.01 | 410 | 372 | 0.06 | 181 | 127 | 0.1 |
| Golden Plover | 1,844 | 1,844 | 0.62 | 2,928 | 1,301 | 0.21 | 558 | 162 | 0.13 |
| Grey Plover | 572 | 572 | 0.19 | 1,429 | 1,170 | 0.19 | 323 | 206 | 0.16 |
| Lapwing | 1,742 | 1,742 | 0.59 | 3,340 | 1,964 | 0.31 | 1,736 | 1,041 | 0.83 |
| Knot | 2,261 | 2,261 | 0.76 | 10,627 | 5,212 | 0.83 | 1,601 | 549 | 0.44 |
| Dunlin | 3,963 | 3,963 | 1.34 | 11,078 | 8,764 | 1.4 | 4,729 | 3,698 | 2.96 |
| Black-tailed Godwit | 0 | 0 | 0 | 181 | 87 | 0.01 | 260 | 183 | 0.15 |
| Bar-tailed Godwit | 1,769 | 1,769 | 0.6 | 1,678 | 1,161 | 0.19 | 4 | 2 | + |
| Curlew | 1,822 | 1,822 | 0.61 | 2,302 | 1,650 | 0.26 | 1,045 | 796 | 0.64 |
| Redshank | 972 | 972 | 0.33 | 3,915 | 3,188 | 0.51 | 2,279 | 1,812 | 1.45 |
| Turnstone | 27 | 27 | 0.01 | 585 | 543 | 0.09 | 131 | 124 | 0.1 |

**Table 12.** WeBS Low Tide Counts in 2001/02 (continued).

| | Solway Firth | | | Stour Estuary | | | Strangford Lough | | |
|---|---|---|---|---|---|---|---|---|---|
| **Species** | **Peak** | **Mean** | **Density** | **Peak** | **Mean** | **Density** | **Peak** | **Mean** | **Density** |
| Brent Goose | 0 | 0 | 0 | 1,373 | 1,209 | 0.74 | 8,380 | 3,881 | 0.99 |
| Shelduck | 1,639 | 1,701 | 0.11 | 1,441 | 1,192 | 0.73 | 3,507 | 2,492 | 0.64 |
| Wigeon | 1,023 | 744 | 0.05 | 2,920 | 2,244 | 1.37 | 2,013 | 1,025 | 0.26 |
| Teal | 266 | 191 | 0.01 | 1,314 | 645 | 0.39 | 824 | 704 | 0.18 |
| Mallard | 855 | 641 | 0.04 | 336 | 283 | 0.17 | 392 | 321 | 0.08 |
| Pintail | 1,716 | 1,736 | 0.11 | 438 | 340 | 0.21 | 294 | 126 | 0.03 |
| Oystercatcher | 27,833 | 26,353 | 1.74 | 1,566 | 1,337 | 0.82 | 5,817 | 5,755 | 1.47 |
| Ringed Plover | 62 | 46 | + | 191 | 134 | 0.08 | 618 | 449 | 0.11 |
| Golden Plover | 1,752 | 1,238 | 0.08 | 8,531 | 3,884 | 2.37 | 11,726 | 5,113 | 1.31 |
| Grey Plover | 202 | 208 | 0.01 | 1,926 | 1,465 | 0.89 | 171 | 88 | 0.02 |
| Lapwing | 1,941 | 1,510 | 0.1 | 5,204 | 2,810 | 1.71 | 5,563 | 3,226 | 0.82 |
| Knot | 1,625 | 436 | 0.03 | 6,998 | 4,364 | 2.66 | 4,000 | 4,361 | 1.11 |
| Dunlin | 11,364 | 11,552 | 0.76 | 16,469 | 13,264 | 8.09 | 3,348 | 3,440 | 0.88 |
| Black-tailed Godwit | 0 | 0 | 0 | 1,553 | 1,187 | 0.72 | 47 | 42 | 0.01 |
| Bar-tailed Godwit | 84 | 33 | + | 28 | 21 | 0.01 | 1,949 | 981 | 0.25 |
| Curlew | 3,840 | 2,069 | 0.14 | 1,119 | 1,012 | 0.62 | 1,478 | 1,236 | 0.32 |
| Redshank | 1,668 | 1,241 | 0.08 | 2,261 | 1,934 | 1.18 | 3,339 | 2,617 | 0.67 |
| Turnstone | 43 | 32 | + | 392 | 336 | 0.21 | 70 | 44 | 0.01 |

| | Swale Estuary | | | Wigtown Bay | | |
|---|---|---|---|---|---|---|
| **Species** | **Peak** | **Mean** | **Density** | **Peak** | **Mean** | **Density** |
| Brent Goose | 1,702 | 848 | 0.36 | 0 | 0 | 0 |
| Shelduck | 2,039 | 1,707 | 0.72 | 384 | 292 | 0.1 |
| Wigeon | 1,187 | 974 | 0.41 | 1,002 | 586 | 0.19 |
| Teal | 692 | 697 | 0.29 | 0 | 0 | 0 |
| Mallard | 264 | 213 | 0.09 | 53 | 30 | 0.01 |
| Pintail | 503 | 196 | 0.08 | 59 | 38 | 0.01 |
| Oystercatcher | 6,085 | 5,072 | 2.14 | 1,711 | 1,499 | 0.49 |
| Ringed Plover | 206 | 134 | 0.06 | 26 | 9 | + |
| Golden Plover | 2,335 | 997 | 0.42 | 30 | 10 | + |
| Grey Plover | 1,567 | 1,386 | 0.58 | 0 | 0 | 0 |
| Lapwing | 1,941 | 1,294 | 0.55 | 190 | 84 | 0.03 |
| Knot | 1,110 | 958 | 0.4 | 130 | 49 | 0.02 |
| Dunlin | 9,189 | 7,876 | 3.32 | 2,380 | 1,364 | 0.45 |
| Black-tailed Godwit | 1,580 | 688 | 0.29 | 0 | 0 | 0 |
| Bar-tailed Godwit | 383 | 349 | 0.15 | 53 | 43 | 0.01 |
| Curlew | 1,174 | 898 | 0.38 | 728 | 524 | 0.17 |
| Redshank | 1,777 | 1,619 | 0.68 | 96 | 39 | 0.01 |
| Turnstone | 389 | 335 | 0.14 | 0 | 0 | 0 |

**Table 13.** Peak and mean counts, and mean density (birds per hectare) of 18 waterbird species present on estuaries covered by the 2002/03 WeBS Low Tide Counts. '+' indicates non-zero densities of <0.01 birds per hectare.

| | Belfast Lough | | | Blackwater Estuary | | | Breydon Water | | |
|---|---|---|---|---|---|---|---|---|---|
| **Species** | **Peak** | **Mean** | **Density** | **Peak** | **Mean** | **Density** | **Peak** | **Mean** | **Density** |
| Brent Goose | 17 | 9 | 0.02 | 1,856 | 1,055 | 0.69 | 0 | 0 | 0 |
| Shelduck | 199 | 199 | 0.42 | 1,251 | 1,057 | 0.69 | 245 | 132 | 0.33 |
| Wigeon | 138 | 115 | 0.24 | 1,297 | 945 | 0.61 | 15,999 | 10,082 | 25.08 |
| Teal | 316 | 221 | 0.46 | 2,818 | 2,114 | 1.37 | 109 | 46 | 0.11 |
| Mallard | 386 | 282 | 0.59 | 72 | 59 | 0.04 | 460 | 224 | 0.56 |
| Pintail | 0 | 0 | 0 | 471 | 339 | 0.22 | 192 | 105 | 0.26 |
| Oystercatcher | 5,542 | 4,291 | 9.01 | 310 | 387 | 0.25 | 59 | 31 | 0.08 |
| Ringed Plover | 91 | 90 | 0.19 | 90 | 75 | 0.05 | 32 | 24 | 0.06 |
| Golden Plover | 15 | 11 | 0.02 | 12,455 | 6,518 | 4.23 | 8,126 | 3,046 | 7.58 |
| Grey Plover | 0 | 0 | 0 | 877 | 684 | 0.44 | 30 | 12 | 0.03 |
| Lapwing | 1,186 | 1,088 | 2.29 | 11,053 | 5,525 | 3.59 | 10,088 | 4,513 | 11.23 |
| Knot | 0 | 0 | 0 | 1,700 | 2,003 | 1.3 | 280 | 99 | 0.25 |
| Dunlin | 959 | 887 | 1.86 | 13,786 | 15,510 | 10.07 | 5,273 | 3,437 | 8.55 |
| Black-tailed Godwit | 424 | 264 | 0.55 | 1,066 | 622 | 0.4 | 753 | 487 | 1.21 |
| Bar-tailed Godwit | 104 | 91 | 0.19 | 55 | 64 | 0.04 | 10 | 8 | 0.02 |
| Curlew | 479 | 372 | 0.78 | 356 | 329 | 0.21 | 664 | 357 | 0.89 |
| Redshank | 1,194 | 1,093 | 2.3 | 1,860 | 1,613 | 1.05 | 1,497 | 1,151 | 2.86 |
| Turnstone | 225 | 183 | 0.38 | 107 | 105 | 0.07 | 5 | 4 | 0.01 |

| | Dyfi Estuary | | | Traeth Lafan | | | Lindisfarne | | |
|---|---|---|---|---|---|---|---|---|---|
| **Species** | **Peak** | **Mean** | **Density** | **Peak** | **Mean** | **Density** | **Peak** | **Mean** | **Density** |
| Brent Goose | 1 | 0 | + | 9 | 6 | + | 1,929 | 1,817 | 0.61 |
| Shelduck | 179 | 146 | 0.07 | 503 | 442 | 0.14 | 1,527 | 1,274 | 0.43 |
| Wigeon | 1,863 | 1,460 | 0.73 | 1,263 | 924 | 0.29 | 1,293 | 1,152 | 0.39 |
| Teal | 938 | 450 | 0.22 | 43 | 33 | 0.01 | 870 | 687 | 0.23 |
| Mallard | 232 | 174 | 0.09 | 189 | 165 | 0.05 | 400 | 300 | 0.1 |
| Pintail | 196 | 86 | 0.04 | 77 | 55 | 0.02 | 219 | 146 | 0.05 |
| Oystercatcher | 537 | 421 | 0.21 | 7,178 | 5,612 | 1.74 | 811 | 660 | 0.22 |
| Ringed Plover | 29 | 11 | 0.01 | 60 | 39 | 0.01 | 41 | 39 | 0.01 |
| Golden Plover | 1,250 | 884 | 0.44 | 0 | 0 | 0 | 3,098 | 2,356 | 0.79 |
| Grey Plover | 20 | 12 | 0.01 | 4 | 1 | + | 502 | 420 | 0.14 |
| Lapwing | 1,475 | 1,044 | 0.52 | 230 | 86 | 0.03 | 1,458 | 1,454 | 0.49 |
| Knot | 0 | 0 | 0 | 127 | 61 | 0.02 | 3,829 | 3,747 | 1.26 |
| Dunlin | 572 | 348 | 0.17 | 4,419 | 2,910 | 0.9 | 4,128 | 3,343 | 1.13 |
| Black-tailed Godwit | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 3 | + |
| Bar-tailed Godwit | 5 | 1 | + | 10 | 6 | + | 2,862 | 1,949 | 0.66 |
| Curlew | 815 | 482 | 0.24 | 1,922 | 1,398 | 0.43 | 1,338 | 1,218 | 0.41 |
| Redshank | 52 | 33 | 0.02 | 1,525 | 953 | 0.3 | 941 | 870 | 0.29 |
| Turnstone | 0 | 0 | 0 | 56 | 32 | 0.01 | 42 | 41 | 0.01 |

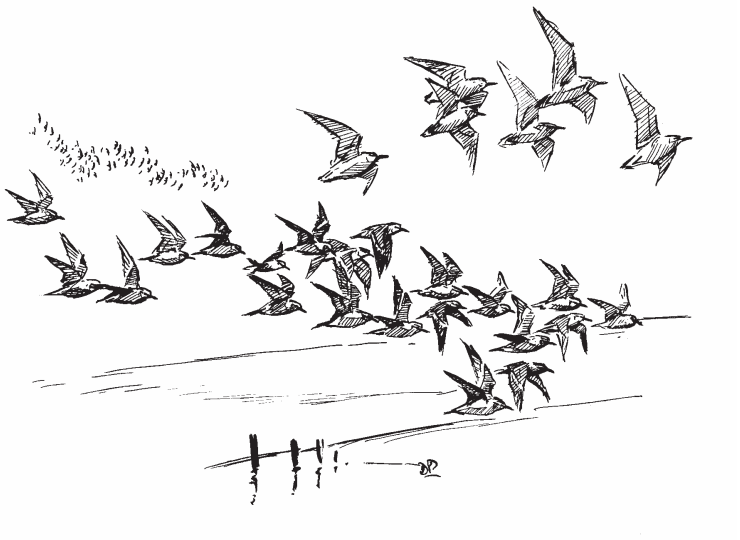
**Table 13.** WeBS Low Tide Counts in 2002/03 (continued).

| | Moray Firth | | | Orwell Estuary | | | Pegwell Bay | | |
|---|---|---|---|---|---|---|---|---|---|
| **Species** | **Peak** | **Mean** | **Density** | **Peak** | **Mean** | **Density** | **Peak** | **Mean** | **Density** |
| Brent Goose | 0 | 0 | 0 | 1,525 | 889 | 0.71 | 115 | 68 | 0.08 |
| Shelduck | 348 | 239 | 0.08 | 715 | 552 | 0.44 | 282 | 185 | 0.23 |
| Wigeon | 6,475 | 5,851 | 1.97 | 2,898 | 2,459 | 1.97 | 1,630 | 1,103 | 1.37 |
| Teal | 2,948 | 2,651 | 0.89 | 1,607 | 763 | 0.61 | 136 | 94 | 0.12 |
| Mallard | 1,005 | 797 | 0.27 | 506 | 404 | 0.32 | 649 | 301 | 0.37 |
| Pintail | 302 | 260 | 0.09 | 372 | 218 | 0.17 | 6 | 2 | + |
| Oystercatcher | 3,666 | 3,455 | 1.16 | 1,863 | 1,404 | 1.12 | 2,004 | 1,449 | 1.8 |
| Ringed Plover | 82 | 50 | 0.02 | 203 | 173 | 0.14 | 359 | 274 | 0.34 |
| Golden Plover | 321 | 158 | 0.05 | 84 | 24 | 0.02 | 7,229 | 3,313 | 4.11 |
| Grey Plover | 1 | 0 | + | 358 | 296 | 0.24 | 523 | 382 | 0.47 |
| Lapwing | 556 | 406 | 0.14 | 1,454 | 756 | 0.61 | 10,282 | 4,912 | 6.09 |
| Knot | 906 | 690 | 0.23 | 3,172 | 2,111 | 1.69 | 365 | 212 | 0.26 |
| Dunlin | 2,242 | 1,880 | 0.63 | 5,555 | 4,146 | 3.32 | 1,906 | 1,565 | 1.94 |
| Black-tailed Godwit | 3 | 1 | + | 407 | 247 | 0.2 | 14 | 4 | + |
| Bar-tailed Godwit | 987 | 671 | 0.23 | 4 | 2 | + | 408 | 262 | 0.32 |
| Curlew | 1,282 | 1,103 | 0.37 | 733 | 681 | 0.55 | 601 | 477 | 0.59 |
| Redshank | 2,047 | 1,569 | 0.53 | 1,825 | 1,678 | 1.34 | 356 | 303 | 0.38 |
| Turnstone | 53 | 35 | 0.01 | 210 | 173 | 0.14 | 307 | 167 | 0.21 |

| | Portsmouth Harbour | | | Severn Estuary | | | Stour Estuary | | |
|---|---|---|---|---|---|---|---|---|---|
| **Species** | **Peak** | **Mean** | **Density** | **Peak** | **Mean** | **Density** | **Peak** | **Mean** | **Density** |
| Brent Goose | 1,823 | 1,551 | 1.61 | 11 | 3 | + | 1,369 | 988 | 0.6 |
| Shelduck | 200 | 130 | 0.13 | 3,495 | 2,797 | 0.13 | 1,906 | 1,614 | 0.98 |
| Wigeon | 163 | 146 | 0.15 | 3,331 | 3,269 | 0.15 | 4,068 | 2,541 | 1.55 |
| Teal | 112 | 66 | 0.07 | 1,624 | 1,558 | 0.07 | 1,060 | 757 | 0.46 |
| Mallard | 92 | 60 | 0.06 | 1,793 | 1,568 | 0.07 | 547 | 375 | 0.23 |
| Pintail | 2 | 1 | + | 478 | 306 | 0.01 | 613 | 475 | 0.29 |
| Oystercatcher | 536 | 438 | 0.45 | 829 | 811 | 0.04 | 1,804 | 1,397 | 0.85 |
| Ringed Plover | 79 | 44 | 0.05 | 84 | 57 | + | 120 | 110 | 0.07 |
| Golden Plover | 173 | 43 | 0.04 | 1,215 | 624 | 0.03 | 2,567 | 1,236 | 0.75 |
| Grey Plover | 165 | 112 | 0.12 | 555 | 323 | 0.01 | 2,038 | 1,719 | 1.05 |
| Lapwing | 482 | 323 | 0.34 | 12,129 | 8,696 | 0.39 | 4,137 | 1,514 | 0.92 |
| Knot | 2 | 1 | + | 1,703 | 1,297 | 0.06 | 8,648 | 4,387 | 2.68 |
| Dunlin | 8,139 | 5,412 | 5.61 | 41,120 | 31,864 | 1.44 | 12,863 | 10,348 | 6.31 |
| Black-tailed Godwit | 246 | 134 | 0.14 | 42 | 27 | + | 1,689 | 1,195 | 0.73 |
| Bar-tailed Godwit | 2 | 1 | + | 59 | 23 | + | 145 | 106 | 0.06 |
| Curlew | 420 | 332 | 0.34 | 3,615 | 3,535 | 0.16 | 868 | 775 | 0.47 |
| Redshank | 438 | 362 | 0.38 | 2,439 | 1,634 | 0.07 | 1,769 | 1,520 | 0.93 |
| Turnstone | 101 | 63 | 0.07 | 274 | 213 | 0.01 | 453 | 327 | 0.2 |

**Table 13.** WeBS Low Tide Counts in 2002/03 (continued).

| | Strangford Lough | | | Tamar Complex | | | Thames Estuary | | |
|---|---|---|---|---|---|---|---|---|---|
| **Species** | **Peak** | **Mean** | **Density** | **Peak** | **Mean** | **Density** | **Peak** | **Mean** | **Density** |
| Brent Goose | 10,765 | 4,304 | 1.12 | 1 | 0 | + | 48 | 30 | 0.01 |
| Shelduck | 4,199 | 2,946 | 0.77 | 633 | 384 | 0.25 | 603 | 315 | 0.13 |
| Wigeon | 1,372 | 660 | 0.17 | 319 | 269 | 0.17 | 7,029 | 2,219 | 0.89 |
| Teal | 830 | 842 | 0.22 | 225 | 165 | 0.11 | 565 | 175 | 0.07 |
| Mallard | 350 | 292 | 0.08 | 324 | 261 | 0.17 | 123 | 67 | 0.03 |
| Pintail | 123 | 91 | 0.02 | 2 | 1 | + | 335 | 160 | 0.06 |
| Oystercatcher | 6,378 | 5,671 | 1.48 | 277 | 224 | 0.14 | 901 | 590 | 0.24 |
| Ringed Plover | 236 | 221 | 0.06 | 16 | 8 | 0.01 | 50 | 43 | 0.02 |
| Golden Plover | 5,413 | 3,221 | 0.84 | 14 | 5 | + | 185 | 91 | 0.04 |
| Grey Plover | 398 | 164 | 0.04 | 147 | 46 | 0.03 | 1,222 | 932 | 0.38 |
| Lapwing | 3,876 | 2,944 | 0.77 | 251 | 182 | 0.12 | 1,473 | 767 | 0.31 |
| Knot | 10,340 | 7,147 | 1.86 | 0 | 0 | 0 | 11,103 | 5,496 | 2.22 |
| Dunlin | 4,408 | 3,479 | 0.91 | 1,763 | 660 | 0.43 | 28,880 | 20,080 | 8.09 |
| Black-tailed Godwit | 189 | 140 | 0.04 | 53 | 32 | 0.02 | 953 | 473 | 0.19 |
| Bar-tailed Godwit | 960 | 551 | 0.14 | 25 | 11 | 0.01 | 161 | 52 | 0.02 |
| Curlew | 1,159 | 1,089 | 0.28 | 518 | 408 | 0.26 | 785 | 681 | 0.27 |
| Redshank | 2,879 | 2,304 | 0.6 | 430 | 327 | 0.21 | 554 | 455 | 0.18 |
| Turnstone | 63 | 33 | 0.01 | 33 | 20 | 0.01 | 23 | 16 | 0.01 |



## ALDE COMPLEX
**Suffolk**

**Internationally important:** Avocet, Redshank

**Nationally important:** European White-fronted Goose, Shelduck, Wigeon, Teal, Pintail, Shoveler, Black-tailed Godwit

*Site description*

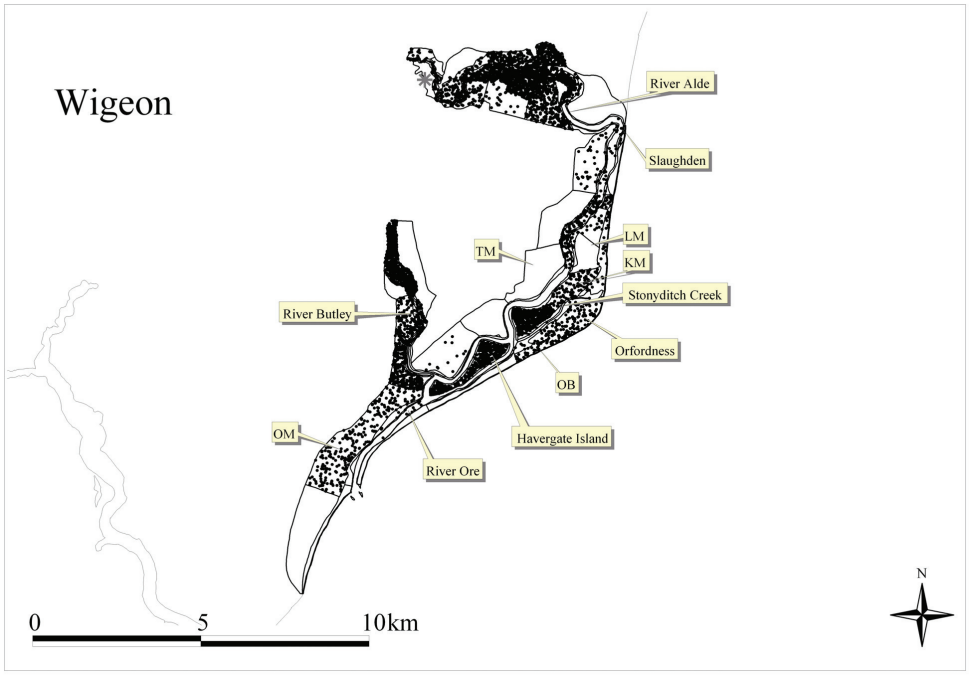
The Alde Complex is separated from the sea by the large shingle spit of Orfordness and the estuary is comprised of three rivers; the Alde, Butley and Ore. The spit has been extending continually southwards since 1530, with the consequent effect of pushing the mouth of the River Ore progressively further to the south-west. Havergate Island lies at the confluence of the Rivers Ore and Butley and hosts the largest breeding colony of Avocets in Britain. The River Alde is relatively wide and shallow with mudflats in the upper reaches and saltmarsh including some *Spartina* exposed at low tide along both banks. The Butley River has extensive areas of mudflat, grading into saltmarsh and reedbed along its length. Industrial operations are virtually absent and water quality is excellent, however, a wide range of recreational activities occurs. Sailing occurs throughout, with moorings at Aldeburgh and Orford, and windsurfing, canoeing and water-skiing are permitted in the lower zones. Leisure use of the beach occurs around the mouth and wildfowling takes place over parts of the Alde, Butley and Orfordness. Other activities include oyster cultivation, fish trawling, eel netting, reed cutting and bait digging (Buck 1997).

*Bird distribution 2001/02*

Little Grebe peaked at 61 birds in November, mostly found on the pools and creeks of Lantern Marshes and Havergate Island. Cormorants were present in nationally important numbers, with most of the birds resting on Orford Beach. A few Little Egret and up to 38 Grey Heron were generally distributed, with the former species avoiding, and the latter species favouring, the upper part of the Alde. Mute Swan were widely distributed, frequenting both the Town and King's Marshes. Oxley Marshes also attracted many of the Dark-bellied Brent Geese present in December. Shelduck were distributed relatively evenly throughout the estuary. The densest concentrations of Wigeon occurred on the Alde, Havergate Island, King's Marshes and the saltmarsh around Butley River. Teal distribution was similar, although higher counts were made at Stonyditch Creek. Mallard and Pintail were both evenly distributed and the highest density of the latter was found on Havergate Island. Habitat near Stonyditch Creek hosted the highest congregations of Shoveler. Pochard and Tufted Duck frequented the pools on King's and Lantern Marshes and small numbers of Goldeneye were present off Orford Beach.

Oystercatcher were present generally only in the upper reaches. High numbers of Avocet were recorded in February (1,765) reflecting the continued population increase within the UK in general, and East Anglia in particular. Avocet were concentrated in the broader estuarine part of the Alde, on the river adjacent to Slaughden, along the Butley River and around Havergate Island. Ringed Plover were confined to the upper parts of the Alde, whilst the majority of Knot frequented the western mudflats of the Alde. Small numbers of Grey Plover occurred on Havergate Island and the saltmarsh near Slaughden. The highest Lapwing count occurred in December, when more than 2,200 were present, widely distributed, although absent from Orfordness and the marshes around Orford. The greatest concentrations of Golden Plover occurred around Stonyditch Creek and on the flats off Sandy Point at the north-western part of the Alde. Dunlin were present in nationally important numbers in December but this was a short-lived influx. Black-tailed Godwit were sparse throughout most of the winter but numbers rose to 64 in February when the majority were found along Butley River. Curlew and Redshank were evenly distributed, with the latter concentrated along the Butley River, Stonyditch Creek, the saltings near Slaughden and the north-western corner of the Alde. Turnstone were mostly found along the narrow stretch of shingle adjacent to Havergate Island.

Six species of gull were noted, of which Black-headed were the most abundant, peaking at over 5,600 individuals. Herring Gull were the next most abundant, with 2,061 birds in December. A sudden increase in the numbers of Lesser Black-backed Gull in February may have indicated the start of the return movement to breeding grounds.



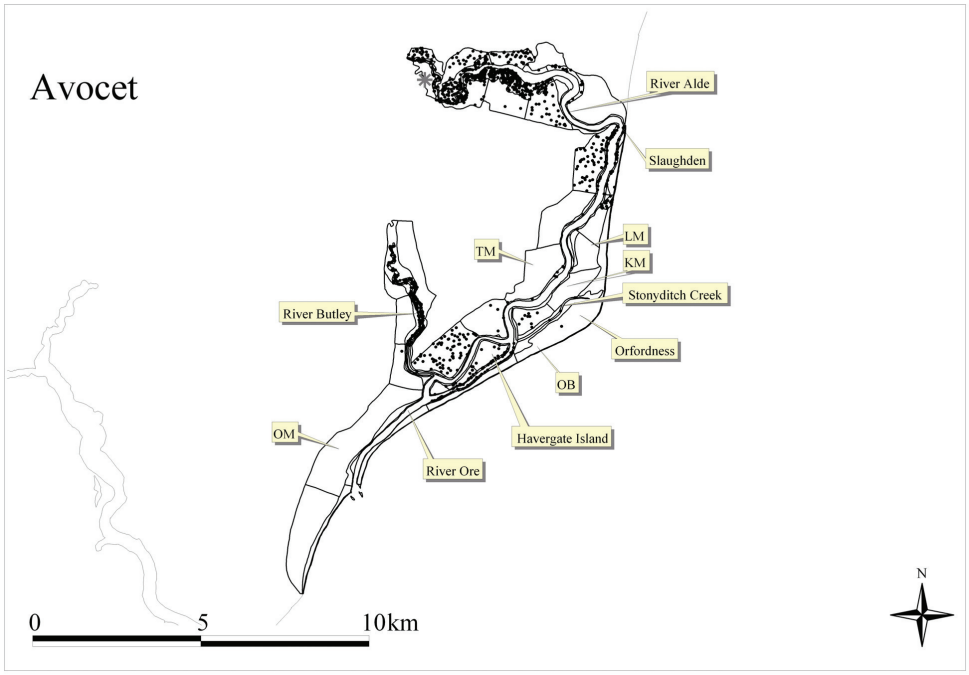




**Figure 80.** WeBS Low Tide Count distributions of Wigeon and Avocet at Alde Complex, winter 2001/02. (KM=King's Marshes, LM=Lantern Marshes, OB=Orford Beach, OM=Oxley Marshes, TM=Town Marshes)