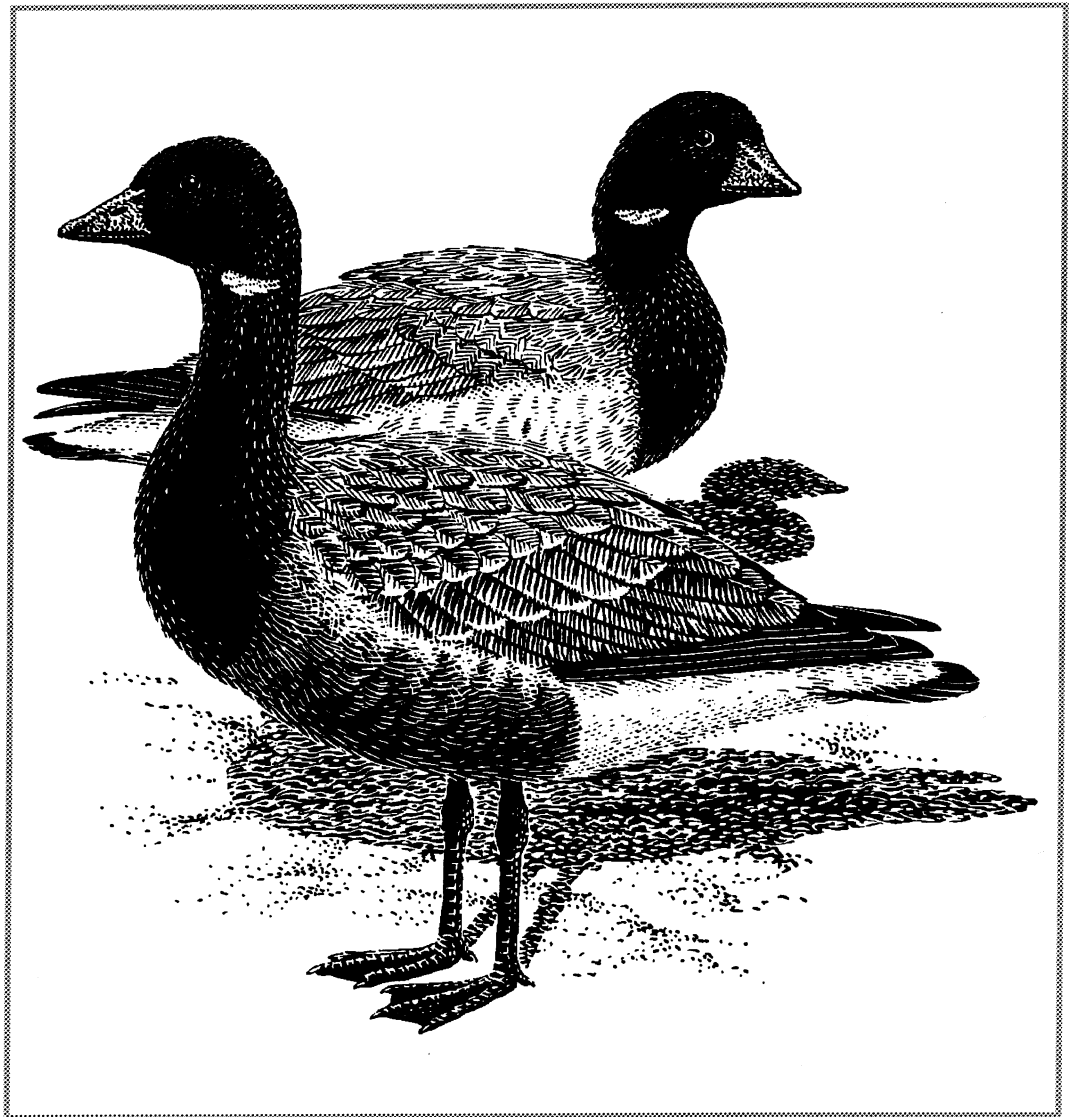


Orwell Estuary

Systematic review of waterbirds

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No 381

**Orwell Estuary
Systematic review of waterbirds**

**incorporating a report on
the effects of the Felixstowe Dock expansion
on key wading species at Fagbury**

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Summary

In the recent past there have been dramatic changes to the Orwell's ecosystem. Ongoing threats from saltmarsh, shoreline and mudflat erosion, land claim and an increase in recreational pursuits will impact still further on the wildlife interest of the estuary. Despite this erosion of the natural interest and ecology of the Orwell, the estuary is still a beautiful area, rich in habitats and important for its Waterbird populations.

In recognition of the important concentrations of waterbirds found on the estuary the following designations have been made. The Orwell, with the Stour estuary is a Special Protection Area (SPA) and a Ramsar site. The Orwell estuary is A Site of Special Scientific Interest (SSSI) and the Suffolk Wildlife Trust (SWT) Trimley Marshes Reserve is a proposed SPA. The whole of the Orwell valley is within an Area of Outstanding Natural Beauty (ANOB) and throughout the estuary there is a wealth of County Wildlife Sites (CWS).

The Orwell estuary is exceptionally diverse in waterbirds, 109 species have been reviewed in this report. However, over the last fifteen years of WeBS counts the figures suggest that the number of waterbirds have declined by 15%. The figures also indicate that the number of waders has declined by 21% but wildfowl have increased by 9%.

Most of the wildfowl species have shown dramatic increases, Wigeon 102%, Gadwall >4000%, Pochard 375%, Tufted Duck 42% and Coot 64%. Mallard is the only duck to have declined. It appears, however, that there are declines in the populations of three species of wader, namely Dunlin 20%, Ringed Plover 60% and Turnstone 55%. On a brighter note, Black-tailed Godwits have increased dramatically by some 273%, Grey Plover 31% and Redshank 20%.

Currently the estuary is internationally important for two species, wintering Common Redshank and autumn passage Black-tailed Godwit and nationally important for eight species, Little Grebe, Dark-bellied Brent Goose, Common Shelduck, Gadwall, Northern Pintail, Pied Avocet, Dunlin and Black-tailed Godwit.

The Orwell is no longer nationally important for Ringed Plover, Grey Plover or Ruddy Turnstone.

Summary

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2 Orwell Estuary - Systematic Review of Waterbirds

2.1 Introduction

Waterbirds migrating from their Arctic breeding grounds to their wintering quarters in Britain, western Europe or western Africa do so via the East Atlantic Flyway. The Orwell estuary, like all British estuaries, is ideally placed within that 'Flyway'. Coupled with relatively mild winters, large tidal amplitudes and tidal flats rich in invertebrate fauna, the Orwell is a resource of finite proportions that is of international importance. This importance for wildlife has been recognised by being designated a Site of Special Scientific Interest (SSSI), Ramsar site and a Special Protection Area (SPA).

In this section of the report all species have been reviewed including, for completeness, those that occur irregularly. For each species the Suffolk status is given and, where applicable, by using historical data, the Orwell is put into context with the whole of Suffolk. Where it is relevant, information is provided on wintering, passage and breeding. Levels of national or international importance are also given.

Although the significance of both high and low water counts is not in any doubt, they represent only a small window of time in the daily life cycle of waterbirds using the estuary (i.e. two counts per month, at high water and low water, during the winter period). Waterbirds are highly mobile, some species more than others, and use the estuary to its full potential. When they are not able to feed in their preferred areas they are forced elsewhere. They also congregate on the last areas of mudflat of a flooding tide, and depending where they finally roost at top tide, they then distribute themselves throughout the estuary when the tide ebbs. In addition, they are constantly reacting to all forms of disturbance and prevailing weather conditions. Often their plight is exacerbated during times of severe weather or prolonged thick fog, whereby their behaviour and use of the estuary changes profoundly.

In order to comprehensively assess each species the Wetland Bird Survey (WeBS) count data, for both high and low water, have been used extensively. In addition, data from other sources eg Suffolk Ornithologists' Group (SOG) Bulletins, Suffolk Bird Reports (SBR) and other survey work have also been incorporated into the review. Anecdotal information supplied by the author and a core of observers who have many years of experience between them of the Orwell's waterbirds, has also been included.

In 1993 the two long-running national count schemes, the National Waterfowl Counts and the Birds of Estuaries Enquiry (BoEE), merged to form WeBS. The survey, to monitor non-breeding waterfowl, is jointly run by the British Trust for Ornithology (BTO), The Wildfowl & Wetlands Trust (WWT), Royal Society for the Protection of Birds (RSPB) and Joint Nature Conservation Committee (JNCC). The main aims of the survey are to identify population sizes, determine trends in numbers and distribution, and identify important sites.

The WeBS counts are carried out once a month on a Sunday, primarily from September to April, and timed to coincide with spring tides. The counts are made on a flooding tide over a period of approximately two hours before, and one hour after, top tide. For counting purposes the estuary has been split into 13 compartments and recently some of the compartments have been split into sub-compartments (see later for description and breakdown). This coming winter (1999/2000) will see the 30th consecutive count of waterfowl during the winter period since the survey began in 1969. On the Orwell full counts have taken place over the winters of 1973/74, 1974/75 and 1984/85 to 1998/99 inclusive. In addition to the monthly winter period counts some count data exist for other months especially for those compartments where the habitat supports passage migrants.

Co-ordinated Low Water Counts were initiated by the Suffolk Wildlife Trust (SWT) in 1984. More recently (1994) these counts have been integrated, to standardise data collection, with the national WeBS Low Tide Counts. The estuary has been divided into six major areas and then sub-divided into a total of 18 sections. Recently, some sections have been split further in line with the high water compartments. The co-ordinated counts are carried out two hours either side of predicted low water. Counts have taken place over the winters of 1984/85, 1985/86, 1988/89 to 1992/93 inclusive and from 1994/95 to 1998/99 inclusive.

The following WeBS tables show the peak winter count (November to March for waders and September to March for wildfowl) and, where applicable, the five-year average maxima are given to denote whether a species is of national or international importance. In addition, the tables referring to birds on passage show the peak count and the five year average maxima either for Spring (April - May) or Autumn (August - October). In some of the tables, depending on the species involved, the peak count from all sources is given.

There are two types of graphs in the text based on WeBS high and low water counts for the periods 1984/85 to 1998/99 inclusive which show the monthly averages or the winter peaks.

The maps show the distribution of feeding birds two hours either side of the predicted time for low water. The analysis has been based on all the counts for the winter periods, November to March for the last five years of counts 1994/95 to 1998/99 inclusive. The figures for each section have been summed and expressed as a percentage of the total. Each map has its own key to indicate the levels of importance.

All figures in charts and graphs have been rounded to the nearest whole number.

The 'Suffolk Status' given for each species follows that used in Suffolk Birds. The following definitions are intended as a guide to the relative status of each species.

Very common: Occurs in large numbers in suitable habitat and season.
Common: Occurs regularly or widely distributed in suitable habitat.
Fairly common: Occurs in small numbers in suitable habitat and season.
Uncommon: Occurs annually in small numbers.

Scarce:	One or two records each year or restricted to specific habitats.
Rare:	Occurs less than annually.
Very rare:	Less than 15 records in past 30 years.
Accidental:	Less than three records in past 30 years.

The criteria for assessing the international importance of a wetland have been agreed by the Contracting Parties to the Ramsar Convention on Wetlands of International Importance (Ramsar Convention Bureau 1998). Under one criterion a wetland is considered internationally important if it regularly holds at least 1% of individuals in a population of one species or sub-species of waterfowl, while any site regularly holding a total of 20,000 or more waterfowl also qualifies. Britain and Ireland's wildfowl belong, in most cases, to the north-west European population (Pirot *et al.* 1989), and the waders to the East Atlantic flyway population (Smit & Piersma 1989).

A wetland in Britain is considered nationally important if it regularly holds 1% or more of the estimated British population of one species or subspecies of waterfowl. Sources of qualifying levels represent the most-up-to-date figures following recent reviews; for British wildfowl see Kirby (1995); for British waders see Cayford & Waters (1996). International criteria follow Smit & Piersma (1989) or Scott & Rose (1996).

For full explanations of international and national importance, sources and revisions see the latest report on wildfowl and wader count results published in the Wetland Bird Survey 1997-98 (Cranswick P., Pollitt M., Musgrove A. & Hughes B. 1999).

Key to symbols and abbreviations used in the text.

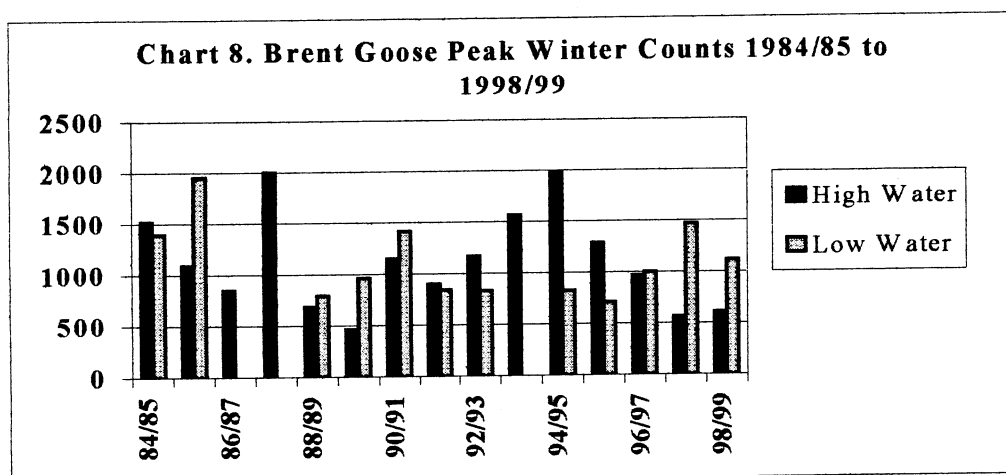
- * * in tables = data derived from a source other than WeBS e.g. SOG Bulletin/Suffolk Bird Report.
- No data available.
- () Incomplete count.
- ? Population size not accurately known.
- * Where 1% of the British wintering population is less than 50 birds, 50 is normally used as a minimum qualifying level for national importance.
- ** A site regularly holding more than 20,000 waterbirds qualifies as internationally important by virtue of absolute numbers.
- + Population too small for meaningful figure to be obtained.
- (O) Record relates to bird/s flying over.
- n/c Not counted
- pr Pair

2.2 Orwell Estuary Waterbird Review

This report has reviewed no less than 109 species, confirming the Orwell's reputation of being renowned for its diversity of waterbirds. Since the pilot study for the BoEE in 1969 and during the following five years full coverage was achieved for two winters (1973/74 and 1974/75). There were then incomplete counts for the winters up until 1983/84 and thereafter comprehensive counts were achieved in all succeeding winters up to 1999/00.

WeBS count data have already established the fact that the Orwell estuary is internationally and/or nationally important for a wide variety of waterbird populations.

High water counts for the winter periods of 1984/85 to 1998/99 give an average midwinter maxima, for all species, of 18,189. Graph 1 clearly shows that for wading birds the trend is downwards and for wildfowl it is upwards.



The maximum number of waterbirds counted at high water was 27,548 on January 24th 1985. However, the highest number of waterbirds ever to be counted on the Orwell was during a low water count on February 13th 1996 when 33,059 birds were present of which 25,793 were wading birds.

When comparing the average maxima for the first five midwinter periods, 1984/85 to 1988/89, with those from the midwinter periods of 1995/96 to 1999/00 the figures suggest that the number of waterbirds have declined by 15%. The figures also indicate that the number of waders have declined by 21% but wildfowl have increased by 9% (see Table 1).

	1984/85 - 1988/89	1995/96 - 1999/00	% change
Wildfowl	5,037	5,506	+9
Waders	14,424	11,405	-21
Waterbirds	18,987	16,220	-15

There has been a large increase in swans and geese which is due to the massive increase in the feral goose populations; for example Canada Goose has increased by 267% and Greylag Goose has increased from zero birds up a average maxima in 1998/99 of 339. Brent Goose, on the other hand, has declined by 16%. Most of the wildfowl species have shown dramatic increases, Wigeon 102%, Gadwall >4000%, Pochard 375%, Tufted Duck 42% and Coot 64%. Mallard is the only duck to have declined. This increase in wildfowl numbers can be largely attributed to the way that Loompit Lake has evolved and to the new wetland reserve on Trimley Marshes. Both sites provide feeding areas, safe refuge and access to fresh water for washing and preening.

It appears, however, that there are declines in the populations of three species of wader, namely Dunlin 20%, Ringed Plover 60% and Turnstone 55%. On a brighter note, Black-tailed Godwits have increased dramatically by some 273%, Grey Plover 31% and Redshank 20%. See Tables 2 & 3 for changes in the high water populations of some waterbirds over the last fifteen years.

	SU	WN	GA	MA	PT	PO	TU	CO
85/86 - 89/90	1,041	744	2	640	244	55	120	259
95/96 - 99/00	1,048	1,503	97	460	247	261	170	425
% change	+1%	+102%	+4,000%	-28%	+1%	+375%	+42%	+64%

	OY	RP	GP	DN	BW	CU	RK	TT
85/86 - 89/90	1,099	456	282	8,161	119	664	1,293	380
95/96 - 99/00	995	240	369	6,412	444	781	1,551	170
% change	-10%	-47%	+31%	-21%	+273%	+18%	20%	-55%

Although the Orwell has a wealth of low water count data from the winter of 1984/85 the counts have not been carried out over consecutive years and therefore cannot be directly compared with the high water counts. However, there are a sufficient number of counts to indicate trends of waterbird populations at low water. In fact, the trends are similar to those found for high water with the exception of Oystercatcher, which are decreasing, and Mallard and Ringed Plover whose populations appear to be stable.

Since the early 1970s the Orwell's importance has changed either to a revision of qualifying criteria or to changes in the size of waterbird populations using the estuary. During the first five years of the Enquiry, the Orwell held one internationally and eleven nationally important species (Blindell 1976). By the latter half of the 1980s there were two species of international importance and six species of national importance wintering on the Orwell (Wright 1989). Currently the estuary is internationally important for two species, wintering Common Redshank and autumn passage Black-tailed Godwit and nationally important for eight species, Little Grebe, Dark-bellied Brent Goose, Common Shelduck, Gadwall, Northern Pintail, Pied Avocet, Dunlin and Black-tailed Godwit. The Orwell is no longer nationally important for Ringed Plover, Grey Plover or Ruddy Turnstone.

2.3 Orwell Estuary - Systematic Review of Waterbirds

Red-throated Diver *Gavia stellata*

Suffolk Status - Common winter visitor and passage migrant.

In Suffolk the majority of wintering Red-throated Divers are to be found offshore especially between Sizewell and Benacre. According to the Ministry of Agriculture, Fisheries and Food (MAFF) large concentrations of sprats are found off the East Anglian coast during midwinter and it is this availability of food that supports important numbers of Red-throated Divers. The highest recorded count to date was at Covehithe on January 23rd 1994 when 2,724 were present (Dare 1998). Away from the coast very few birds are encountered.

In most years since the early 1970s, particularly during severe weather, one or two birds, often oiled, have frequented the Orwell estuary. All records for the 1980s and 1990s are as follows:

- 1983 Two Ipswich Docks/river Feb. 12th to Mar. 13th.
- 1984 A single bird Ipswich Docks area Jan. 19th to 22nd and Woolverstone Dec. 29th.
- 1990 A single bird was present throughout January and two frequented the estuary from November 18th onwards into December.
- 1991 Between Jan. 4th and 24th a single bird found refuge in the Ipswich Wet Dock.
- 1992 Single birds were noted in December.
- 1993 Single birds were noted in December.
- 1994 At Trimley Marshes Reserve an individual was present on Jan. 12th, 22nd and 26th; a bird, presumed to be the same one, was found dead on the reserve on Feb. 11th. A second bird was found dead on the reserve on Apr. 14th.
- 1995 Single birds were noted on five dates.
- 1996 A bird was found dead (oiled) on Trimley Marshes Reserve on Mar. 6th. On the Orwell a single bird on Mar. 17th.
- 1997 Single birds were noted on three dates.

Black-throated Diver *Gavia arctica*

Suffolk Status - Uncommon winter visitor and passage migrant.

This species is usually encountered annually in very low numbers at coastal locations and often in the company of Red-throated Diver flocks. It is a scarce winter visitor to the Orwell.

All records from the 1970s to date are listed below for the Orwell estuary:

- 1973 Jan. 3rd and Dec 6th to the end of year.

- 1976 Woolverstone/Freston Dec. 10th to end of year.
- 1979 Woolverstone Feb. 26th to 28th.
- 1980 Freston Dec. 6th and Ipswich Docks Dec. 28th.
- 1981 Nov. 11th to 22nd.
- 1984 Nov. 24th to Dec. 23rd.
- 1985 One or two Ipswich Dock area Jan. 10th to 23rd.
- 1986 Jan. 27th to Feb. 18th.
- 1989 Nacton/Levington Feb. 10th.
- 1990 Wherstead Dec. 14th.
- 1992 Trimley, sick or injured bird on the sea wall Dec. 20th.
- 1993 Wherstead Nov. 22nd.
- 1994 Loompit Lake, found dead, Feb. 13th.
- 1996 Trimley Dec. 7th and 11th and Ipswich Wet Dock Dec. 11th.

Great Northern Diver *Gavia immer*

Suffolk Status - Scarce winter visitor and passage migrant.

Principal County site for wintering birds

Largest County gathering: **Four, Orwell estuary, November 13th 1977**

Only one or two occurrences were recorded in Suffolk each year from the 1940s to the mid-1970s. However, in 1977 seven or eight birds were seen during the year, including three/four on November 13th on the Orwell estuary (Payn, 1978). From the mid-1980s the trend in numbers was upwards from three to around 10 by the late 1990s. All records for the Orwell estuary from the 1970s to date are listed below.

- 1974 Freston Nov. 29th.
- 1975 The only record for Suffolk was of a single bird on the Orwell at Cliff Quay from Dec. 2nd to the end of the year.
- 1976 From Jan. 1st to Feb. 26th, Nov. 6th to the end of the year were the only records for Suffolk.
- 1977 From Jan. 7th to late February; from November onwards including three/four on Nov. 13th, one at Trimley Dec. 28th.
- 1978 Two on Orwell throughout January.
- 1979 Two Feb. 2nd to 27th.
- 1980 Wherstead Nov. 7th.
- 1986 Freston Feb. 24th.
- 1987 Ipswich Docks Dec. 6th.
- 1989 Wherstead Nov. 11th
- 1990 Upper reaches Jan. 29th to Mar. 3rd.

- 1991 Reported on at least 18 dates from Jan. 11th. This bird was seen throughout the river and made frequent visits to Alton Water. Last seen Feb. 20th flying out from the mouth of the Orwell, and then north past Landguard.
- 1992 Seen flying south, off Landguard and then up the Orwell, May 12th.
- 1993 Upper reaches Dec. 11th to the end of the year.
- 1994 Wherstead/Freston/Woolverstone Jan. 1st to at least 18th.
- 1995 Ipswich Wet Dock Jan. 8th to 17th, Loompit Lake Jan. 24th.
- 1997 Trimley area between Mar. 2nd and 26th.
- 1998 Ipswich Dock area Nov. 8th to 21st and Dec. 12th.
- 1999 Ipswich Dock area Jan 1st and 2nd.

Little Grebe *Tachybaptus ruficollis*

Suffolk Status - Common resident, winter visitor and passage migrant.

Threshold for international importance - ?

Threshold for national importance - 30.*

Nationally important wintering species

Highest count: **81 November 1974**

Number breeding in 1999: **c13 pairs**

The highest count of 81 for the Orwell was recorded in November 1974 (Blindell 1975). A few winters later, from 1977 and in subsequent years there was a big decrease in the number of Little Grebe wintering in Ipswich Docks. The WeBS counts for wintering birds for the last five seasons, 1995/96 to 1999/00 inclusive, give an average maximum of 30, which is of national importance.

Little Grebes were not included in the national wildfowl counts until 1984/85 except for the years of 1973/74 and 1974/75. The peak counts are derived from co-ordinated high/low water counts unless stated otherwise and are tabulated below.

Table 4. Little Grebe Peak Counts								
73/74	74/75	75/76	76/77	77/78	78/79	79/80	80/81	81/82
*60/70	81	*c70	*c60	-	*23	*17	-	*27
82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90	90/91
*18	16	24	23	14	12	10	12	23
91/92	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00
28	29	26	37	36	30	34	21	28

According to Payn (1978) Little Grebes were comparatively common in suitable breeding habitat prior to the constant dredging and cleaning of rivers and dykes that preceded the

1970s. During the 1970s, the numbers breeding were thought to be under recorded. There were only four known breeding pairs recorded in Suffolk in 1974. However, during the mid- to late 1950s I recall that a few pairs bred on the Trimley Marshes; likewise, Mike Packard confirms that a few pairs bred on the Shotley Marshes. During 1999, 13 pairs were breeding on the Orwell (Trimley Marshes Reserve 5, Trimley Marshes 1, Loompit Lake 2, Shotley Marshes 3, Colton Creek Pond 1 and Clamp House Reservoir 1).

Great Crested Grebe *Podiceps cristatus*

Suffolk Status - Common resident, winter visitor and passage migrant.

Threshold for international importance 1500.

Threshold for national importance - 100.

Highest count: **100 (1978/79, 1979/80, 1984/85 and 1990/91)**

Number breeding in 1999: **Five pairs**

By 1860 the Great Crested Grebe was almost exterminated as a result of hunting. Skins were in high demand for the millinery trade. At around this time it was thought that only three breeding pairs were left in the county. As a result of the Seabirds Protection Act of 1869 numbers began to increase. By 1884 Babington could call it "not uncommon" and 50 years later Ticehurst (1932) thought that maximum numbers had been reached. Payn stated that flocks of 30 or more wintered on the Rivers Orwell and Stour.

Table 5. shows the peak counts from 1973/74 up to the present time. By comparing the average maxima for the winter periods 1973/74 to 1977/78 inclusive with 1995/96 to 1999/00 inclusive there has been an increase of 52%. This increase in numbers is probably due to the construction of the reservoir at Alton Water, which was completed in 1986. However, when comparing the five-year average maxima over the last 15 years the Great Crested Grebe's wintering population appears to be stable. In cold weather spells when the Alton Water reservoir freezes some of the birds move to the Orwell. On December 6th 1980 a wintering flock of c50 was present on the Orwell which was the largest concentration in Suffolk for that winter. On four occasions (1978/79, 1979/80, 1984/85 and 1990/91) this species has been recorded on the Orwell at levels of national importance.

Great Crested Grebes were not included in the national wildfowl counts until 1983/84 except for the years of 1973/74 and 1974/75. The peak counts are derived from co-ordinated high/low water counts unless otherwise stated and are tabulated below.

Table 5. Great Crested Grebe Peak Counts								
73/74	74/75	75/76	76/77	77/78	78/79	79/80	80/81	81/82
50	31	*40	*40	*100	*c100	*40	*c50	*75
82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90	90/91
*35	-	100	30	34	42	39	34	100
91/92	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00
30	47	73	69	80	80	93	90	52

The number of Great Crested Grebes breeding in Suffolk was estimated at 42 pairs at 10 sites in 1931 (Harrison & Hollom 1932). Payn in 1960 counted a total of 38 pairs at eight sites. Following a record number of 93 pairs in 1991, Suffolk Bird Reports suggest that breeding numbers are now declining. On the Orwell this species occasionally bred during the late 1970s and 1980s at Loompit Lake where the only suitable habitat was to be found. However, more recently, they have bred annually at this site and in 1995 there were five broods. In addition, during the late 1990s up to four pairs have bred on the maturing wetland habitat at the Trimley Marshes reserve.

Red-necked Grebe *Podiceps grisegena*

Suffolk Status - Uncommon winter visitor and passage migrant.

Although this species is uncommon in Suffolk the frequency with which it is recorded both in Suffolk and on the Orwell estuary is greater than for both the Slavonian and Black-necked Grebes.

The Red-necked Grebe has been recorded on the Orwell in 25 of the last 30 years with approximately 42 individuals being involved. During the severe weather period of 1979, when there was 64 in the County, this grebe was recorded on an exceptional number of dates on the Orwell between January 1st and April 1st with a peak of four on February 25th. In addition, wintering records of two together have occurred on the following dates: January 1st 1980, October 1988, November 23rd 1991 and January 25th 1997. Most records are from the southern shore of the upper reaches of the estuary.

In 1988 were the first confirmed breeding attempts in Britain; in the same year a pair held territory at Loompit Lake immediately adjacent to the Orwell estuary. The birds, in full summer plumage (a rare sight in Suffolk), were seen offering 'nesting material' as part of their display ritual and when one of the two birds disappeared there was much speculation that 'she' could be incubating - however, this was never proven (Suffolk Birds 1989). The pair was present from May 22nd to June 7th with a single to at least June 26th.

Slavonian Grebe *Podiceps auritus*

Suffolk Status - Uncommon winter visitor and passage migrant.

Generally, less than 10 individuals are recorded in Suffolk each year although a few exceptional years have occurred. Due to a cold weather influx in 1978/79 there were between 15 - 20 birds, and more recently, in 1997, there were around 17 individuals recorded. Single birds have been recorded on the Orwell in 18 of the last 30 years and in three years (1972, 1994 and 1997) two birds were present. The majority of the observations came from the south shore between Pin Mill and Ipswich Docks.

All records for the 1980s and 1990s are listed below and refer to single birds unless otherwise stated.

- 1982 Jan. 11th to Feb. 1st.
- 1985 Jan. 8th to 19th, Feb. 10th and Dec. 29th.
- 1986 Levington Jan. 26th.
- 1987 Ipswich Dock area Jan. 16th to 30th.
- 1989 Felixstowe Dock basin Dec. 29th (badly oiled).
- 1990 Woolverstone Mar. 11th.
- 1991 Fox's Marina/Woolverstone Feb. 9th to 18th, Loompit Lake Dec. 1st.
- 1992 Wherstead Nov. 11th.
- 1993 Woolverstone from 1992 to Feb. 6th, Dec. 15th to end of year.
- 1994 Two on river at Trimley Nov. 29th.
- 1995 Woolverstone Dec. 24th.
- 1996 Wherstead Strand Feb. 29th, Woolverstone Jan. 3rd to Mar. 6th, Wet Dock Dec. 12th and 16th.
- 1997 Two Jan. 9th and Feb. 9th; Trimley Marshes reserve Dec. 27th and 30th, Chelmondiston Dec. 28th.
- 1998 Woolverstone Jan. 1st, Wherstead Strand Jan. 3rd and Fox's Marina Jan. 1st (assumed to be the same bird). Trimley Marshes Reserve Jan. 10th to 12th, 19th, 25th and 31st.

Black-necked Grebe *Podiceps nigricollis*

Suffolk Status - Uncommon winter visitor and passage migrant.

This species is the rarest of the grebes to be seen in Suffolk.-The only record for Suffolk in 1970 was of a single bird wintering on the Orwell estuary at Cliff Quay between January 12th and February 5th. The Orwell is a regular wintering site for this species and has been recorded in 14 winters since 1970. Although all records are noteworthy the following selection documents all records where more than one bird was involved. At the end of January 1977 two birds were present in Ipswich Docks and later that year between one and two were recorded on October 26th and December 10th. Two birds were present

from December 29th 1992 until at least March 7th 1993 and three birds were present at Woolverstone between January 3rd and February 8th 1996 and again six weeks later in Thorpe Bay on March 17th and 22nd. In 1997 there were two at Pin Mill on January 19th.

Great Cormorant *Phalacrocorax carbo*

Suffolk Status - Common winter visitor and passage migrant, less common in summer.

Threshold for international importance - 1,200.

Threshold for national importance - 130.

Nationally important wintering species

Present wintering population trend: **Increasing**

Highest count: **224 September 24th 1999**

Number breeding in 1999: **19 pairs**

In Suffolk during the last century Babington (1886) regarded the Cormorant as being a rare bird and apparently a single bird was worthy of a mention. However, by the 1930s it was said to have increased considerably (Ticehurst 1932). Numbers continued to increase and Payn (1962) stated that during the winter months high numbers congregated on the estuaries of the Stour and Orwell where up to 100 birds had been counted.

The counts tabulated below show that since the early 1970s, numbers on the Orwell increased steadily to reach nationally important figures by the 1980s. However, during the 1990s the counts fluctuated and appear to show a slight decline in overall numbers to a figure just below the threshold required for national importance. The national survey of Cormorants organised by the BTO over the winter of 1985/86 found that the Orwell was the second most important site in Suffolk for this species. However, apart from a small roost at Fox's Marina, Wherstead no other sites were being used, not even Loompit Lake (Waters 1986). Birds began to roost at Loompit Lake in 1991; numbers there remained relatively low until 1997 when there was a dramatic increase, see Table 6 (Marsh & Biddle *pers. comm*). The highest count to date involved 224 birds, at roost, on September 24th 1999.

The average maxima for the last five winters indicates that the Cormorant is present on the Orwell in nationally important numbers.

Cormorants are present all year round on the Orwell with peak numbers occurring either during autumn passage or the winter period. The first birds to overwinter on the Orwell were in Ipswich Docks in 1976. Birds showing characteristics of the continental race *sinensis* have been noted on many occasions but to date no attempt has been made to compile numbers. Ekins (1994) considers most of the Abberton colony to be *sinensis* and some of these birds may have colonised the Orwell (see later).

Despite the amount of count data on the Cormorant, it is still difficult to assess the true population that regularly uses the Orwell estuary. During both high and low water counts birds may be found either fishing throughout the estuary, loafing or preening in groups at a variety of locations from mud-banks, buoys, boats or on the rocks below the Orwell Bridge. In addition, and regardless of the state of the tide, some birds will be at their night roosting location or involved in overland movement e.g. between neighbouring estuaries or reservoirs. R. B. Warren (1981) in his preliminary report on overland flights of Cormorants in Suffolk, in which the Orwell estuary figures prominently, gives a glimpse into the complexity of their movements. Couple all these factors and it can readily be seen that the Cormorant has a complicated behavioural routine. As a consequence I feel that the Orwell is more important for this species than the counts suggest.

18.04.91	24.12.92	23.11.93	05.01.94	08.01.95	23.11.96	30.12.97	20.11.98	24.09.99
10	20+	35	25	41	43	152	160	224

Cormorants were not included in the national wildfowl counts until 1986/87 except for the years of 1973/74 and 1974/75. The peak counts are derived from co-ordinated high/low water counts unless otherwise stated and are tabulated below.

	73/74	74/75			84/85	Average
High	100	107			188	
Low	-	-	-	-	225	
	85/86	86/87	87/88	88/89	89/90	
High	130	174	172	141	155	154
Low	167	-	-	188	126	
	90/91	91/92	92/93	93/94	94/95	
High	182	89	101	115	96	117
Low	151	128	71	-	99	
	95/96	96/97	97/98	98/99	99/00	
High	145	90	114	150	161	132
Low	92	75	139	43	90	88

Documented evidence on Cormorants having bred in Suffolk is rather sketchy. Payn refers to a few examples which all relate to the Stour. However, in 1998 a colony was founded on the Orwell at Loompit Lake where one pair successfully reared one young from a brood of two. The following year nesting took place on either side of the lake and involved 19 pairs - at least 33 young fledged. Under the supervision of Landguard Bird

Observatory 20 young birds were ringed and individually identified by a coded Darvic colour ring. It is thought that birds from the Abberton Reservoir colony in Essex founded this colony. In previous years a number of colour-ringed individuals which have roosted at Loompit Lake have been identified as being from the Abberton colony (Marsh & Piotrowski *pers. comm.*). In the past the Cormorants have been discouraged from roosting at Loompit Lake by the gamekeeper who felled the preferred roosting tree. This resulted in the birds using several other trees at the same location. The long term future of this night roost and breeding site is uncertain. However, at the present time, after discussions with the landowners and the keepers, assurances have been given that the birds will be left alone. The lake is stocked with Rainbow Trout and the fishing club has informed me that, for the present, the Cormorants are not a problem. This is probably due to the age class of the trout rendering them too large for the birds. Local birdwatchers have also noted that despite large numbers of Cormorants often being present, they rarely see a bird fishing on the lake.

European Shag *Phalacrocorax aristotelis*

Suffolk Status - Uncommon winter visitor and passage migrant.

The Shag was formerly thought to be a 'wreck species' occurring only following severe gales during the autumn and winter periods (Payn 1978). Records, however, now suggest that it is becoming more regular as a winter visitor. Apart from 'wreck occasions' the majority of records are associated with the coast and the coastal estuaries. The two most favoured sites are the docklands at Lowestoft and Ipswich.

All records for the Orwell, with the exception of a few from Levington, Woolverstone and the Strand, are from the stretch of river between Fox's Marina and the Wet Dock at Ipswich. In March 1962, there was an exceptional number of 20 in Ipswich Docks. Numbers, since, have varied annually between one and four birds but there were five during November and December 1975 and nine on February 23rd 1986.

Great Bittern *Botaurus stellaris*

Suffolk Status - Scarce and decreasing resident, passage migrant and winter visitor.

It appears that there are no Bittern records this century for the Orwell until 1972. All records are listed.

Bourne Park
1972 One Aug. 1st.

Loompit Lake:

- 1994 May 31st.
1997 Sep 18th and 22nd.
1998 One to three between Jul. 25th and Nov. 6th.
1999 Single birds were noted on 16 dates between Apr. 8th and Dec. 27th. Between two and five birds were recorded on 15 dates with six Sep. 8th, seven Sep. 15th, eight Sep. 27th and nine Sep. 13th, 20th and 24th (the largest County gatherings equal with nine at Orfordness).

Shotley/Trimley area:

- 1998 Up to three Jun. 18th to Sep. 25th and two Oct. 2nd to Nov. 22nd.

Trimley Marshes Reserve:

- 1993 May 14th and 15th.
1994 Aug. 14th and 28th and Oct. 9th.
1995 Apr. 4th and 6th.
1996 Two May 5th and one Jun. 15th.
1997 Mar. 20th to 26th; May 9th to 11th; Jul. 2nd; Aug. 2nd to 19th; Sep. 3rd and 20th.
1998 Apr. 26th, Jun. 1st, three Jun. 10th, two Jul. 30th and singles on Jul. 29th, Aug. 8th to 10th, Sep. 17th, Oct. 24th and Nov. 28th.
1999 An excellent year for this species. Apr. 7th, 8th, five May 4th, one May 5th, Jul. 10th, 24th and Aug. 1st, four Aug. 3rd, 8th and 16th, two Aug. 4th, 7th, 8th and 29th. One (o) Oct. 30th.

Grey Heron *Ardea cinerea*

Suffolk Status - Common resident, winter visitor and passage migrant.

Principal County Site

Number breeding in 1999: 16 – 20 pairs

The Grey Heron is a common bird and widely distributed in Suffolk. It is associated especially with coastal and river valley flood plains and marshes. Although qualifying levels have not been set, the Orwell is in fact a principal site for this species in Suffolk. Annual numbers can vary substantially. Reynolds (1979) states that after very cold winters numbers may decrease by 45% or increase after a series of mild winters by 32%. The peak winter WeBS counts tabulated below show that low numbers have been recorded in the severe winter periods of 1984/85 and 1987/88.

Freston: -

1979 One flushed from bracken Dec. 22nd.

Shotley Marshes:

1988 One present in January.

Loompit Lake:

1994 One Jan. 21st.

Trimley Marshes Reserve:

1993 One Aug. 30th.

1994 One Jan. 9th.

1998 A single bird fitted with an RSPB radio transmitter was present on Oct. 3rd and 7th and traced by radio signals until Oct. 14th.

1999 One Jul. 25th and Sep. 8th.

Little Egret *Egretta garzetta*

Suffolk Status - Scarce visitor.

Largest County gathering: Nine, Orwell estuary, September 13th, 20th & 24th 1999
Present wintering population trend: Increasing

Little Egrets have increased dramatically in Britain since the early 1990s. This upsurge in numbers has been attributed to post-breeding dispersal of young birds from France and it was around this time that numbers increased in Suffolk. During the 1980s and early 1990s generally only one or two birds were reported annually in Suffolk. The first record for the Orwell was in 1993. In the autumns of 1998 and 1999 the egrets roosted with the cormorants at Loompit Lake. A record count involving nine birds was recorded there on September 24th 1999 which is a County record. All records for the Orwell are listed below and refer to single birds unless otherwise stated.

Chelmondiston

1998 Nov. 22nd.

Hare's Creek

1998 Aug. 28th.

Levington:

1996 Jun. 4th and Nov 5th.

1997 Mar. 26th.

1998 Oct. 14th and Dec. 2nd.

82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90	90/91
-	-	3	41	26	6	21	36	32
91/92	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00
25	22	15	*26	35	11	26	11	27

Favoured haunts are the Trimley Marshes reserve and Wherstead Strand. They are recorded regularly on the reserve at Trimley (Wright & Last *et al* 1993/98), where the highest count so far recorded is 20 on February 15th 1995. A sample of the peak numbers at the regular Wherstead Strand field roost is as follows: 21 October in 1985, 20 January 16th 1993, 26 November 19th 1994, 27 in November 1995 and 24 October 5th 1997.

Hérons have a long history of breeding on the Orwell estuary (see Wright 1986). Bridge Wood at Nacton contained around 20 nests in the early 1950s but unfortunately this heronry was lost when the wood was clear felled. It was not until the late 1960s that herons were found to have colonised the Orwell again at Whinnyfield Wood at Woolverstone.

1982	1983	1984	1985	1986	1987	1988	1989	1990
-	-	-	16	9	17	16	18	18-22
1991	1992	1993	1994	1995	1996	1997	1998	1999
13-16	13-16	16-18	15-19	n/c	n/c	n/c	12-16	16-20

Purple Heron *Ardea purpurea*

Suffolk Status - Scarce passage migrant.

It appears that at some time during the 1800s two were shot together, on the Orwell, and taken to the Ipswich Museum (Babington 1986). There are usually only one or two records annually in Suffolk. On the Orwell, during the 1900s, it appears that this bird has only been recorded once.

Hare's/Colton Creeks and Levington areas: Juvenile Oct. 15th to Nov. 3rd 1990.

Eurasian Spoonbill *Platalea leucorodia*

Suffolk Status - Uncommon passage migrant. Now increasingly oversummers; has overwintered.

Both Babington and Ticehurst recorded this species as being a regular visitor to our shores. Later Payn (1978) stated that it was evident that this species was a very regular visitor to our coastal areas. After searching records from the 1950s, it appears that Spoonbills were only recorded on the Orwell infrequently and included singles at Levington in September 1974 and 1980 and one on Trimley Marshes from July 26th to August 8th 1984. It was not until the early 1990s with the construction of the wetland reserve on Trimley Marshes that observations became more regular.

Most of the records for the Orwell in the 1990s come from the Trimley Marshes Reserve and are listed below:

Levington:

1998 Two Aug. 23rd.

Loompit Lake:

1998 Two Sep. 2nd.

Trimley Marshes:

1974 One Nov. 7th.

1975 One May 26th.

Trimley Marshes reserve:

1991 One intermittently Jul. 7th to 25th and two Jul. 26th and 27th.

1993 One Apr. 27th to 29th, two Apr. 30th to May 2nd and two again on May 8th.

1994 One [O] May 28th.

1996 Three Apr. 20th, one Apr. 21st to 23rd, two May 11th and one Jun. 1st.

1998 One Jun. 2nd and two Aug. 23rd.

1999 One May 10th.

Over 300 years ago Sir Thomas Browne, in his 'Account of Birds from Norfolk and Suffolk' (1685) wrote that Spoonbills bred in the tops of tall trees at Trimley on the Orwell. However, it is not known how many years they bred there. More recently (1997), Spoonbills have attempted to breed in Suffolk once again but this time on the ground at a coastal site.

Greater Flamingo *Phoenicopterus ruber*

Escapee.

Native range: S Europe, Africa and Central America.

All records for the Orwell are as follows.

Trimley Marshes Reserve:

1996 One Mar. 23rd to 28th (this bird was in company with a Chilean Flamingo).

Chilean Flamingo *Phoenicopterus chilensis*

Escapee.

Native Range: South America.

All records for the Orwell are as follows:

Trimley Marshes:

1984 One Dec. 12th.

Trimley Marshes Reserve:

1996 One Mar. 23rd to 28th (this bird was in company with a Greater Flamingo).

Flamingo Species *Phoenicopterus sp.*

Orwell: Four (O) flying Jun. 21st 1984.

Mute Swan *Cygnus olor*

Suffolk Status - Common resident.

Threshold for international importance - 2,400.

Threshold for national importance - 260.

No longer a nationally important wintering species

Highest count: **500 in the 1960s**

Number breeding in 1999: **nine pairs**

Present population trend: ***Decreasing***

The results of the BTO's 1983 spring census found an increase of 7% over 1978 but a decline of 8% compared with 1955/56. This increase, however, is not found across the whole of Britain; in fact, in heavily-fished lowland river systems numbers are stable or

declining (Ogilvie 1986). Research shows that between 3,000 and 4,000 Mute Swans had been dying annually during the late 1970s and early 1980s from lead poisoning (Goode 1981). In 1987 the government banned the sale and import of lead weights between 0.6 and 56.7 grams. Nationally, since 1992/93 there has been a small but sustained increase in numbers and in 1996/97 the peak count of Mute Swans in Great Britain was the largest total recorded to date by WeBS.

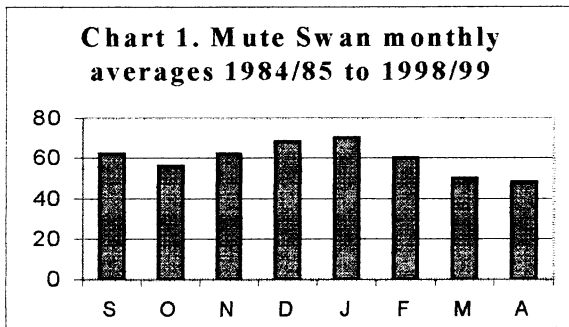
Between the early 1960s and the middle of the 1970s there was a dramatic decline in numbers in Suffolk. At the present time, despite a shift from traditional estuary site such as Ipswich Docks to coastal flood plains, numbers have not recovered to their former levels.

During the 1960s the Ipswich Docks herd often numbered 500 (Blindell 1976). On the Orwell, Mute Swans have declined from an average maximum of 328 (1970/75) to 86 (1995/99) and as a consequence are no longer of national importance. Although numbers improved during the 1990/95 period the recovery has not been sustained and numbers are declining again. The main reason for the decline in numbers is due to improved efficiency in the way that grain is handled in Ipswich Docks; this has resulted in less spills and wastage of an important food source. Other local reasons that have affected numbers include; Oil spills within the dock area which have also resulted in deaths and on frequent occasions swans have been taken away by the RSPCA. There have also been losses due to collisions with overhead high tension power lines, for example seven birds in two years on Trimley Marshes (Wright 1995).

Table 10. Mute Swan Winter Peaks and Five Year Average Maxima

70/71	71/72	72/73	73/74	74/75	Average
458	305	290	265	321	328
75/76	76/77	77/78	78/79	79/80	
78	200	160	183	146	153
80/81	81/82	82/83	83/84	84/85	
115	52	43	*67	67	69
85/86	86/87	87/88	88/89	89/90	
67	65	54	71	102	72
90/91	91/92	92/93	93/94	94/95	
111	128	135	128	105	121
95/96	96/97	97/98	98/99	99/00	
93	87	96	69	109	91

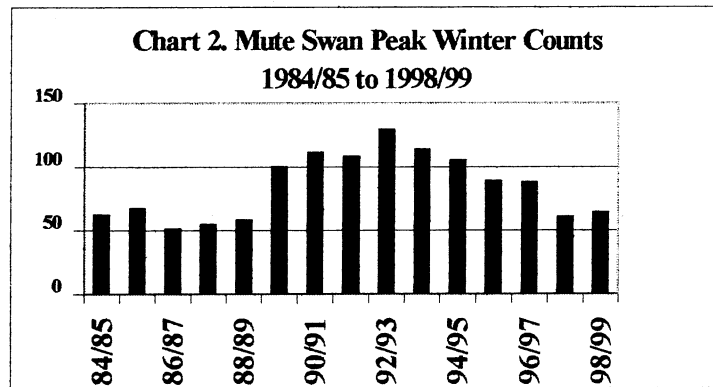
Mute Swans are almost at peak numbers in September; they remain at peak levels through to January before a few move off to their breeding grounds in March and April.



Over the last 15 winters average numbers increased from around 60 in the 1980s to around 100 between 1990/91 and 1995/96. Numbers in the latter half of the 1990s have fallen back to the levels of the 1980s. The high water count of 109, on December 26th 1999, was the highest for six years.

In the 1977 SOG Mute Swan survey there were in the region of 125 pairs in Suffolk of which only five pairs were found on the Orwell (Marsh 1979). The 1990 National Census of Mute Swans

found 131 breeding pairs in Suffolk of which only seven pairs were found on the Orwell (Wright 1991). In 1999 there were 11 breeding pairs (four on Trimley Marshes, two on both Looptit Lake and Shotley Marshes and single pairs at Pin Mill area, Hare's Creek and the Strand). A regular breeding site is the borrow dyke of Shotley Marshes. In



some years, up to four pairs may breed each pair having staked their territory more or less equally along the length of the borrow dyke. Mute Swans used to breed at various locations on the sea wall but owing to an increase in public pressure in these areas they no longer do so.

Black Swan *Cygnus atratus*

Suffolk Status - Escapee.

All records are listed below for the Orwell.

Fox's Marina:

1996 One Nov. 17th and Dec. 15th.

Ipswich Docks:

- 1983 One Oct. 19th to Nov. 18th.
1984 One Jan. 30th.
1985 Two Jun. 4th.
1997 One Jan. 1st to 6th.

Levington:

- 1992 One Aug. 4th.

Loompit Lake:

- 1999 One Aug. 8th.

Trimley Marshes Reserve:

- 1995 Two adult birds Nov. 16th, singles on 15 days between Mar. 21st and Nov. 16th.

Tundra Swan *Cygnus columbianus bewickii*

Suffolk Status - Fairly common winter visitor and passage migrant.

Although this species is a fairly common winter visitor to Suffolk; herds are more associated with the coastal marshes, and the fen areas around Mildenhall and Lakenheath. The Orwell appears not to have sufficient areas of the wintering habitat preferred by this species. As a consequence records are scarce; flocks of 25 on December 1st 1973 seen from Pin Mill, 15 at Trimley Marshes on December 12th 1976 and 14 at Walton on January 3rd 1979 were noteworthy. Thereafter all records for the Orwell for are listed below:

Loompit Lake:

- 1999 Five Dec. 12th.

Trimley Marshes:

- 1995 Six Dec. 30th.
1996 Five Jan. 3rd, four Oct. 29th, 12 Nov. 10th and 14 (O) Dec. 30th.
1997 15 (O) Jan. 18th and 13 (O) Jan. 19th and five Dec. 21st.
1998 15 Jan. 31st.

Whooper Swan *Cygnus cygnus*

Suffolk Status - Uncommon winter visitor and passage migrant.

This species is largely a hard-weather visitor to Suffolk. In most years there is a scattering of single-figure parties. They are often found with the herds of Tundra Swans.

Swans. This species is not often recorded on the Orwell and sightings usually involve birds flying over. All records for the Orwell from the 1970s are listed below:

Orwell:

- 1979 One Ipswich Docks.
- 1980 13 Shotley Mar. 11th.
- 1981 One Levington Creek Jan. 17th.
- 1984 Four on arable fields Shotley Jan. 25th.
- 1985 A single bird was noted in Ipswich Docks and two birds flew west over Trimley Dec. 3rd.
- 1998 One Loompit Lake Nov. 15th.
- 1999 Six immatures Feb. 17th. Two adults and two juveniles Loompit Lake Nov. 7th.

Trimley Marshes Reserve:

- 1992 One Apr. 22nd and 23rd.
- 1993 Two (O) Nov. 3rd.
- 1994 One May 2nd, 28th and 29th, and Oct. 21st and seven (O) Dec. 14th.
- 1995 One (O) Nov. 17th.

Swan Goose *Anser cygnoides*

Escapee.
Native Range: Eastern Asia.

All records for the Orwell are from Levington and are listed below:

- 1988 One Dec. 21st.
- 1989 One Feb. 7th.

Bean Goose *Anser fabilis*

Suffolk Status - Uncommon winter visitor and passage migrant.

Between 1946 and 1970 the Bean Goose was identified with certainty on only 11 occasions in Suffolk (Payn 1978). Formerly irregular, although uncommon, this species is now becoming an annual visitor to Suffolk. During the exceptional winter for this species in 1979 four were seen on the Orwell at Shotley on February 26th. There are not many records for the Orwell - all observations are listed below:

Orwell:

- 1989 One Oct. 14th.
- 1994 Mar. 10th and 17th.
- 1995 Apr. 11th and Jun. 5th.

1998 Three Chelmondiston Dec. 9th.

Trimley Marshes Reserve:

1993 One Mar. 17th.

1997 Three Dec. 8th.

Pink-footed Goose *Anser brachyrhynchus*

Suffolk Status - Uncommon winter visitor and passage migrant.

Highest count: **70 December 13th 1996**

During the 1960s and early 1970s this species was widely recorded in Suffolk although generally in small numbers. From the latter part of the 1970s to the present time numbers have much improved with flocks of between 100 and 260 being seen regularly. As with Bean Geese they are seldom recorded on the Orwell. All records for the 1980s and 1990s are as follows:

Orwell:

1984 10 Walton Marshes Feb. 26th.

1987 One Shotley (SBR)

1988 15 Shotley Jan. 17th.

1998 One Chelmondiston Dec. 29th.

Trimley Marshes Reserve:

1993 One (presumed escapee) Jun. 8th.

1995 Three Mar. 8th, two remaining to Mar. 20th, and 12 (O) Oct. 20th.

1996 23 Nov. 2nd and 5th, 22 Nov. 4th, 70 (O) Dec. 13th and 40 Dec. 12th.

1997 34 Jan. 5th, four Jan. 13th, seven Oct. 12th, and three Oct. 18th.

Loompit Lake:

1997 One Jan 16th and 22nd and Mar. 1st.

Greater White-fronted Goose *Anser albifrons albifrons*

Suffolk Status - Fairly common winter visitor and passage migrant.

Threshold for international importance - 6,000.

Threshold for national importance - 60.

Highest count: **c70 Feb. 22nd 1993**

In former times, according to Payn (1978), the status of this species in Suffolk had been subject to some confusion. During the 19th century and first half of the 20th century there were records of birds in flocks that numbered several thousand. More recently, since the 1970s, flocks of around a few hundred have been the norm with numbers reaching four figures only infrequently. The White-fronted Goose, however, is certainly a bird that prefers the coastal grazing marshes north of the Deben estuary. Records for the Orwell during the 1980s were; 73 at Shotley Marshes Dec. 12th 1982 and c60 Trimley Marshes Jan. 19th to 21st, the only other record appears to have involved one/two birds frequenting the Orwell area in 1988. All records for the Orwell estuary for the 1990s are listed below:

Loompit Lake:

1999 One Dec. 29th.

Trimley Marshes Reserve:

1993 c70 Feb. 22nd, numbers remained fairly constant into March with 69 on 9th, 68 on 8th, 61 on 3rd and 60 on three other dates. By Mar. 14th only a single bird remained.

1994 Three Jan. 4th and Dec. 3rd and 16th. Two to Apr. 20th. An injured bird was present to the end of the year.

1995 Three Jan 9th and 25th, Apr. 15th and Sep. 6th. The injured bird from 1994 was present throughout the year.

1996 Eight Jan. 7th, seven Jan. 13th, six Jan. 10th, two May 4th, Oct. 7th, Nov. 2nd, c35 Dec. 28th, 37 Dec. 30th, 22 (O) Dec. 16th and four Dec. 13th. In addition the injured, now resident, bird was present throughout the year.

1997 37 Jan 13th, two Jan. 25th and 14 (O) Dec. 15th. The single "resident" bird was not seen after the end of June.

1999 c35 Jan. 1st, 13 Jan. 17th, 14 Jan. 18th, 10 Jan. 16th, nine Jan. 17th, seven Jan. 11th, six Jan. 2nd and two Feb. 13th.

Wherstead:

1998 One Dec. 4th.

The Greenland race *A.a. flavirostris*, has not, to my knowledge, been recorded on the Orwell.

Lesser White-fronted Goose *Anser erythropus*

Vagrant - Escapee.

Native range: Breeding range NE Europe and Siberia, wintering range SE Europe and Asia.

The birds seen on the Orwell form part of the Greylag/Canada Goose flock that resides at Alton Water and are good indicators of how these geese interchange with the neighbouring estuaries. All records for the Orwell are as follows:

Loompit Lake:

1994 One seen intermittently during January and February.

1999 Two Jan. 1st.

Trimley Marshes Reserve:

1993 One Jun. 8th.

1995 One Jan. 3rd.

Greylag Goose *Anser anser*

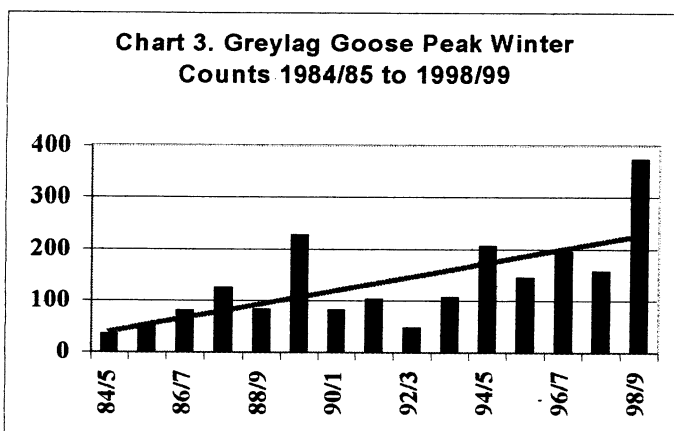
Suffolk Status - Common resident from feral stock.

Largest County gathering: **c1,000, Trimley Marshes, September 9th 1999**

Present population trend: **Increasing**

Number breeding in 1999: **10 pairs**

Ticehurst (1932) thought that the Greylag was a bird of spring and autumn passage. It was Payn's belief that the small parties of Greylag that appeared in Suffolk during the 1970s were stragglers from Essex and Norfolk where they had already become well established.



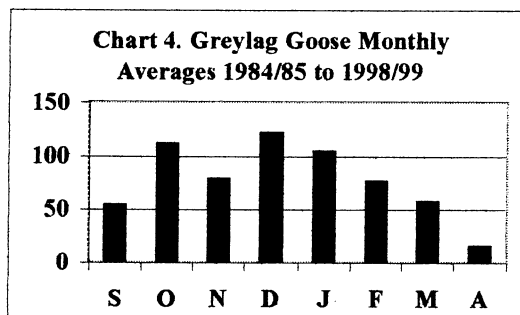
In the 1970s even a single bird was noteworthy; all records for this period on the Orwell are as follows. In 1973 a single bird flew upstream, at Pin Mill, within the 'V' formation of 25 Bewick's Swans on December 1st. There were 26 at Trimley on October 22nd and 27th 1974 and in 1978 during the February freeze seven were seen at the New Cut at Ipswich. There were also five at Nacton on December 9th 1978.

The co-ordinated estuary counts show clearly that during the 1970s and 1980s very small numbers were recorded on the estuary. It was not until the mid-1990s that numbers began to increase significantly and currently the population is soaring and showing no signs of slowing down. The trend in population size, as shown by Chart 3, is upward.

The most favoured site on the Orwell is the Trimley Marshes Reserve and the surrounding farmland where the highest gathering for the county of c1,000 was recorded on September 9th 1999. Two other high counts were of 850 on November 9th 1999 at Trimley Marshes and c800 at Loompit Lake on January 17th 1999.

Table 11. Greylag Goose Peak Counts at Trimley Marshes						
1993	1994	1995	1996	1997	1998	1999
c80	280	186	c300	c400	c600	c1000

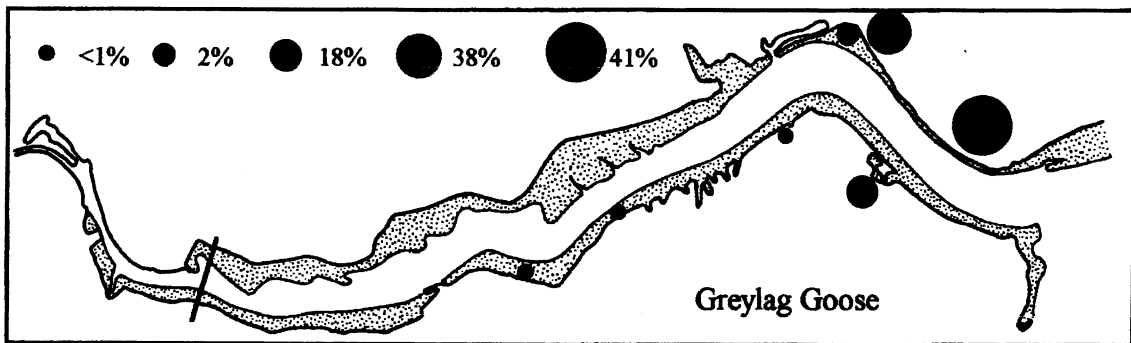
Table 12. Greylag Goose Winter Peaks and Five Year Average Maxima Based on High and Low Water Counts						
	73/74	74/75			84/85	Average
High	1	26			0	
Low	-	-			36	
	85/86	86/87	87/88	88/89	89/90	
High	0	6	10	6	8	6
Low	0	-	-	4	17	
	90/91	91/92	92/93	93/94	94/95	
High	25	39	61	136	149	82
Low	35	51	27	-	210	
	95/96	96/97	97/98	98/99	99/00	
High	237	440	308	563	418	393
Low	145	298	799	401	989	526



The Greylag Goose is attracted to the grassland habitat and farmland stubble areas on the lower reaches of the estuary at Trimley where numbers peak first in the autumn. A mid-winter peak then follows in December before numbers decline as birds depart for their summering and breeding areas.

Greylag Geese prefer the lower reaches of the Orwell estuary especially the hinterland marshland areas of Trimley Marshes (Comp. D4) and Shotley Marshes (Comp. C3). Also large numbers are found at Loompit Lake (Comp. D3). The low water counts show that over the last five winter periods, 97% of the Greylag Geese on the Orwell have been found at these three locations.

Map 1. Greylag Goose Feeding Densities Based on Low Water Counts 1994/95 to 1998/99.



Breeding was first proven in Suffolk in 1976 when a pair reared a brood at Minsmere. The first time that a pair bred on the Orwell is believed to have been in c1983 at Nacton. Since that date Greylags have nested at Levington, Shotley, Clamp House, Loompit Lake and Trimley Marshes. In 1999 an estimated 10 pairs bred on the Orwell estuary (*pers. obs.*).

Table 13. Greylag Goose Breeding Pairs at Two Main Sites

	1994	1995	1996	1997	1998	1999
Trimley Marshes	min 7	min 3	4	7	4	5
Loompit Lake	0	2	3	2	2	2

Bar-headed Goose *Anser indicus*

Escapee.
Native range: Southern Asia.

All records for the Orwell are listed as follows:

Loompit Lake:

- 1992 Two in flight May 10th and two Dec. 6th to 31st.
- 1994 Two Nov. 29th and one Dec. 21st.
- 1996 One intermittently Jan. 15th to Feb. 11th.
- 1997 Two Mar. 9th and 10th and one Dec. 13th.
- 1999 Singles May 31st, Aug. 20th, Nov. 27th and Dec. 12th.

Nacton:

1978 One Dec. 9th

Trimley Marshes:

1991 One May 10th.

1994 Two in November and one in December.

Trimley Marshes Reserve:

1994 Two were present on eight days in the period Nov. 13th to 30th and one bird was present on nine occasions after Dec. 4th up to the year's end.

1995 A single bird was reported on 16 dates in January and February.

1996 One Apr. 29th

1997 One Sep. 19th, Oct. 4th and 18th and Nov. 12th and 15th.

1998 One Sep. 13th and 19th, Oct. 10th, 28th and 30th and Nov. 1st.

1999 One on 16 dates between Apr. 27th and Sep. 25th and three Oct. 9th, four Oct. 10th and one Oct. 29th.

Orwell estuary:

1995 One Nov. 2nd.

Canada Goose *Branta canadensis*

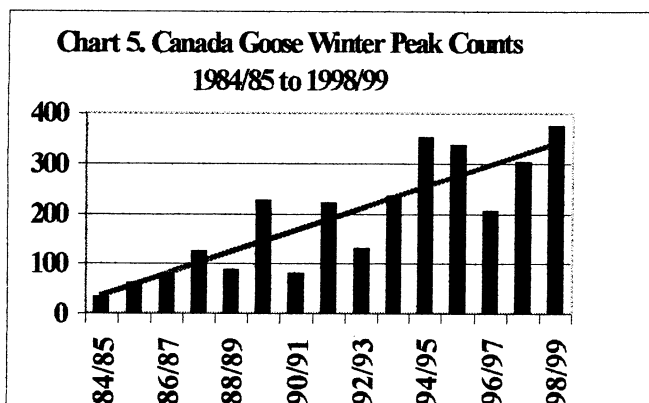
Suffolk Status - Very common resident. Originally from feral stock.

Highest count: **789 September 16th 1997**

Present population trend: **Increasing**

Number breeding in 1999: **11 pairs**

Historically the Canada Goose has either colonised or been introduced into private estates with the greatest concentrations being found in west and central Suffolk. In the east of the



county, prior to the 1940s, this species was confined to Fritton Lake and to a couple of sites on the river Waveney. With numbers and range increasing dramatically a survey was undertaken by the Suffolk Naturalists' Society in 1972 in order to ascertain the species' status in the County. The survey found around 330 pairs during the summer period and at least 1,800 wintering birds (see Suffolk Bird Report, 1973: 158). At this time no birds were

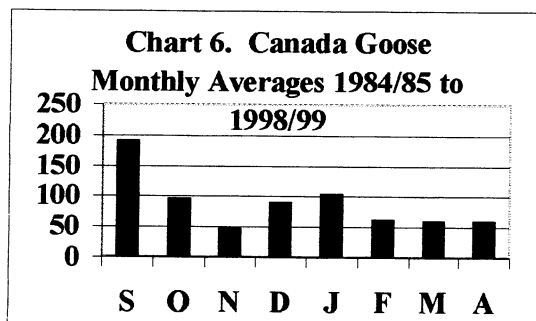
found within the Orwell area.

It was not until April 16th 1974 that two birds were recorded at Loompit Lake. Over the next 10 years the numbers remained consistently low. It was not until the mid-1980s that numbers began to steadily increase. During the winter of 1987/88 numbers were recorded in excess of 100 birds for the first time. The upward trend in Canada Goose numbers continued throughout the 1990s and at the current time they still appear to be increasing on the Orwell. Flocks of over 300 birds are regularly encountered and the highest count recorded to date is 789 on September 16th 1997 on Trimley Marshes Reserve.

1993	1994	1995	1996	1997	1998	1999
280	450	300	475	789	300	500

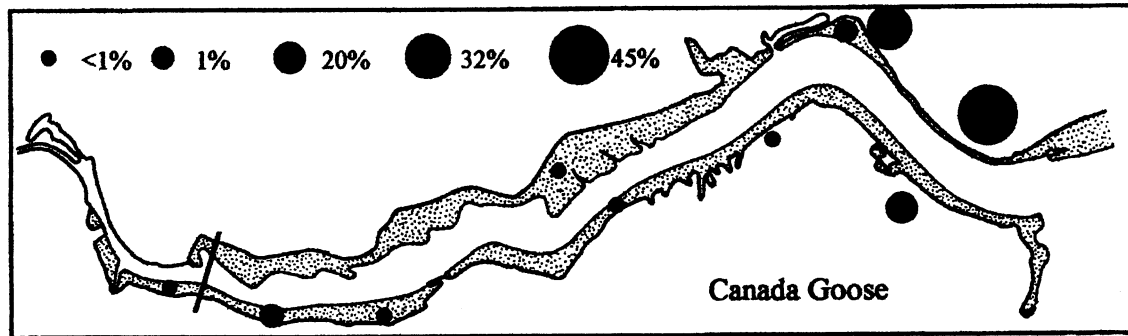
	73/74	74/75			84/85	Average
High	0	5			36	
Low	-	-			40	
	85/86	86/87	87/88	88/89	89/90	
High	61	78	123	127	225	123
Low	57	-	-	151	131	
	90/91	91/92	92/93	93/94	94/95	
High	109	219	128	233	349	208
Low	135	74	38	-	193	
	95/96	96/97	97/98	98/99	99/00	
High	335	203	301	373	282	299
Low	103	233	528	224	184	254

The highest numbers are recorded up to September during the early-autumn period. As with Greylag Goose, the Canada Goose is attracted to the farmland stubble and grassland habitat in the early autumn on the lower reaches of the estuary at Trimley. However, the Canada Goose is highly mobile between Alton Water and the flood plains of the Deben, Orwell and Stour estuaries; those areas planted with winter wheat are particularly favoured. There may also be considerable daily fluctuations in numbers.



As with Greylag Geese, Canada Geese also prefer the lower reaches of the Orwell estuary especially the hinterland marshland areas of Trimley Marshes (Comp. D4) and Shotley Marshes (Comp. C3). Also large numbers are found at Loompit Lake (Comp. D3). The low water counts show that over the last five winter periods, 97% of the Canada Geese on the Orwell have been found at these three locations.

Map 2. Canada Goose Feeding Densities Based on Low Water Counts
1994/95 to 1998/99.



The first breeding record for the Orwell was in 1974 when a pair was noted at Loompit Lake although it was in 1975 that a pair was successful. This is now a regular breeding bird and in 1993 there were 11 pairs at the Trimley Marshes Reserve. At Loompit Lake in 1995 and 1996 there were seven and 13 broods respectively. In 1999 there was a minimum of 11 pairs (four Trimley Marshes, one Shotley Marshes, min. three Loompit Lake, one Clamp House, one Levington, one Strand).

Barnacle Goose *Branta leucopsis*

Suffolk Status - Scarce winter visitor and passage migrant; increasingly common feral resident.

Numbers began to increase in Suffolk from the late 1960s from just one or two birds annually to small parties being reported (Payn 1978). At present, with birds now breeding regularly, the number of feral birds now present in the county (the Kessingland flock alone peaked at 170 in 1996) make it almost impossible to detect winter visitors or migrants.

On March 1st 1981, 23 Barnacle Geese were recorded on the Orwell at Shotley as part of the largest-ever influx into Suffolk to date. All other records for the Orwell are as follows:

Shotley:

1981 One Mar. 1st.

1987 Six Feb.

Loompit Lake:

1999 One Jun. 26th and Aug. 17th.

2000 One Jan. 23rd.

Trimley Marshes Reserve:

1990 17-18 Jan. 1st to 13th.

1994 19-20 Feb. 20th to 27th, up to seven Dec. 14th to the end of the month, three Mar. 28th and a single bird to June.

1996 Six on Dec. 26th, two May 4th, singles on Feb. 18th and 23rd, and Mar. 2nd, 25th and 28th.

1997 One on Dec. 27th.

1998 19 Sep. 6th and one May 19th.

1999 Singles Jan. 17th, 30th, Feb. 20th, 24th and Mar. 7th.

2000 Six Jan. 23rd.

Dark-bellied Brent Goose *Branta bernicla bernicla*

Suffolk Status - Common winter visitor and passage migrant.

Threshold for international importance - 3,000.

Threshold for national importance - 1,000.

Nationally important wintering species

Present wintering population trend: ***Decreasing***

Highest count: **2,849 January 8th 1986**

Two of the races of Brent Goose which occur regularly in Britain are the dark-bellied race *Branta bernicla bernicla* which breeds in western Siberia and the population from Svalbard, the pale-bellied form *B. b. hrota*.

Following the enormous decline of eelgrass stocks through disease in the 1930s and persecution from shooting in their wintering quarters, numbers were reduced to worryingly low levels. It was not until the winters of 1955-57 that detailed counts put the world population at around 16,500 birds. These birds were gradually afforded protection from being hunted. The Netherlands was the first country to introduce protection, in 1950, followed by Britain in 1954 then France in 1966 and Denmark in 1972. This protection was significant in that since the early 1970s numbers have increased spectacularly. The Brent Goose is now protected throughout its wintering range and is included on Annex II/2 of the 1979 European Community Directive on the Conservation of Wild Birds.

To compound the Brent Goose situation natural factors can impact significantly too including adult mortality due to severe weather conditions on the breeding grounds. Accordingly, numbers fluctuate considerably due to their breeding success. In some years, (sometimes in successive years), the breeding season is a complete failure whereas in other years half the population is made up of young birds. In addition, prevailing weather conditions in mainland Europe or Britain may result in influxes or emigration. Hence the wintering numbers in Britain, and as a consequence in Suffolk, may vary considerably between years.

Since 1985, Brent Geese have been monitored annually to provide English Nature with information on population levels and annual breeding success. Mid-winter counts in Britain were 104,249 in 1988/89 and around 90,000 in 1989/90 (Kirby & Salmon 1990). These figures show a spectacular increase compared with the numbers present in the 1960s. Throughout the 1990s numbers have remained steady at around 100,000 birds. There is very little historical information for the Orwell, although Payn wrote that the wide estuaries of the Stour and Orwell were the chief wintering areas in Suffolk. During the period around the late 1970s, Mike Packard, the farmer at Shotley Marshes, recorded that the wintering numbers on his land had increased from 200 in 1969 to c500 in 1977. The numbers on the Orwell over the last 30 years reflect the trend seen nationally. Although numbers vary between the years and the type of count undertaken, it can clearly be seen from Table 17 that since 1984/85 the Orwell has been nationally important for this species. In addition, the Trimley Marshes nature reserve supports nationally important numbers.

1993	1994	1995	1996	1997	1998	1999
1200	1994	1000	1000	550	1200	500

Summering birds are becoming more frequent on the Orwell whereas in former times Payn only documented two records and referred to them as being remarkable.

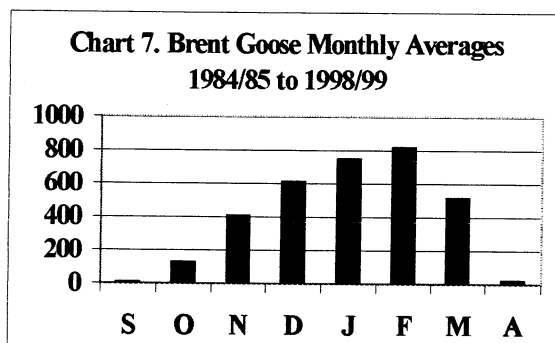
Brent Geese are highly mobile and move frequently between the estuaries of the Deben, Orwell and Stour (possibly some interchange occurs with the Essex populations), or between intertidal and flood plain feeding areas and refuge areas. An example of this frequent mobility is that since the reservoir at the Trimley Marshes nature reserve was built Brent fly to it all through the day in numbers from a few birds to flocks containing several hundred to wash and preen. They stay only for 20 minutes or so and are additional to those that are long-stayers and grazing on the reserve.

Originally the Brent Geese fed solely within the intertidal area. However, since the dramatic loss of the zoster beds and the recovery in the species' numbers, the Brent Geese have sought pastures and wheat fields within the flood plain and even further

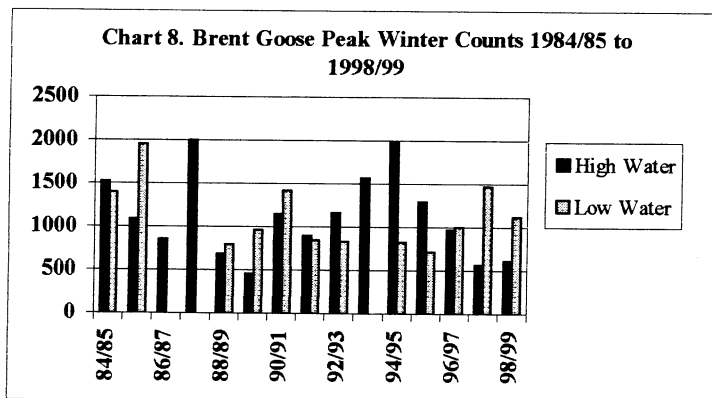
inland. On the Orwell these new feeding areas are located at Shotley, Trimley and Mansbrook and inland from the Orwell, just north of the A14 at Bucklesham.

	73/74	74/75			84/85	Average
High	540	380			1519	
Low					*1394	
	85/86	86/87	87/88	88/89	89/90	
High	1090	850	2000	684	461	1017
Low	2849	-	-	797	964	1537
	90/91	91/92	92/93	93/94	94/95	
High	1150	900	1169	1565	1981	1353
Low	1417	742	833	-	822	954
	95/96	96/97	97/98	98/99	99/00	
High	1290	961	567	605	776	840
Low	707	1000	1472	1117	1799	1219

The monthly averages clearly show that Brent Geese begin to arrive on the Orwell in October and steadily increase to reach peak numbers in February. Birds begin to leave for their breeding grounds in March and by April the majority have departed. In recent years a few birds have over-summered.



Despite the fact that the Orwell is important for this species, Chart 8 clearly shows the erratic nature of the count totals. This is a good example of how misleading a single monthly count can be for a highly mobile species.



For example the high water counts from 1994/95 onwards suggest that the wintering population is rapidly declining, whereas the low water counts over the same period suggest that the population is increasing.

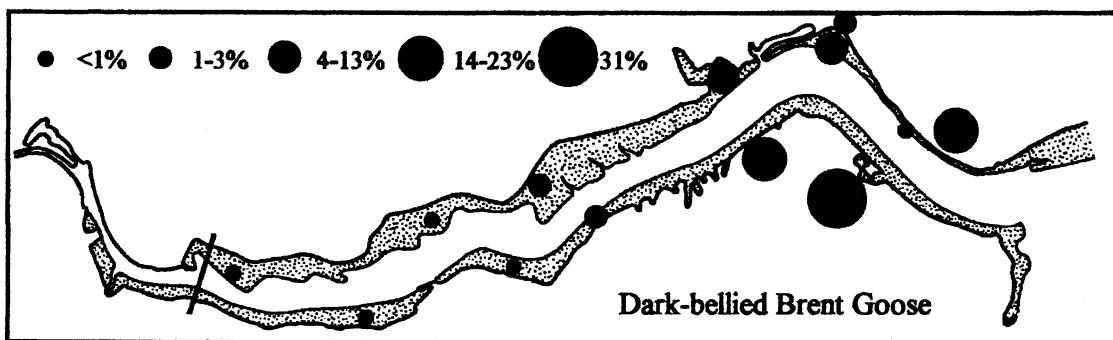
However, when comparing the average maxima of the high tide counts for the winter

periods of 1984/85 to 1988/89 with 1994/95 to 1998/99 there appears to be a decline of 16%. Also when comparing the high and low water average maxima for 1984/85 - 1985/86 with 1997/98 - 1998/99 they indicate declines of 39% and 55% respectively.

Although this species is known for its variability in wintering numbers, the population in Britain has remained steady over the last 15 years. The variable nature of the wintering population is complex. This may be as a result of the species' characteristic three-year pattern of variation in breeding success. Also, in relation to the count dates, the timing and duration of cold spells may force some birds to move further south. In addition, different age classes can vary widely from year to year, which probably involves different migratory habits.

Small numbers of Brent Geese can be found throughout the estuary during the low water period. Principal sites include Shotley Marshes (Comps. C2 & C3), and Trimley Marshes (Comp. D4). On a flooding tide, at both day and night, all salt marsh areas on the estuary become important feeding areas.

Map 3. Dark-bellied Brent Goose Feeding Densities Based on Low Water Counts 1994/95 to 1998/99.



The pale-bellied form *B.b. hrota* is rarely recorded on the Orwell; all known records are as follows:

- 1979 One at Levington on Jan 14th and Feb. 3rd and on the latter date there were four at Wherstead Strand.
- 1998 One at Levington on Jan. 21st

Emperor Goose *Anser canagicus*

Escape
Native Range: Alaska and NE Siberia

Singles birds at Loompit Lake on Apr. 12th and 18th, Nov. 9th and 27th 1999.

Black Brant *Branta bernicla nigricans*

The Northern American and east Siberian race of Brent Goose is colloquially known as the 'Black Brant'. This rare visitor has been recorded on the Orwell as follows:

- 1975 Dec. 22nd to 28th, first seen by Mike Marsh at Nacton
- 1976 Feb. 18th on Trimley Marshes
- 1977 Feb. 7th to Mar. 2nd on Trimley Marshes.
- 1978 Jan. 7th to Feb. 4th on Trimley Marshes.
- 1979 Jan. 14th at Levington.

Red-breasted Goose *Branta ruficollis*

Suffolk Status: Very rare visitor.

This goose was first seen in Suffolk on the Deben estuary at Falkenham Creek, with a flock of Brent, on December 11th 1983. It then followed the Brent flock south to the Orwell/Stour estuary complex. It was seen on the Orwell at Levington on December 31st 1983 and in 1984 it was seen again at Levington on January 6th and on Trimley Marshes in January 7th and 8th.

Egyptian Goose *Alopochen aegyptiacus*

Locally fairly common resident.

This species was added to Category C of the British List in 1972 and is now well established in Suffolk as a breeding bird. Its stronghold prior to the 1980s was the Thorpeness/Aldeburgh area; now its main haunts are the Breckland and Lothingland areas. All records for the Orwell are as follows:

- 1984 One Wherstead Strand Dec. 23rd.
- 1985 One Trimley Marshes.
- 1994 Singles at Levington and Loompit Lake. Two Trimley Marshes Reserve on eight dates between September and October and singles on two other October dates.
- 1995 Two Loompit Lake Sep.6th and two on seven dates during September at Trimley Marshes Reserve.

Ruddy Shelduck *Tadorna ferruginea*

Escapee.

Native range: Asia, North Africa and South Europe.

All records for the Orwell are listed below:

Freston:

1971 One Nov. 20th to the end of the year.

1972 One Jan. 1st to 30th.

Trimley Marshes:

1971 Two Apr. 5th.

Cape Shelduck *Tadorna cana*

Escapee.

Native range: South Africa.

All records for the Orwell are listed below and relate to single birds:

Levington:

1990 Oct. 27th.

Trimley Reserve:

[1997 Sep. 11th.] This record is in square brackets as the observer was not 100% certain of the identity of this bird (SBR 1998).

Common Shelduck *Tadorna tadorna*

Suffolk Status - Very common resident, winter visitor and passage migrant.

Threshold for international importance - 3,000.

Threshold for national importance - 750.

Nationally important wintering species

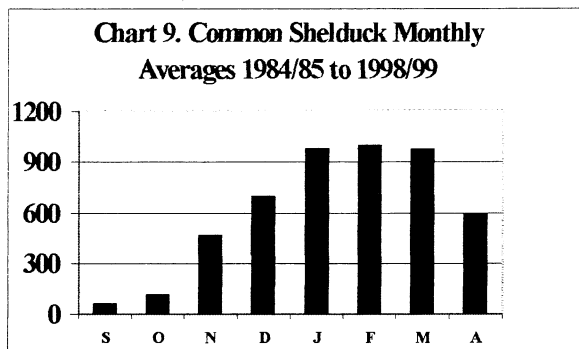
Present wintering population trend: **Stable**

Highest count: **2,500 March 4th 1979**

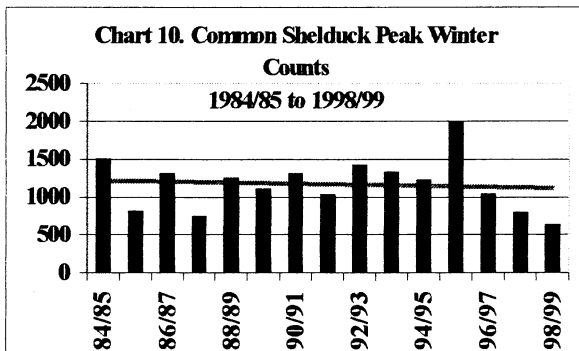
Number breeding in 1992 (latest estimate): **245 pairs**

It appears from the literature that the Shelduck was far less numerous in the latter part of the last century than it is today. Babington (1886) wrote that its numbers had undergone a marked decline and that it "perhaps still breeds". However, according to Ticehurst (1932) it was one of the commoner birds of our tidal waters and there were at least 187 breeding pairs on the Suffolk coast. Payn (1978) stated that between the 1950s and 1970s

Shelduck numbers had increased considerably. At the present time the tidal waters of the Suffolk coast are extremely important for this species. All estuaries between the Alde/Ore complex and the Stour are of national importance.



Birds begin to migrate in July to their traditional moulting grounds in the Waddensee and there is then a noticeable absence until they return in late autumn. On the Orwell numbers steadily build up to peak, usually, in January or February.



The high and low water counts in Table 15 show convincingly that the Orwell is nationally important for this species.

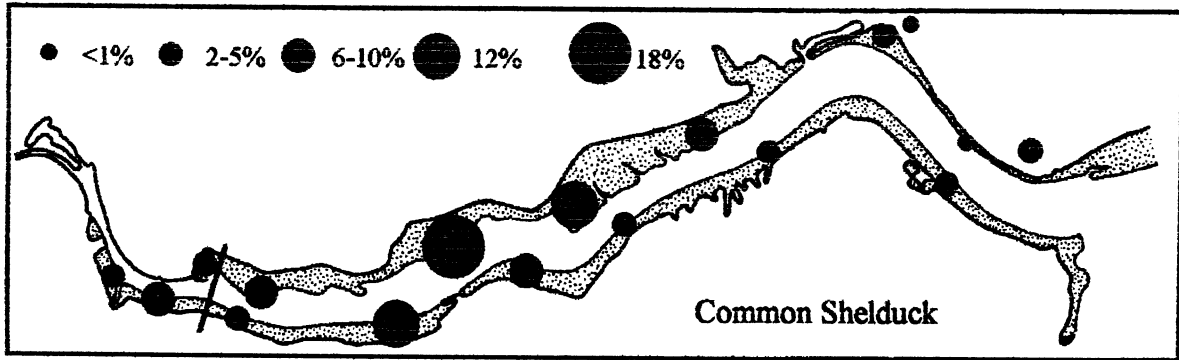
In some years influxes are noted due to severe weather conditions elsewhere. For example exceptional numbers were recorded during the severe weather period of 1979 when there were c1,800 on the upper reaches Feb. 18th and c2,500 on Mar. 4th. In the winter of 1995/96 in January numbers peaked at 1,989. For three consecutive winters

from 1996/97 numbers have dramatically fallen by 68% to an all-time recorded low of 630. However, the peak figures since 1984/85 suggest that the wintering population is stable despite the recent drop in numbers.

	73/74	74/75			84/85	Average
High	1170	984			1500	
Low	-	-			2089	
	85/86	86/87	87/88	88/89	89/90	
High	810	1305	739	1249	1104	1041
Low	1190	-	-	1319	1049	
	90/91	91/92	92/93	93/94	94/95	
High	1304	1026	1411	1320	1221	1256
Low	1515	886	1597	-	1206	
	95/96	96/97	97/98	98/99	99/00	
High	1989	1033	789	630	798	1048
Low	1950	1029	939	645	701	1053

The low water counts show that Shelduck may be found feeding throughout the estuary in particular at softer substrates of the mid reaches (see Map 4). Over the last five winters 18% of the Orwell's Shelducks have preferred the intertidal area of Mulberry Middle (Comp. F1).

Map 4. Common Shelduck Feeding Densities Based on Low Water Counts
1994/95 to 1998/99



During the spring of 1988 the Suffolk Wildlife Trust Estuaries Project co-ordinated a survey of the breeding waders and wildfowl on the Suffolk estuaries (Holtzer *et al* 1989). That survey revealed 114 pairs of Shelduck breeding on the Orwell estuary.

In 1992 there was a national survey of breeding Shelduck, the methodology of which also included counts of non-breeding birds. The methodology was determined after a series of pilot studies. Although birds may not be breeding within the immediate hinterland of an estuary, Delany (1992) found that birds on feeding territories can be strongly indicative of the number of pairs nesting within an area. Wright (1992) documented the results for Suffolk. The survey found that the Orwell held 28% of the Suffolk population; see Table 16 for a summary of the results for the Orwell.

	Total Birds	Territ Males	Pairs	Nbreed Groups	Territ Pairs	Adults	Juveniles
Count	875	34	202	437	28	75	252
Max	1069		245			92	282

Shelduck are known to nest inland where suitable habitats are to be found. However, a number nest within the immediate hinterland of the shoreline. On the Orwell in the 1960s and 1970s I regularly found their nests in the sea walls well camouflaged in the long vegetation, under bramble bushes, in thick scrub or in holes of trees. In the last 10 years or so there has been a marked increase in the numbers of members of the public accessing the sea wall and the regularity with which dogs are exercised in these areas. Accordingly, Shelduck are rarely found nesting in their former areas and more have been

forced to breed further inland. I believe that as a consequence of this, fewer ducklings are making it back to the relative safety of the estuary. A major barrier in the path of young ducklings is the miles of rabbit netting that has been erected around woodlands and fields. Crèches in the 1970s held up to 400 ducklings. In one crèche there were 200 at Levington in July 1975. Between 375 and 400 ducklings were recorded for the Orwell as a whole in July 1976. Numbers at the main site, Levington Creek, had decreased to around 120 by the mid-1980s. Present-day numbers there are around only 40. Shelduck have bred since 1992 at Trimley Marshes Reserve including some in the artificial nest burrows that have been installed for them. Between six and eight pairs bred on the reserve in 1999 when at least 30 ducklings fledged.

Wood Duck *Aix sponsa*

Escapee.

Native Range: Northern America.

All records for the Orwell are listed below and relate to single birds unless otherwise stated:

- 1976 Ipswich Docks Mar. 8th to 10th.
- 1987 A male Ipswich Docks Mar. 29th.
- 1994 Up to four, Trimley Marshes reserve, during September and two Oct. 1st.
- 1995 Trimley Marshes, Gosling's Farm, Pair Dec. 28th. Birds are known to have been deliberately released from this pond and no doubt account for some of the sightings.

Mandarin *Aix galericulata*

Naturalised introduction.

Native range: eastern Asia.

All records are as follows:

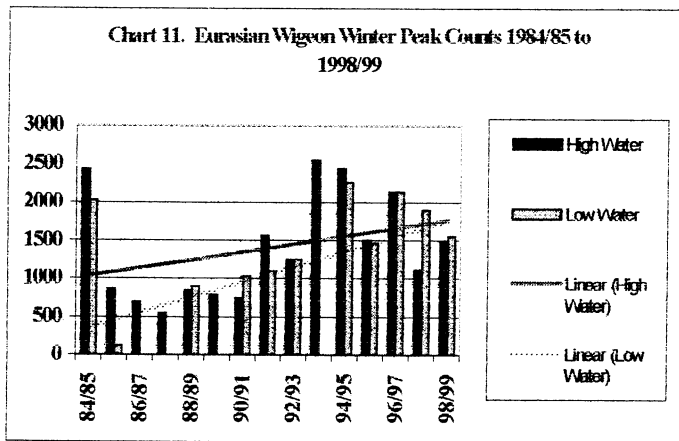
- 1981 Two males and one female Wherstead Dec. 9th.
- 1987 A pair nested near Wherstead and the female was seen with two young.
- 1989 A female Freston Nov. 12th and 18th, male Shotley Marshes Mar. 18th.
- 1996 A male Trimley Marshes reserve Apr. 5th.

Eurasian Wigeon *Anas penelope*

*Suffolk Status - Very common winter visitor and passage migrant. A few oversummer.
 Threshold for international importance - 12,500.
 Threshold for national importance - 2,800.*

Present wintering population trend: **Increasing**
 Highest count: **c3/4,000 in 1970s**

Counts in the early 1970s, according to Payn, indicated that between 3,000 and 4,000 Wigeon were present on the Orwell. In the transactions of the Suffolk Naturalists'



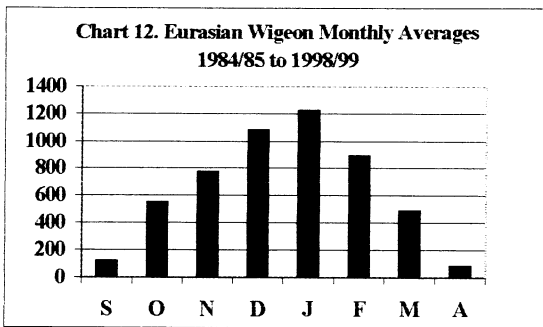
Society (1973) c2,000-3,000 were recorded on the Orwell in September. Numbers were much lower than this during the 1980s apart from a high count of 2,427 in 1984/85, which was due to a massive influx into the County.

Nationally, the numbers wintering have increased from a low point in 1989/90 (261,264) to an all-time-high in 1996/97

(405,562). This upward trend is reflected on the Orwell, when comparing the average maxima for 1985/86 - 1989/90 with 1995/96 - 1999/00, numbers have increased by over 100%. This increase in Wigeon numbers on the Orwell has also coincided with the creation of the new wetland reserve in 1990/91 on Trimley Marshes (see chart 11), which provides not only a safe refuge but also an additional grassland feeding area.

	73/74	74/75			84/85	Average
High	1200	858			2427	
Low	-	-			2020	
	85/86	86/87	87/88	88/89	89/90	
High	857	694	544	852	780	744
Low	1271	-	-	903	784	
	90/91	91/92	92/93	93/94	94/95	
High	733	1563	1245	2543	2432	1703
Low	1023	1102	1280	-	2255	
	95/96	96/97	97/98	98/99	99/00	
High	1495	2132	1121	1491	1278	1503
Low	1465	2132	1894	1546	1609	1730

The monthly averages reveal that the first autumn birds arrive in August. Numbers then increase steadily to peak, as is usual with Wigeon, in January, which also mirrors the national pattern. Birds depart in February and March and have almost all gone by April.

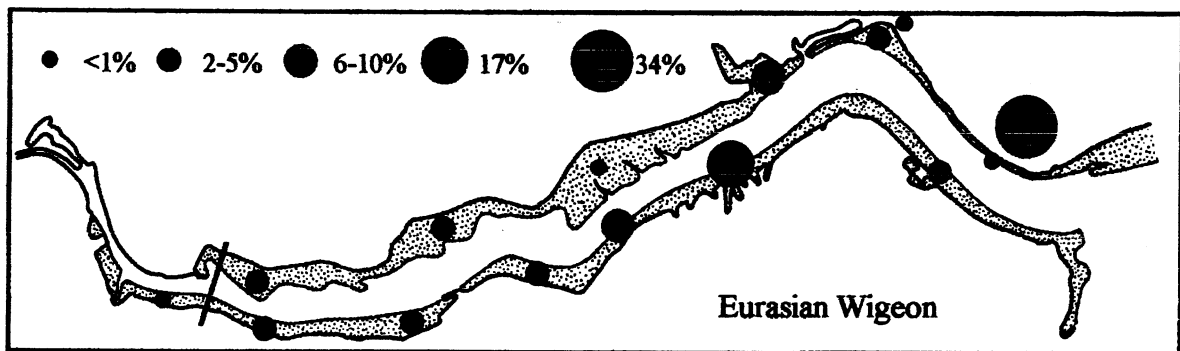


Since the mid-1960s, Wigeon were have oversummered more regularly in Suffolk and were recorded breeding for the first time in 1973. There are no breeding

records for the Orwell although at Trimley Reserve, a few birds have oversummered annually since 1995.

At low water this species distributes itself throughout the estuary feeding on the enteromorpha and is found in association with the freshwater flows across the mudflats. The largest concentration however is found on Trimley Marshes Reserve (Comp. D4). On a flooding tide, both at day and night, all salt marshes provide additional feeding areas and often the reserve at Trimley is a refuge for the whole of the Orwell's Wigeon population.

Map 5. Eurasian Wigeon Feeding Densities Based on Low Water Counts 1994/95 to 1998/99.



American Wigeon *Anas americana*

*Suffolk Status: Very rare visitor: Escapee.
Native Range: North and Central America.*

The following records relate to the same bird. This is the fourth record for the county and the first for the Orwell estuary.

Levington Creek:

1996 Single male Nov. 4th.

Loompit Lake:

1996 Single male Nov. 8th.

Trimley Marshes Reserve:

1996 Single male Nov. 5th.

Chiloe Wigeon *Anas falcata*

*Escapee.
Native Range: Eastern Asia.*

All records for the Orwell are listed below and relate to single birds unless otherwise stated:

Freston:

1991 Jan. 12th and 14th.

Loompit Lake:

1992 Jul. 26th.

Thorpe Bay:

1994 Jan. 8th and 10th.

Trimley Marshes Reserve:

1990 Dec. 1st.

1991 Jun. 14th

1992 Jul. 17th and 26th.

1993 Sep. 16th to 23rd, Oct. 9th to 11th and Dec. 10th and 13th.

1994 Intermittently Jan. 14th to Mar. 7th.

1996 [Hybrid Chiloe x Wigeon, superficially resembling a male American Wigeon
Mar. 19th to 24th.].

Gadwall *Anas strepera*

Suffolk Status - Common resident, winter visitor and passage migrant.

Threshold for international importance - 300.

Threshold for national importance - 80.

Nationally important wintering species

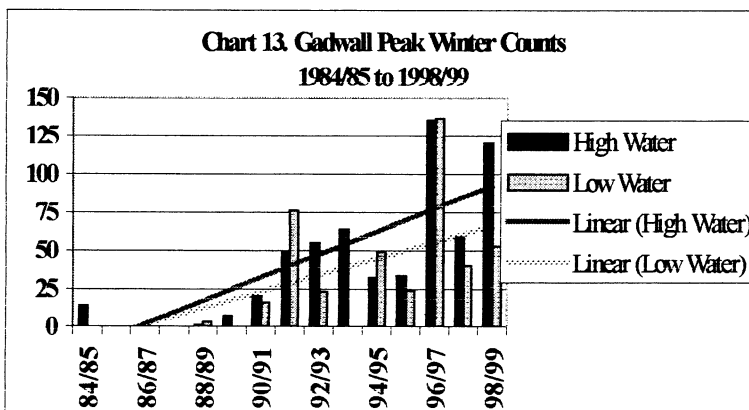
Present wintering population trend: **Increasing**

Highest count: **165 November 1st, 1999**

Number breeding in 1999: **14 pairs**

In former times this species was either rare or scarce in Suffolk (Babington 1884-1886 and Payn 1978). Payn stated that by 1953 this species had spread to the Orwell. Tom Baker, the Decoy man at Nacton, said that it was a regular visitor in the autumn. However, records suggest that prior to the 1990s the Gadwall was seldom seen apart from a scattering of records and involved only a few birds.

Gadwall is the fastest growing 'natural' wildfowl population in Great Britain (Cranswick *et al* 1999). This upsurge in the population was evident on the Orwell from the early



1990s (see Table 21). This dramatic increase coincides with the completion of the wetland reserve at Trimley. The numbers at the present time have reached a point where the Orwell is nationally important for this species. The two principal sites on the Orwell where this bird is encountered are Loompit Lake and Trimley Marshes

Reserve. There is an upward trend in Gadwall numbers wintering on the Orwell.

Table 21. Gadwall Winter Peaks and Five Year Average Maxima
Based on High and Low Water Counts

	85/86	86/87	87/88	88/89	89/90	Average
High	0	0	0	2	7	2
Low	0	-	-	-3	3	
	90/91	91/92	92/93	93/94	94/95	
High	20	49	55	64	32	44
Low	16	76	23	-	49	
	95/96	96/97	97/98	98/99	99/00	
High	33	135	59	120	138	97
Low	24	136	40	53	165	84

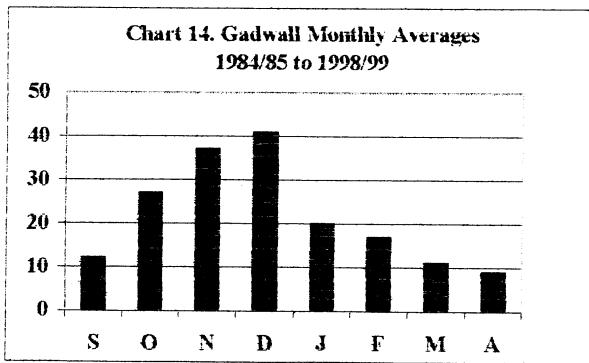


Chart 14 shows a distinct increase in numbers on the Orwell in October. Thereafter numbers increase to peak in December, which is followed by a sharp drop in numbers in January; by March/April breeding numbers are attained.

Probably the first time that the Gadwall bred on the Orwell estuary was in 1976 when between one and two pairs bred at

Loompit Lake. This was the only site on the Orwell that provided the habitat required by Gadwall until the construction of the wetland reserve on Trimley Marshes. Since 1991 numbers breeding there have increased from two pairs to nine/ten pairs in 1999.

Table 22. Gadwall – The Number of Pairs at Two Main Sites

	1994	1995	1996	1997	1998	1999
Trimley Reserve	4/5	4	8	6/7	9	9/10
Loompit Lake	-	-	0	1	5	4

Common Teal *Anas crecca*

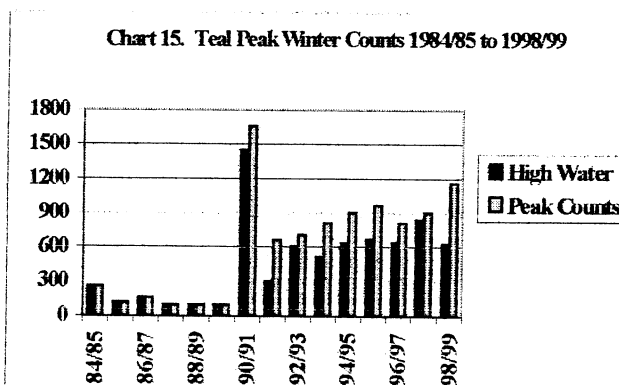
Suffolk Status - Very common winter visitor and passage migrant. Scarce resident.

Threshold for international importance - 4,000.

Threshold for national importance - 1,400.

Present wintering population trend: **Increasing**
Highest count: **1,650 January 9th 1991**

Despite the loss of wetland habitat, the Teal is still very common throughout the coastal areas of Suffolk. On the Orwell, numbers have increased considerably since the 1980s. This increase has coincided with the development of the wetland reserve at Trimley.

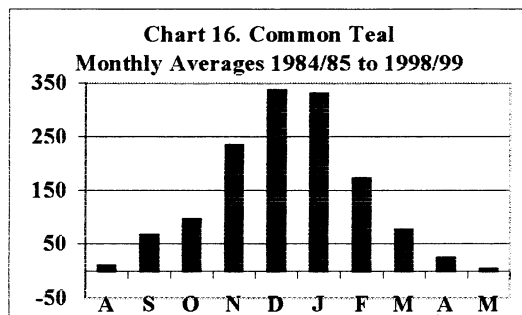


On the Orwell, numbers have increased considerably since the 1980s. This increase has coincided with the development of the wetland reserve at Trimley.

The numbers wintering on the Orwell in the 1980s averaged around 133. However, during the winter period of 1990/91, and coinciding

with the completion of the Trimley Marshes reserve, Teal numbers dramatically increased to peak at 1,650. This is above the threshold for national importance and is also the highest count of Teal recorded on the Orwell. The following year the numbers dropped to around 600 but have steadily increased thereafter to peak at 1,150 in the winter period of 1998/99.

73/74	74/75	75/76	76/77	77/78	78/79	79/80	80/81	81/82
350	240				*200			
82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90	90/91
		255	113	158	90	91	91	1650
91/92	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00
657	700	*800	*900	969	*800	*900	*1150	646



The few summering birds are joined by birds from northern Europe in September. Migrants continue to arrive throughout the autumn and numbers peak in December and January. Thereafter, numbers decrease rapidly through February and March.

At Trimley Marshes Reserve between one and three pairs have been present throughout the summer months since 1993. Although distraction displays have been noted several times, successful breeding has not been confirmed. Teal have bred occasionally on Shotley Marshes (Glazebrook *pers. comm.*).

Green-winged Teal *Anas crecca carolinensis*

Native range: North America.

A drake was at Trimley Marshes from May 21st to 23rd, 1992. This is the eleventh County record of this subspecies (SBR 1993).

Mallard *Anas platyrhynchos*

Suffolk Status - Very common resident, winter visitor and passage migrant.

*Thresholds for international importance - 20,000**.*

Threshold for national importance - 5,000.

Present wintering population trend: **Decreasing**

Highest count: **929 January 20th 1985**

Number breeding in 1999: **c60 pairs**

Payn stated that during the 50 years since 1925 Mallard had probably decreased very considerably in many parts of Suffolk, particularly the coastal areas. The figures given for catches at the Nacton Decoy of 4,800 in 1925 and 1,300 in 1945 are representative of the periods concerned. Nationally, the WeBS counts show a downward trend in numbers over the period 1987/88 to 1997/98; the figures suggest that the population has declined by 40% during those years (Cranswick *et al* 1999). On the Orwell, over a similar period of time, the high water counts suggest that there has been a decline of around 28%. The highest number recorded on the Orwell was 929 on January 20th 1985.

Mallard is a popular quarry species; bag sizes and released stock may well be clouding the statistics. Mallard have been released for hunting purposes at several locations on the estuary during the last 20 years. The number of birds released each year may vary from zero to 200 (*pers. comm.*).

Table 24. Mallard Winter Peaks and Five Year Average Maxima
Based on High and Low Counts

	73/74	74/75			84/85	Average
High	415	445			929	
Low	-	-			684	
	85/86	86/87	87/88	88/89	89/90	
High	693	638	598	542	732	640
Low	622	-	-	464	471	
	90/91	91/92	92/93	93/94	94/95	
High	455	415	397	489	526	456
Low	723	543	363	-	696	
	95/96	96/97	97/98	98/99	99/00	
High	591	589	324	406	389	460
Low	768	738	605	560	661	666

The Mallard is one of the commonest ducks to be found breeding throughout the length of the estuary. In 1995 the number of broods noted at Loompit Lake was 20 and in 1996 there were 18 broods. The number of pairs found breeding throughout the estuary in 1997 was 47 (Babbs 1997). However, breeding numbers vary each year; when

considering the areas not covered by the 1997 survey e.g. farm ponds and reservoirs that are to be found throughout the length of the Orwell, I would estimate the number of pairs in 1999 to be around 60.

Northern Pintail *Anas acuta*

*Suffolk Status - Common winter visitor and passage migrant. A few oversummer.
 Threshold for international importance - 600.
 Threshold for national importance - 280.*

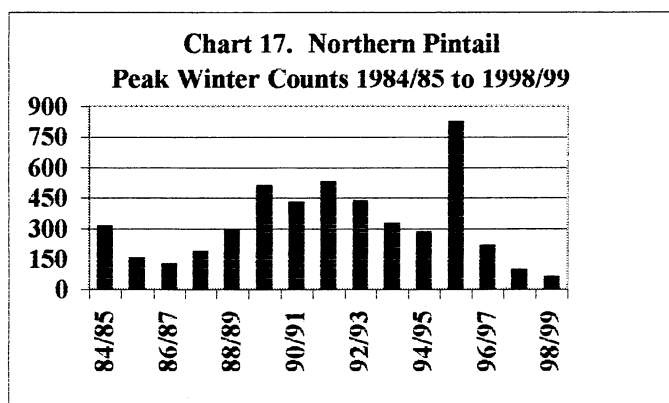
Nationally important wintering species

Present wintering population trend: **Stable/Decreasing**

Principal County Site for Wintering Numbers

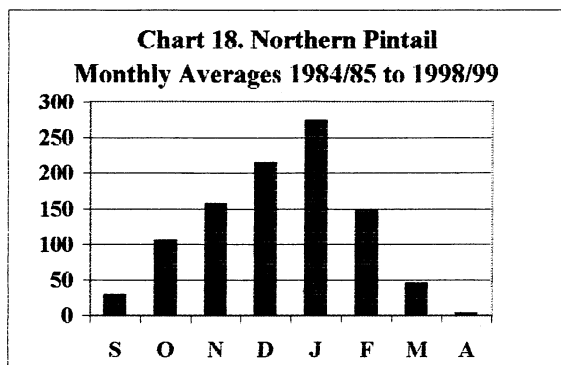
Highest count: **821 January 1996**

The Pintail is an autumn and winter visitor to Suffolk's coastal marshes and estuaries.



Payn (1962) recorded flocks of 300 or more on the Orwell. Figures for the Nacton Decoy indicated that between the 1920s and 1947 the Pintail was on the increase from a few score taken annually to a "take" exceeding 300 (T. Baker). Present-day figures show that it was not until the winter of 1984/85 that Pintail peaked above the level required for national importance. From the late 1980s nationally

important figures were regularly recorded although since the winters of 1991/92 (apart from the 1995/96 winter) numbers have been declining steadily. At the present time, nationally, there appears not to be a significant decline although, there have been



significantly different trends between regions and large declines on some of the traditional most important sites (Cranwick *et al* 1999). On the Orwell both high and low water figures from the early 1990s show that numbers are declining, although when comparing the five-year average maxima for 1986/87 - 1989/90 with 1995/96 - 1999/00 the population appears to be stable. When combining the peak counts over the last five years the estuary is still

nationally important for this species.

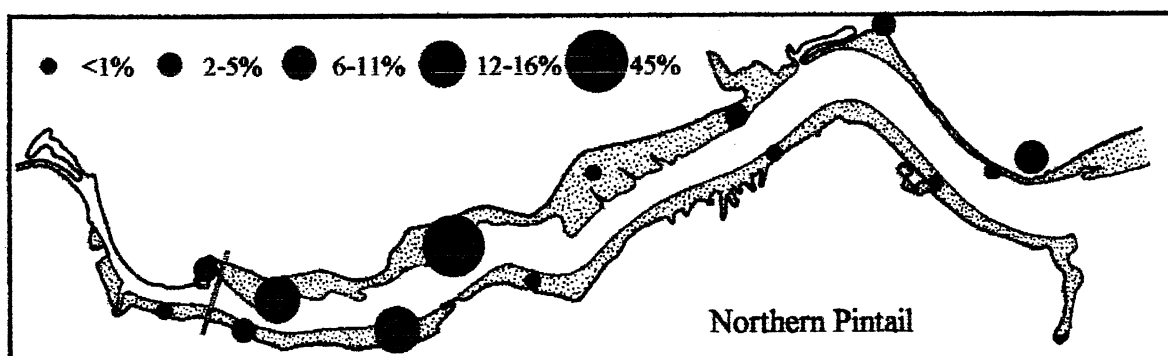
The exceptional peak count of 821 in January 1996 is the highest figure recorded for the Orwell and was above the level required for international importance.

Pintail begin to arrive in September and steadily increase in numbers to peak in January. Numbers thereafter rapidly decline through February and March as birds depart for their breeding grounds. By April the birds have almost totally gone.

	73/74	74/75			84/85	Average
High	225	192			309	
Low	-	-			217	
	85/86	86/87	87/88	88/89	89/90	
High	149	89	186	291	506	244
Low	244	-	-	335	363	
	90/91	91/92	92/93	93/94	94/95	
High	426	528	432	321	282	398
Low	286	324	317	-	210	
	95/96	96/97	97/98	98/99	99/00	
High	821	214	94	56	51	247
Low	452	228	331	90	115	243

The low water counts show that Pintail prefer the upper reaches of the estuary especially at Mulberry Middle (Comp. F1) where 45% of the population was to be found. Two other locations, Pond Ooze (Comp. F2) and Freston (Comp. B2) between them held 31% of the population.

Map 6. Northern Pintail Feeding Densities Based on Low Water Counts 1994/95 to 1998/99.



The first time that this species was recorded breeding in Suffolk was in 1937 and it has only nested occasionally since then. On the Orwell there are no records of nesting by wild birds although pinioned birds have bred on one of the ponds at Goslings Farm.

Bahama Pintail *Anas bahamensis*

Escapee.
Native range: South America.

All records for the Orwell are listed below:

Trimley Marshes:

- 1992 One Aug. 14th to 17th and Sep. 14th to 19th.
- 1993 One Sep. 18th.
- 1994 One Sep. 2nd.

Wherstead:

- 1996 One at Fox's Marina Jan. 13th.

Garganey *Anas querquedula*

Suffolk Status - Uncommon summer visitor and passage migrant.

The Garganey winters in tropical Africa and is an uncommon summer visitor to Suffolk where suitable wetland habitat is found. It was first recorded as a breeding bird in Suffolk in 1873. Nowadays, breeding is irregular and most records are of birds seen during passage periods.

Prior to the 1990s it was seldom recorded on the Orwell; records include a single male on Loompit Lake April 17th 1976 and male and female at Levington April 8th 1979. It has been recorded annually since 1991 following the construction of the wetland reserve at Trimley. This species almost certainly bred successfully in 1997, 1998 and 1999; distraction displays have been noted but no young ducklings seen. All records are listed below:

Loompit Lake:

- 1999 Two Sep. 8th.

Trimley Marshes Reserve:

- 1991 One male May 19th and 20th.
- 1992 One male Apr. 25th, May 25th, 27th and 28th, June 6th, two June 7th and one Aug. 21st.
- 1993 Three males and two females Mar. 17th, two Mar. 26th and May 12th, male May

- 8th, one May 28th, one juv. July 27th and one Aug. 2nd.
- 1994 One male May 7th, 8th, 9th, 11th and 13th, between two and three males May 16th to 29th, four May 30th, one Jun. 3rd, two Jun. 4th and one June 6th.
- 1995 One male Apr. 24th, one male and female May 13th and one male May 23rd.
- 1996 Two females and one male May 25th, two May 22nd and 26th and two Jun. 14th and one Sep. 21st.
- 1997 A single male or pair was regularly seen between May 1st and Aug. 24th. On Jul. 27th an immature bird, possibly of local origin, was seen accompanying the pair.
- 1998 Up to two males and a single female were seen regularly between May 2nd and Jul. 28th. A female and one immature were seen on Aug. 5th and 26th and three birds were recorded on Aug. 9th and Sep. 13th.
- 1999 The first bird was seen on May 2nd followed by a series of observations involving a male or a pair through to Jul. 7th. Two juveniles were seen on Aug. 3rd and one juvenile Aug. 15th; thereafter between one and two birds were seen to Oct. 1st when three birds were present.

Shoveler *Anas clypeata*

Suffolk Status - Common winter visitor and passage migrant. Uncommon resident.

Threshold for international importance - 400.

Threshold for national importance - 100.

Present wintering population trend: **Increasing**

Highest count: **175 February 14th 2000**

Number breeding in 1999: **five to seven pairs**

The Shoveler is a common winter visitor and passage migrant to Suffolk in relatively small numbers. Payn (1962) describes the numbers as being considerable on inland waters where as many as 120 has been recorded. He also states that on the coastal marshes and broads the species is present in variable numbers of up to 400.

Both high water and low water co-ordinated counts show that from the early 1970s to the early 1980s the number of Shovelers frequenting the Orwell was around 60 birds. Thereafter numbers dropped drastically to around an average of only six birds until the winter of 1990/91. In the 1990s, although numbers fluctuated, they rose to above former levels. The average maxima over the last five years of 90 falls just short of the criteria required for national importance (see Table 26).

It is interesting to note that in the 1970s the vast majority of Shovelers were be found opposite Woolverstone Marina whereas in the 1990s almost all of the birds were found on Looipit Lake or the Trimley Marshes Reserve. Shovelers prefer fresh water lakes and marshes as opposed to tidal estuaries. One explanation as to why the birds frequented the Woolverstone shoreline area may be that at that locality there is more

fresh water seeping across the mudflats than anywhere else on the Orwell. Later, the birds may well have left the site in preference for the fresh water habitat of Alton Water reservoir, which was finally commissioned in 1986.

Shovelers have peaked three times above the level required for national importance, in February 1992 (102), February 2000 (110) and January 2000 (175).

73/74	74/75	75/76	76/77	77/78	78/79	79/80	80/81	81/82
75	60	*90				*50	*40	*50
82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90	90/91
31	-	9	12	15	-	6	9	68
91/92	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00
102	23	39	*77	*92	*50	73	60	175

The number breeding on the Orwell is low. Between one and two pairs breed annually on the Shotley Marshes and in the Hare's Creek area - a similar number bred on Trimley Marshes. However, since the construction of the Trimley Marshes Reserve between four and five pairs have bred there annually.

Red-crested Pochard *Netta rufina*

Vagrant and escapee.
Native range: Europe and Asia.

All records for the Orwell are as follows:

Orwell:

1991 Ipswich Docks/Wherstead Strand a female and two males Feb. 10th to 13th and male Nov. 16th to 18th.

Loompit Lake:

1992 A pair May 15th to 24th.
1993 Female Jan. 2nd.
1995 Male Mar. 5th to 12th.
1996 Noted from Sep. 10th to Dec. 7th, four max Oct. 6th and 26th (two pairs).
1998 Two Jul. 1st and Oct. 2nd.
1999 Seven between Sep. 7th and Oct. 5th and three Oct. 10th.

Trimley Marshes Reserve:

1992 A pair May 18th and 19th (the same birds as at Loompit Lake).
1993 One Jan. 18th.
1995 Two on Oct. 13th and 14th.
1997 A male on Jul. 1st.

Common Pochard *Aythya ferina*

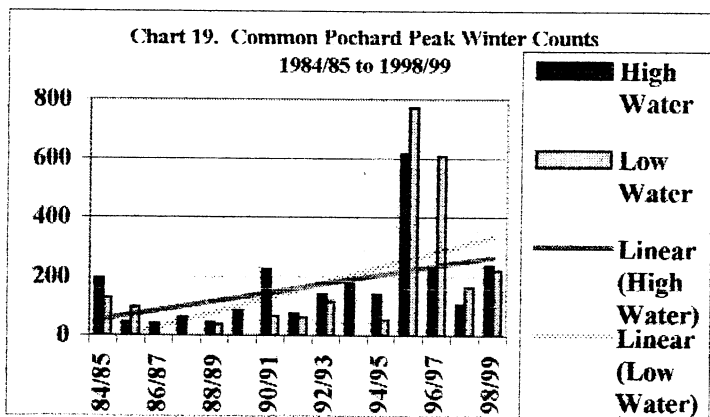
Suffolk Status - Common winter visitor and passage migrant. Scarce resident.

Threshold for international importance - 3,500.

Threshold for national importance - 440.

Present population trend: **Increasing**
 Highest count: **772 February 13th 1996**
 Number breeding in 1999: **five pairs**

Payn (1978) wrote that this duck was a plentiful winter visitor to the coastal Broads where 200 or more frequently congregated in January and February. The highest figure documented by Payn was of 360 at Alton Water during the autumn of 1977. On the Orwell Pochard are to be found on the freshwater at Loompit Lake and the reservoir and fresh water pools on Trimley Marshes Reserve. However, during times of severe weather



when fresh water areas are frozen Pochard move to the upper reaches of the Orwell and to the Wet Dock at Ipswich. In Ipswich Docks there were 210 birds on February 22nd 1979; this was recorded as an unprecedented total (SOG bulletin 42). The highest count so far recorded for the Orwell is 772 on February 13th 1996. On the Trimley Marshes Reserve on

January 6th 1999 there was a gathering of c250.

The co-ordinated counts indicate the mobility of this species by the variability of the numbers recorded. Wintering populations are regularly boosted by influxes due to severe weather conditions. However, the trend in numbers both during high and low water is upwards. On January 6th 1999 at Trimley Marshes Reserve there was a gathering of c250.

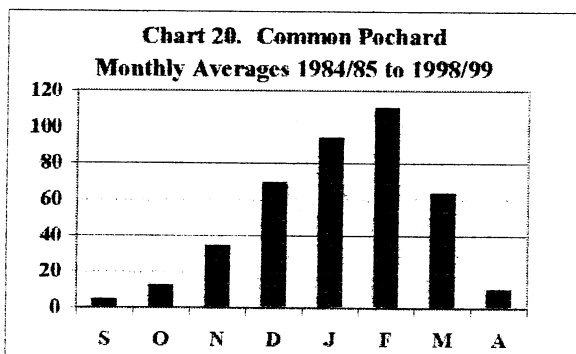


Chart 20 clearly shows that Pochard build up in numbers over the winter period to peak in February. Numbers thereafter decline rapidly and are almost all gone by the end of April.

Table 27. Common Pochard Winter Peaks and Five Year Average Maxima For High and Low Water Counts						
	73/74	74/75			84/85	Average
High	70	75			195	
Low	-	-			140	
	85/86	86/87	87/88	88/89	89/90	
High	44	39	63	43	86	55
Low	96	-	-	38	30	
	90/91	91/92	92/93	93/94	94/95	
High	222	77	140	174	140	151
Low	66	62	115	-	52	
	95/96	96/97	97/98	98/99	99/00	
High	615	229	107	238	115	261
Low	772	606	162	221	220	356

Although well established as a breeding bird in the west of the county, it was not until the late 1930s that this species first bred on the coast, at Minsmere. The first time that breeding was successful on the Orwell was in 1996 at Loompit Lake where there was a brood of four; in 1999 there were four broods. At the Trimley Marshes Reserve they successfully bred for the first time in 1997 and in successive years have attempted to breed but without success.

Ring-necked Duck *Aythya collaris*

Suffolk Status - Vagrant
Native Range: North America

The only record of this duck on the Orwell was during a WeBS count on February 21st 1999 on the stretch of river between Fox's Marina and Cliff Quay.

Ferruginous Duck *Aythya nyroca*

Suffolk Status - Rare winter visitor and passage migrant and escape
Native range: North Africa and Asia

There are two records for this species; the first was in 1985 when a female was present in Ipswich Docks between January 28th and February 15th. Then again in 1987 when a female was seen at Freston on December 30th and 31st.

Tufted Duck *Aythya fuligula*

Suffolk Status - Common resident, winter visitor and passage migrant.

Threshold for international importance - 10,000.

Threshold for national importance - 600.

Principal County Site for Wintering birds

Present winter population trend: **Increasing**

Highest count: **1,150 January 30th 1985**

The most important Breeding site in Suffolk

Number breeding in 1998: **c40 pairs**

Ticehurst (1932) considered that this duck was increasing as a winter visitor to the Suffolk coast. The Suffolk Bird Reports for the 1950s documented small numbers for the county of less than c30 birds and sometimes none were recorded on the coast or in the estuaries. However, they were more numerous than usual due to severe weather in 1956 when 200 were recorded on the Orwell in the Wet Dock at Ipswich. As wintering numbers increased nationally higher numbers were being recorded during times of severe weather. On February 22nd 1979 there were 500+ birds in Ipswich Docks; this was recorded as an unprecedented total (SOG bulletin 42). A few years later, on January 30th 1985, the County's largest flock up to that date of 1,150 was present in the Wet Dock at Ipswich.

The results from the co-ordinated counts show that there has been an increase in wintering numbers since former times and certainly numbers have peaked much higher during cold weather periods. The average peak counts from all sources suggest a wintering population higher than that of the co-ordinated counts and a population that is stable at the present time.

	73/74	74/75			84/85	Average
High	85	112			507	
Low					668	
	85/86	86/87	87/88	88/89	89/90	
High	95	115	96	139	157	120
Low	505	-	-	89	124	
	90/91	91/92	92/93	93/94	94/95	
High	373	180	155	142	182	206
Low	188	74	119	-	138	
	95/96	96/97	97/98	98/99	99/00	
High	217	182	134	154	164	170
Low	490	272	163	219	304	290

Tufted Ducks have peaked above the level required for national importance twice on the Orwell, in the winters of 1984/85 and 1995/96. It is also evident from the counts that Ipswich Docks, especially the Wet Dock, is extremely important for this species during times of severe weather when freshwater areas are frozen.

73/74	74/75	75/76	76/77	77/78	78/79	79/80	80/81	81/82
85	112				*500			*525
82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90	90/91
		*1150	*552	115	96	139	157	373
91/92	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00
180	*163	142	182	*770	272	163	219	304

The first time that this duck was recorded as breeding in Suffolk occurred around 1913 on the Euston Estate and the first coastal breeding record was in 1930 when a pair was seen with one duckling at Easton Broad. Over the next 50 years breeding numbers and range increased dramatically. The SOG's Tufted Duck Survey in 1980 located 257 pairs in Suffolk (Murphy & Piotrowski 1981). On the Orwell there were 46 pairs and 225 juveniles and Loompit Lake held the highest concentration in the county with 30 pairs rearing 154 ducklings. On the Orwell these birds will nest on any suitable area of water from a small pond to a lake, borrow dyke or fringing habitat of the estuary's shoreline.

1978	1979	1980	1981	1982	1983	1984	1985	1986
20/125	37/175	30/154	-	15/120	-	-	10/57	13/82

When comparing the breeding figures for 1986 with those from the late 1970s it can readily be seen that there is a significant drop in breeding numbers. This decline has been mirrored at Shotley Marshes. A factor, which has no doubt contributed to this decrease in numbers, is the interference by local wildfowlers at the Loompit site. A number of clutches, it has been said, have been deliberately destroyed because, in their opinion, "there are too many for their own good" (Suffolk Birds 1987). This fact has also been relayed to me by a wildfowler acquaintance. By the mid-1990s and with the additional wetland habitat at the Trimley Marshes Reserve the numbers breeding were the highest ever recorded on the Orwell.

	1994	1995	1996	1997	1998	1999
Loompit Lake	-	16/141	21/127	12/52	20/144	-
Trimley Marshes	28/190	16/-	16/-	17/-	15/-	12/-

Greater Scaup *Aythya marila*

Suffolk Status - Fairly common winter visitor and passage migrant.

Threshold for international importance - 3,100.

Threshold for national importance - 110.

Largest County gathering: c420, Orwell, February 21st 1954

The greatest numbers of Scaup appear on Suffolk estuaries during periods of severe winter weather. As a result of hard weather on the Orwell in 1954 F.K. Cobb and M. Packard counted an exceptional figure of c420 birds on February 21st (SBR). In 1956 a peak count of 250 on February 12th was recorded on the Orwell and in the 1962/63 winter 300 were counted at Freston (SBR). Over the last 35 years peak numbers have reached nowhere near former levels; in fact in some winters birds are not recorded at all.

73/74	74/75	75/76	76/77	77/78	78/79	79/80	80/81	81/82
*12	*3	*35	*9	-	*48	*6	*4	*19
82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90	90/91
-	-	45	16	*76	1	28	0	*131
91/92	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00
5	2	5	1	48	53	*9	*1	1

Common Eider *Somateria mollissima*

Suffolk Status - Fairly common winter visitor and passage migrant. Has bred.

*Threshold for international importance - 20,000**.*

Threshold for national importance - 750.

During the last century the Eider was considered as rare on the Suffolk coast. Babington (1884) listed only a few records; one such record was for the Orwell where three birds were obtained in Levington Creek in October 1881. Very few Eiders were recorded along the Suffolk coast during the first half of this century but from 1952 onwards there has been a steady increase in numbers. Payn (1962) reported that five ducks were seen six miles up the river Orwell in December 1955. Since the 1960s Eiders have almost been recorded annually, in varying numbers, on the Orwell estuary. All records involving 10 birds or more are listed below:

- 1957 10 Shotley Dec. 25th.
- 1962 12 Jan. 14th to Mar. 4th.
- 1969 26 in Jan.
- 1972 17 Pin Mill Feb. 18th.
- 1975 13 in Dec.
- 1976 Up to 26 Jan/Feb.

- 1978 Up to 14 in Dec.
 1979 17 Jan 3rd, increased to 21 Jan, 7th, and 26 by Feb. 3rd, 20 remained to Feb. 26th.
 and 10 Mar. 11th.
 1980 A maximum of 21 Jan. 7th and 26th and 20 Feb. 26th.
 1985 20 in Jan.
 1986 17 Jan. 8th.
 1991 10 in Feb.
 1996 18 Feb. 18th, 17 Feb. 13th, 14 Feb. 7th and 10 Mar. 17th and 30th.

Long-tailed Duck *Clangula hyemalis*

Suffolk Status - Uncommon winter visitor and passage migrant.

*Threshold for international importance - 20,000**.*

Threshold for national importance - 230.

Principal County Site for Wintering Birds

Largest County gathering: 13, Orwell, Jan. & Feb. 1991

Only small numbers, usually ones and twos, winter in Suffolk waters. Ticehurst (1932) described it as "of rather uncertain occurrence" but also thought it was possibly overlooked.

Over the last 30 years this species has occurred annually in Suffolk and over the same period has been present on the Orwell estuary in no fewer than 24 of those years. The records suggest that the Orwell is the most favoured site in Suffolk. The County's largest gathering, of 13 birds, occurred on the Orwell in 1991 during January and February. Other notable gatherings include between four and six at Woolverstone November 17th to 27th 1988, up to four in 1990 between Ipswich and Shotley from November 8th increasing to 12 in December and max. five Trimley Marshes, December 23rd 1994.

Black Scoter *Melanitta nigra*

Suffolk Status - Common non-breeding resident, winter visitor and passage migrant.

The Black Scoter is a bird that frequents the coastal waters throughout the year although the highest concentrations are present during the winter months when birds may number several thousand. Small numbers, usually singles, seek refuge on the tidal reaches of the Orwell estuary.

Single birds are regularly recorded but all other Orwell records are as follows:

- 1972 Up to six November and December.
 1973 15 Pin Mill Dec. 1st.

- 1974 Four at Trimley Apr. 21st. and one or two Ipswich Docks September/October.
- 1978 Two at Trimley Jan. 29th and three Ipswich Docks April 16th.
- 1980 Three Woolverstone Nov. 8th.
- 1981 A male Ipswich Docks Feb. 25th and two Woolverstone from Nov. 11th.
- 1985 A male Ipswich Docks Jul. 14th.
- 1992 Three March.
- 1994 Three on the river May 29th and Dec. 14th and singles Nov. 17th and Dec. 4th.
One Aug. 24th and an injured female on Dec. 5th at Trimley Reserve.
- 1995 Two January.

Velvet Scoter *Melanitta fusca*

Suffolk Status – Uncommon winter visitor and passage migrant.

Once again a bird of coastal waters during the winter period and often seen in with the rafts of Common Scoter. More birds are present during gales and severe weather periods when some may seek refuge in estuaries.

There are only a few records for the Orwell of mainly just one or two birds although in 1972 during November and December there were six birds at Cliff Quay, Ipswich. Single birds were recorded in 1980, 1982, 1995 and 1996.

In 1992 a single bird was first seen at Loompit Lake on June 22nd; it remained on the lower reaches of the estuary throughout the summer and was also seen on the Trimley Marshes Reserve on September 12th.

All other Orwell records are as follows:

- 1971 Two Wherstead Strand Nov. 13th
- 1973 Two or three birds from 1972 which stayed into January/February.
- 1979 One Jan. 3rd to 14th, two Jan. 18th to Feb. 24th and three Feb. 25th and 26th.
- 1985 Two up to March.
- 1988 Two or three Trimley/Nacton area Dec. 25th to 31st.
- 1989 One to three Trimley/Levington area Jan. 1st to 6th.
- 1990 One Freston/Woolverstone area Oct. 25th and three Nov. 25th to Dec. 4th.
- 1996 One Woolverstone Jan. 13th.

Common Goldeneye *Bucephala clangula*

Suffolk Status - Common winter visitor and passage migrant.

Threshold for international importance - 3,000.

Threshold for national importance - 170.

Principal County Site for Wintering Birds

Largest County gathering: **200, Shotley, February 28th 1985**

The Orwell is the principal site in Suffolk for this species. Table 33 clearly shows that flocks of over 80 birds are regularly recorded with numbers increasing during cold weather periods. The highest gathering is of 200 at Shotley on February 28th 1985.

In 1982 a female overwintered at Loompit Lake and in 1983 a female was seen in Ipswich Docks on July 9th.

	73/74	74/75			84/85	Average
High	85	80			84	
Low	-	-			168	
	85/86	86/87	87/88	88/89	89/90	
High	99	151	85	45	71	90
Low	91	-	-	64	65	
	90/91	91/92	92/93	93/94	94/95	
High	102	86	107	60	107	92
Low	106	71	59	-	61	
	95/96	96/97	97/98	98/99	99/00	
High	178	91	45	39	54	81
Low	110	100	131	65	74	96

Smew *Mergellus albellus*

Suffolk Status - Uncommon winter visitor and passage migrant.

Highest count: **20 in 1956**

The Smew is principally a visitor to the Suffolk coast during times of hard weather. Payn (1978) recorded flocks of up to 20 or more in the hard winters of 1947, 1950, 1954, 1956 and 1963 on the coastal broads and estuaries.

In 1956 a flock of around 20 including a number of males was recorded on the Orwell and was often seen just off Cliff Quay at Ipswich. In 1979 during a severe cold weather spell this species was present from Jan. 2nd to Mar. 4th with a peak of seven on Jan. 7th and 8th.

All records for the 1980s and 1990s are as follows.

Orwell:

- 1981 One redhead Dec. 26th to the end of the year.
- 1982 One Ipswich Docks Jan. 16th to Feb. 27th.
- 1985 Up to 10 (four adult males) Ipswich Docks in mid January and nine (seven adult males) Trimley Lake Feb. 16th.
- 1986 Two females Feb. 25th to Mar. 3rd.
- 1987 Two on the Orwell plus five in Ipswich Docks in January.
- 1989 Two redheads Loompit Lake Nov. 26th.
- 1991 There were many sightings in February due to a cold weather influx. Ipswich Docks/Shotley, one to five 8th to 28th, Wherstead Strand, seven 12th and West End Road/Stoke Bridge, Ipswich, pr 8th to 17th.
- 1994 One redhead Levington Creek Mar. 8th.
- 1995 One redhead Trimley Marshes reserve Dec. 3rd to 20th.
- 1996 One Wet Dock Jan. 1st and 2nd, redhead Trimley Marshes Reserve Mar. 31st to at least Apr. 17th and two redheads Dec. 26th, 27th and 28th and one Dec. 29th.
- 1997 Up to three redheads Ipswich Docks between Jan. 2nd and 19th and single redheads at Loompit Lake Dec. 22nd and Trimley Marshes Reserve Dec. 29th.
- 1998 A redhead seen intermittently at Trimley Marshes Reserve from Jan. 3rd to Mar. 25th and three Dec 5th.

Red-breasted Merganser *Mergus serrator*

Suffolk Status - Fairly common winter visitor and passage migrant.

Thresholds for international importance - 1,250.

Threshold for national importance - 100.

Principal County Site for Wintering Birds

Largest County gathering: 169, Orwell, March 4th 1979

Payn (1978) described this species as being a rather scarce winter visitor and that the highest numbers are to be found on the Orwell estuary. He went on to report that a marked increase in numbers had taken place since about 1955 when 35 birds were counted on the river where previous to that only two or three had been present. In the following year, during a cold spell in February, 85 were counted as they flew out of the Orwell towards the sea at dusk.

The county's largest total, of 169, was recorded on the Orwell on March 4th 1979 during a severe winter weather period.

73/74	74/75	75/76	76/77	77/78	78/79	79/80	80/81	81/82
14	4	-	-	-	*169	*30	*21	*c42
82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90	90/91
13	*18	48	38	48	15	*14	*11	26
91/92	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00
15	18	15	28	63	25	74	32	52

Goosander *Mergus merganser*

Suffolk Status - Locally fairly common winter visitor and passage migrant.

Threshold for international importance - 2,000.

Threshold for national importance - 90.

This fairly common winter visitor favours inland freshwater habitats as opposed to tidal waters. Since the construction of reservoirs, and the flooding of several large areas of gravel pits, numbers have improved from between seven and 15 as quoted by Payn to regular double-figure gatherings of around 30 birds. When freshwater areas become frozen some birds may move to the upper reaches of the Orwell and in particular to Ipswich Docks.

This species has been seen on the Orwell in 10 of the last 15 years. Although Ipswich Docks is the favoured haunt, birds have been noted at Levington, Loompit Lake and Trimley Marshes Reserve. The highest number recorded on the Orwell is of 16 birds on the lower reaches of the estuary off Trimley Marshes on January 18th 1985. Another high Orwell figure occurred at the beginning of 1996 when there was a major influx into the county that resulted in 14 being present in Ipswich Docks from February 11th to 27th.

Ruddy Duck *Oxyura jamaicensis*

Suffolk Status - Uncommon resident, winter visitor and passage migrant.

Highest count: **18 November 3rd 1999**

Since the 1950s, this introduced Nearctic species has increased dramatically throughout Britain and Europe. An anticipated result of this population explosion is that it may lead to the demise of the globally endangered White-headed Duck through hybridisation and competition for territories. In order to protect the White-headed Duck the conservation

argument for control of the Ruddy Duck is overwhelming. The UK government, along with other European governments has announced a control programme.

The first occurrence of this species in Suffolk was of a single male at Minsmere on June 19th 1976. The first record for the Orwell was probably the single bird seen at Ipswich Docks/Woolverstone area on January 15th and 16th 1982. Since 1995 this duck has been present annually at Trimley Marshes Reserve in numbers varying from one to 18 birds, except in 1996.

All records are listed below:

Orwell:

- 1982 One Ipswich Docks/Woolverstone Jan. 15th and 16th.
- 1985 One Ipswich Docks/Woolverstone Jan. 9th.
- 1988 One Dec. 4th.
- 1989 One Nacton Feb. 12th

Loompit Lake:

- 1987 Three immatures Dec. 12th to the end of the year.
- 1988 Two females and one immature Jan. 1st to Feb. 6th and male and female/immature Nov. 27th.
- 1998 Male, Apr. 19th, three males and two females May 21st and two males were seen harassing a pair with two young Jul. 24th. 10 Aug. 3rd reducing to five on 14th, two Sep. 10th and one Nov. 15th.
- 1999 Between one and five present almost all year from Mar. 2nd to Oct. 10th, with three males and three females May 12th.

Trimley Marshes Reserve:

- 1995 One June 26th.
- 1997 Maximum three birds (female and two males) noted on eight dates between Apr. 12th and Jul. 14th.
- 1998 One or two females and up to seven males, maximum eight birds, were noted on 38 dates between Mar. 24th and Sep. 19th. A juvenile bird, presumed to be the bird from Loompit Lake, was noted on three dates in September. There were 10 in November and one Dec. 12th.
- 1999 Present all year with numbers varying between one and five birds up until September. There were seven on Oct. 12th and 23rd increasing to 17 on Nov. 1st and a peak count of 18 on Nov. 3rd which is the highest number recorded on the Orwell.

Suffolk's first brood was noted at Livermere Lake in 1983. On the Orwell the first time that breeding was recorded was in 1998 when a pair at Loompit Lake produced one duckling to the flying stage, which was seen later that year on the reservoir at Trimley Marshes Reserve.

Water Rail *Rallus aquaticus*

Suffolk Status – Fairly common resident, winter visitor and passage migrant.

This skulking bird is easily overlooked and, as a consequence, is seldom recorded during WeBS counts. Individual birds involving passage migrants often occur in atypical habitats. For instance, an interesting report was of two birds present throughout December 1992 at Cliff Quay Sewage Works in Ipswich Docks and another sought refuge in a field drainage pipe when disturbed on Shotley Marshes on December 10th 1991.

Ones and twos have been recorded regularly at Trimley Marshes Reserve, Loompit Lake, Bourne Park, Shotley Marshes and Levington. They probably bred at Levington in 1999.

Spotted Crake *Porzana porzana*

Suffolk Status – Rare passage migrant.

First recorded on the Orwell at Trimley Marshes Reserve in September 1999. A single bird on September 5th was joined by a second bird on the 18th until at least the 20th; the last sighting was on September 23rd.

Corncrake *Crex crex*

Suffolk status – Very rare passage migrant. Formerly bred.

There are only six records listed for the Orwell of this once-common summer visitor. The records are of single birds on passage at Shotley Marshes, Aug. 15th 1956, Aug. 28th and Sep. 13th 1958, Aug. 25th 1961, Sep. 15th 1962 and one found dead at Shotley during harvest in 1977 (Mike Packard).

Common Moorhen *Gallinula chloropus*

Suffolk Status - Very common resident, winter visitor and passage migrant.

Highest count: **157 January 28th 2000**
Number breeding in 1999: **min. 60 pairs**

The Moorhen is a very common bird on the Orwell and is found throughout the estuary both during the winter and summer months. Although this species is counted during the WeBS co-ordinated counts it is still very much under-recorded due to its often skulking behaviour. Winter and passage visitors swell the resident population. The larger

concentrations are found at Loompit Lake, Trimley Marshes Reserve and Bourne Park meadows.

The highest single count recorded on the Orwell is 130 on Trimley Marshes on January 7th 1978. Other high individual site-counts include 55 at Bourne Park on February 15th 1987, 70+ on Shotley Marshes in December 1982 and 56 January 28th 2000.

During the summer, birds are found breeding just about everywhere from the reed fringes of the upper shore, drainage ditches, ponds, reservoirs and borrow dykes to the larger expanses of wetland habitat at Loompit, Trimley and Shotley. In the 1950s, before the Levington Marina was built, the habitat of reed-fringed saltings and wind-blown broken/fallen trees that formed the upper shoreline there was a favoured breeding site. Birds used to nest in almost every tree and in one year, I recall, there were 11 nests. The number of pairs breeding on Shotley Marshes, Trimley Marshes Reserve and Loompit Lake is in the order of 14, 12 and seven pairs respectively. I would estimate that there is a minimum of 60 pairs breeding within a half a mile of the Orwell's estuary hinterland.

The highest count recorded at the Trimley Marshes Reserve was 47 in April 1994.

82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90	90/91
-	-	89	*105	101	*89	89	83	87
91/92	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00
*82	*73	122	91	62	54	36	48	157

Common Coot *Fulica atra*

Suffolk Status - Very common resident, winter visitor and passage migrant.

Threshold for international importance - 15,000.

Threshold for national importance - 1,100.

A Principal County Site for Wintering Birds

Highest count: **1,100 December 1973**

Number breeding in 1999: **c40 – 45 pairs**

In the 1950s, according to Payn (1978), the most regular wintering area in Suffolk was the Orwell estuary between Freston and Pin Mill. In the mid-1950s flocks of around 750 were recorded there. Since the construction of the Alton Water Reservoir the wintering flock on the upper reaches of the river has virtually disappeared. When the pond at Loompit was enlarged into a lake and the reservoir built at Trimley Marshes, Coot favoured these sites.

The highest number recorded on the Orwell was 1,100 birds in December 1973; these birds were split between Freston and Loompit Lake. Eleven years later another high count of 1,003 in November 1984 was almost entirely composed of birds on Loompit

Lake. There were three individual site counts at Loompit Lake in 1989, 1991 and 1992 of 500, 575 and 850 respectively that were higher than the WeBS co-ordinated counts. Other high counts not mentioned in the text above:

Ipswich Docks:

1979 350 Feb. 26th.

Loompit Lake:

1978 600 Dec. 28th.

1980 650 Dec. 20th.

1981 750 Jan.

1996 840 Nov.

	73/74	74/75			84/85	Average
High	1100	400			1003	
Low	-	-			773	
	85/86	86/87	87/88	88/89	89/90	
High	228	349	144	176	397	259
Low	242	-	-	157	431	
	90/91	91/92	92/93	93/94	94/95	
High	242	543	439	589	481	459
Low	135	575	202	-	477	
	95/96	96/97	97/98	98/99	99/00	
High	155	867	265	399	440	425
Low	135	876	309	267	469	411

The main sites where breeding occurs are Trimley Marshes Reserve and Loompit Lake. Undoubtedly a few pairs nest on at least some of the ponds and reservoirs that are to be found throughout the estuary. The number breeding at Trimley Marshes between 1997 and 1999 has averaged around 20 pairs and at Loompit Lake during the same period there have been around 20 broods annually. An estimate on the current breeding population on the Orwell is in the order of 40 to 45 pairs.

Common Crane *Grus grus*

Suffolk Status - Rare passage migrant.

The only record for the Orwell is of one bird seen in the Shotley/Flatford area on September 19th 1965.

Eurasian Oystercatcher *Haematopus ostralegus*

Suffolk Status - Very common winter visitor and passage migrant. Common resident.

Threshold for international importance - 9,000.

Threshold for national importance - 3,600.

Principal County site with the Stour for wintering birds

Present wintering population trend - feeding: **Increasing**

Present wintering population trend - roosting: **Decreasing**

Highest count: **1,680 January 1986**

Britain's wintering Oystercatchers include birds from Iceland, the Faeroes, Norway, the Netherlands, Sweden and Russia (Pienkowski in Cramp and Simmons 1983).

Over 60 years ago Ticehurst (1932) recorded that a very regular Oystercatcher passage occurred during both spring and autumn and that normally very few, if any, wintered on the Suffolk coast. The largest number reported in 1955 was of c60 on the Orwell (SBR). According to Payn (1978) the majority of Suffolk's wintering Oystercatchers congregated on the larger estuaries – 100 or more were regularly seen on the Orwell and Stour estuaries and 450 were present at Felixstowe in January 1975.

According to BoEE figures, during the early 1970s (1970/75) only small numbers (average 493) were to be found on the lower reaches of the Orwell estuary. It was not until the winter of 1984/85 that the numbers substantially increased. In that winter the principal roost site, Fagbury, held, on average, 88% of the birds found on the estuary (O'Brien and Ravenscroft 1985). In the next winter, 1985/86, Fagbury held 86% of the Orwell population. On occasions the total Orwell population roosted at Fagbury and the largest number recorded there was of 1,680 birds in January 1986.

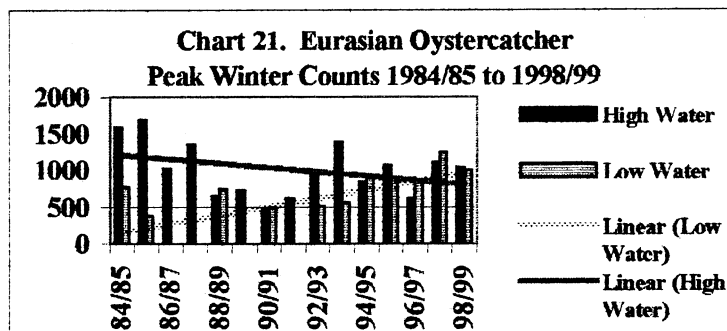
The high water figures show that numbers dropped in the latter part of the 1980s and early 1990s. This decline came at a time when both of the principal roosting sites on the Orwell, at Fagbury and Levington, suffered serious environmental damage. At Fagbury, the site succumbed to dock development whilst the Levington roost suffered through being constantly disturbed by the public and a change of habitat. The problem at Levington occurred as a result of infilling the hinterland with silt dredged from the yacht harbour. To control the pumping medium bringing the silts ashore, bunds had to be built which were also connected to the sea wall which in turn allowed the public easy access through the site to the marina.

Towards the end of the 1990s numbers began to increase again with the main concentrations, at high water, regularly being found on the Shotley and Colton Creek saltmarshes and the Trimley Marshes Reserve. However, Oystercatchers regularly pre-roost on the Levington saltmarsh.

During the early 1980s Fagbury was the most important feeding site for Oystercatchers with on average 69% (peak 94%) of the total Orwell population (Obrien & Ravenscroft 1985); this area has now been lost to port development. In the 1970s feeding Oystercatchers were rarely seen upstream from Woolverstone. Feeding birds are now distributed throughout the estuary, although the main concentrations are found on the north shore between Black Ooze and Butterman's Bay.

The population feeding on the Orwell over the last 15 years appears to have increased by around 107% whereas the number roosting has declined by around 10% .

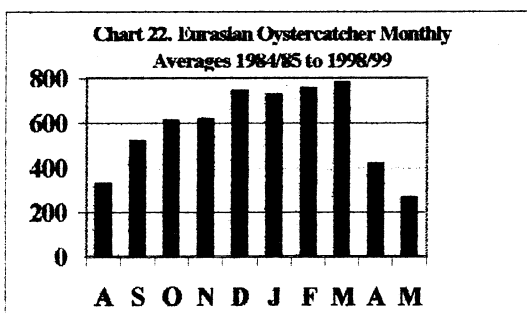
Over the last 30 years the high and low water counts have shown quite distinct periods of variation in population sizes and differences between the numbers present at high tide and low tide. From



observations in the field it is well known that there is inter-estuarine movement between the Stour and Orwell by Oystercatchers. The counts in the 1980s clearly show that birds

moving in from the Stour to form roosts at the safe refuge areas swelled the numbers of birds feeding on the Orwell. Additionally, during the winter period of 1984/85 there was an influx of birds that coincided with the onset of severe weather.

Oystercatchers can be at their roosting site up to four hours before high tide (see later). It is the dispersal from these high tide assemblages that estuary and site fidelity changes thus changing the population levels of any given area. One can only speculate that immature or young inexperienced birds bring about such changes. However, in contrast with the previous period the roosting and feeding populations during the second half of the 1990s were very similar which in turn indicates that very little inter-estuarine movement was occurring.



The non-breeding summering flock in the late 1990s of c400 often sought refuge on the Trimley Marshes Reserve.

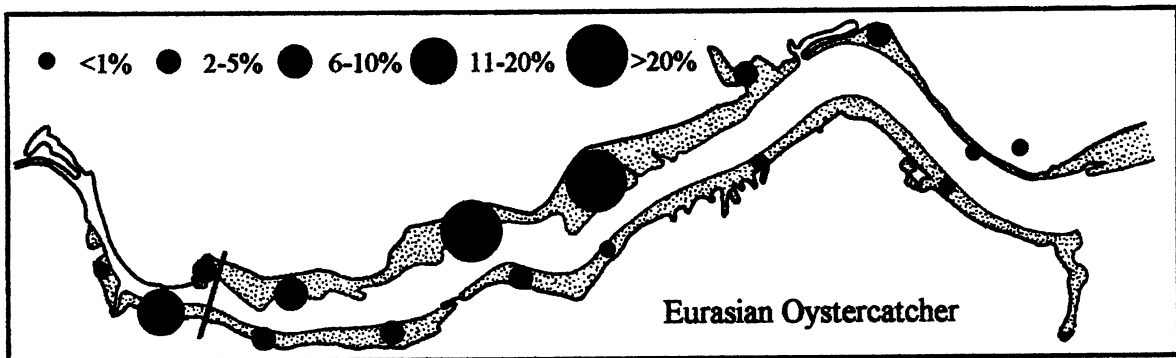
Chart 22 of monthly averages over the last 15 years shows the summering flock being supplemented by birds moving into the area from elsewhere to steadily build up in numbers to December. Thereafter maximum

numbers were maintained through into March before birds promptly departed in April for their summering areas.

	73/74	74/75			84/85	Avg
High	495	490			1590	
Low	-	-			773	
	85/86	86/87	87/88	88/89	89/90	
High	1680	1015	1350	723	726	1099
Low	363	-	-	742	516	
	90/91	91/92	92/93	93/94	94/95	
High	480	613	948	1388	841	854
Low	482	507	558	-	893	
	95/96	96/97	97/98	98/99	99/00	
High	1073	608	1100	1039	1154	995
Low	892	857	1237	1001	1602	1118

The low water counts show that Oystercatchers may be found feeding throughout the estuary (see Map 7). The mid reaches at Mulberry Middle and Nacton (Comps. E2 & F1) supported 48% of the Orwell's population.

Map 7. Eurasian Oystercatcher Feeding Densities Based on Low Water Counts 1994/95 to 1998/99.



The Orwell estuary is an important breeding site for Oystercatchers.

Hele (1870) stated that Oystercatchers used to breed in large numbers around Aldeburgh and the mere-lands at Thorpe. Sixty years later Ticehurst (1932) wrote that this species nested only rarely. In the 1950s there were only five pairs nesting on Orford Ness (Robertson 1954). Payn (1978) later talked about numbers increasing from around this period. In 1985 there were 90 breeding pairs on Orford Ness (SBR).

Data on breeding Oystercatchers for the Orwell, prior to the 1980, are virtually non-existent although a few pairs bred at Walton and Shotley and a pair nested in fields at Wherstead Strand in 1973 (M. Marsh & M. Packard *pers. comm.*). However, from the early 1980s they were breeding throughout the estuary at a variety of habitats (*pers. obs.*).

Although sparsely vegetated sandy/shingle substrates are preferred, breeding pairs can be found on structures, grassland, arable, saltmarsh areas and sea walls. However, at the present time most of the breeding pairs are confined to a few "hot-spots" and no longer breed on the sea walls because of the increase in public pressure on these areas. A survey of breeding waders and wildfowl of coastal Suffolk in 1988 – 1989 found 50 breeding pairs on the Orwell (SWT).

Black-winged Stilt *Himantopus himantopus*

Suffolk Status – Very rare migrant.

Payn (1978) considered this species to be more regular than in Babington's and Ticehurst's days. He goes on to detail the records for six occasions when this species visited Suffolk between 1945 and 1965.

Both records for the Orwell are of birds seen on the Trimley Marshes Reserve and are listed as follows:

- 1991 One July 7th to 25th.
- 1993 One June 10th to 13th.

Pied Avocet *Recurvirostra avosetta*

Suffolk Status - Common resident, summer visitor, winter visitor and passage migrant on the coast.

Threshold for international importance - 700.

Threshold for national importance - 10.*

Nationally important species during passage periods

Present population trend: **Increasing**

Highest count: **130 July 27th 1999**

Payn (1978) makes no mention of wintering birds in Suffolk although a few may well have wintered on the Butley Creek and the Ore. The Birds of Estuaries Enquiry annual reports for 1976/77 to 1978/79 gave figures for the Ore/Butley Creek of between 10 and 35 birds for the three winters. The number wintering elsewhere in Britain was of the same order. Over a relatively short period of time numbers have significantly increased to around 1,400 birds with the Alde complex being the most important site in Britain (Cranswick, Pollitt *et al* 1999).

To date, apart from the occasional single bird for a short period of time, the Avocet has not wintered on the Orwell. However, between 1974 to 1989, one to five birds were

noted irregularly during passage periods; in the 1990s the Avocet was present in nationally important numbers at Trimley Marshes Reserve (see Table 38). Numbers continue to increase with the highest recorded total to date of 130 on July 27th 1999.

1991	1992	1993	1994	1995	1996	1997	1998	1999
19	20	50	73	64	71	83	c70	130

Early in the 19th century Avocets bred regularly on the eastern and south-eastern coasts of England but there then came a period of around 100 years up to the early 1940s when no Avocets bred anywhere in England. With the outbreak of the Second World War public access to the Suffolk coast was restricted and many marshes were flooded to create a defensive barrier. These actions provided ideal habitat conditions for recolonisation by the Avocet and, as a consequence, from 1947 the species became re-established as a regular breeding bird. The RSPB reserves at Minsmere and Havergate have become the principal breeding sites in Britain with approximately 200-250 pairs there in the late 1990s. Since 1968 small numbers have colonised other suitable areas in Suffolk.

The first time that the Avocet was recorded breeding on the Orwell was in 1991 at the new Trimley Marshes Reserve and it has bred successfully there in successive years to date. In 1995 there were 30 pairs which successfully reared a minimum of 25 juveniles to the fledging stage. Breeding has also taken place at Shotley and been attempted at Levington but failed at the egg stage. In 1997 young Avocets were colour ringed with a combination that is unique to the Trimley Marshes Reserve [right leg ringed red over BTO metal, left leg yellow - all rings above the tarsus]. The left leg colour ring was changed in 1998 to orange and in 1999 to black.

	1991	1992	1993	1994	1995	1996	1997	1998	1999
Trimley	4/6	10/?	20/40	22/23	30/25	17/?	15/15	18/6	19/30
Shotley	-	-	-				4/?		

Stone Curlew *Burhinus oedicnemus*

Suffolk Status – Locally fairly common summer visitor.

The main Suffolk stronghold for this species is in the Breckland area. It formerly bred on all the heaths between the Orwell and the Blyth until numbers declined and the species disappeared from almost all of its haunts in the coastal belt of Suffolk. In recent years,

due to conservation measures, a few pairs have been trying to re-establish themselves in the coastal area.

All records for the Orwell are listed as follows:

Levington:

1972 One Feb. 11th.

Trimley Marshes Reserve:

1994 One on the main track to the reserve May 21st.

1998 One May 13th.

Little Plover *Charadrius dubius*

Suffolk Status – Fairly common summer visitor and passage migrant.

The Little Plover is a relatively recent coloniser of Britain and was first recorded breeding in this country at Tring, in Hertfordshire in 1938. It is a species that prefers gravel workings and reservoirs. On the Orwell it is bird that is recorded on passage and prior to the reserve being constructed at Trimley Marshes this species was recorded only infrequently on the lower reaches of the estuary at Walton. It has also been recorded at Levington. However, nowadays this species is recorded regularly during passage periods at the Trimley Marshes Reserve. Usually only ones and twos are recorded although three birds were recorded on July 6th 1993, five August 4th and 10th 1994 and August 30th 1995, three July 29th and August 17th and 24th 1996 and July 30th 1997. There was an early March record of the 3rd in 1997 at Trimley Marshes Reserve.

	Mar	Apr	May	Jun	Jul	Aug	Sep
1993	1	1	0	0	16	46	6
1994	0	1	1	0	14	30	1
1995	0	0	2	0	4	10	5
1996	1	11	4	0	3	21	0
1997	2	7	4	4	10	19	1
1998	0	0	5	8	12	3	0
1999	0	5	5	0	20	15	0

As far as can be ascertained Little Plovers have bred only once on the Orwell and that was at Trimley Marshes in 1990 when the reserve was under construction.

Kentish Plover *Charadrius alexandrinus*

Suffolk Status - Scarce passage migrant.

All records for the Orwell involve single birds and are listed as follows:

- 1975 Levington, female, Jun. 3rd.
1978 Walton Ferry, male, Apr. 30th and Levington May 7th and 8th.
1982 Trimley St. Martin May 16th.

Ringed Plover *Charadrius hiaticula*

Suffolk Status - Common resident, winter visitor and passage migrant.

Threshold for international importance - 500.

Threshold for national importance - 290.

Passage 300.

Principal County Site for wintering birds

No longer a nationally important wintering species

No longer a nationally important species during passage

Present wintering population trend - high water: **Decreasing**

Present wintering population trend - low water: **Stable**

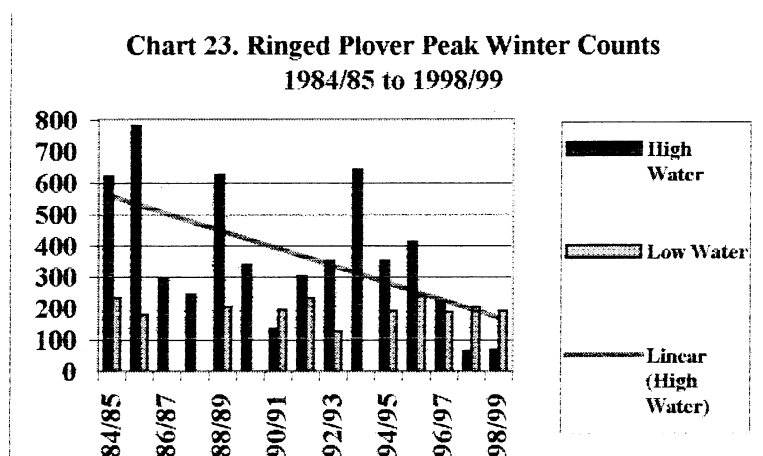
Highest count: **782 November 1985**

One of the most important breeding sites in Suffolk

There are two races of the Ringed Plover that are generally recognised: *C. h. hiaticula* which breeds in north-eastern Canada, Greenland, Iceland and south-west Europe and *C. h. tundrae* which breeds across Russia and Lapland (Cramp & Simmons 1983).

The Ringed Plover population wintering in Britain consists chiefly of those that breed in Britain, the Wadden Sea and the southern Baltic (Davidson *et al*). Autumn passage begins in July and peaks in September/October. Territorial behaviour may begin as early

as late February and at around this time birds depart for their breeding grounds. On the Orwell the peak autumn passage numbers are far greater than in the spring. Information on the numbers wintering in Suffolk prior to 1969 (BoEE launch) is almost non-existent. However, during the early 1980s the numbers on the



Orwell increased steadily (Salmon & Moser 1984). In 1984 the Orwell was the third most important estuary in Britain for this species and on the basis of average counts between 1981/82 and 1986/87 the most important estuary in Britain (WeBS). The average five-year maxima for the winters of 1985/86 to 1989/90 (456) when compared with 1995/96 to 1999/00 (240) shows a dramatic decline of 47% (see Table 41).

However, the number of birds counted during the low tide period appears to be relatively stable. The high water peak count of 432 in 1999/00 was the highest for six years. During the winter period the Orwell is no longer nationally important for this species. Wintering numbers began to decline when the intertidal areas at Fagbury were claimed for port development. Fagbury was a principal wintering site (see later).

A similar situation has occurred with numbers during autumn passage whereby the

Orwell is no longer nationally important for this species (see Table 41). Despite this loss of importance the Orwell estuary is still a principal site in Suffolk. The highest number recorded on the Orwell is 782 in November 1985.

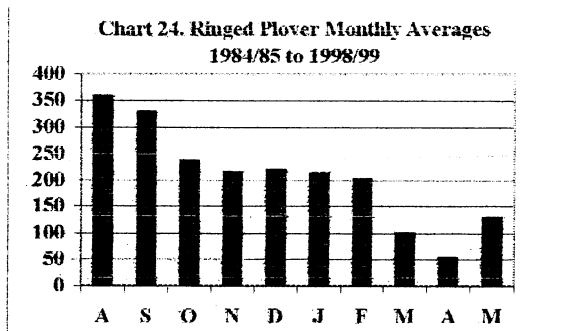


Chart 24 shows that the birds on passage migration peak during August and the wintering birds remain remarkably constant between November and

February. Birds during the spring passage period are notable during May.

Observations of birds showing characteristics of the *tundrae* race have been recorded on several occasions during the early autumn on the Orwell.

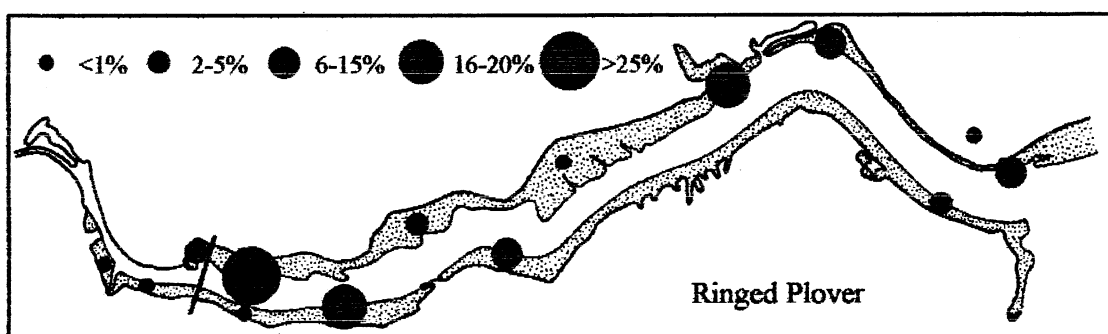
Table 41. Ringed Plover Winter Peaks and Five Year Average Maxima Based on High and Low Water Counts

	73/74	74/75			84/85	Average
High	75	172			620	
Low	-	-			234	
	85/86	86/87	87/88	88/89	89/90	
High	782	292	243	625	338	456
Low	177	-	-	204	274	
	90/91	91/92	92/93	93/94	94/95	
High	133	302	352	643	248	336
Low	197	150	127	-	190	
	95/96	96/97	97/98	98/99	99/00	
High	411	226	63	67	432	240
Low	239	186	205	191	266	217

	73/74	74/75			84/85	Average
Spring	20	98			-	
Autumn	259	265			508	
	85/86	86/87	87/88	88/89	89/90	
Spring	-	162	131	40	28	
Autumn	442	437	485	566	538	494
	90/91	91/92	92/93	93/94	94/95	
Spring	53	56	114	106	120	90
Autumn	237	175	341	255	583	318
	95/96	96/97	97/98	98/99	99/00	
Spring	-	9	-	-	-	
Autumn	56	239	309	-		

The low water counts reveal that Ringed Plovers may be found feeding throughout the estuary (see Map 8). Over the last five winters (1994/95 to 1998/99) 20% of the Orwell's Ringed Plovers have preferred the intertidal area of Pond Ooze (Comp. F2). High concentrations are to be found at two other areas, Levington (Comp. E1) and Freston Hard (Comp. B2).

Map 8. Ringed Plover Feeding Densities Based on Low Water Counts 1994/95 to 1998/99.



The Ringed Plover has been subject to a number of breeding surveys. Piotrowski (1980) comprehensively reviewed and discussed the 'History of the Ringed Plover in Suffolk' as a breeding bird both in Breckland and on the coastal strip. The national census in 1973/74 provided a baseline for subsequent surveys that were carried out in 1979 (SOG) and 1985 (BTO). In addition, breeding numbers of Ringed Plovers have been recorded during other surveys which include: Breeding Wader and Wildfowl survey of Coastal Suffolk 1988/89 and the Suffolk River Valleys and Coast Breeding Wader and Wildfowl survey 1997 (see Table 43).

	1973/74	1979	1985	1988/89	1997	1999
Suffolk	95	223	183	107	-	-
Orwell	-	min 10	16	32	34	25

The survey results for 1979 found a marked increase on the national census figures of 1973/74; however, the 1985 survey found that the overall county population had declined by 20% since 1979 (Waters 1985). The 1988/89 survey that was organized by the SWT Estuary Project found that the breeding population had decreased by a further 41% (Holzer *et al* 1989). This survey revealed that the Orford Ness population had drastically declined from 53 pairs in 1979 and 34 pairs in 1985 to only 13 pairs. Conversely, the Orwell population had increased from 16 pairs to 32 pairs and to date is the most important site in Suffolk. My estimate, from personal observations of breeding numbers, for 1999 is of around 25 pairs, a decline of 26% in only two years, which is due to habitat loss on the lower reaches of the Orwell at Fagbury.

Ringed Plovers nest at a variety of locations throughout the estuary although they clearly prefer sand and shingle areas. They have been found nesting on infill areas of soil/rubble, dried mud and arable fields. A few pairs breed each year on the Trimley Marshes Reserve and in some years they have succeeded in raising young to the flying stage. However, although the wetland habitat is to their liking they are nesting in the wrong place, as they are no match for other waterbirds such as Moorhens which heavily predate them. The most important breeding "hot-spot" on the Orwell is the harbour wall of Levington Marina where there may be between 10 and 14 pairs. Even at this isolated spot birds are being disturbed all too frequently by marina clientele. In 1999 there were 10 pairs and despite some pairs having more than one clutch of eggs it is the first time that I have recorded no young fledging from this site. On a brighter note discussions are taking place in order to safeguard this important wildlife site.

Unfortunately, the Orwell's habitat for breeding Ringed Plovers is under intense pressure from an increase in the number of people accessing these sensitive areas. The birds have been pushed out from some of their former breeding areas and, as with the decline elsewhere in coastal Suffolk, it has been attributed to increased public pressure (Waters 1985 & 1988).

European Golden Plover *Pluvialis apricaria*

Suffolk Status - Common winter visitor and passage migrant.

Threshold for international importance - 18,000.

Threshold for national importance - 2,500.

The Golden Plover occurred in great numbers "at times" on the Orwell at Walton and Levington according to Babington (1884). Ticehurst (1932) recorded flocks of between

3,000 and 4,000 while Payn (1978) recorded flock sizes of around 300-400 as being the norm although exceptions included on occasions flocks of up to 2,000. In the 1990s flocks of around 300 to 500 have been regularly recorded and on occasions four-figure numbers have occurred. The largest gatherings recorded in Suffolk are of 6,000 at both Blythburgh on January 22nd 1995 and Gt. Livermere February 15th 1995.

On the Orwell autumn birds arrive in August and are generally first seen on the inter-tidal areas at Levington. Over the winter period birds are local in their distribution, preferring the marshes at Trimley and Shotley. Numbers vary from small parties of around 40 birds to flocks involving several hundred birds. The frequency with which the birds are present varies enormously; sometimes they are present only for a few days while on other occasions they may be present for weeks at a time. Birds are seen in greater numbers and more frequently during hard weather periods.

Flocks of over 200 birds are recorded regularly between November and March with the highest numbers occurring during February and March on Trimley Marshes. The highest gathering there was 719 in March 1996 and on two other occasions c700 were seen, on March 1st 1993 and March 3rd 1995.

Grey Plover *Pluvialis squatarola*

Suffolk Status - Common winter visitor and passage migrant.

Threshold for international importance - 1,500.

Threshold for national importance - 430.

No longer a nationally important wintering species

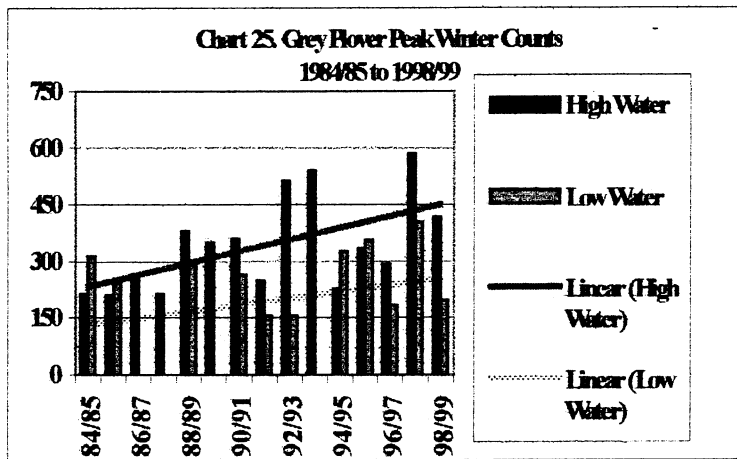
Present wintering population trend: **Increasing**

Highest count: **585 January 1998**

The Grey Plover is a medium to long distance migrant; those that visit Britain are entirely of Siberian origin (Branson & Minton 1976). There are no races recognised.

In Suffolk the Stour is the most important site for this species. In 1976 a flock of 600 was recorded there; Payn (1978) considered that this was as high a wintering population as any known to Ticehurst. Nowadays, on the Stour, numbers have increased considerably; in the winter of 1997/98 a peak of 1,705 was recorded.

In Britain throughout the 1970s and into the 1980s there was a dramatic increase in wintering numbers; there then followed spectacular increases towards the end of the 1980s. The population wintering in Britain in 1988/89 peaked at 40,403 birds (Salmon, Prys-Jones and Kirby 1989). Numbers increased still further in the 1990s but now remain stable at around 45,000 birds.



Over the same period numbers have increased considerably on the Orwell from a peak of 63 in the early 1970s to a peak of 585 in the late 1990s. The five-year average winter maxima over the last 15 years have increased by 31% from 282 (1985/86 – 1989/90) to 369 (1995/96 – 1999/00). Over the same period it appears

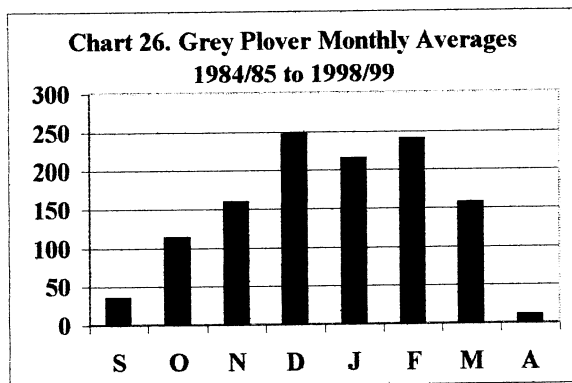
that the population feeding has increased by 18%. In the late 1980s the Orwell was regularly supporting nationally important populations but owing to the East Atlantic population estimates being revised for the winter of 1991/92 the Orwell no longer qualifies (Cayford & Waters 1996). The Grey Plover has peaked only three times above the new threshold required for national importance; the highest recorded count to date is 585 in January 1998. The peak number of Grey Plovers more than doubled in size between 1984/85 and 1993/94; thereafter, for three winters numbers fell but in the late 1990s have increased again to peak at their highest ever levels (see Chart 25). The trend in the Grey Plover wintering population is upward.

Table 44. Grey Plover Wintering Peaks and Five Year Average Maxima Based on High and Low Water Counts

	73/74	74/75			84/85	Average
High	60	63			212	
Low	-	-			313	
	85/86	86/87	87/88	88/89	89/90	
High	208	262	212	380	350	282
Low	242	-	-	291	198	
	90/91	91/92	92/93	93/94	94/95	
High	359	248	511	539	226	377
Low	263	156	156	-	327	
	95/96	96/97	97/98	98/99	99/00	
High	333	294	585	417	214	369
Low	354	183	405	196	298	287

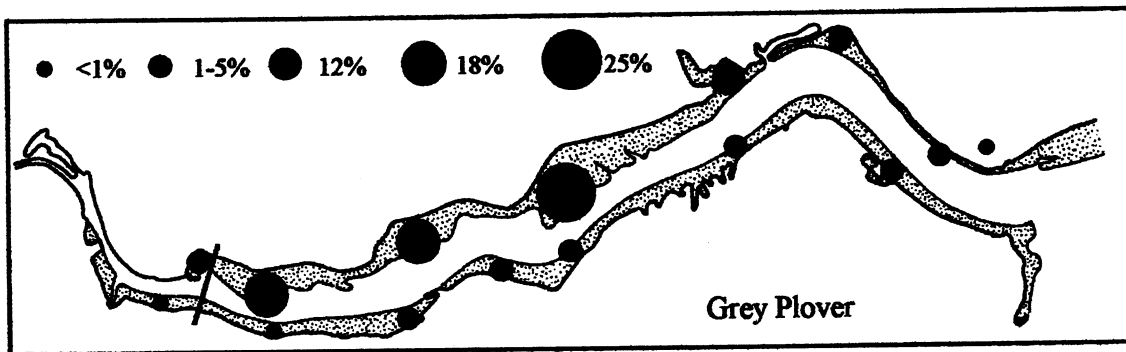
Grey Plovers begin to arrive from their breeding grounds during early autumn and build up in numbers to peak in December.

Numbers remain high throughout mid-winter before the birds leave for their breeding grounds in March and by April almost all have gone (see Chart 26).



Grey Plover can be found feeding on all areas of mudflat throughout the estuary. However, there is a preference for the north shore between Black Ooze and Nacton Shores (Comps. E2, F1, F2 & F3).

Map 9. Grey Plover Feeding Densities Based on Low Water Counts 1994/95 to 1998/99.



Northern Lapwing *Vanellus vanellus*

Suffolk Status - Very common winter visitor and passage migrant. Declining as a breeding species.

*Threshold for international importance - 20,000**.*

*Threshold for national importance - 20,000**.*

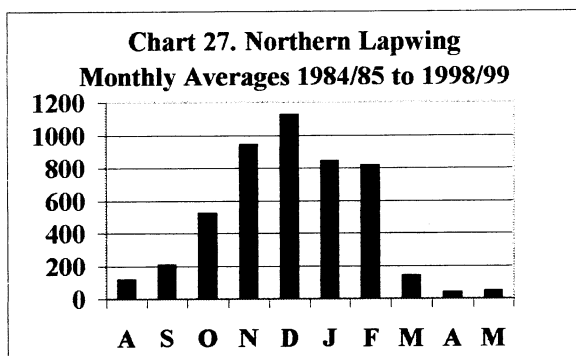
Highest count: **4,001 on December 16th 1992**

Number breeding in 1999: **c40 pairs**

The Lapwing is distributed widely throughout Europe and almost all of temperate Russia. Dispersal from breeding grounds begins in late May and June when adults make long westward movements. British breeders, however, mainly make short journeys. Summer movements merge with autumn migrants during September to November as increasing

numbers of juveniles leave their natal areas. Spring passage begins from late January. The variability and timing of Lapwing movements are compounded still further through reactions to hard weather periods and to local feeding patterns.

Lapwings are typically diurnal migrants. However, during night-time mist netting sessions, I have witnessed on many occasions birds, presumably, moving from inter-tidal haunts to terrestrial ones. Numbers fluctuate greatly between years; assemblages from just a few birds to several thousand can be found throughout the Orwell on the inter-tidal areas of both mudflat and saltmarsh. In addition, they can be found on any area of arable hinterland. Most observations appear to involve loafing birds especially those within the inter-tidal areas.



The pattern of migration as described above is not readily obvious from Chart 27. However, there is a clear winter peak in numbers in December and an abrupt drop in numbers in March.

The co-ordinated waterfowl counts have recorded Lapwings in excess of 3,000 birds on 10 occasions between 1984/85 and 1998/99. The highest recorded count was of 4,001 on December 16th 1992.

Lapwings seen at Levington and Trimley on the arable fields that border the A14, which may number in excess of 5,000 birds, have not been included in this report as they are considered to be outside the hinterland area.

When comparing the figures for the low water counts with those from the high water counts it appears that, on a regular basis, more birds are present during the low water period. This suggests that the inter-tidal areas are a safe refuge for loafing birds.

	73/74	74/75			84/85	Average
High	595	1370			3094	
Low	-	-			210	
	85/86	86/87	87/88	88/89	89/90	
High	1242	1604	1300	1518	1714	1476
Low	488	-	-	1630	1223	
	90/91	91/92	92/93	93/94	94/95	
High	1279	1433	1684	1033	3331	1752
Low	1150	3846	4001	-	3728	
	95/96	96/97	97/98	98/99	99/00	
High	1744	1198	998	954	1327	1244
Low	3888	3876	2077	2037	2115	2799

The Lapwing has been decreasing as a breeding bird since former times when pressure was exerted upon them when the birds and their eggs were considered a delicacy. Since the early 1960s to the present time breeding numbers have declined substantially. Between the two Atlas periods of 1968/72 and 1988/91 there was a decline of 9% (Gibbons 1993) and between the BTO national surveys of 1987 and 1998 there was a dramatic decline of 49% (Wilson 1999). The decline was most severe in south-western England and Wales and a similar decline was apparent in Suffolk (see Wright 1999).

Information on breeding Lapwings on the Orwell is scarce. I can remember several pairs nesting on Trimley Marshes during the late 1950s, and they were also breeding on Shotley Marshes (Packard *pers. comm.*). Blindell (1974) documented that there were 30 pairs on Shotley Marshes and c20 pairs on Trimley Marshes. Undoubtedly in the 1970s and 1980s Shotley Marshes was the most important breeding area on the Orwell. Table 43 gives an insight into the number of broods and pulli that were ringed by Ian Peters in the 1970s and 1980s.

	1970	1973	1974	1976	1977	1978	1981	1982	1983	1984	1985	1986
Broods	5	18	7	12	11	15	15	6	37	11	17	3
Pulli	10	38	22	20	17	26	39	12	93	30	41	6

A survey of breeding waders and other waterfowl on the coastal marshes and saltings of Suffolk in 1988 found 18 pairs of Lapwing breeding on the Orwell; all except one pair were on Shotley Marshes. In 1997 the Suffolk River Valleys and Coast Breeding Waders and Wildfowl Survey found 30 pairs on the reserve at Trimley Marshes and 16 pairs on Shotley Marshes. See Table 47 for breeding numbers since 1992 on the wetland reserve on Trimley Marshes.

1992	1993	1994	1995	1996	1997	1998	1999
20	29	38	33	29	30	26	32

Red Knot *Calidris canutus*

Suffolk Status - Locally common winter visitor and passage migrant.

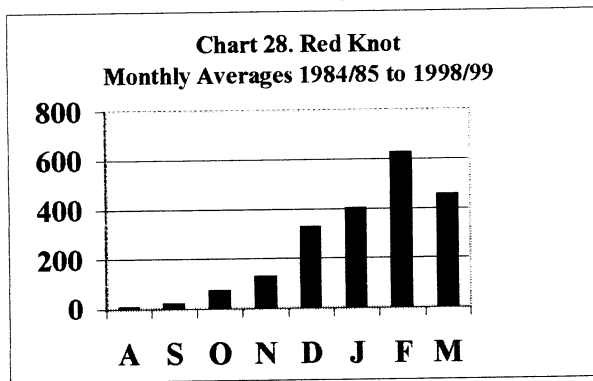
Threshold for international importance - 3,500.

Threshold for national importance - 2,900.

Highest count: **3,651 on February 5th 1998**

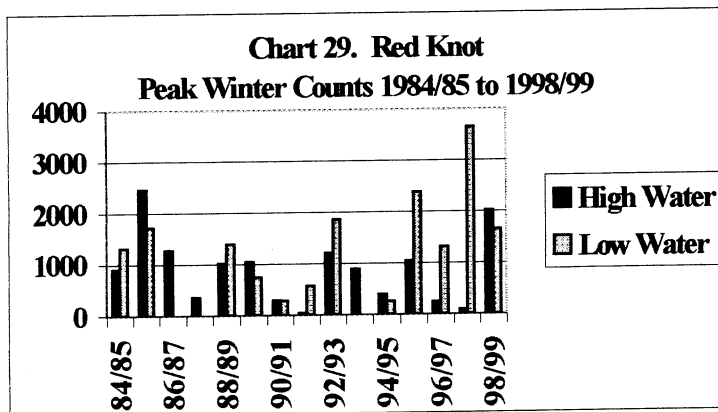
There are two populations of Knot which migrate through Britain. The sub-species *canutus* breeds in the Taimyr and winters in Africa and *islandica* which breeds in Greenland and north-western Canada and winters in western Europe.

On the Orwell the Knot is a regular winter visitor although numbers may vary



considerably with higher numbers occurring during times of hard weather. In some winters only a few birds may be present and only then for a short period of time while in other years there may be several thousand birds present. The Knot has peaked only once above the level required for national importance and that was on February 5th 1998 with a total of 3,651. The peak month for Knot is February and by the end of March they have all left for their breeding areas.

Both high and low water count peaks indicate just how variable numbers can be between years. It also evident from Chart 29, especially for the latter part of the 1990s, that a

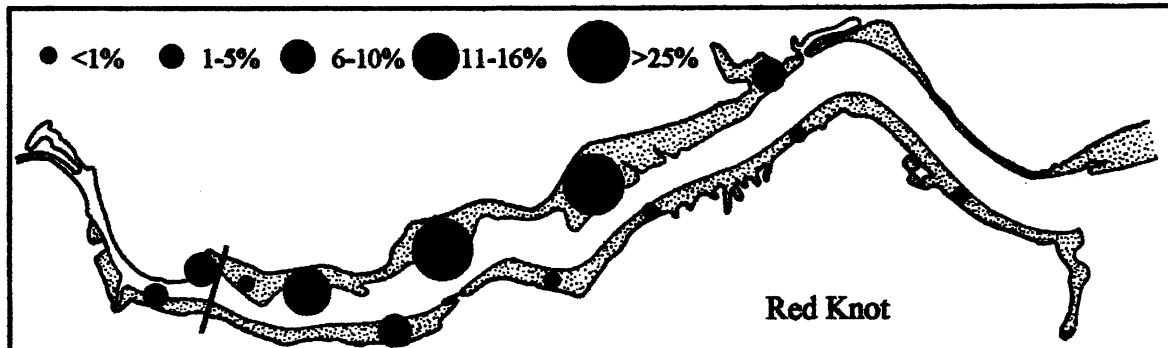


higher number of birds have been counted at low water. This suggests that either a roost site has been missed or birds have moved elsewhere. I have witnessed Knot, on many occasions, leave the Orwell to roost on the Stour. An albino bird was noted at Wherstead on January 29th 1998.

Table 48. Red Knot Wintering Peaks and Five Year Average Maxima Based on High and Low Water Counts						
	73/74	74/75			84/85	Average
High	125	335			898	
Low	-	-			1303	
	85/86	86/87	87/88	88/89	89/90	
High	2449	1260	350	1005	1027	1218
Low	1708	-	-	1384	725	
	90/91	91/92	92/93	93/94	94/95	
High	280	40	1190	878	391	556
Low	265	564	1850	-	252	
	95/96	96/97	97/98	98/99	99/00	
High	1030	246	82	2002	350	742
Low	2372	1305	3651	1645	2237	2242

Knots have a preference for the north shore of estuary between Black Ooze and Nacton Shores (Comps. E2, F1, F2 & F3).

Map 10. Red Knot Feeding Densities Based on Low Water Counts 1994/95 to 1998/99.



Sanderling *Calidris alba*

Suffolk Status - Regular winter visitor and passage migrant in small numbers.

Threshold for international importance - 1,000.

Threshold for national importance - 230.

Passage - 300.

Highest count: **46 on February 21st 1989**

Sandy substrates and shores are the favoured haunts of this species; hence in Suffolk only small parties are encountered. They are regularly found wintering on the coast at Lowestoft.

A few birds used to winter on the lower reaches of the Orwell estuary at Walton Ferry and Fagbury but unfortunately they no longer do so because of habitat loss to dock development. During the construction of the Trimley Terminal by the Port of Felixstowe during 1988/89 to 1990/91, Sanderlings, regularly exploited the infilling operation that brought fresh sands and gravel to the inter-tidal area. The highest counts for the Orwell were recorded during this period. The peak counts were 29 December 7th 1988, 46 February 21st 1989, 45 January 29th 1990, 32 November 12th 1991 and 31 February 7th 1992. Nowadays only one or two birds are recorded, infrequently, on the reserve at Trimley Marshes.

Semipalmated Sandpiper *Calidris pusilla*

Suffolk Status - Accidental.

Suffolk's third record of this American vagrant and the first for the Orwell occurred at Trimley Marshes as detailed below:

1993 May 13th and 14th.

Little Stint *Calidris minuta*

Suffolk Status - Fairly common passage migrant. Occasionally overwinters.

The Little Stint is usually found singly or in parties of around three; small flocks of 10 or more are rare. Occasionally one or two birds will overwinter but generally they are seen regularly during the spring and autumn passage periods.

This small wader was observed on the Orwell in only 11 of the years between 1974 and 1990. Most observations involved single birds at Levington although there was a peak of

11 birds on September 3rd 1975, which frequented the Levington/Trimley area. At Walton Ferry there were two birds on June 6th 1977 and June 20th 1989 and also on this date there were three at Levington. In October 1990 there were three at Levington and five at Loompit Lake.

During the 1990s the bulk of the records came from the Trimley Marshes Reserve (see Table 49); high counts included nine June 2nd 1992, and 15 September 15th 1996 which is the highest count so far recorded for the Orwell. Two other noteworthy counts during this period came from Loompit Lake where eight were seen in May 1991 and six at Wherstead Strand on August 30th 1992. Overwintering by this species was noted in 1993/94 and 1995/96 and the second half of the 1996/97 winter.

	J	F	M	A	M	J	J	A	S	O	N	D
1993	0	0	0	2	10	0	0	42	44	0	5	2
1994	8	5	16	19	16	2	4	0	0	1	0	0
1995	0	0	4	0	0	0	0	0	9	0	2	0
1996	3	0	5	9	0	4	0	2	116	10	0	0
1997	0	4	1	3	2	0	1	2	0	0	0	0
1998	0	0	4	1	1	0	2	5	14	14	1	0
1999	0	0	2	0	1	0	0	7	12	2	0	0

Temminck's Stint *Calidris temminckii*

Suffolk Status - Uncommon passage migrant.

At the turn of the century, this species was commonly seen on passage, being described by Ticehurst (1932) as "very regular". Payn (1978) described this species as being rare. Now it is uncommon with only a few birds seen on the coast (and occasionally inland) each year. It appears that this species was recorded in only one year (1980) prior to the creation of the new reserve at Trimley Marshes where it is almost an annual visitor. It is worthy of note that the Levington bird on August 17th to 19th 1980 was colour-ringed. This bird was ringed as a pullus at Fuise, Hordaland, Norway on July 1st 1980. All records for the Orwell are as follows and relate to single birds unless otherwise stated:

Levington Creek:

1980 May 24th, Aug. 17th to 19th and Sep. 3rd.

Trimley Marshes Reserve:

1991 May 10th to 17th and three May 25th to 27th.

1992 May 23rd, 24th, 27th, 28th and 30th involving at least two birds.

1993 May 14th.

1994 May 10th.

- 1995 Two May 11th.
 1997 Aug. 23rd.
 1998 Two May 13th. -

Pectoral Sandpiper *Calidris melanotos*

Suffolk status - Scarce passage migrant.

This scarce passage migrant from North America is recorded in Suffolk almost annually. There are four records for the Orwell, all from Trimley Marshes Reserve.

- 1990 One Jul. 25th to 30th, a second bird Jul. 31st, both remaining to Aug. 3rd, one to Aug. 9th.
 1991 One Jun. 30th.
 1999 One Sep. 12th to 21st.

Curlew Sandpiper *Calidris ferruginea*

Suffolk Status - Regular passage migrant in varying numbers.

This sandpiper is a regular bird of passage although its numbers vary between years. In some years, especially during spring, it is scarce or even absent. Generally numbers are small and it is usually seen singly. Flocks may number up to 10 birds; higher double-figure flock sizes are rare.

A wintering Curlew Sandpiper, a rare occurrence, was seen on the Orwell in January 1956. This species was recorded in eight of the years between 1974 and 1989 and most observations involved single birds. Although all records are noteworthy, the following involved flocks of five or more birds: five (probably involving single birds) on the Orwell from May 19th to June 14th 1975 and five at Levington August 30th and September 3rd 1975; between three and five at Levington September 14th to 22nd 1979; five Levington August 25th 1982 and 21 at Levington on September 11th 1988. Since the construction of the reserve at Trimley Marshes there have been more records of Curlew Sandpipers on the Orwell. All records for the 1990s are for Trimley Marshes Reserve unless otherwise stated and are as follows:

- 1990 Two Jun. 18th and one Loompit Lake Oct. 4th.
 1991 One Jul. 24th to 27th and three Aug. 16th.
 1992 One Apr. 26th, three Apr. 27th, May 9th; two May 11th to 17th, May 19th to 23rd and Jun 4th and one Fagbury May 31st. Present from Jul. 29th to Aug. 31st, max 12 Aug. 4th and 13 Aug. 6th.
 1993 Three May 13th, 14th and 16th, two 15th and singles on three dates in May.
 Three Jul. 15th, four Jul. 18th and 22nd and singles on five dates in July, a peak of

- 20 Aug. 2nd, nine Aug. 11th, six 26th, 27th and 30th and between one and four birds on 11 dates in August. Seven Sep. 1st and thereafter between one and four on nine dates in September to 14th. One Levington Aug. 15th.
- 1994 Two Jul. 13th, six Jul. 27th, five 25th and 26th, four 28th, three 22nd to 24th and 30th, two 29th and singles 14th and 15th and three Loompit Lake Sep. 3rd.
- 1995 Two Jun. 13th and singles May 4th and Sep. 13th and one Levington Aug. 1st to 7th.
- 1996 One May 5th, 16 Sep. 28th, five Sep. 30th, two Sep. 11th, 12th and 14th, one 13th and 21st and one Oct. 21st and 26th.
- 1997 One Jul. 6th to 8th.
- 1998 Two May 13th, 14th and 16th, one May 10th, 19th, 30th and 31st, two Jul. 20th, one Jul. 25th, Aug. 17th, 21st and 22nd and Sep. 2nd and 13th.
- 1999 Five Aug. 31st, six Sep. 1st, five Sep. 2nd and 8th, two Sep. 2nd and 20th and one Sep. 5th and 8th.

Purple Sandpiper *Calidris maritima*

Suffolk Status - Regular but very local winter visitor. Scarce passage migrant.

The main wintering concentrations of this species are on the coasts of north-eastern England and eastern Scotland. In Suffolk its favourite haunt is the seaweed-covered sea walls and groynes at Lowestoft where small numbers occur annually.

The Purple Sandpiper is rarely encountered on the Orwell estuary. Single birds were noted in only 11 years between 1956 and 1999. Most of these observations came from Ipswich Docks although singles have been noted at Levington, Shotley and Walton Ferry and on the rocks beneath the Orwell Bridge.

Dunlin *Calidris alpina*

Suffolk Status - Very common winter visitor and passage migrant.

Threshold for international importance - 14,000.

Threshold for national importance - 5,300.

Passage - 2,000.

Nationally important wintering species

Present wintering population trend - feeding: **Stable/Decreasing**

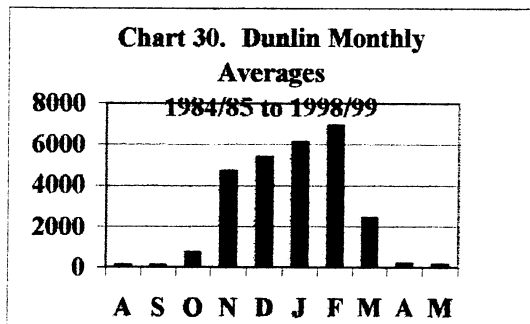
Present wintering population trend - roosting: **Decreasing**

Highest count: **17,634 February 13th 1996**

Dunlin breed mainly in the Arctic but extend to much lower latitudes in western Europe, with some breeding in Ireland and northern and western Britain. There are three sub-species of Dunlins that are known to occur on the east coast of Britain. Our breeding

birds are of the race *schinzii*. In winter, Britain is an important wintering ground for *alpina* birds from northern Scandinavia and northern Russia, and staging post during migration for *arctica* birds from north-eastern Greenland and *schinzii* birds from south-eastern Greenland, Iceland, the Baltic and the Netherlands which winter in Africa.

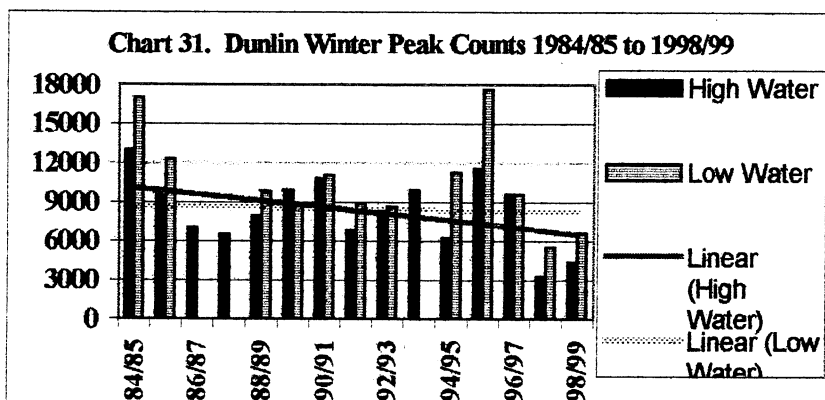
The Dunlin is the most numerous species of waterbird to be found on the Orwell estuary and is present in nationally important numbers.



Small numbers of birds occur on passage during late summer and early autumn. Winter populations arrive in November and steadily increase to peak in numbers in February. A major exodus occurs in March as birds leave for their breeding grounds and only a small

number occur during the spring passage period.

When comparing the high water figures for the five-year average maxima over the last 15 years, a decline of 21% is evident whereas the low water counts over the last 10 years



show a decline of around 8%. Since the winter of 1995/96 for both high and low water figures there is a worrying downward trend. The counts for 1999/00 were markedly down on 1995/96 by over 70%. Over the same period the nationally

trend has been stable. On two occasions Dunlin numbers have peaked over the level required for international importance. Both records relate to feeding birds; the first was on January 24th 1985 when 17,014 were present and the other was on February 13th 1996 when 17,634 birds were counted.

The principal roost site in the 1970s was the field roost at Wherstead Strand and during the 1980s it was at Levington but due to changes there (see Oystercatcher) in the late 1980s and early 1990s the roost was abandoned. At around this time large numbers moved out of the Orwell to roost on the Stour. I have witnessed this massive local movement on numerous occasions. For example, on January 4th 1991 over a two-hour period, from four and half-hours from top tide, flocks that reached an overall total of 4,600 birds left the Orwell for the Stour. On another occasion, c1,450 birds on January 21st 1991 were seen flying to the Stour to roost. Dunlins have also been recorded flying

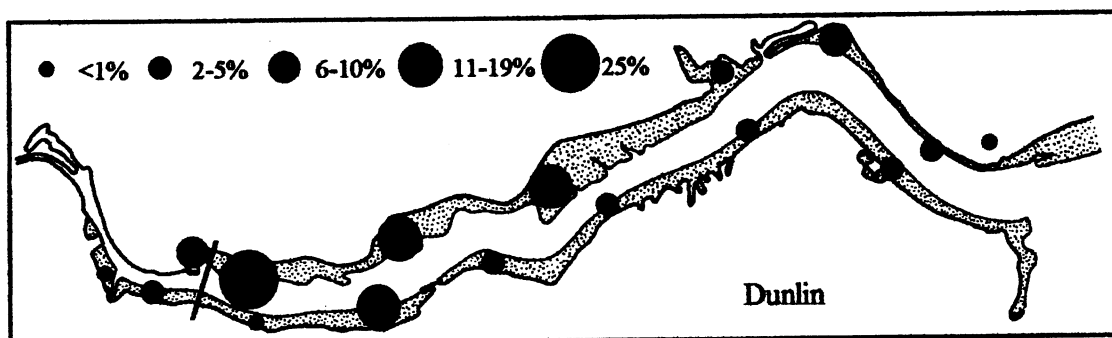
from the Stour back into the Orwell; one such count involved c1,200 birds flying low over the water on November 21st 1991.

It is also worthy of note that on one occasion during a four-year study of the birds at Fagbury, Dunlin lifted off and flew to the Deben. My record is as follows 'November 21st 1991, calls from certain individuals caused some birds to lift off, gain height immediately and then to fly high in the direction of the Deben until they were out of sight (typical behaviour of birds on passage)'. This event occurred seven times and involved 185 birds leaving the site in this way, and to my knowledge this is the first record of this type.

	73/74	74/75			84/85	Average
High	7375	7933			12972	
Low	-	-			17014	
	85/86	86/87	87/88	88/89	89/90	
High	9500	6970	6500	7900	9933	8161
Low	12323	-	-	9837	8652	
	90/91	91/92	92/93	93/94	94/95	
High	10813	6786	8300	9900	6185	8397
Low	11054	8873	8595	-	11226	
	95/96	96/97	97/98	98/99	99/00	
High	11565	9576	3210	4357	3353	6412
Low	17634	9569	6977	6634	4976	9158

The low water counts show that Dunlin may be found feeding throughout the estuary (see Map 11). There is a preference for the muddier substrates with the highest concentration at Pond Ooze (Comp. F2). Other high concentrations are at three other areas, Woolverstone (Comp. B3), Mulberry Middle (Comp. F1) and Nacton Shores (Comp. E2).

Map 11. Dunlin Feeding Densities Based on Low Water Counts 1994/95 to 1998/99.



Stilt Sandpiper *Micropalama himantopus*

Suffolk Status - Accidental.

This North American vagrant had only been recorded in Britain on 22 previous occasions. This is Suffolk's third record and the first for the Orwell.

1990 Trimley Marshes, adult, Aug. 7th to 19th.

Ruff *Philomachus pugnax*

Suffolk Status - Common passage migrant. A few oversummer and winter.

Threshold for international importance - 10,000.

Threshold for national importance - 7.*

Principal County site for birds on passage

Highest count: **80 May 1st & 2nd 1994**

In Suffolk the Ruff is seen during both spring and autumn passage periods. Spring birds arrive in March and some will linger on into June. Autumn passage is more marked from July to September and October/November records are not uncommon. Occasionally a few birds overwinter.

Records of Ruff up until the construction of the reserve at Trimley Marshes were scarce. Birds were recorded in 13 of the years between 1974 and 1991 and mostly involved single birds at Levington, Wherstead Strand, Freston, Ipswich Docks and Shotley. The highest counts for this period were 38 on Shotley Marshes April 4th 1981, seven at Levington January 1st 1989 and 10 in May 1991. Subsequently, almost all of the Ruff records have come from Trimley Reserve and in some years exceptional numbers have occurred there. The highest count of Ruff at Trimley is of 80 on May 1st and 2nd 1994.

1992	1993	1994	1995	1996	1997	1998	1999
Apr. 23rd	Apr. 21st & 22nd	May 1st & 2nd	Aug. 2nd	Aug. 9th	May 3rd	Sep. 26th	Aug. 12th
62	46	80	18	c20	40	18	14

Autumn passage, especially in July and August, is the best period for Ruff at Trimley Marshes (see Table 52).

	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1993	0	4	5	38	14	193	244	64	0	0	0
1994	0	22	98	301	7	408	146	19	0	2	0
1995	0	5	52	30	19	190	198	7	3	0	0
1996	0	27	20	3	4	93	234	92	12	2	0
1997	0	21	119	101	1	55	93	24	0	0	3
1998	1	17	11	4	3	129	149	68	0	0	0
1999	0	0	1	11	5	56	124	45	0	0	0

Ruff used to breed in the Fen lands of East Anglia. However, breeding ceased in the 19th century due to the loss of habitat through drainage and the killing of birds and taking of their eggs for consumption. Displaying and fighting birds have been noted on Trimley Marshes Reserve but there has been no attempt at breeding.

Jack Snipe *Lymnocyptes minimus*

Suffolk Status - Fairly common passage migrant and winter visitor.

Highest count: **c40 January 1976**

This secretive small bird prefers marshland and wet grassland, often where rank vegetation is to be found such as poached margins of reed-fringed dykes. It also frequents the saltings of inter-tidal areas. Because of its solitary nature and its habit of taking flight at the very last moment it is easily overlooked, and as a consequence is under-recorded.

Jack Snipe have been recorded annually on the Orwell since 1974. Regular haunts that are preferred by this species include Shotley Marshes, Bourne Park water meadows, Levington reed bed and lagoon and Trimley Marshes Reserve. All records, even of single birds, are noteworthy. The following records, since 1974, are for those that involved four or more birds:

- 1974 Eight Bourne Bridge Mar. 22nd, six Bourne Park Dec. 21st and four Freston Nov. 23rd.
- 1975 Nine Levington Mar. 27th, five Oct. 20th and seven Nov. 1st.
- 1976 c40 Shotley Marshes in January and five Bourne Park Mar. 29th.
- 1977 Six Bourne Park Jan. 30th.
- 1978 Up to four Bourne Park in January and February.
- 1982 Up to eight noted regularly at Bourne Park in December.
- 1983 Up to nine at Bourne Park in December.
- 1984 Maximum of six at Bourne Park in the period Jan-Mar.

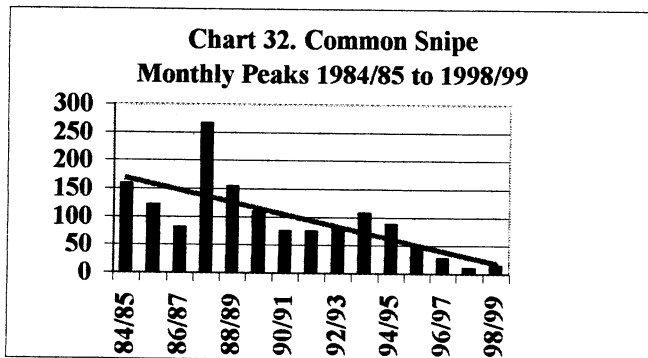
- 1987 Four Shotley Marshes Oct. 4th.
- 1988 Eight Shotley Marshes Dec. 16th and four Bourne Park Dec. 11th.
- 1989 Nine Shotley Marshes in January.
- 1990 Up to eight Levington Nov. 7th and 9th and max. five Bourne Park Nov. 3rd.
- 1991 Maximum of 10 Levington Apr. 2nd.
- 1997 Four Levington Apr. 29th.

Common Snipe *Gallinago gallinago*

Suffolk Status - Common winter visitor and passage migrant. Small numbers breed.
Threshold for international importance - 10,000.
Threshold for national importance - ?

Present wintering population trend: *Decreasing*
 Highest count: **c500 December 30th 1981**

The Snipe is a secretive and tight-sitting bird that prefers wet grassland, boggy margins and saltmarsh. Many British birds are almost sedentary and have been declining from around the turn of the 20th century.



In former times they were considered a delicacy and were often shot in great numbers but habitat loss through extensive drainage of wetlands is considered to be the main cause for the decline. The severe winter of 1962/63 also had a drastic effect on numbers.

This species is also under-recorded during estuary-wide counts due to its habits and haunts. Nevertheless, it is evident from Table 53, based on the average maxima over the last 15 years, that there has been a dramatic decline of around 84% in wintering numbers.

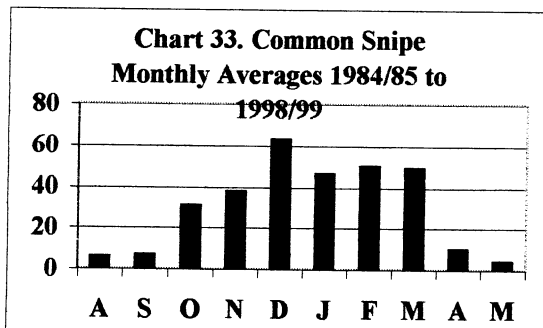


Chart 32 clearly shows that the trend in numbers is downward. It appears that the main arrival of autumn birds is in October with numbers then increasing in early winter to peak in December; thereafter the winter population remains static until birds depart for their breeding grounds in April.

The principal wintering site is Shotley Marshes and the highest count ever to be

recorded was c500 after the December freeze in 1981. Other three-figure numbers there include 150 in 1967 and 1969 and 250 in 1980 and on Jan 15th 1989.

At Shotley, in good snipe years, there used to be Snipe shoots at dusk (Mike Packard *pers. comm.*).

Other wintering sites are Bourne Park water meadows, Levington lagoon and reed bed and Trimley Marshes Reserve.

	73/74	74/75			84/85	Average
High	43	42			158	
Low	-	-			8	
	85/86	86/87	87/88	88/89	89/90	
High	120	80	266	154	109	146
Low	7	-	-	49	120	
	90/91	91/92	92/93	93/94	94/95	
High	75	74	79	106	87	84
Low	49	7	5	-	13	
	95/96	96/97	97/98	98/99	99/00	
High	45	26	9	14	7	20
Low	5	9	1	1	13	6

The Snipe has also been declining as a breeding bird for probably over a century or more through loss of wetland habitat due to drainage of wetlands and changes in agricultural practices. To date, to my knowledge, breeding has not been proven on the Orwell. However, at the Trimley Marshes reserve breeding activity was noted in 1996 and a pair set up territory there in 1997 from May 29th and during June 'drumming' and 'chipping' was heard regularly.

Eurasian Woodcock *Scolopax rusticola*

Suffolk Status - Fairly common resident, winter visitor and passage migrant.

One of the beauties of the Orwell is the extensive woodland that is found throughout the estuary. Many of these woodlands are in private ownership and have no public access; some, of course, are managed for game. This wealth of woodland cover, much of it waterlogged, provides ideal habitat for Woodcock. Its numbers vary annually but it is particularly more noticeable when 'falls' occur during the onset of cold spells.

Being a secretive bird and active around dawn and dusk has led to this species being significantly under-recorded. During a 'fall' in December 1961 20 birds were seen in one of the Shotley woodlands. In 1981 at least 70 were flushed during a shoot at Shotley on December 30th. Probably the best anecdotal information comes from shooting bags. According to Mike Packard (*pers. comm.*), in the 1970s bag sizes per shoot from Shotley would be around five or six birds; this number had dropped to around three or four in the early 1990s and none were shot in 1998 and 1999.

It appears that breeding has not been proven for this species for the Orwell although suitable breeding sites exist. I would personally be surprised if at some time breeding has not occurred.

Black-tailed Godwit *Limosa limosa*

Suffolk Status - Common winter visitor and passage migrant. A few oversummer.

Threshold for international importance - 700.

Threshold for national importance - 70.

Internationally important autumn passage species

Nationally important wintering species

Nationally important species at Trimley Marshes Reserve

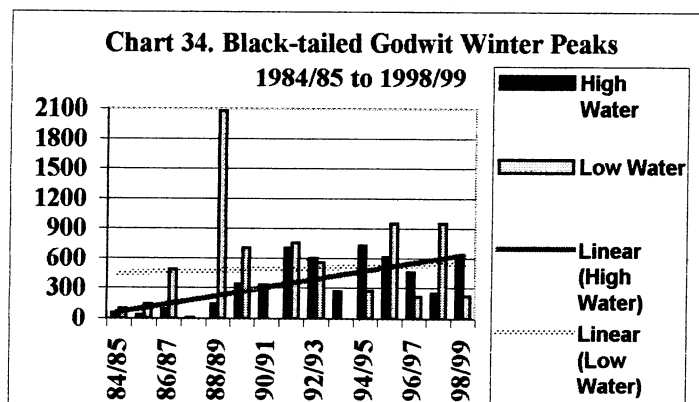
Present wintering population trend: **Increasing**

Highest count: **2,077 November 20th 1989**

Two races occur on the Orwell, the nominate *limosa* (W. Europe to W. Asia) and *islandica* (Iceland).

Black-tailed Godwits wintering in Britain have increased dramatically since the 1930s. At that time there were less than 100 but now (1999) the number wintering has peaked at 15,461 (Cranswick *et al* 1999).

In Babington's days (1880s) this species was a rare spring and autumn passage migrant and up to 1930 the largest



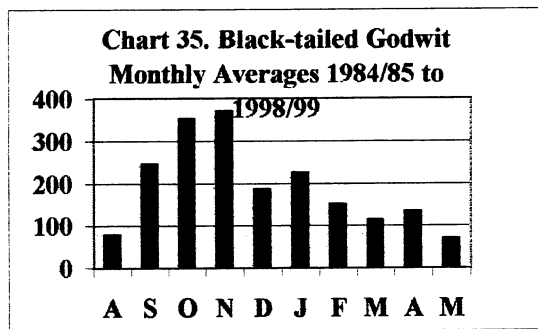
gathering known to Ticehurst (1932) was just 13. However, by the 1960s Payn (1978) recorded flocks of up to 600 as being commonplace on some Suffolk estuaries. On the Orwell flocks of between 300 and 400 were regularly recorded during the 1950s but between 1960 and 1980, according to Suffolk Bird

Reports, it appears that this species was infrequently seen. Then from the mid-1980s the number of birds increased substantially to a level of national importance and for the period between 1985/86 and 1998/99 the estuary was internationally important for this species.

The highest number recorded on the Orwell was during a low water count on November 20th 1989 when 2,077 were counted; at that time this was a county record. High individual site counts included the following: 1,072 Freston November 20th 1989; 1,749 Mulberry Middle November 21st 1989; 900 Mulberry Middle December 20th 1989; c800 Hares Creek October 10th 1990; 1,427 Freston October 18th 1991 and 619 Freston December 19th 1991.

As shown on Chart 34, the trend in numbers for both high and low water counts is upwards. Chart 35 shows that numbers are high during the autumn passage period. The peak numbers in winter occur in November and there is evidence of spring passage in April.

Black-tailed Godwits sometimes roost in high numbers at Levington or at Colton Creek.



Quite often they will also roost on arable land well away from the tidal and hinterland areas of the Orwell. As a result of this roosting behaviour, many of the low water co-ordinated feeding counts are much higher than the high water counts (see Table 57). When looking at the peak counts during the autumn passage period it can clearly be seen that the Orwell is regularly supporting internationally important numbers for this species. The average may

well have been higher if low water counts had been undertaken during the years indicated by a #.

90/91	91/92	92/93	93/94	94/95	95/96	96/97	97/98	Average
*800	1444	788	701	294	333	733	948	755
				#	#			
# indicates that no low water counts were carried out during the passage periods								

On January 29th 1989 a synchronised low water count of four estuaries (Deben, Orwell, Stour and Hamford Water) was carried out to determine the number of wintering Black-tailed Godwits (see Table 55) in south-eastern Suffolk and north-eastern Essex.

Deben	Orwell	Stour	Hamford	Total
32	406	903	480	1821

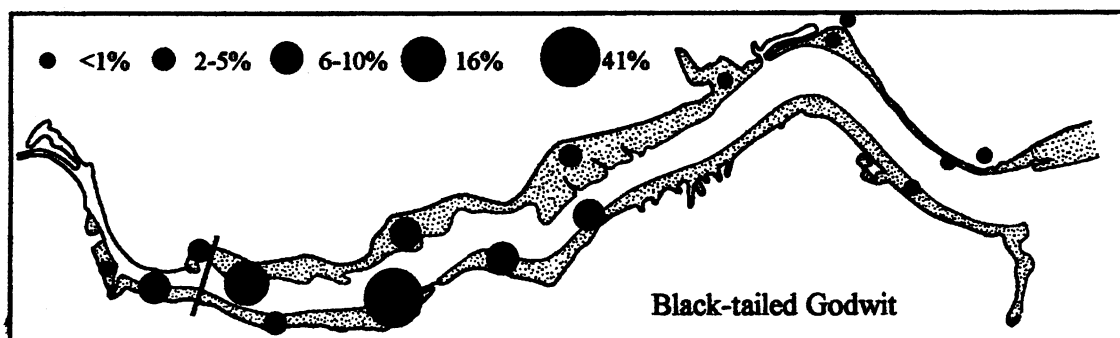
The reserve at Trimley Marshes attracts Black-tailed Godwits throughout the year in excess of the criterion set for national importance (see Table 56).

1995	1996	1997	1998	1999	Average
250	520	200	317	140	285

	73/74	74/75			84/85	Average
High	25	0			50	
Low	-	-			96	
	85/86	86/87	87/88	88/89	89/90	
High	30	89	4	139	335	119
Low	141	-	-	480	2077	
	90/91	91/92	92/93	93/94	94/95	
High	330	700	597	270	728	525
Low	398	762	552	-	274	
	95/96	96/97	97/98	98/99	99/00	
High	615	458	253	622	272	444
Low	944	219	480	226	395	453

Black-tailed Godwits can be encountered throughout the estuary although they prefer the upper reaches with the shoreline at Freston (Comp. B2) supporting the highest numbers. Other key feeding areas are Pond Ooze (Comp. F2), Mulberry Middle (Comp. F1), Woolverstone (Comp. B3), Pin Mill (Comp. C1) and Bourne Bridge (Comp. A3).

Map 12. Black-tailed Godwit Feeding Densities Based on Low Water Counts 1994/95 to 1998/99.



In former times this was another species that was shot during the nesting season for the table; this, together with drainage of its breeding haunts, brought about its decline as a breeding bird. According to Payn (1978) between 1950 and 1970 this species increasingly overwintered in Suffolk and in 1972 two pairs bred. Up to the present time a few pairs breed irregularly at one or two coastal sites.

Oversummering occurs each year at the Trimley Marshes Reserve; in 1996 singing and displaying were observed over one of the meadows. It was thought that nesting had been attempted but failed at the egg stage.

Bar-tailed Godwit *Limosa lapponica*

Suffolk Status - Fairly common passage migrant and locally fairly common winter visitor.

Threshold for international importance - 1,000.

Threshold for national importance - 530.

Highest count: **110 February 1955**

The majority of the Bar-tailed Godwits wintering in the UK are thought to breed in Western Siberia and the Russian Arctic (Tomkovich & Zhoikov 1998). This species is highly mobile, and this is reflected in the considerable annual fluctuations of the wintering population (Cranswick *et al* 1999).

According to Payn (1978), this species is much less common than in former times although in 1955 a flock of 110 spent much of February on the Orwell. Nowadays only small numbers occur in Suffolk and on the Orwell one or two birds infrequently winter although more birds occur in cold weather. However, Bar-tailed Godwits are seen regularly during the spring (April/May) and autumn (July/August) passage periods and it is during this time that the highest numbers are recorded.

The highest flock numbers recorded on the Orwell since 1954 are as follows: 29 February 28th 1954, 110 February 1955, 47 February 1956, 34 January 12th 1957, 25 January 25th 1959, c50 early May 1976 and 46 in late April 1976, 38 Levington May 3rd 1980, 23 Walton Ferry April 26th 1985, 41 Walton Ferry January 18th 1985, 40 Levington November 16th 1986, 60 Fagbury January 4th 1987, 74 October 1997 and 52 December 1997.

The following flocks have been recorded on the Trimley Marshes Reserve: 30 May 8th 1994 and 23 May 1st 1995.

Whimbrel *Numenius phaeopus*

Suffolk Status - Common passage migrant.
Threshold for international importance - 6,500.
Threshold for national importance - +.*
Passage - 50.

The Whimbrel is seen on the Orwell during the spring and autumn passage periods generally in ones and twos or in small flocks. It is interesting to note that unlike many other wader species more Whimbrels are seen during the spring period. Observations of 10 or more birds are as follows:

- 1974 10 Levington in August and 26 between Ipswich Docks and Pin Mill May 5th.
- 1975 16 between Ipswich Docks and Woolverstone April 30th and 23 Ipswich Docks to Freston plus two at Levington May 5th. 35 Orwell until Jun.1st. and 11 Clamp House Aug. 11th.
- 1976 40 on Orwell early May, including 25 in Ipswich Docks.
- 1977 28 Walton Apr. 19th and 16 Levington May 8th.
- 1989 22 Shotley Marshes Aug. 23rd.
- 1991 15 Levington May 8th.
- 1992 14 Shotley Marshes Apr. 26th.
- 1993 10 Shotley Marshes Apr. 23rd, 13 north over Fagbury Apr. 24th, 15 Shotley Marshes and 13 Trimley Marshes Reserve May 9th.
- 1994 18 Trimley Marshes May 2nd and 11 (O) May 7th.
- 1995 16 north Trimley Marshes May 10th.

Eurasian Curlew *Numenius arquata*

Suffolk Status - Common winter visitor and passage migrant. A few pairs breed.
Threshold for international importance - 3,500.
Threshold for national importance - 1,200.

Present wintering population trend: **Increasing**
Highest count: **1,335 October 1997**

A temperate and sub-arctic species whose numbers in Britain have increased by 22% since the late 1980s (Davidson 1998). Curlews regularly winter on Suffolk's estuaries in high three-figure numbers. Autumn passage birds may arrive as early as late June. It is a bird whose numbers appear to be increasing; the five year average maxima of high water counts between 1985/86 and 1998/99 suggest that the population increased by 18% during that period. In November 1953 1,000 Curlews were counted on the Orwell (SBR); since then they have only been recorded on two other occasions in four-figure numbers, namely during February 1973 when they peaked at 1,000 and more recently in October 1997 when the highest ever count of 1,335 was recorded. The difference between the feeding and roosting numbers, although only marginal, may be due to some birds moving

to arable and pasture lands to feed. Birds totalling several hundred may be encountered wherever suitable feeding habitat can be found within the hinterland of the Orwell or even further afield.

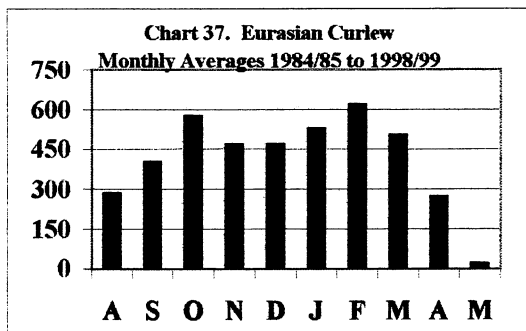
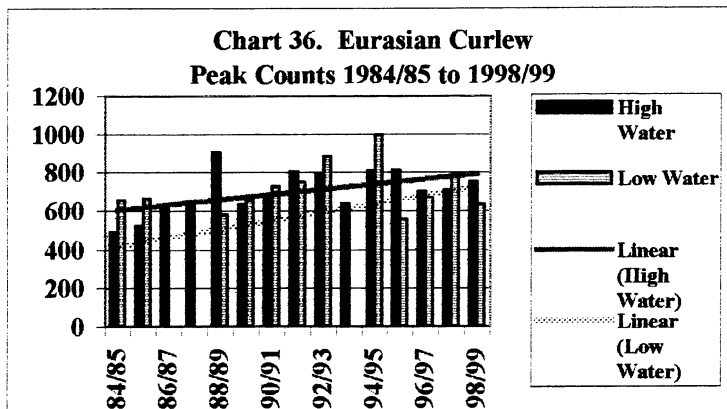


Chart 37 shows a distinct autumn peak in October and a winter peak in February; thereafter numbers fall steadily until the wintering birds have almost all departed by May.

Table 58. Eurasian Curlew Wintering Peaks and Five Year Average Maxima Based on High and Low Water Counts

	73/74	74/75			84/85	Average
High	1,000	537			491	
Low	-	-			656	
	85/86	86/87	87/88	88/89	89/90	
High	524	610	649	904	633	664
Low	664	-	-	581	654	
	90/91	91/92	92/93	93/94	94/95	
High	666	803	793	636	808	741
Low	726	752	880	-	997	
	95/96	96/97	97/98	98/99	99/00	
High	812	702	707	750	932	781
Low	560	667	785	634	871	703

The Curlew breeds in small numbers in the Breckland areas of Suffolk. The only coastal breeding records came from Fritton between 1955 and 1959.

Spotted Redshank *Tringa erythropus*

Suffolk Status - Common passage migrant. A few overwinter.

In Babington's time (1880s) this species was said to be very irregular although Ticehurst (1932) called it a regular passage bird in small numbers but in winter it was "decidedly rare". Since then it appears that numbers have increased. Payn (1978) wrote that this species is likely to occur somewhere on the coast in every month of the year.

This species has never been plentiful on the Orwell with most records being of birds seen during the spring and autumn passage periods. Up to the 1990s observations usually involved singles, or on occasions two birds, being recorded at a variety of locations which included Levington, Trimley and Shotley Marshes. However, since the reserve at Trimley Marshes has been constructed, bird-days and numbers have increased. The highest count recorded there to date is 19 September 1st 1994.

	J	F	M	A	M	J	J	A	S	O	N	D
1993						4		9				
1994				5	4	4	1	1	23		1	
1995						5	2	8	1			
1996				3	2	14	2	2	9	5		1
1997		5	14	11	4	2	6	15	1		3	
1998	1	3	8	7		3	3	13				
1999			2	10			2		2			

Common Redshank *Tringa totanus*

Suffolk Status - Common resident, winter visitor and passage migrant.

Threshold for international importance - 1,500.

Threshold for national importance - 1,100.

Passage - 1,200.

Internationally important wintering species

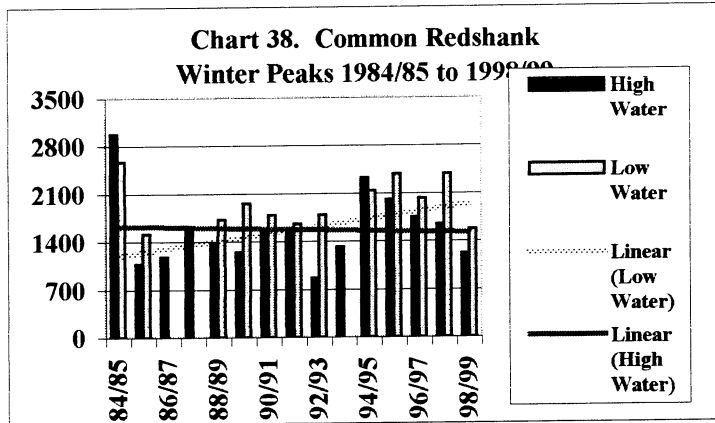
Present wintering population trend: **Increasing/stable**

Highest count: **3,105 January 1984**

Number breeding in 1997: **105 pairs**

Smit & Piersma (1989) concluded that two populations of Redshank could be distinguished within the area of the East Atlantic Flyway. *T. t. totanus* winters in Europe/western Africa and *T. t. robusta* winters in north-western Europe. Many of the

Redshank which breed in Iceland and Britain, together with small numbers from Scandinavia and continental western Europe, overwinter in Britain (Davidson, Evans and Pienkowski 1986).

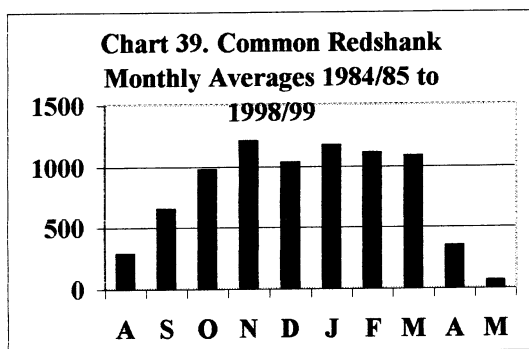


The thresholds for international and national importance for Redshank have been revised several times during the past 15 years. Smit & Piersma (1989) changed the threshold for international importance from 2,000 to 1,500. A revision of the population estimates for Redshank wintering in Britain gave a national total of 75,000 birds (Moser

1987), a reduction of 25% on the previous estimate (Hayman *et al* 1981). The threshold was revised again to 1,100 in 1993 (Cayford & Waters *in prep.*)

Ticehurst (1932) recorded flocks of up to 200 by early August on the Orwell; by October numbers had peaked at around 2,000 and thereafter throughout the winter period numbers were generally around 1,000. Records for the 1950s and 1960s are almost non-existent; the SBRs document Redshank numbers only once. In 1953 J. T. Fenton recorded the following observations: c1,500 January 4th, c1,000 February 14th at Freston and c1,500 November 24th at Long Reach. During the embryonic days of the BoEE enquiry in the 1970s Redshank were being reported more regularly in SOG bulletins with peak numbers of around 2,000.

On the Orwell a peak count of 3,105 during the winter of 1983/84 ranked the estuary second to Morecambe Bay in national importance. On the basis of counts since 1979, Salmon & Moser (1984) ranked the Orwell as the fifth-most important estuary in the country. Following the figures for the winter period of 1985/86 the Orwell had slipped back to become the tenth-most important estuary in Britain (Salmon *et al* 1987). Regular high and low water co-ordinated counts for the period 1985/86 to 1999/00 show that the Redshank population has increased by 20% and 22% respectively. Looking at all these data there is a reasonable degree of consistency over the years and without question the Orwell estuary is internationally important for this species.

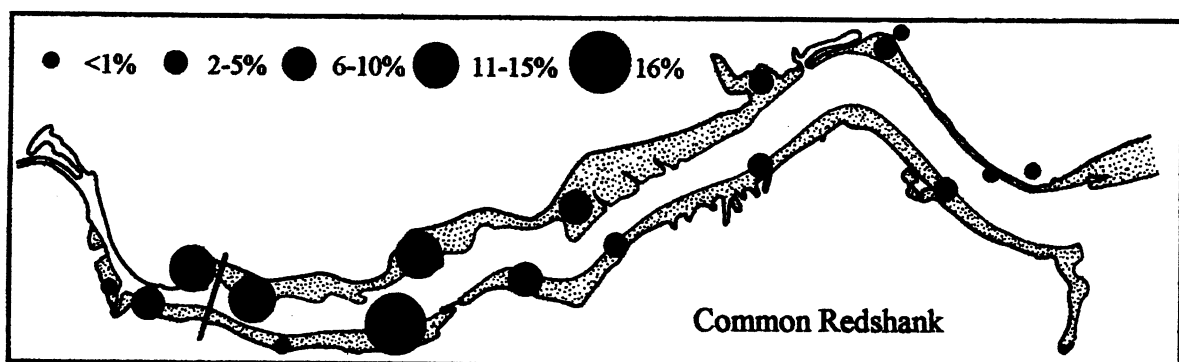


Studies by Summers *et al* (1988) indicated that there is an equal mix of Icelandic and British Redshank in autumn on Scottish rivers, but that almost the entire winter population is Icelandic. It is unknown whether this is the case for the Orwell. However, Chart 39 shows that numbers peak in late autumn and early winter and then some move elsewhere for the entire winter period although there is a slight peak in January. By April most birds have departed for their breeding grounds.

	73/74	74/75	75/76	83/84	84/85	Average
High	1950	2100	2328	3105	2972	
Low	-	-	-	-	2568	
	85/86	86/87	87/88	88/89	89/90	
High	1070	1179	1600	1373	1243	1293
Low	1516	-	-	1718	1958	
	90/91	91/92	92/93	93/94	94/95	
High	1574	1531	862	1315	2320	1520
Low	1788	1652	1787	-	2135	
	95/96	96/97	97/98	98/99	99/00	
High	2002	1747	1644	1214	1146	1551
Low	2382	2021	2381	1575	2197	2111

Redshanks can be found throughout the estuary although they prefer the upper reaches with Freston (Comp. B2), Black Ooze (Comp. F3), Pond Ooze (Comp. F2), Mulberry Middle (Comp. F1), and Bourne Bridge (Comp. A3) supporting the highest concentrations.

Map 12. Common Redshank Feeding Densities Based on Low Water Counts 1994/95 to 1998/993



Nationally, breeding numbers of Redshank are falling; between the two Atlas periods of 1968/72 and 1988/91 there was a decline of around 11% (Gibbons 1993). The decline has been greatest on the inland wet grassland sites through loss of habitat due to drainage and agricultural intensification. However, breeding numbers are faring better in coastal areas especially the saltmarshes of East Anglia.

Payn (1978) stated that the Redshank had declined greatly as a breeding bird between the 1940s and the 1970s. This was a direct contrast to Ticehurst's (1932) belief that breeding numbers had increased since Babington's day (1880s).

On the Orwell, according to Blindell (1974), there were 20 pairs on Shotley Marshes and c20 pairs on Trimley Marshes in 1974. Nowadays Redshank may be found breeding on Shotley Marshes and saltings, Colton Creek saltmarsh and occasionally at Levington Lagoon. Currently there are approximately 30 pairs breeding on the Trimley Marshes Reserve and a similar number on the Shotley Marshes/saltings. Unfortunately, Redshank no longer breeds on Bourne Park Meadows and the Levington and Fagbury saltmarshes; their demise at these sites is largely due to habitat loss or public disturbance.

A survey of breeding waders and other wildfowl on the coastal marshes and saltings of Suffolk (Beardall *et al* 1988) found 64 pairs of Redshank breeding on the Orwell; the main concentrations were on Shotley Marshes/saltings (33 pairs), Colton/Hares Creek saltings (19 pairs) and Fagbury (10 pairs). In 1997 the Suffolk River Valleys and Coast Breeding Waders and Wildfowl Survey found 105 pairs on the Orwell; principal sites were Shotley Marshes (38 pairs), Trimley Marshes Reserve (34 pairs) and Colton/Hares Creek (17 pairs) (Babbs 1997). See Table 56 for breeding numbers since 1992 on the wetland reserve on Trimley Marshes.

1992	1993	1994	1995	1996	1997	1998	1999
15	29	38	min28	18	34	32	29

Common Greenshank *Tringa nebularia*

Suffolk Status - Common passage migrant. Occasionally overwinters.

This elegant wader breeds mainly in the boreal zone and the tundra; its range is from Scotland across Europe and Siberia to the Kamchatka Peninsular. Those birds using the east Atlantic Flyway to reach the wintering quarters range widely throughout western and southern Africa. Some birds spend the winter in Britain, principally in southern and western areas.

Ticehurst (1932) recorded flocks numbering 40 or 50 birds on the coast of Suffolk. The largest flock recorded to date totalled c100 birds at Havergate on August 17th 1979.

Although this species is a common passage migrant, observations usually involve single birds or small parties.

On the Orwell the Greenshank's favourites haunts are Levington Creek, Trimley Marshes Reserve and Shotley although this species will frequent any of the saltmarshes and, on occasions, may be seen on the upper reaches of the estuary at Freston. For eight consecutive winters 1976/1983 this species overwintered at Levington. All observations involving eight or more birds since 1974 are listed below.

- 1974 10 Levington Aug. 30th and 31st with eight still present at the end of October.
- 1975 Eight Levington Jul. 12th.
- 1978 Nine Levington Sep. 18th.
- 1980 15 Levington Sep. 20th.
- 1981 13 Levington in Jul. - Aug.
- 1985 14 Levington Aug. 19th.
- 1990 10 Trimley Marshes Reserve Aug. 8th.
- 1991 Nine Trimley Marshes Reserve June 1st.
- 1992 30 Trimley Marshes Reserve Aug. 9th.
- 1993 Eight Trimley Marshes Reserve Jul. 15th.
- 1995 12 Thorpe Bay May 17th.
- 1997 Nine Trimley Marshes Reserve Aug. 16th and 24th.
- 1999 10 Trimley Marshes Reserve May 6th and 11 Aug 31st.

Green Sandpiper *Tringa ochropus*

Suffolk Status - Fairly common passage migrant with small numbers overwintering.

This fairly common passage migrant can be encountered throughout the Orwell estuary wherever there is suitable habitat. Although this species prefers the muddy margins of freshwater ponds, dykes, ditches, lakes and reservoirs, they may also be flushed from saline lagoons. Generally this sandpiper is seen singly or in small parties. However, where the habitat is extensive, such as at the reserve at Trimley Marshes numbers may be in double figures. A co-ordinated high water count in August 1993 recorded a total of 16 birds. All observations involving six or more birds since 1974 are listed below; these all refer to the Trimley Marshes Reserve except where stated otherwise.

- 1974 Seven Bourne Park Aug. 1st.
- 1990 10 Jul. 28th and Aug. 1st and six Loompit Lake Nov. 14th and 30th.
- 1991 Nine Jul. 31st and 15 Aug. 3rd.
- 1992 Six Sep. 4th.
- 1993 15 Aug 22nd, 12 Aug. 16th, 10 Aug. 6th to 10th, 14th and 17th to 19th.
- 1994 Six Jul. 8th, eight Jul. 17th and Aug. 22nd.
- 1995 Nine Jul. 27th and 10 Aug. 1st.
- 1996 15 Aug. 24th, eight 25th, seven 7th, 9th and 14th, six 1st, 7th, 13th, 21st and 23rd.
- 1997 Nine Aug 14th, seven 18th and six 15th.

1999 12 Aug. 4th, 11 9th, six 24th and 12 Sep. 2nd.

The number of bird-days at Trimley (see Table 62) gives an insight into the periods when birds are passing through the site. All figures are minimum values; for example, in July and August the number of bird-days has been arrived at by summing the birds on probably less than half of the days in the month, when in reality birds would have been present on every day.

	J	F	M	A	M	J	J	A	S	O	N	D
1993	1	0	0	0	0	11	71	199	20	0	3	0
1994	0	0	0	0	0	1	90	116	12	8	0	1
1995	0	0	0	0	5	5	29	128	21	0	0	0
1996	0	0	3	2	2	2	40	132	11	0	1	1
1997	0	2	0	2	0	2	21	57	2	0	0	0
1998	0	1	1	2	0	2	38	33	1	0	0	0
1999	0	0	0	3	8	0	24	72	43	3	0	0

Wood Sandpiper *Tringa glareola*

Suffolk Status - Fairly common passage migrant.

The Wood Sandpiper rarely occurred on the Orwell estuary until the wetland reserve at Trimley Marshes was constructed. Since 1991 this species has been recorded annually. All records are listed below:

- 1972 Four Bourne Park Aug. 1st and one Aug. 5th.
- 1974 One Bourne Park Aug. 15th.
- 1975 One Levington Jul. 31st.
- 1979 One Loompit Lake Apr. 17th
- 1988 One Levington Aug. 22nd and 29th.
- 1989 One Levington Aug. 8th to 18th.
- 1995 Four Loompit Lake Sep. 1st; one Sep. 6th and three Sep. 17th.

Trimley Marshes Reserve:

- 1991 One May 13th and 24th, four May 26th, three May 27th, two May 28th, one May 31st, June 1st, July 28th and 29th, Aug. 2nd, 17th and 20th, two Aug. 6th and three Aug. 8th and 16th.
- 1992 Two May 14th, one May 23rd, July 24th and 28th, Aug. 16th and Sep. 30th.
- 1993 One May 1st, 4th, 7th and 10th, July 16th, 24th, 29th and 31st, Aug. 1st, 9th and 17th to 30th, Sept. 4th and 10th.
- 1994 One May 14th and June 17th.
- 1995 One May 7th, two May 10th, three May 12th and one Aug. 1st, 4th, 7th, 10th to 14th, 19th and 20th.

- 1996 One May 14th, 15th, 19th and 20th, July 23rd, one Aug. 17th to 23rd, two Aug. 24th and 25th, one 26th and 27th.
- 1997 Four July 26th to 28th, two on five dates and one on five dates in July. Nine Aug. 14th, seven Aug. 18th, five Aug. 13th, 19th and 20th, four Aug. 10th and 16th, three Aug. 1st and 24th, two on five dates and one on three dates in August. Two Sep. 3rd.
- 1998 One Jul. 9th.
- 1999 One Jul. 14th, Aug. 3rd, two Aug. 4th and 5th, one Aug. 8th, two Aug. 9th, one Aug. 29th and 31st, Sep. 10th, 11th and 15th to 23rd.

Common Sandpiper *Actitis hypoleucos*

Suffolk Status - Common passage migrant. A few occasionally overwinter.

The Common Sandpiper is a common passage migrant and can be encountered throughout the Orwell estuary wherever there is suitable habitat. This species prefers the muddy margins of ponds, lakes, dykes, ditches, reservoirs and tidal creeks.

At peak times during spring and autumn this species is usually present daily in small numbers of between one and six birds, at a variety of locations throughout the estuary. However, since the early 1990s the reserve at Trimley Marshes has been attracting double-figure day-totals. See Table 63 for double-figure peak counts at Trimley. Occasionally this species overwinters.

	1993	1994	1995	1996	1997	1998	1999
May	13	20				14	
July	15				12	20	15
August	15	15	15	14	11	16	20

The number of bird-days at Trimley Marshes Reserve (see Table 64) gives an insight into the periods when birds are passing through the site.

	J	F	M	A	M	J	J	A	S	O	N	D
1993	0	0	0	14	56	5	133	244	66	0	0	0
1994	0	0	0	13	71	1	156	172	60	9	0	0
1995	0	0	0	3	33	3	74	164	37	3	8	0
1996	0	0	0	6	18	0	50	148	29	1	0	0
1997	0	0	0	4	11	0	60	114	21	0	1	0
1998	0	0	0	0	39	6	189	154	5	1	0	0
1999	1	0	0	3	9	0	135	221	30	1	0	0

Ruddy Turnstone *Arenaria interpres*

Suffolk Status - Common winter visitor and passage migrant.

Threshold for international importance - 700.

Threshold for national importance - 640.

No longer a nationally important wintering species

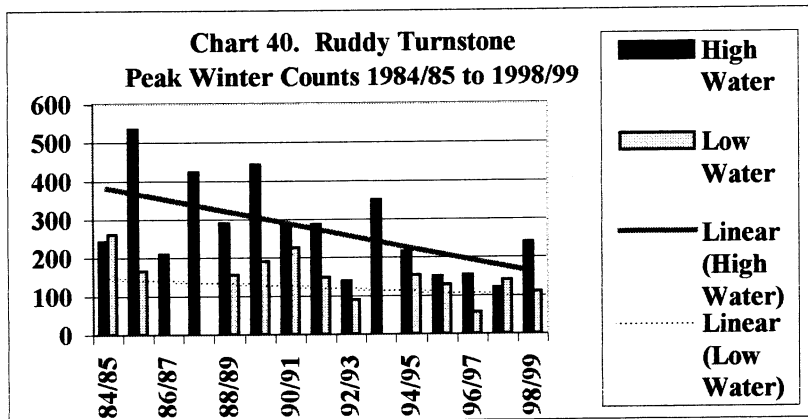
No longer a nationally important species during passage

Present wintering population trend: **Decreasing**

Highest count: **675 October 1984**

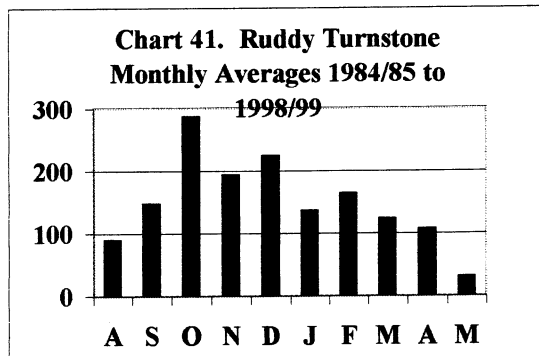
The Turnstone has a circumpolar Holarctic breeding range that extends from arctic Canada to the Chuckchi Peninsula in Russia. Turnstones wintering in Britain come almost exclusively from the populations of north-eastern Canada and Greenland, although breeding birds from northern Europe (mainly Finland) occur on passage in the autumn.

Prior to the winter of 1985/86, when the threshold for national importance was revised, the Orwell was



nationally important for this species. Salmon and Moser (1984) showed the Orwell to be the seventh-most important estuary in Britain for this species. From the mid-1980s to the present time, with the exception of the 1997/98 winter, the numbers of birds

counted at low water have been lower than the numbers at roost indicating that there is a movement of birds into the estuary at or around high water. Over the same period the five-year average maxima for both high and low water numbers of Turnstones have declined by 55% and 36% respectively. Chart 40 also indicates than the trend for the numbers of Turnstones both at high and low water is downwards.



The highest numbers of Turnstones are seen during the autumn passage period and Chart 41 clearly shows that the peak occurs in October. Despite the importance of the Orwell as a staging post for Turnstones during autumn, the five year average maximum for the period 1985/86 to 1989/90 when compared with the period 1995/96 to 1999/00 shows a dramatic decline of 55%. This decline in numbers

can be attributed to the loss of all the intertidal area on the lower reaches of the Orwell at Fagbury to Dock development. O'Brien and Ravenscroft (1985) showed that Fagbury was the principal site on the Orwell for Turnstones.

Table 65. Ruddy Turnstone Wintering Peaks and Five Year Average Maxima Based on High and Low Water Counts						
	73/74	74/75			84/85	Average
High	290	280			243	
Low	-	-			260	
	85/86	86/87	87/88	88/89	89/90	
High	535	209	423	289	442	380
Low	166	-	-	155	191	
	90/91	91/92	92/93	93/94	94/95	
High	282	286	138	349	216	254
Low	225	148	90	-	154	
	95/96	96/97	97/98	98/99	99/00	
High	150	154	121	239	188	170
Low	129	56	141	111	204	128

Wilson's Phalarope *Phalaropus tricolor*

Suffolk Status - Very rare vagrant.

1980 One juvenile at Levington Aug. 31st to Sep. 2nd. This constitutes the fourth county record and the first for the autumn.

Red-necked Phalarope *Phalaropus lobatus*

Suffolk Status - Rare passage migrant.

All records for the Orwell are of single birds seen at the Trimley Marshes reserve and are listed as follows:

- 1993 Jun. 28th to Jul. 2nd.
- 1996 Jun. 24th to 29th.
- 1997 Jun. 6th.
- 1999 Jun. 13th.

Grey Phalarope *Phalaropus fulicarius*

Suffolk Status - A rare winter visitor and passage migrant.

All records for the Orwell are of single birds and are listed as follows:

- 1981 Wherstead Strand Oct. 10th.
- 1989 Loompit Lake Dec. 17th.
- 1990 Levington Nov. 11th and Fagbury Nov. 13th.
- 1991 Fagbury Oct. 24th

3 The Orwell - Intertidal and Hinterland Areas

3 The Orwell - Intertidal and Hinterland Areas

Since Roman times ships have navigated the River Orwell. Historically, Ipswich has been, and still is, one of the most important ports in Britain. As a consequence, centuries of human activities have transformed the estuary dramatically. These have been in response to the growing needs of a developing environment whether it has been in agriculture, trade, and communication or, in more recent times, recreational pursuits.

The river walls were probably constructed in the 16th and 17th centuries to provide, in the main, more fertile agricultural land. Beardall (1991) estimated that 983 ha of saltmarsh had been reclaimed on the Orwell. The first improvement to the channel dates back to 1614 but large scale dredging to widen and deepen the channel did not take place until the 1800s.

In recent times dramatic changes have continued to occur on the estuary. Major land claims of saltmarsh and mudflat for dockland and marinas, loss of silts through dredging, shoreline erosion and recreational pursuits have either individually or collectively impacted on the natural interest and ecology of the Orwell. At the present time there are developments being proposed for the Orwell which will, if approved, lead to a further decline in the conservation interest of the estuary. Currently the Orwell is a minefield of activity and a local saying which is becoming ever more true is 'the estuary is dying from a thousand cuts'. Probably the biggest worry in the future for the Orwell's habitat and associated wildlife is the impact from an increase in public leisure pursuits. However, despite the many problems facing the conservation interest of the estuary, the Orwell can still be described as a beautiful place, important for its waterbird populations and rich in habitats and wildlife in general.

The area covered by this report extends from the Wet Dock at Ipswich to where the estuary is in confluence with the Stour at the Haven Ports. The hinterland is the terrestrial area immediately adjacent to the estuary which includes the valley sides on the upper reaches and the flood plain on the mid to lower reaches. The estuary is relatively long and narrow with some 22 miles of shoreline. The extensive intertidal area totals approximately 705 ha, which comprises of 645 ha mudflat and 60 ha of saltmarsh. The main tidal reaches extend from Wherstead Ooze in the northwest to Thorpe Bay; thereafter the tidal reaches at Trimley and Shotley are very narrow. The once-extensive intertidal area on the lower reaches at Fagbury and Walton has now been completely lost to development.

This section of the report describes the shoreline and hinterland areas of the estuary in sections that relate to the low and high water counts (see Figures 1 - 14). The sections with their sub-compartments are from 1999. However, the sections themselves have remained the same since the winter of 1984/85; any variations to the counting sections are highlighted in the text below. Relevant information has also been included where there have been changes, for example, on habitat.

During my childhood days, the Orwell estuary was my playground. From the age of about five I recall trying to catch crabs in the pools left behind by the ebb tide on a shingle hard that was locally called the 'Roman Path'. It was in fact a recognised landing place for ships in Anglo-Saxon times. Nowadays the hard is barely

recognisable but remnants can still be seen at low tide where the Orwell Bridge spans the river. My most memorable recollection from those early-1950s days, and one that has stayed with me ever since, was when I stood at the water's edge of Mulberry Middle at low water. I was in awe of the vastness of the scene around me; the natural wilderness feeling was so powerful, and thereafter I was simply hooked on the beauty of the estuary. I have savoured that experience on so many occasions both during the winter and summer months from all parts of the low water line. In those early years, even during a long mid-summer's day, you would not see a soul but now of course there are many more people accessing the shoreline to a point where some sections of shore are crowded. Only on a really bleak winter's day or during the depth of night does the estuary become a wilderness for its wildlife.

Ipswich Docks - Figure 1

High Water section	1	[1 - Ipswich Docks, 1a - Ipswich Wet Dock & 1b - lock gate area]
Low Water sections	A1	[Ipswich Wet Dock]
	A2	[Lock gate area]

These compartments include the Wet Dock and the narrow channel of the New Cut from Stoke Bridge to the lock gates and thereafter the quayside which extends to Brown's timber yard.

The whole of the area is predominately of quayside and much of it supports dockland activities. However, in recent years there has been a profound change of use of the Wet Dock area from port-related industries to restaurants, residential and office premises, and commercial and leisure uses along Wherry Quay. There are plans for more marinas, apartments and hotels.

There are small areas of mud throughout parts of the New Cut and around the lock gates at low tide. These areas are rich in harbour rag worms *Nereis diversicolor*, a local source of bait. These areas generally support less than 50 feeding birds but large concentrations of waterbirds occur during mid-winter or severe weather periods when freshwater areas are frozen.

Occasionally, roosts of certain species are missed at high tide on count days. One explanation for this is that on some occasions Redshank, for example, will roost on the steep banks between the moored ships. I have recorded these roosts of up to 800 Redshank on several occasions when I have been working from a boat.

Bourne Park - Figure 2

High Water section	2
Low Water section	n/a

Part of the park is formal and widely used for recreational pursuits while the remaining sensitive areas have been designated as a County Wildlife Site (CWS). The site comprises wet grassland and a large reedbed with a series of shallow pools that drain into Belstead Brook. The brook bisects the meadowland and the reedbed and both areas are subject to regular flooding either by the incoming tide or the

floodwaters from the brook. The habitat supports a variety of waterbirds; up to only ten years ago there were breeding Redshank and on a flooding tide wading birds used to roost on the meadow. The meadow is no longer being grazed and this lack of management has allowed reed to encroach and dominate the grassland; however, it is still a site that is favoured by Common Snipe and the diminutive Jack Snipe.

Fox's Marina/Orwell Bridge - Figure 3

High Water section	3	[3 - Fox's Marina/Orwell Bridge, 3a - West Bank, 3b - Fox's Marina/Orwell Bridge & 3c - Black Ooze]
Low Water sections	F3 A3	[Black Ooze] [A3 - West Bank/Orwell Bridge, A3a - West Bank & A3b - Fox's Marina/Orwell Bridge]

Four distinct types of shoreline make up these sections.

The West Bank Terminal has finally extended over 15 ha of mudflat leaving only remnants of a tidal zone. Marina infrastructure, moorings and boats dominate the whole area at the mouth of Belstead Brook.

The only section of river wall to be found on the upper reaches of the Orwell extends between Fox's Marina and the Orwell Bridge. The flood plain at this location is a narrow strip of grazing marsh. The mudflats here are some of the most important on the estuary for feeding waders but unfortunately this intertidal area has not been included in the estuary's SSSI status.

There is permanent deep water opposite Fox's Marina at Cliff Quay. The Cliff Quay Power Station was demolished in the 1990s and Associated British Ports is about to develop this site to extend the port facilities at Ipswich. Since the demolition of the power station the site has become a loafing area for some species of birds such as gulls and Shelduck. Assessing the number of birds at this site is very difficult due to its isolation.

The remaining shoreline in this section extends from the steel piling of Cliff Quay to the Orwell Bridge. Here the hillside of Pipers Vale, a CWS, grades from a floristically rich shoreline area, which includes Hemlock Water-dropwort *Oenanthe crocata* and Meadow-rue *Thalictrum flavum* through to a reed-fringed upper shore. Along the whole length of this section water issues from the bank to create a freshwater flow across the mudflat where small areas of Eelgrass *Zostera noltii* are to be found.

Pipers Vale and the associated intertidal area have undergone tremendous change through development. The construction of the Orwell Bridge has created new mud banks and hards. There is a sewerage outfall at Cliff Quay and at certain times during the summer months the amount of freshwater reaching the Orwell can be less than half the volume of sewage being discharged. This, coupled with organic effluent from industrial sources, creates complete anoxic conditions in the sediment in the mudflats

in the upper reaches of the estuary (Beardall 1991). In some years this excessive nutrient enrichment helps to create blankets of green algae, particularly *Enteromorpha* and *Ulva*, and huge amounts, sometimes up to half a metre thick, accumulate on the strand line.

Kingfishers have been known to breed in holes in the steel piling of Cliff Quay and Peregrine Falcons occupy the Orwell Bridge throughout most of the year. Access to the foreshore is easily gained via footpaths through Pipers Vale.

Strand - Figure 4

High Water section	4	[4 - Strand, 4a + c shoreline, river & saltings & 4b - arable fields]
Low Water section	B1	[B1 - Strand, B1a - shoreline, river & saltings & B1b - arable fields]

The Strand shoreline runs from the Orwell Bridge to Freston Brook. From the Orwell Bridge there is a small length of river wall, backed by grazing marsh, which meets the main Ipswich to Shotley (B1456) road. There is a very narrow strip of saltmarsh along the remainder of the Strand up to Freston Brook. The arable fields on the other side of the road provide a safe refuge for roosting birds when the estuary is at full flood.

The mudflats along this stretch of shoreline show tremendous erosion with many deep gullies traversing the flats; in addition, there is a mud-cliff edge at low water. These signs of erosion are a recent phenomenon - they were not there 40 years ago. On some spring tides the water comes over the saltmarsh and floods the main road.

The Strand mudflats are one of the last areas to be covered by the tides. Consequently, when there is only a narrow strip of mudflats between the water and the saltmarsh edge, waders are present in very high numbers. Sometimes this involves thousands of birds. The saltmarsh edge then becomes a roost site and on many of the spring tides the birds are forced to roost elsewhere, principally on the fields across the road.

Black & Pond Ooze - Figure 5

High Water section	n/a	
Low Water section	F2	[F2 - Black & Pond Ooze]

This count unit extends from the Orwell Bridge to Bridge Wood where the footpath meets the shore. The land slopes steeply down to the shore next to the bridge, then levels out through Pond Hall Farm before rising again at Bridge Wood where cliffs have formed in places. Due to freshwater flows, the reed-fringed shoreline is still accreting between the bridge and the sandy cliffs where, in some years, Sand Martins have bred. There is a shingle beach in front of the cliffs. Where the Pond Hall stream, which is also a major freshwater source, flows through the intertidal area, the shoreline has eroded significantly over the last 40 years. The remaining length of shoreline to Bridge Wood is also retreating; although a thin scrub fringe remains the footpath has been set back into the arable field. At Bridge Wood, which has now

been designated a Country Park, the mature Oaks, sadly, have been toppling into the river due to bank erosion for as long as I can remember, ie at least 50 years.

For the most part, the upper shoreline is sandy with outcrops of boulder clay and scattered patches of *Spartina*. The intertidal area of Black and Pond Ooze is of soft muds; patches of shingle forming a mosaic of hard are noticeable near the Orwell Bridge.

Easy access to the shore can be gained through Pipers Vale, Pond Hall Farm and Bridge Wood; consequently, the whole area is subject to heavy public pressure.

Freston - Figure 6

High Water section	5	[5 - Freston]
Low Water section	B2	[B2 - Freston]

This length of shoreline extends from Freston Brook to the start of Woolverstone Marina. A Blackthorn thicket blankets the shoreline to the headquarters of the Stoke Sailing Club; thereafter a parkland landscape with grazed grassland gently slopes to sandy upper shore. This parkland gives way to a well-wooded hillside from Wheelwright's Piece, Tower Plantation and Toweralder Carr, through to Whinneyfield Wood and Woolverstone Park.

There are several freshwater outlets across the mudflats in this section but between Deerpark Lodge and Woolverstone Marina fresh water flows across the whole of the shoreline. Part of the shoreline has a saltmarsh fringe.

Although two public footpaths give access to the shore along this stretch it is probably the quietest section on the estuary - hence the shoreline wader roost. There is also always a high concentration of wildfowl in this area and there is a heronry in the woodland.

Bridge Wood/Nacton Quay - Figure 7

High Water section	6	[6 - Bridge Wood/Nacton Quay, 6a + c - shoreline, river & saltings & 6b - arable fields]
Low Water section	F1	[F1 - Bridge Wood/Nacton Quay, F1b - arable fields & F1c - shoreline, river & saltings]

Sandy cliffs and the wooded slopes of Bridge Wood form the first length of this unit. The habitat then changes dramatically. A drainage ditch has been cut to separate the wood from the manicured greens and non-native trees of the Alnesbourne Priory Country Club's golf course. Alders camouflage a caravan park before Mansbrook Grove and Creek. The following length of shoreline is treeless and backed by the arable fields of Park Farm. The land then rises high again with well-wooded slopes and once again mature Oaks have been toppling into the river due to bank erosion for as long as I can remember. Behind the tree line lies the deer park of the Orwell Park Estate and the hillside then slopes back down to the thatched cottage next to the quay.

A small strip of reed fringing a portion of Bridge Wood was eroded by the tides some 15 years ago and a small but healthy reed bed on the shore near the World War II gun emplacements disappeared in a single season. This occurred at a time when a wet area on the land was altered and a drainage channel was cut along the whole length of the golf course and channels cut transversely across the saltmarsh. In front of the caravan park there appears to be a shingle hard; in fact, concrete was illegally dumped there some 12 years ago to form a boating facility for the Country Park. The development was stopped before too much damage was caused. At Bridge Wood the sandy upper shore merges into a strip of saltmarsh which continues almost all the way to Mansbrook. In front of the saltmarsh the sediment is firm whereas 45 years ago there were soft muds. Between the two streams at Mansbrook the grazing marsh has succeeded to woodland and the creek itself is a major freshwater flow into the estuary. The mouth of the creek has eroded to a point where the beach blends into the land whereas in the 1950s on a spring tide you could dive off the edge and not hit your head on the bottom of the creek. *Spartina* plants were rare beyond the creek during the same period but now they have colonised large areas of the upper shoreline.

The saltmarsh at Bridge Wood is an important site for wildfowl. Brent Geese often use the arable fields and there used to be a wader roost at Park Farm.

Woolverstone - Figure 8

High Water section	7	[7 - Woolverstone]
Low Water section	B3	[B3 - Woolverstone]

The dominating features of this section are the marinas at Woolverstone and the historic hamlet at Pin Mill. As a consequence, this stretch of shoreline is subject to heavy public pressure.

Wooded slopes border most of the shoreline and from Hall Point; saltmarsh and scattered patches of *Spartina* extend along the upper shore almost to Pin Mill.

Pin Mill/Collimer Point - Figure 9

High Water section	8	[8 - Pin Mill/Collimer Point, 8a + d - shoreline, river & saltings, 8b- arable fields & 8c grazing marsh]
Low Water sections	C1	[C1 - Pin Mill/Clamp House, C1a - shoreline, river & saltings]
	C2	[C2 - Clamp House/ Collimer Point, C2a - shoreline, river & saltings, C2b - arable fields & C2c grazing marsh]

The land rises from Pin Mill and falls again at the Clamp House. The steep sides are well-wooded and terminate at the high tide line. The National Trust owns a large area of the woodland. Between the Clamp House and Orwell Cottages farmland gently

slopes to high marsh; for the most part this length of shoreline is virtually treeless apart from a few clumps of Blackthorn. The farmland then terminates at a borrow dyke and sea wall that extends all the way to the marina at Shotley Point. The land in front of the wooded area of Man's Cliff is grazing marsh.

Houseboats line the shore for several hundred metres past Pin Mill. There then follows remnants of fringing saltmarsh with clumps of *Spartina* and *Phragmites*. Immediately downstream from the Clamp House lies the largest area of saltmarsh on the Orwell. The intertidal substrate is sandy mud with stones and there is a shingle hard at Collimer Point.

This saltmarsh is currently the most important site on the Orwell for both day and night-time roosts. The farmland hinterland of arable land, grazing marsh and two reservoirs is also an important area for waterbirds.

Public access to the foreshore is via Pin Mill and Wades Lane.

Nacton Shores - Figure 10

High Water section	9	[9 - Nacton Shores, 9a + c - shoreline, river & saltings & 9b - Orwell Park]
Low Water section	E2	[E2 - Nacton Shores, E2a - shoreline, river & saltings & E2b - Orwell Park]

The deer park of the Orwell Park Estate and woodland fringes the shoreline as far as Shore Lane. At Home Wood, the land slopes steeply to the shoreline.

The mudflats are the widest on the Orwell estuary with much of the upper shore being sandy especially in front of Broke Hall. Between Nacton Quay and Shore Lane there is a narrow fringe of saltmarsh, much of which has colonised the shoreline over the last 40 years. It has out-competed much of the *Zostera* of which only a few small patches remain. There are remnant areas of saltmarsh and fringing *phragmites* at the Levington end

There is a car park and public access at Shore Lane where there is also a Suffolk Coastal District Council (SCDC) picnic site.

Levington Creek - Figure 11

High Water section	10	[10 - Levington Creek, 10a - west marsh & field, 10b - east fields & silt pans & 10c - shoreline, river & saltings]
Low Water section	E1	[E1 - Levington Creek, E1a - west marsh & field, E1b - east fields & silt pans & E1c + d - shoreline, river & saltings]

There is a sea wall around Levington Creek, which was breached in 1942 by a freak tide, which flooded 25 ha of low-lying marshland at Stratton Hall. Later the area was

part-filled with inert industrial waste until measures were taken to stop this activity. The area is now a tidal lagoon, controlled by sluices. It is a SWT nature reserve and a CWS protected by a SCDC section 52 order. Silt pans are adjacent to the lagoon where dredged silts from the Levington Marina are currently being deposited. The silts are also being used to recharge the foreshore to the remnants of a Napoleonic sea wall, which is adjacent to the marina.

To the west of the creek the grassland area is currently managed through a Ministry of Agriculture Fisheries and Food grant-aided scheme. Between the New Cut and the high ground there is an important wetland habitat, which includes a reed bed. The creek is silting up and much of the saltmarsh flora is being lost through erosion both of the surface and at the edge of the marsh. Lax-flowered Sea-lavender *Limonium humile* can still be found growing here. The whole of the area is one of the most important sites on the estuary for waders and wildfowl for feeding, refuge and roosting.

There is a small unofficial car park at the head of the creek and a public footpath on the sea wall. In recent years the increase in the number of people visiting this area has had an adverse impact on the conservation interest of this site.

Shotley Marshes - Figure 12

High Water section	11	[11 - Shotley Marshes, 11a - north marsh, 11b - middle marsh, 11c - south marsh & 11d - shoreline, river & saltings]
Low Water section	C3	[C3 - Shotley Marshes, C3a - north marsh, C3b - middle marsh, C3c - south marsh & C3d - shoreline, river & saltings]

A sea wall runs between Collimer Point and the marina at Shotley Point except where the high ground at Crane's Hill meets the saltmarsh. All of the low-lying hinterland is grazing marsh.

There is a substantial area of saltings at Crane's Creek and remnants of saltmarsh on the upper shore to Shotley Point. The sea wall is showing signs of erosion and as a consequence there have been a number of attempts to protect the toe of the sea wall. Wooden posts laced with brushwood to form groynes have been installed downstream from the saltings at Crane's Creek. Foreshore recharge upstream from Shotley Marina involved creating a sand bund, which was back-filled with silts.

The grazing marsh with its mosaic of habitats is extremely important for a variety of bird life. During the winter months Brent Geese and Snipe, in particular, favour this area. The sand and shingle portions of the shoreline and saltmarsh edge are important breeding sites for Ringed Plover, Oystercatcher and Little Terns.

A public footpath runs the length of the sea wall with access via Shotley Marina and Crane's Hill.

Loompit Lake area - Figure 13

High Water section	12	[12 - Loompit Lake area, 12a - Loompit Lake & 12b - marina wall, shoreline, river & saltings]
Low Water sections	D2	[D2 - Thorpe Bay]
	D3	[D3 - Loompit Lake]

This section contains Levington Marina, which is the largest marina on the Orwell and a major recreational area. Fields and the ancient woodland of Stratton Hall Wood, a CWS, back the marina. Thereafter the land rises sharply to form Stratton Cliff, which is well-wooded before the land falls to Loompit Lake. The woodlands of Alder Carr and Loompit Grove, which are both CWSs, fringe the lake. Immediately adjacent to the east side of the lake there is an herb-rich meadow, which is also a CWS and contains Heath Spotted Orchid *Dactylorhiza maculata*. The land then rises to Sleighton Hill, a wooded cliff above Thorpe Bay with a small stretch of saltmarsh containing *Spartina maritima* just downstream. Between the marina and Loompit Lake there is an area of mudflat behind a rock embankment, which is important for providing a feeding area at top tide. Foreshore recharge, using harbour silts, is also being carried out in front of the marina wall.

The sea wall fronting the marina is an extremely important breeding site for Ringed Plover and Oystercatcher and is also a refuge site for roosting waders during passage periods and the winter months. Loompit Lake is important for breeding and wintering wildfowl and the trees there provide the habitat for breeding and roosting Cormorants. There are a number of outcrops of crag faces in Stratton Cliff and at Sleighton Hill which also provide breeding habitat for Sand Martins and Kingfishers.

Despite the wealth of wildlife interest at this area, the whole site is coming under ever increasing public pressure.

Trimley Marshes - Figure 14

High Water section	13	[13 - Trimley Marshes, 13a - retreat area, 13b - ESA/arable, 13c - SWT reserve, 13d - arable & 13e - shoreline & river]
Low Water sections	D1	[D1 - Trimley mudflats & D1e - foreshore, mudflats & river]
	D4	[D4 - Trimley Marshes, D4a - retreat area, D4b - ESA/arable, D4c - SWT reserve & D4d - arable]

A sea wall, which is in urgent need of repair, extends between the saltmarsh at Thorpe Bay and the dockland of the Port of Felixstowe. Only a narrow strip of saltmarsh remains, for a short distance, on the lower reaches of this shoreline.

By the autumn of 2000 a new sea wall will have been built inland so that the old sea wall can be breached in order to flood an area of arable land. This is in compensation

for the loss of intertidal areas on the Stour and Orwell caused by the deepening of the channel to the Haven Ports. The construction of the wetland reserve at Trimley Marshes, which is managed by SWT, came about through an Act of Parliament in 1989 as a result of mitigation for the loss of the Fagbury Flats to dock development.

In 1994 the foreshore for the whole length of the sea wall was recharged with sand and shingle. The result of this work is that in some areas the upper shore has accreted and the ebb tide leaves pools of water and soft silts whereas prior to the recharge the substrate was of stiff clay.

The importance of the reserve at Trimley has been recognised by its being designated as a pSPA. The reserve is an important refuge for wintering wildfowl and is one of the best in East Anglia for breeding Redshank and Lapwing.

Access to this area is via Thorpe Lane and Gosling's Farm and from a small car park at Searson's Farm.

Notes on Count Compartment Changes

In the early days of the BoEE a team of eight fieldworkers counted the estuary. The reports from that era, written by R. Blindell, contained only estuary totals for each species with no subsection breakdown.

The counts made in 1984/85 were tabulated in the following compartments:
1a Ipswich Docks, 1b Piper's Vale, 2a Bourne Park, 2b Fox's Marina, 3 Strand, 4 Freston, 5 Woolverstone, 6 Nacton, 7 Levington Creek, 8 Hare's Creek to Pin Mill, 9 Shotley Marshes, 10a Trimley Lake, 10b northern part of Trimley Marshes and 11 Trimley Marshes and Fagbury.

The high water count compartments remained fundamentally the same between 1985/86 and 1998/99 with only minor changes. For the winter of 1999/2000, the main count compartments have been split into subcompartments wherever it was relevant to do so.

The minor changes made since 1985/86 are as follows:

Compartment 7: For the winter of 1988/89 only, this compartment terminated where the footpath through the NT woodland meets the shore instead of terminating at Pin Mill. The result of this change is negligible in terms of the count for this section.

Compartment 8: Between 1984/85 and 1987/88, the end point of this compartment terminated where the footpath from the Orwell Cottages meets the river wall. From 1988/89 onwards, the count compartment is between Pin Mill and Collimer Point. The result of this change is negligible in terms of the count for this section.

Compartment 10: The marina and harbour wall was included in the Levington Creek compartment between 1984/85 and 1997/98; thereafter this area was included in Compartment 12. This change was as a result of the wader roost moving from the silt pans to elsewhere although some birds formed a small roost on the harbour wall.

Carrying out an accurate count from the Levington side was difficult hence the changes.

Compartment 11: Part of Compartment 8 was included between 1984/85 and 1988/89. From 1989/90 this compartment extends between Collimer Point and Shotley Point. The result of this change, in relation to roosting waders, is negligible although the hinterland, on occasions, may support wildfowl.

Compartment 12: The marina and harbour wall was included in this compartment from 1998/99. Also, between 1988/89 and 1996/97 the northern part of Trimley Marshes, next to Sleighton Hill, was included. This compartment now contains a small wader roost.

Compartment 13: From 1996/97 the northern part of Trimley Marsh is included in this compartment. Over the years, the inter tidal area of Fagbury Flats have progressively been lost to port development. Large sections were lost in 1985/86 and 1989; the remainder was lost in 1994.

4 Figures

ORWELL WATERBIRD COUNT SECTIONS

Figure 1

Compartments/sub-comps. from 1999/00

Co-ordinator: Mick Wright
Address: 15 Avondale Road, Ipswich,
Suffolk, IP3 9JT
Tel. 01473 710032
Email: mickwright@talk21.com

Grid Ref. North TM165440
Grid Ref. South TM166425
Grid Ref. relates to shoreline position

Counter Code:
CUDI Code
SPA: UK9009121

WeBS High Tide Counts

WeBS Low Tide Counts

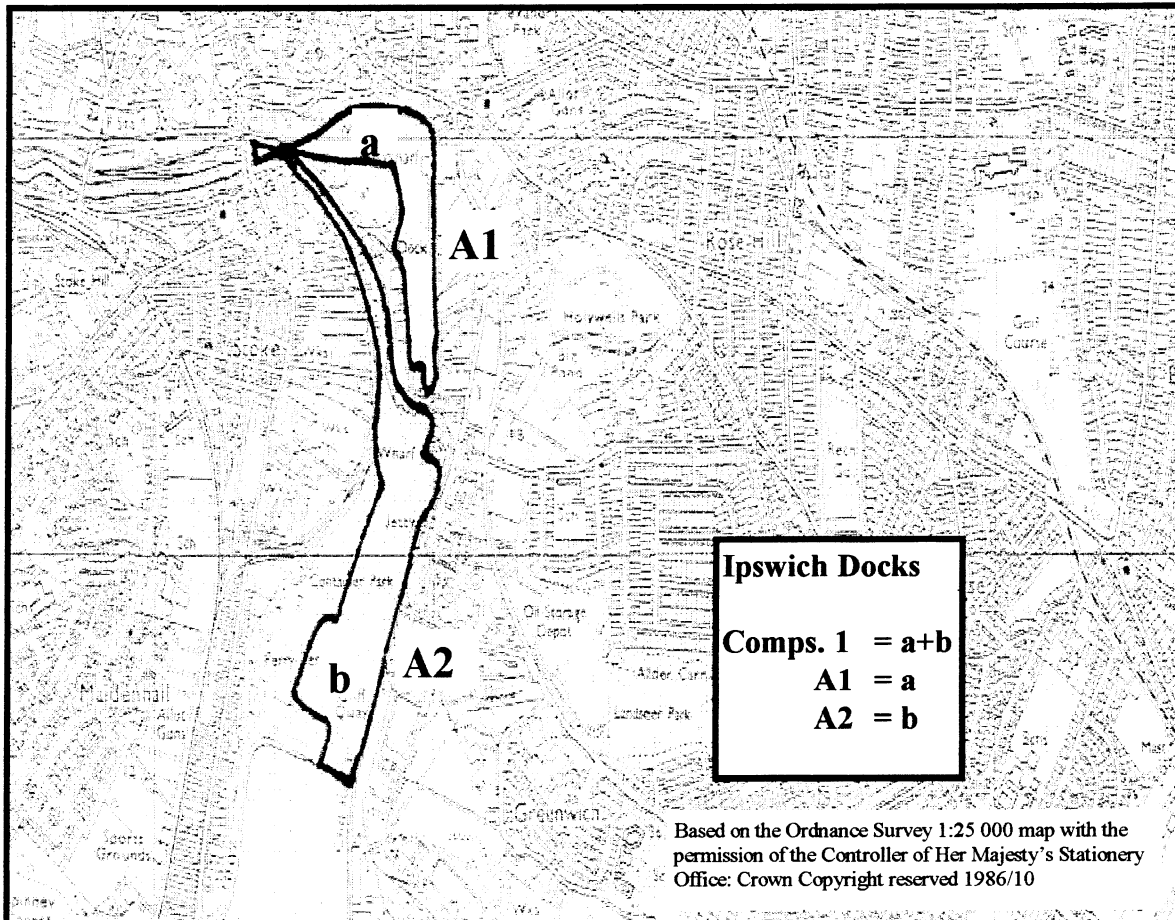
Comps.

- 1 Ipswich Docks
- 1a Ipswich Wet Dock
- 1b Lock gates

Comps.

- A1 Ipswich Wet Dock
- A2 Lock gates

NB: Count all waterbirds outside of the above designated compartments but within your area.



ORWELL WATERBIRD COUNT SECTIONS

Figure 2

Compartments/sub-comps. from 1999/00

Co-ordinator: Mick Wright
Address: 15 Avondale Road, Ipswich,
Suffolk, IP3 9JT
Tel. 01473 710032
Email: mickwright@talk21.com

Grid Ref. North TM158419

Counter Code:
CUDI Code
SPA: UK9009121

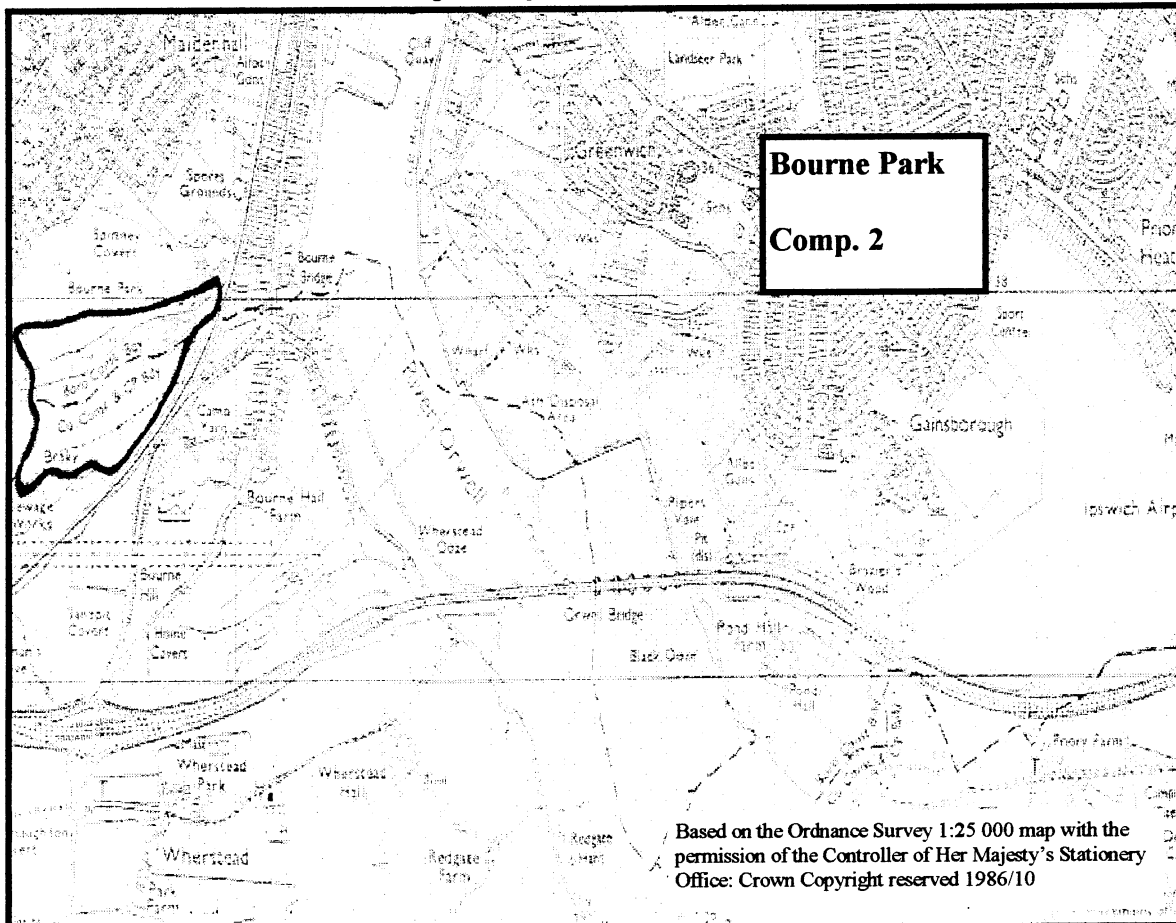
WeBS High Tide Counts

WeBS Low Tide Counts

Comp.
2 Bourne Park

Comp. n/a

NB: Count all waterbirds outside of the above designated compartments but within your area.



ORWELL WATERBIRD COUNT SECTIONS

Figure 3

Compartments/sub-comps. from 1999/00

Co-ordinator: Mick Wright
 Address: 15 Avondale Road, Ipswich,
 Suffolk, IP3 9JT
 Tel. 01473 710032
 Email: mickwright@talk21.com

Grid Ref. North TM166425
 Grid Ref. South TM170412
 Grid Ref. relates to shoreline position

Counter Code:
 CUDI Code
 SPA: UK9009121

WeBS High Tide Counts

WeBS Low Tide Counts

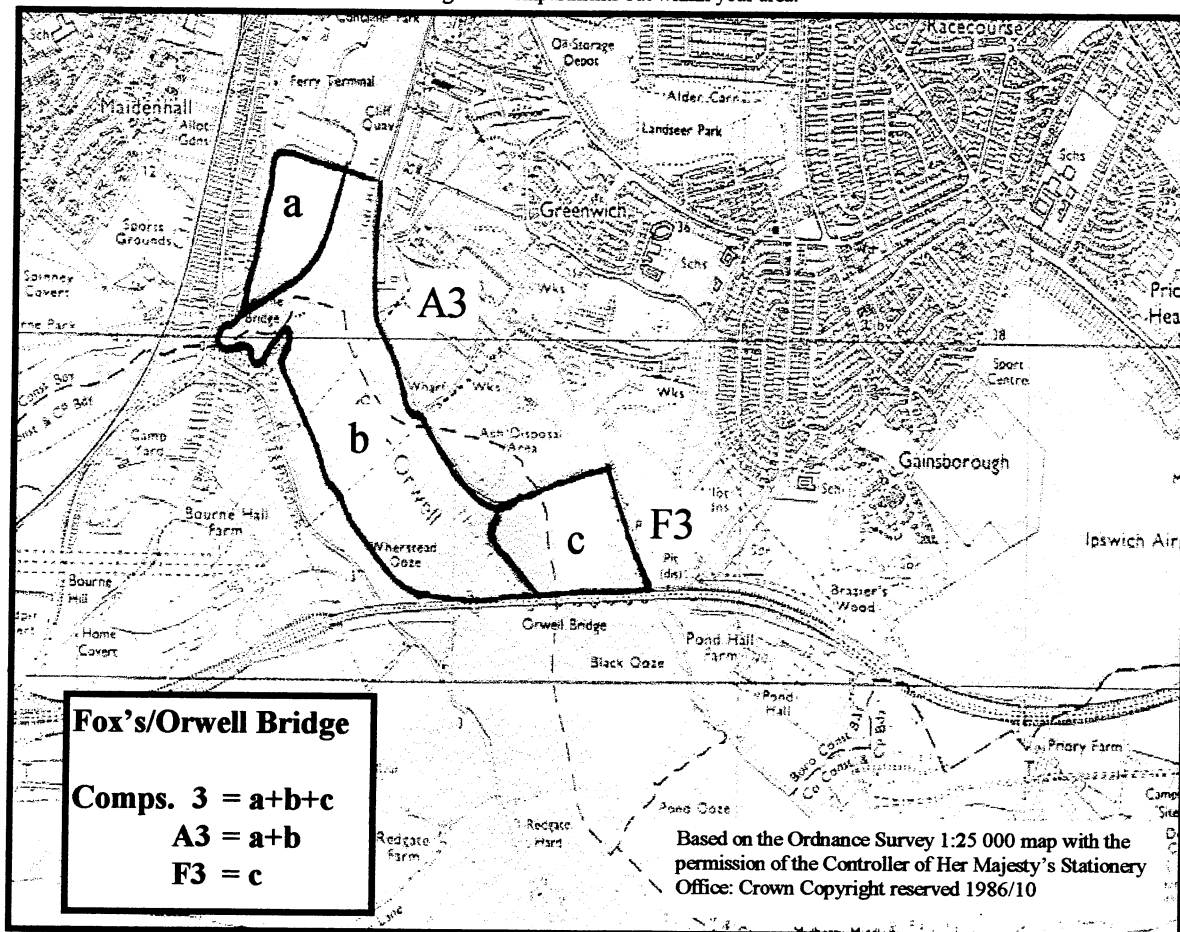
Comps.

- 3 Fox's Marina/Orwell Bridge
- 3a West Bank
- 3b Fox's Marina/Orwell Bridge
- 3c Black Ooze

Comps.

- F3 Black Ooze
- A3 West Bank/Orwell Bridge
- A3a West Bank
- A3b Fox's Marina/Orwell Bridge

NB: Count all waterbirds outside of the above designated compartments but within your area.



ORWELL WATERBIRD COUNT SECTIONS

Figure 4

Compartments/sub-comps. from 1999/00

Co-ordinator: Mick Wright
 Address: 15 Avondale Road, Ipswich,
 Suffolk, IP3 9JT
 Tel. 01473 710032
 Email: mickwright@talk21.com

Grid Ref. North TM170412
 Grid Ref. South TM174403
 Grid Ref. relates to shoreline position

Counter Code:
 CUDI Code
 SPA: UK9009121

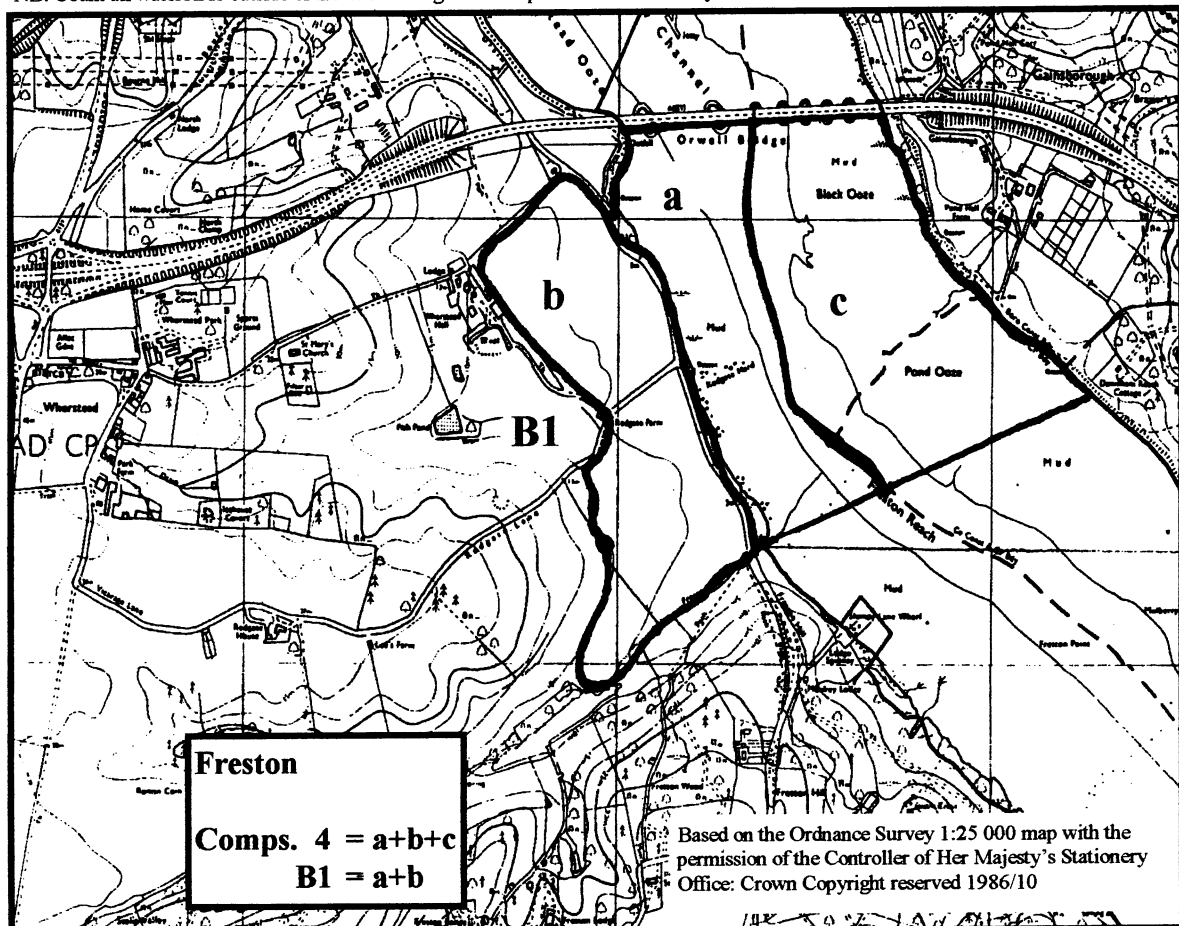
WeBS High Tide Counts

WeBS Low Tide Counts

Comps.
 4 Strand
 4a + c Shoreline, river & saltings
 4b Arable fields

Comps.
 B1 Strand
 B1a Shoreline, river & saltings
 B1b Arable fields

NB: Count all waterbirds outside of the above designated compartments but within your area.



ORWELL WATERBIRD COUNT SECTIONS

Figure 5

Compartments/sub-comps. from 1999/00

Co-ordinator: Mick Wright
Address: 15 Avondale Road, Ipswich,
Suffolk, IP3 9JT
Tel. 01473 710032
Email: mickwright@talk21.com

Grid Ref. North TM177412
Grid Ref. South TM189400
Grid Ref. relates to shoreline position

Counter Code:
CUDI Code
SPA: UK9009121

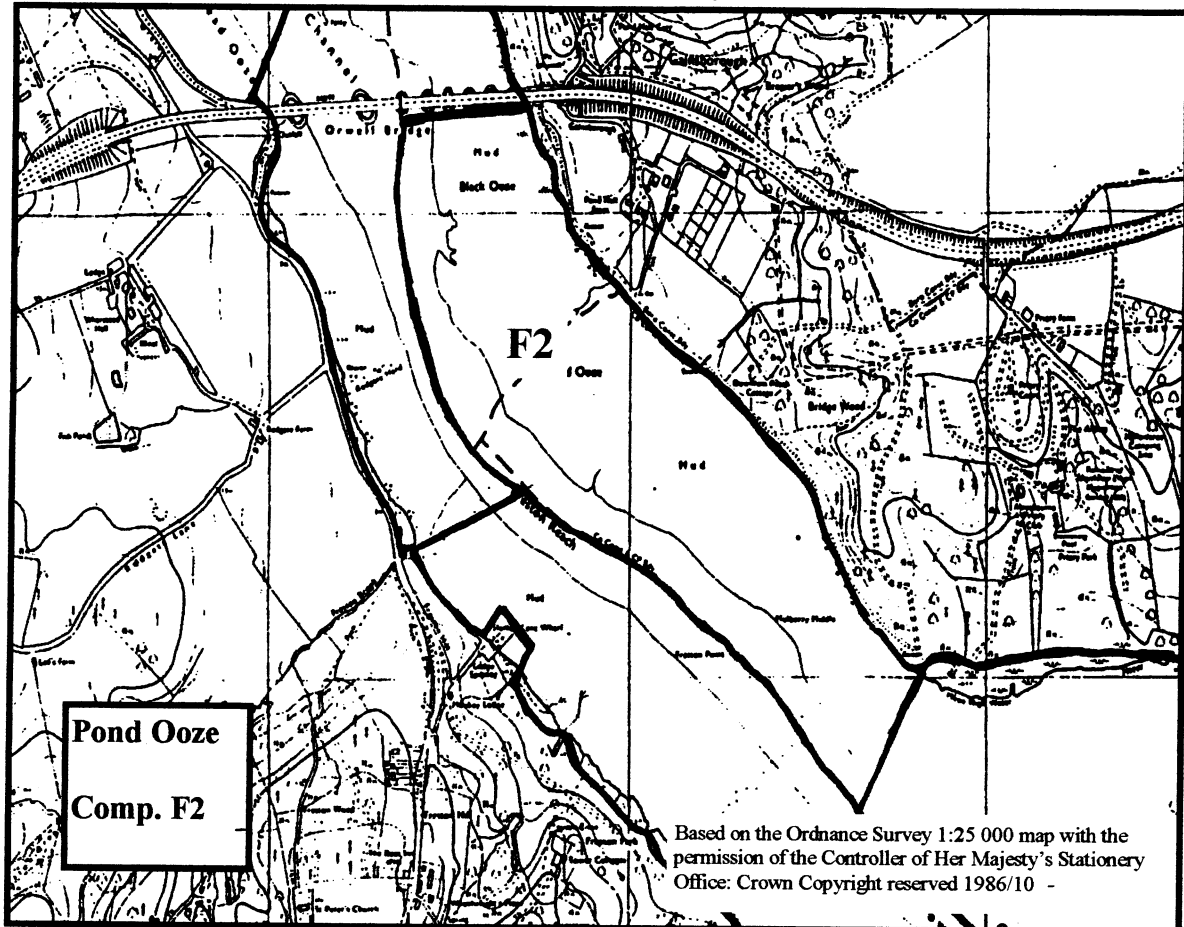
WeBS High Tide Counts

WeBS Low Tide Counts

Comps. n/a

Comps.
F2 Black & Pond Ooze

NB: Count all waterbirds outside of the above designated compartments but within your area.



ORWELL WATERBIRD COUNT SECTIONS

Figure 6

Compartments/sub-comps. from 1999/00

Co-ordinator: Mick Wright
Address: 15 Avondale Road, Ipswich,
Suffolk, IP3 9JT
Tel. 01473 710032
Email: mickwright@talk21.com

Grid Ref. North TM174403
Grid Ref. South TM191391
Grid Ref. relates to shoreline position

Counter Code:
CUDI Code
SPA: UK9009121

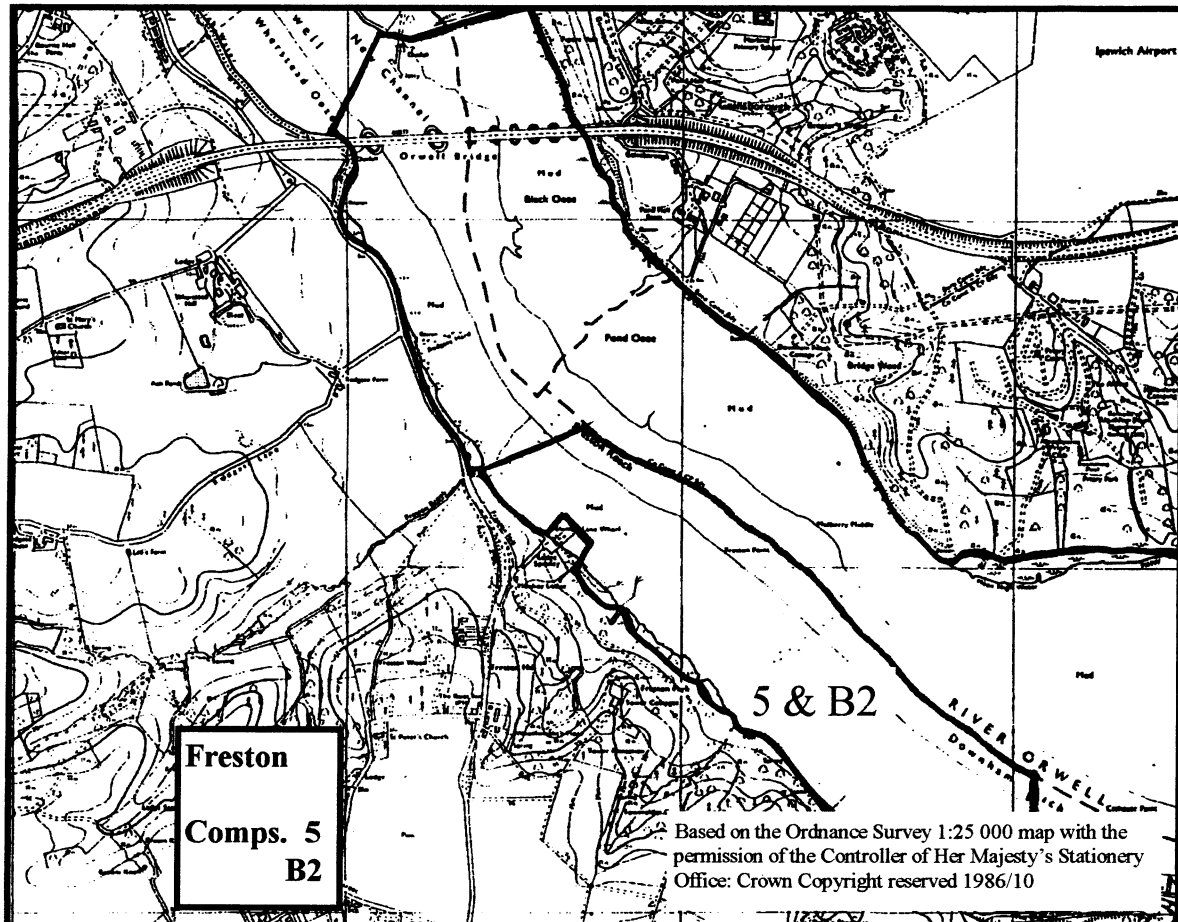
WeBS High Tide Counts

WeBS Low Tide Counts

Comps.
5 Freston

Comps.
B2 Freston

NB: Count all waterbirds outside of the above designated compartments but within your area.



ORWELL WATERBIRD COUNT SECTIONS

Figure 7

Compartments/sub-comps. from 1999/00

Co-ordinator: Mick Wright
Address: 15 Avondale Road, Ipswich,
Suffolk, IP3 9JT
Tel. 01473 710032
Email: mickwright@talk21.com

Grid Ref. North TM184406 High water
Grid Ref. North TM189400 Low water
Grid Ref. South TM208391
Grid Ref. relates to shoreline position

Counter Code:
CUDI Code
SPA: UK9009121

WeBS High Tide Counts

WeBS Low Tide Counts

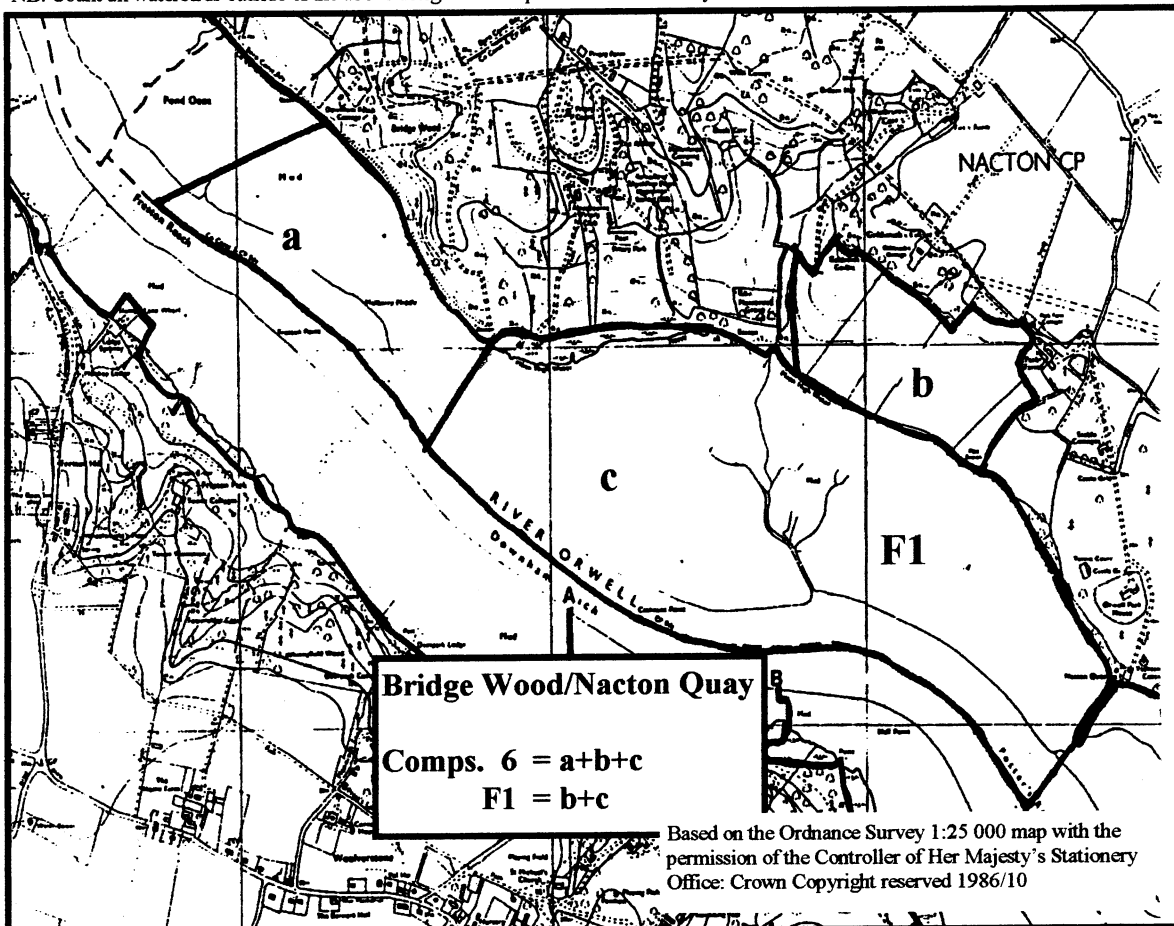
Comps.

6 Bridge Wood/Nacton Quay
6a + c Shoreline, river & saltings
6b Arable fields

Comps.

F1 Bridge Wood/Nacton Quay
F1b Arable fields
F1c Shoreline, river & saltings

NB: Count all waterbirds outside of the above designated compartments but within your area.



ORWELL WATERBIRD COUNT SECTIONS

Figure 8

Compartments/sub-comps. from 1999/00

Co-ordinator: Mick Wright
Address: 15 Avondale Road, Ipswich,
Suffolk, IP3 9JT
Tel. 01473 710032
Email: mickwright@talk21.com

Grid Ref. North TM191391
Grid Ref. South TM206380
Grid Ref. relates to shoreline position

Counter Code:
CUDI Code

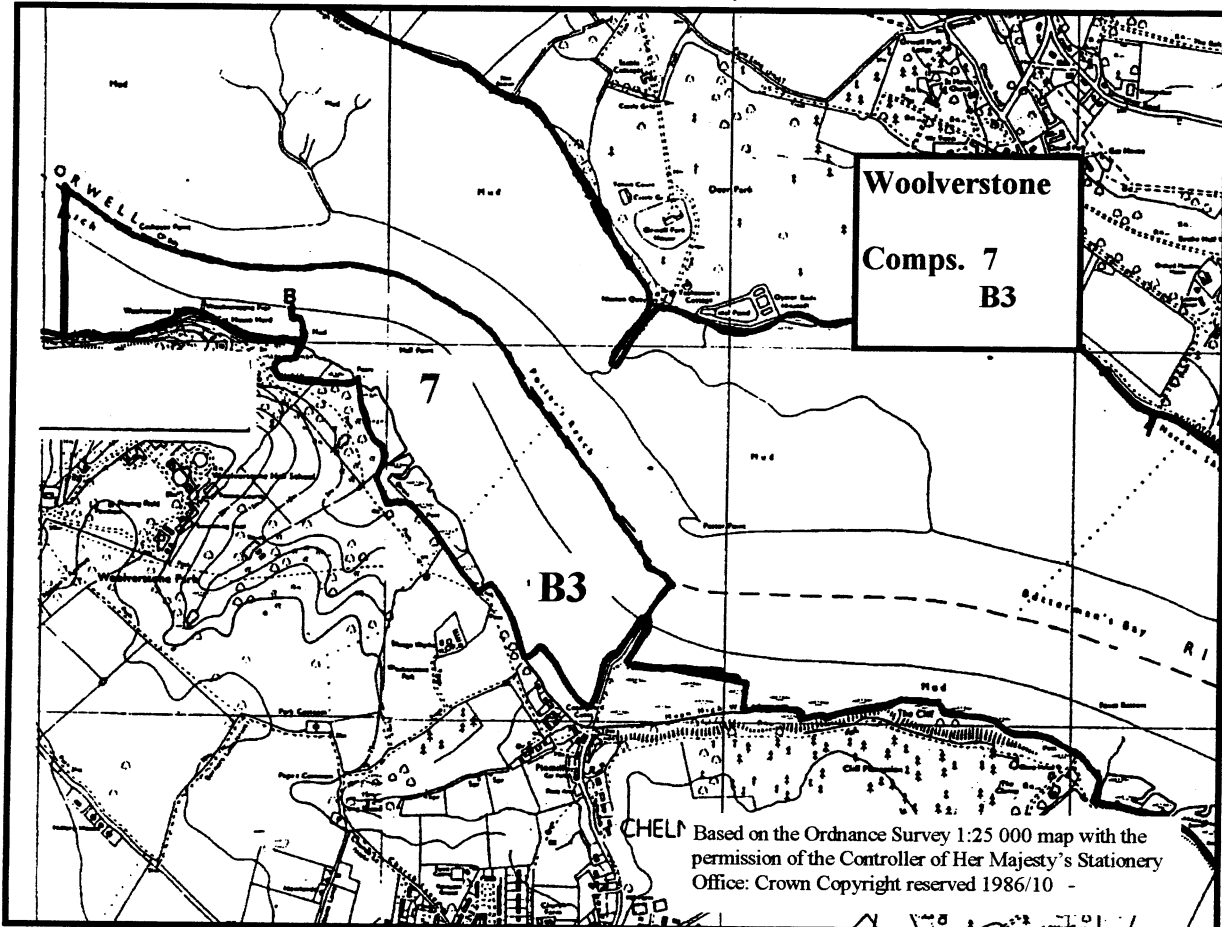
WeBS High Tide Counts

WeBS Low Tide Counts

Comp.
7 Woolverstone

Comp.
B3 Woolverstone

NB: Count all waterbirds outside of the above designated compartments but within your area.



ORWELL WATERBIRD COUNT SECTIONS

Figure 9

Compartments/sub-comps. from 1999/00

Co-ordinator: Mick Wright
 Address: 15 Avondale Road, Ipswich,
 Suffolk, IP3 9JT
 Tel. 01473 710032
 Email: mickwright@talk21.com

Grid Ref. North TM206380 High water
 Grid Ref. North TM221379 Low water
 Grid Ref. South TM242373
 Grid Ref. relates to shoreline position

Counter Code:
 CUDI Code
 SPA: UK900912

WeBS High Tide Counts

WeBS Low Tide Counts

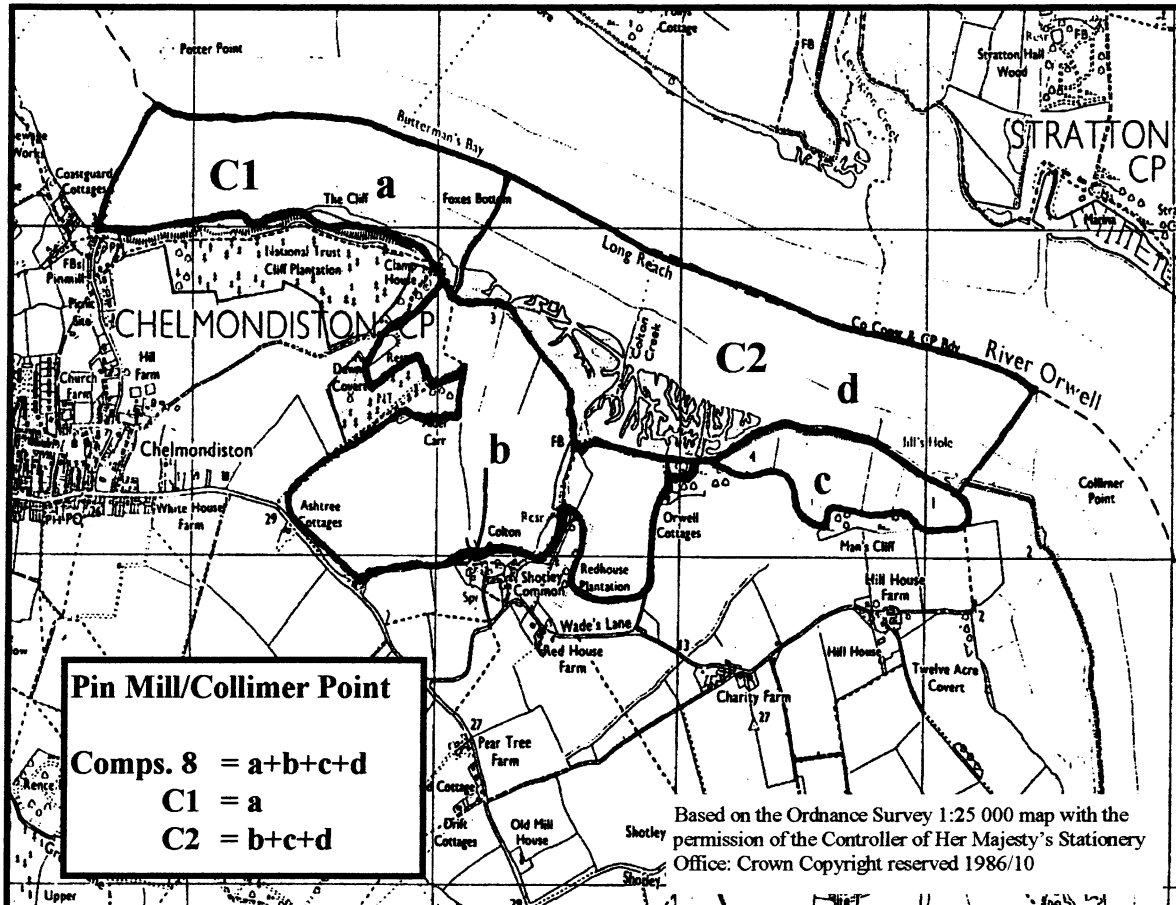
Comps.

- 8 Pin Mill/Collimer Point
- 8a Shoreline, river & saltings
- 8b Arable fields
- 8c Grazing Marsh

Comps.

- C1 Pin Mill/Clamp House
- C1a Shoreline, river & saltings
- C2 Clamp House/Collimer Point
- C2b Arable fields
- C2c Grazing marsh
- C2d Shoreline, river & saltings

NB: Count all waterbirds outside of the above designated compartments but within your area.



ORWELL WATERBIRD COUNT SECTIONS

Figure 10

Compartments/sub-comps. from 1999/00

Co-ordinator: Mick Wright
 Address: 15 Avondale Road, Ipswich,
 Suffolk, IP3 9JT
 Tel. 01473 710032
 Email: mickwright@talk21.com

Grid Ref. North TM208391 High water
 Grid Ref. North TM221389 Low water
 Grid Ref. South TM236382
 Grid Ref. relates to shoreline position

Counter Code:
 CUDI Code
 SPA: UK9009121

WeBS High Tide Counts

WeBS Low Tide Counts

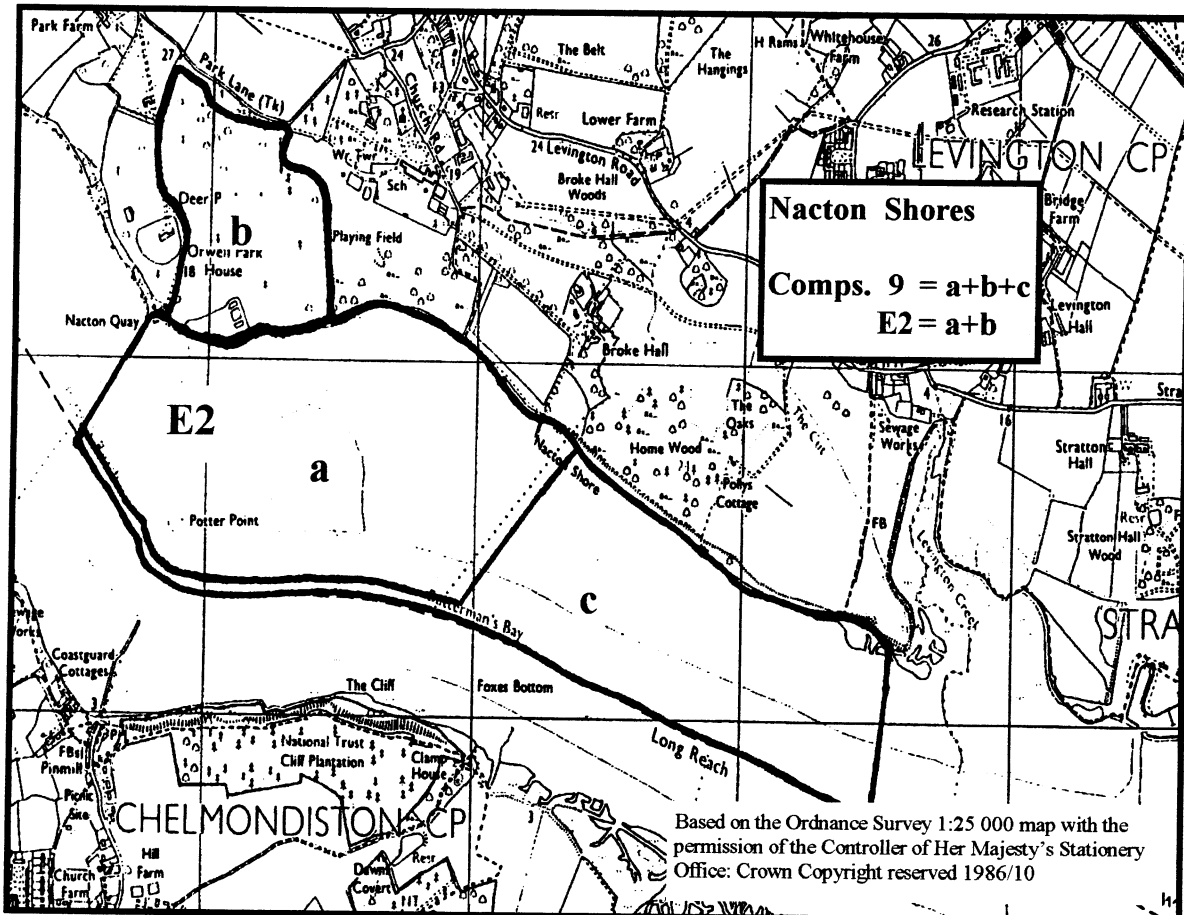
Comps.

- 9 Nacton Shores
- 9a + c Shoreline, river & saltings
- 9b Orwell Park

Comps.

- E2 Nacton Shores
- E2a Shoreline, river & saltings
- E2b Orwell Park

NB: Count all waterbirds outside of the above designated compartments but within your area.



ORWELL WATERBIRD COUNT SECTIONS

Figure 11

Compartments/sub-comps. from 1999/00

Co-ordinator: Mick Wright
 Address: 15 Avondale Road, Ipswich,
 Suffolk, IP3 9JT
 Tel. 01473 710032
 Email: mickwright@talk21.com

Grid Ref. North TM221389 Low water
 Grid Ref. North TM236382 High water
 Grid Ref. South TM245380
 Grid Ref. relates to shoreline position

Counter Code:
 CUDI Code
 SPA: UK9009121

WeBS High Tide Counts

WeBS Low Tide Counts

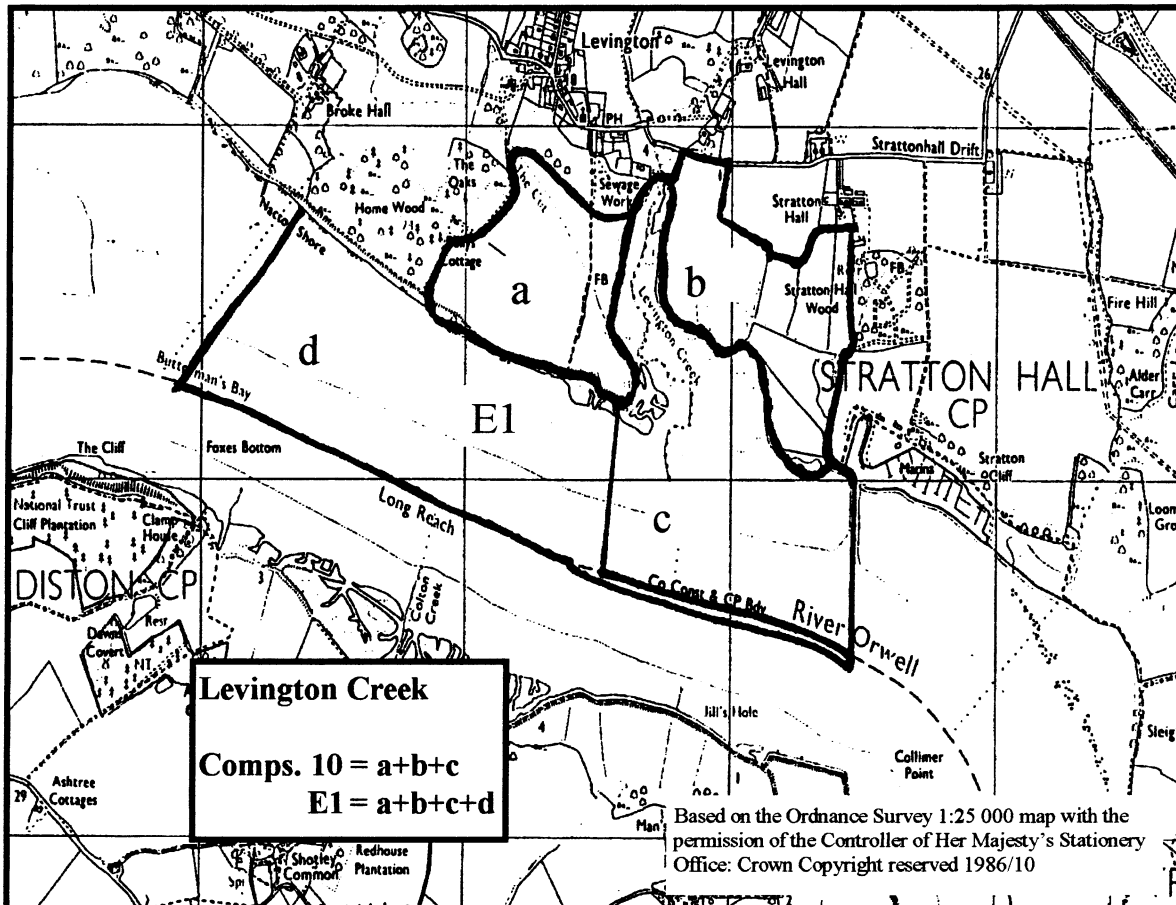
Comps.

- 10 Levington Creek
- 10a West marsh & field
- 10b East fields & silt pans
- 10c Shoreline, river & saltings

Comps.

- E1 Levington Creek
- E1a West marsh & field
- E1b East fields & silt pans
- E1c + d Shoreline, river & saltings

NB: Count all waterbirds outside of the above designated compartments but within your area.



ORWELL WATERBIRD COUNT SECTIONS

Figure 12

Compartments/sub-comps. from 1999/00

Co-ordinator: Mick Wright
 Address: 15 Avondale Road, Ipswich,
 Suffolk, IP3 9JT
 Tel. 01473 710032
 Email: mickwright@talk21.com

Grid Ref. North TM242373
 Grid Ref. South TM250336
 Grid Ref. relates to shoreline position

Counter Code:
 CUDI Code: 33909
 SPA: UK9009121

WeBS High Tide Counts

WeBS Low Tide Counts

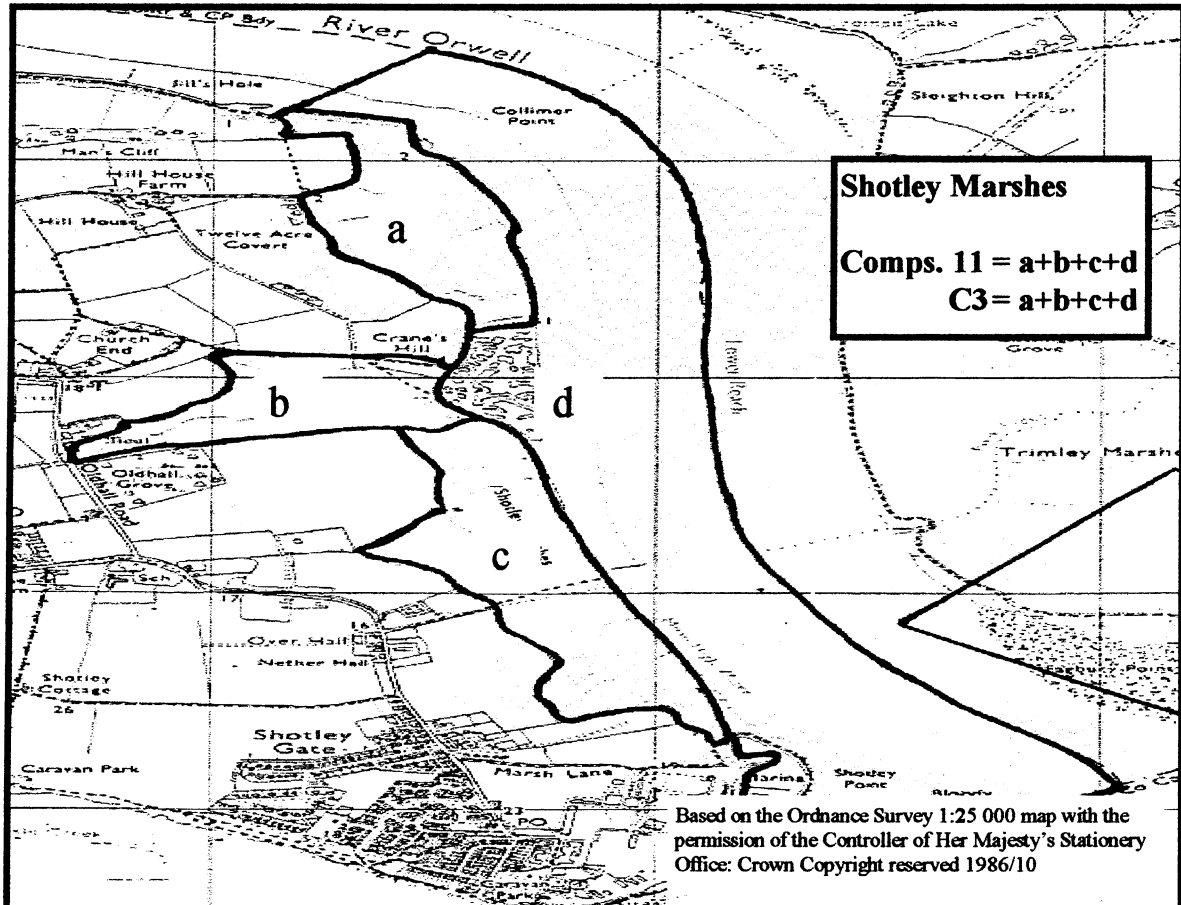
Comps.

- 11 Shotley Marshes
- 11a North marsh
- 11b Middle marsh
- 11c South Marsh
- 11d Shoreline, river & saltings

Comps.

- C3 Shotley Marshes
- C3a North marsh
- C3b Middle marsh
- C3c South marsh
- C3d Shoreline, river & saltings

NB. Count all waterbirds outside of the above designated compartments but within your area.



ORWELL WATERBIRD COUNT SECTION

Figure 13

Compartments/sub-comps. from 1999/00

Co-ordinator: Mick Wright
 Address: 15 Avondale Road, Ipswich,
 Suffolk, IP3 9JT
 Tel. 01473 710032
 Email: mickwright@talk21.com

Grid Ref. North TM242384
 Grid Ref. South TM255360
 Grid Ref. relates to shoreline position

Counter Code:
 CUDI Code
 SPA: UK9009121

WeBS High Tide Counts

Comps.

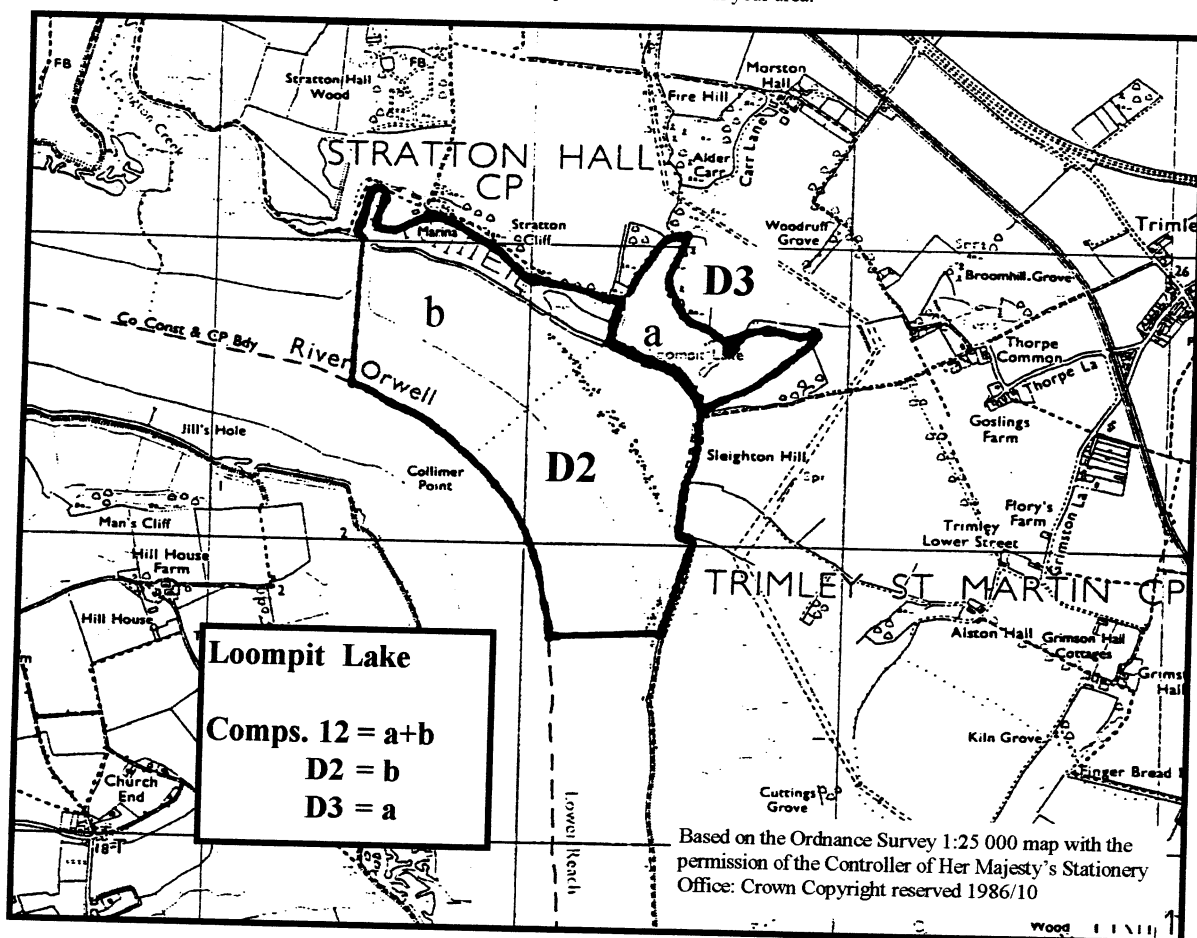
- 12 Loompit Lake area
- 12a Loompit Lake
- 12b Marina wall, shoreline, river & saltings

WeBS Low Tide Counts

Comps.

- D2 Thorpe Bay
- D3 Loompit Lake

NB: Count all waterbirds outside of the above designated compartments but within your area.



ORWELL WATERBIRD COUNT SECTIONS

Figure 14

Compartments/sub-comps. from 1999/00

Co-ordinator: Mick Wright
 Address: 15 Avondale Road, Ipswich,
 Suffolk, IP3 9JT
 Tel. 01473 710032
 Email: mickwright@talk21.com

Grid Ref. North TM254367
 Grid Ref. South TM256351
 Grid Ref. relates to shoreline position

Counter Code LW: 3060
 Counter Code HW:
 CUDI Code: 33910
 SPA: UK9009121

WeBS High Tide Counts

WeBS Low Tide Counts

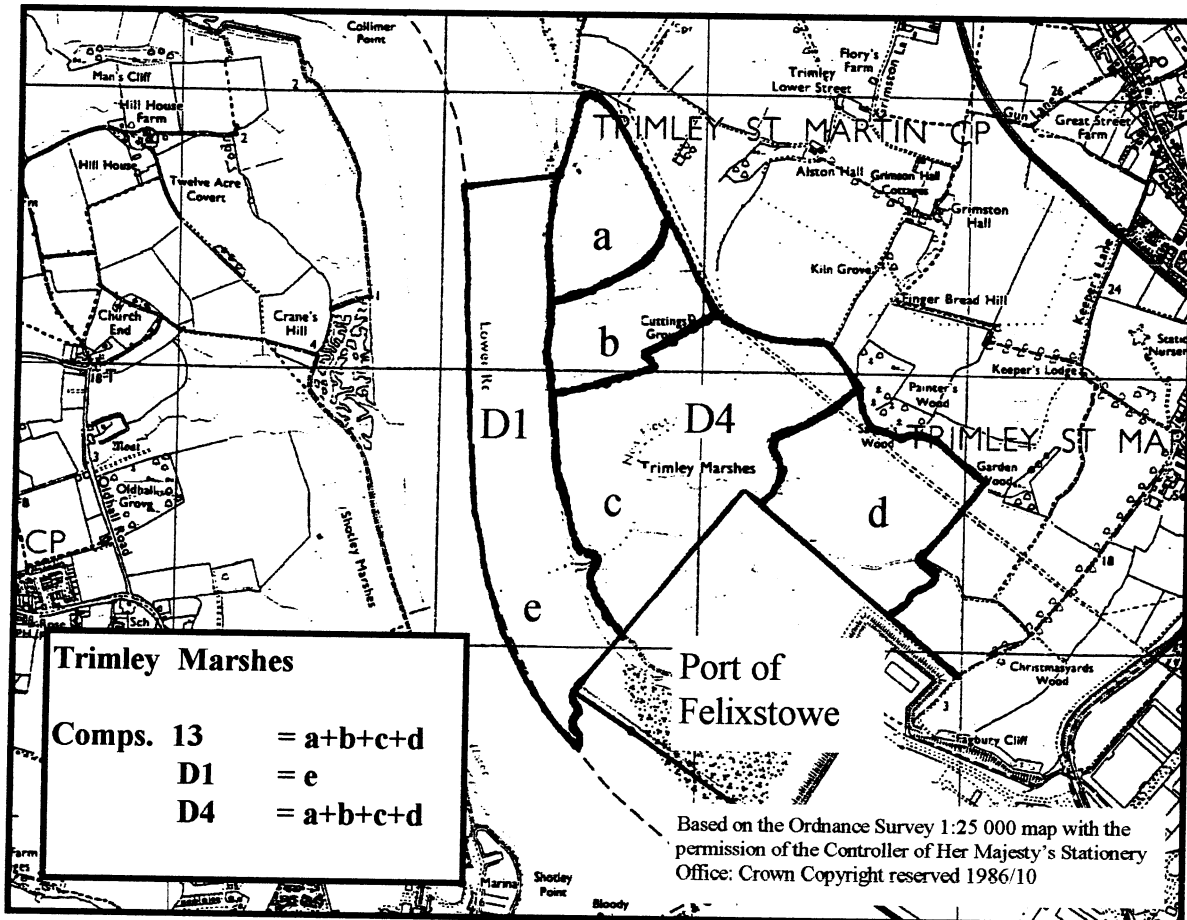
Comps.

- 13 Trimley Marshes
- 13a Retreat area
- 13b ESA/arable
- 13c SWT reserve
- 13d Arable
- 13e Shoreline & river

Comps.

- D1 Trimley mudflats
- D1e Foreshore, mudflats & river
- D4 Trimley reserve
- D4a Retreat area
- D4b ESA/arable
- D4c SWT reserve
- D4d Arable

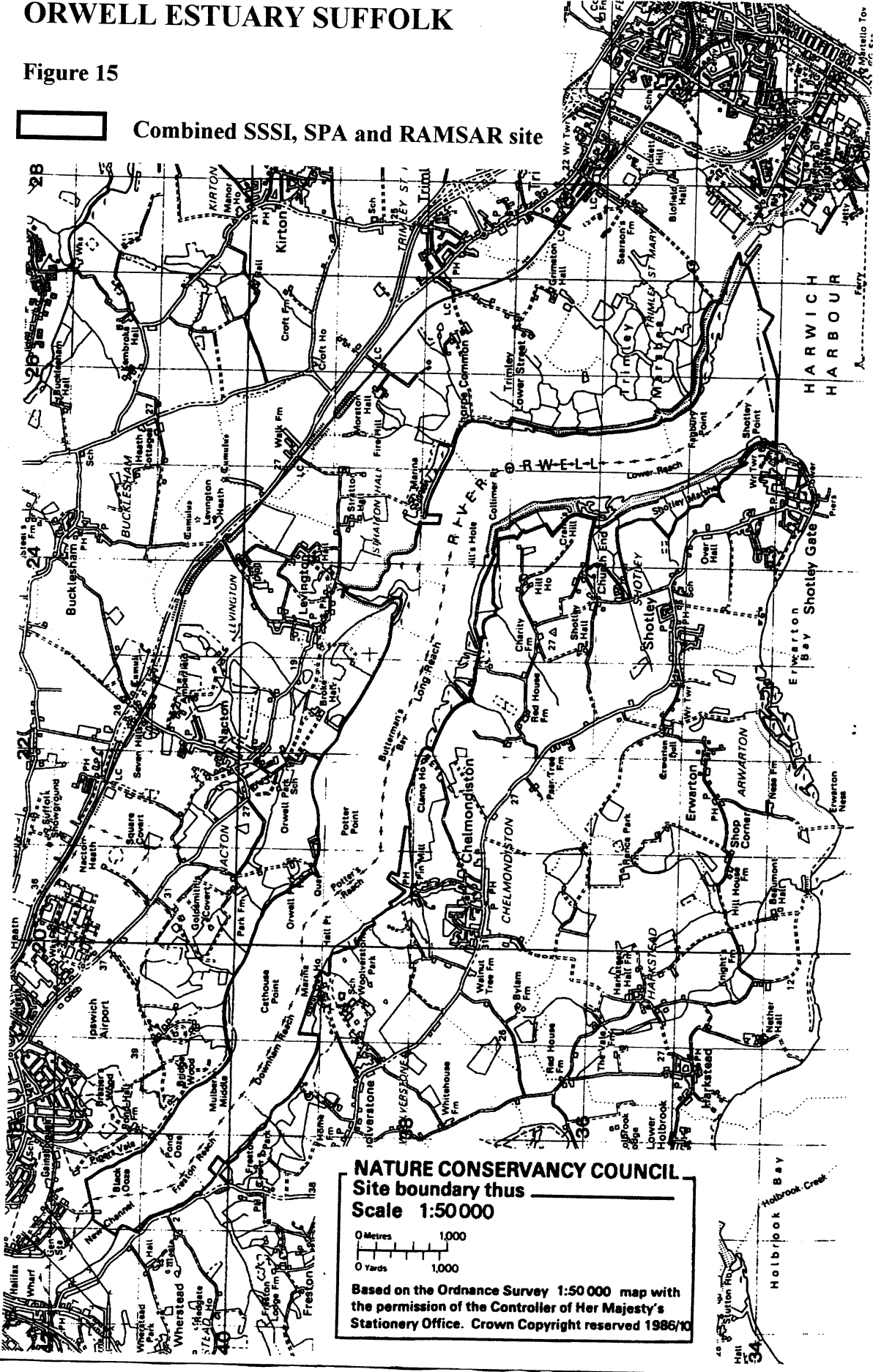
NB. Count all waterbirds outside of the above designated compartments but within your area.



ORWELL ESTUARY SUFFOLK

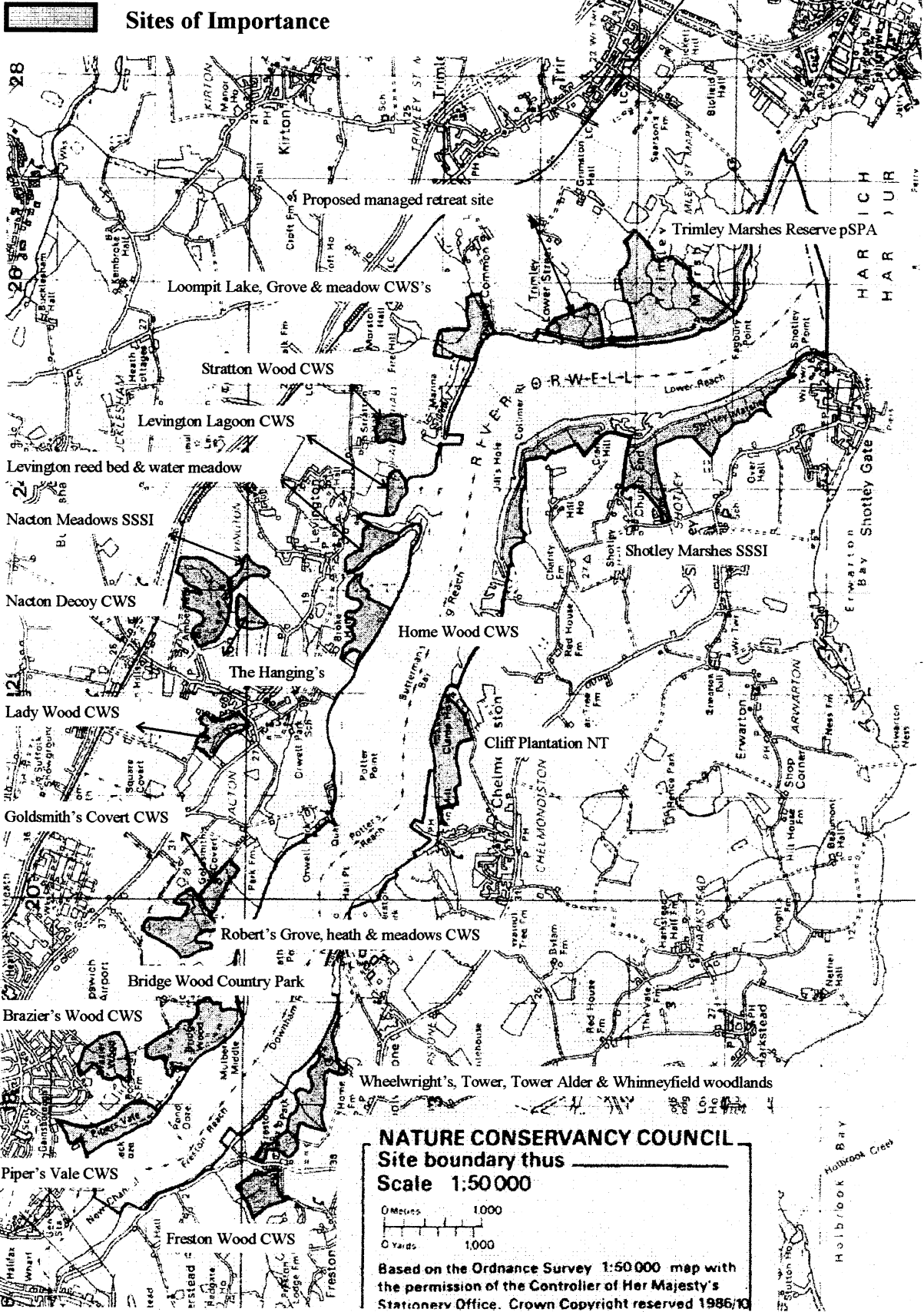
Figure 15

 Combined SSSI, SPA and RAMSAR site



ORWELL ESTUARY SUFFOLK

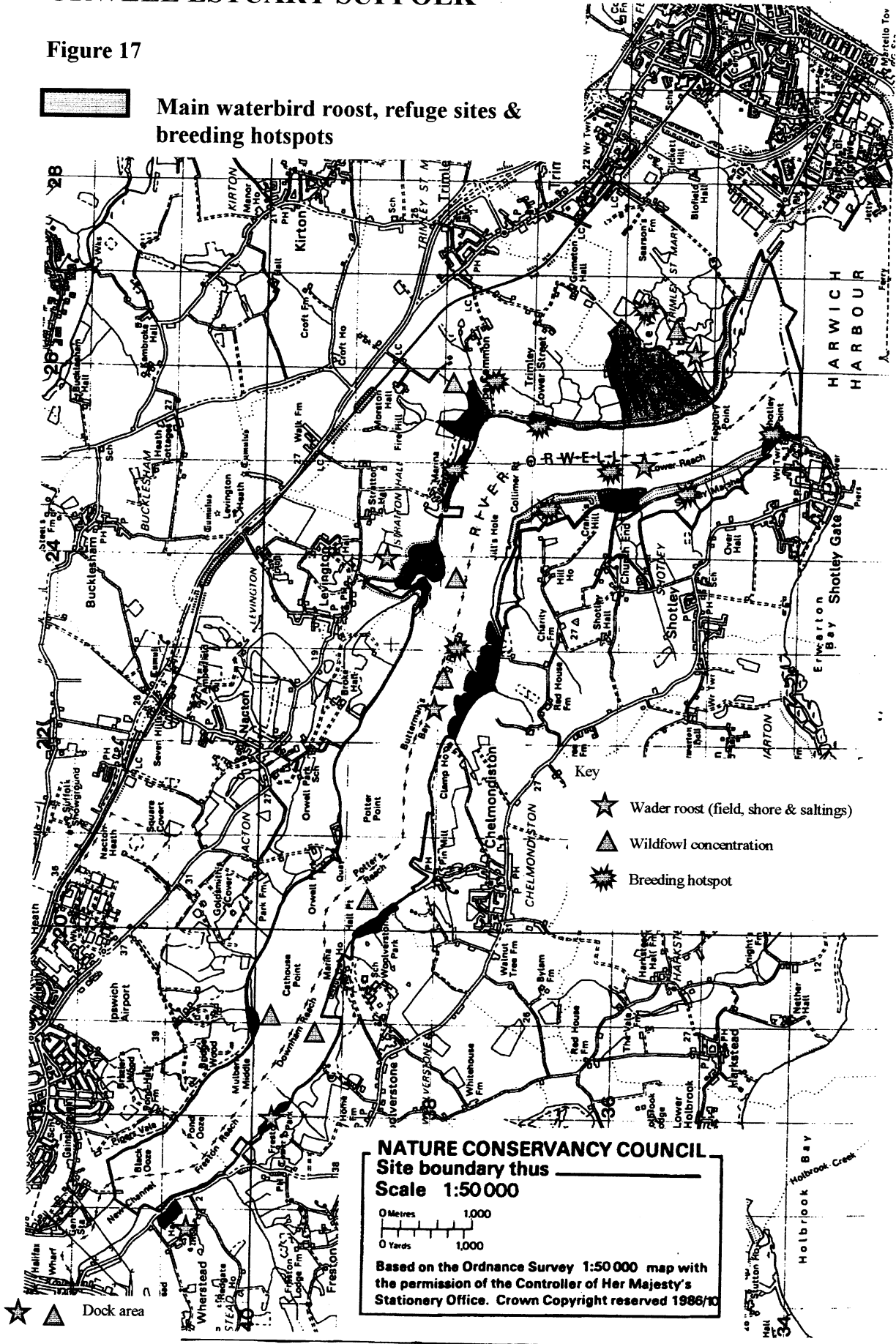
Figure 16

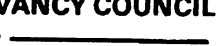


ORWELL ESTUARY SUFFOLK

Figure 17

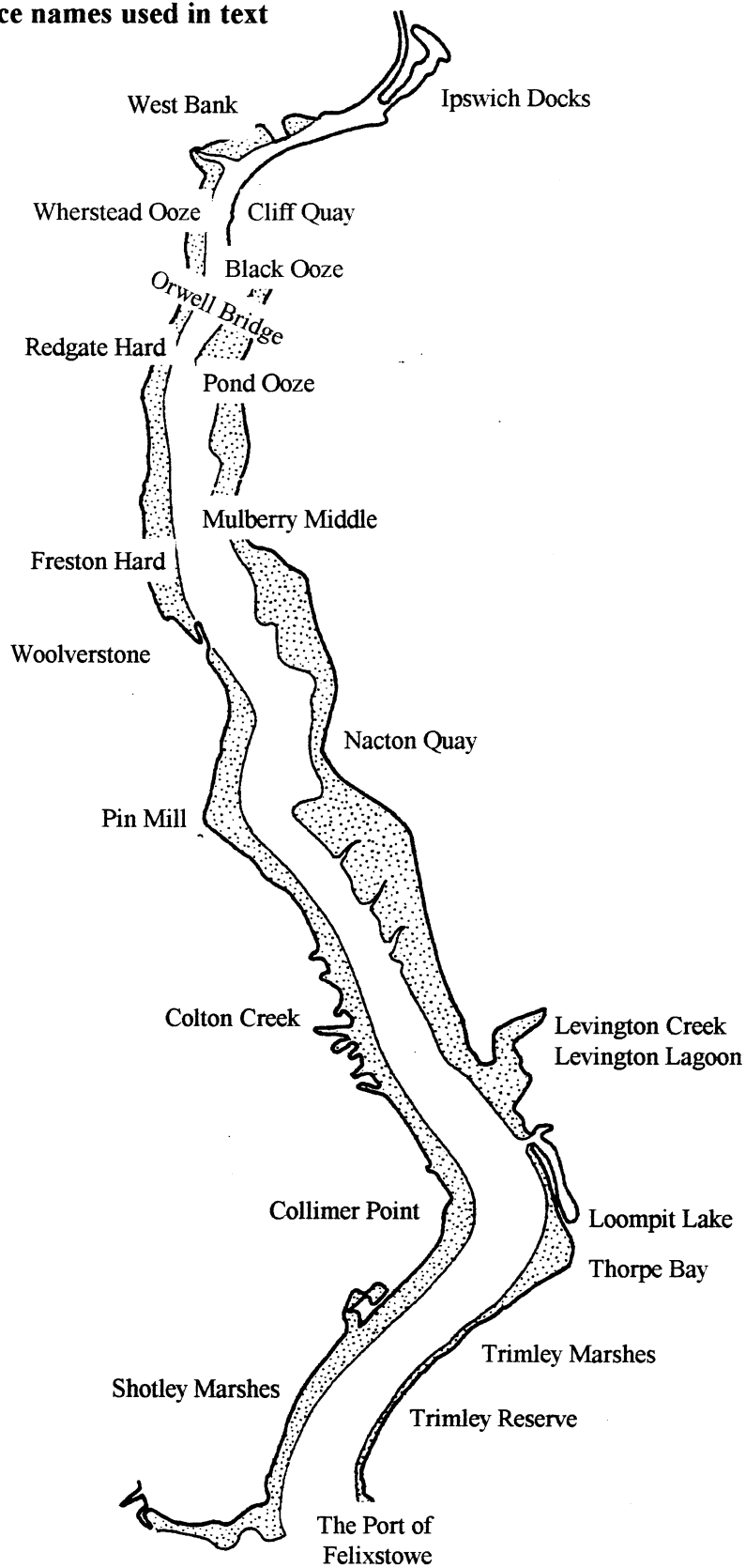
 Main waterbird roost, refuge sites & breeding hotspots



NATURE CONSERVANCY COUNCIL
 Site boundary thus 
 Scale 1:50 000
 0 Metres 1000
 0 Yards 1000
 Based on the Ordnance Survey 1:50 000 map with the permission of the Controller of Her Majesty's Stationery Office. Crown Copyright reserved 1986/70

ORWELL ESTUARY SUFFOLK

Figure 18 Place names used in text



5 The effects of the Felixstowe Dock expansion on key wading species at Fagbury

Summary

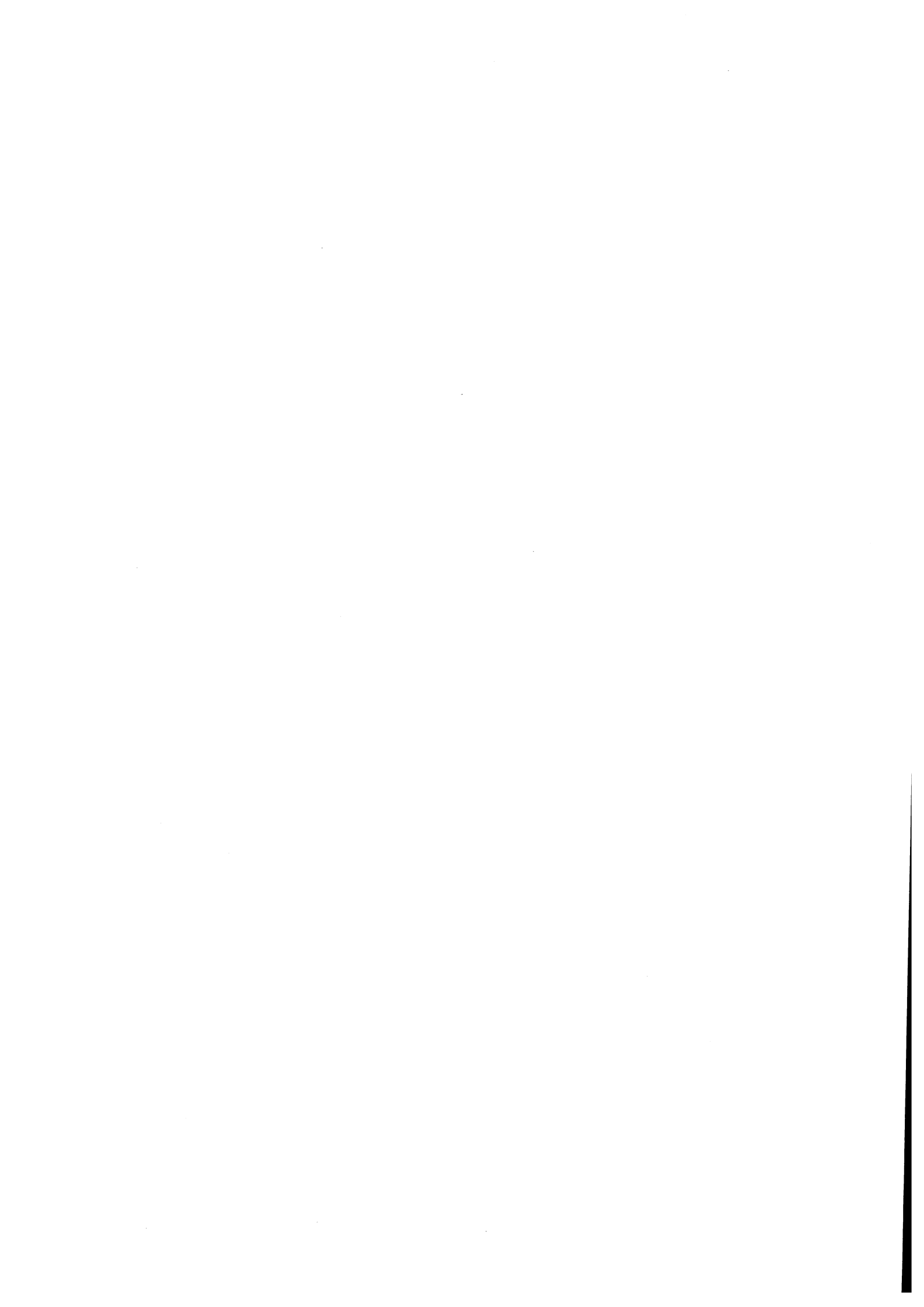
During 1988 over-wintering waders moving into Fagbury faced daily disturbances and a habitat that was rapidly disappearing under infill material. Soon after infilling commenced all species of wader responded to the loss of feeding area by a corresponding reduction in their population. Following the loss of habitat there was a substantial decrease in all the key species of wader ie Eurasian Oystercatcher, Ringed Plover, Grey Plover, Dunlin, Redshank and Ruddy Turnstone. Dunlin and Redshank were present in the highest numbers prior to infilling and showed the greatest response to the loss of habitat.

The average mid-winter maximum of feeding waders at Fagbury declined from 1,796 in 1984/85 to 80 in 1989/90, a decline of 96%.

The results clearly indicate that there was an impact on the number of wading birds that roosted and fed at Fagbury over the winter period. Whether this impact at Fagbury had an effect on the whole of the Orwell's wader populations is hard to discern given the high year-to-year variability of numbers on the whole of the estuary.

There was no control over the sand and silts that were pumped ashore. This rendered large areas of mudflat outside of the Phase 1 consent unusable for waders to feed in the following winters.

Prior to the development, Fagbury was a traditional roosting site for all six key species of wader. At the end of the project period (1992) only two species, Eurasian Oystercatcher and Ruddy Turnstone were roosting there albeit in much reduced numbers. A few years later there were no waders roosting at Fagbury.



Summary

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5.1 Introduction

It was Colonel Tomlin who first conceived the idea of constructing a large graving dock, with its entrance at Horseshoe Creek, on Landguard Marshes. The Company was first known as the Felixstowe Railway & Pier Company. After several name changes the Company's title was changed again, by an act of Parliament in 1879, to The Felixstowe Dock & Railway Company (FD&RC), as it is known today. Permission was also given to construct dock, warehouse and rail sidings. In 1886 the dock was officially opened and the first commercial vessel berthed on April 7th of that year.

During the 1914-18 War the FD&RC became a base for destroyers and throughout the Second World War the port's facilities were requisitioned by the Admiralty and used as a base for Motor Torpedo Boats. Between the inter-war years Felixstowe was better known for the testing and development of seaplanes than as a port.

The expansion of Felixstowe Port beyond its traditional limits began in 1964 with the first of a series of major land claims and development schemes. The first modern roll on – roll off berth was built in 1965, followed in 1967 by a purpose built container berth at Landguard, the first in the country. The expansion continued in the early 1970s with two more RO-RO berths, a Ferries Terminal and over 1,550 feet of new quay. Construction of the Dooley and Walton container terminal was completed in 1981. In 1986 the Trinity container terminal became operational which added a further 550 metres of purpose built quay. The water alongside was dredged to a depth of 13.5 metres allowing the Port to handle the largest container vessels afloat.

The rapid growth of the FD&RC over the last forty years has made Felixstowe the largest container port in the United Kingdom.

In November 1984, during the construction of the Trinity container terminal, the FD&RC submitted a Private Members Bill to Parliament seeking to extend their port facilities still further up the Orwell estuary. The proposed development would result in the loss of 104 hectares, which includes 34 and 13 hectares of mudflat and saltmarsh respectively. On completion this latest development would, in effect, result in the loss of all the saltmarsh and intertidal area on the lower reaches of the north shore of the Orwell.

The Bill was opposed by a formidable alliance of conservation bodies. After a record-breaking passage through the Houses of Parliament, the Bill finally won approval in May 1988. The Secretary of State for the Environment gave consent in September of that year for Phase 1; work commenced on site immediately.

Ornithologically, the Orwell supports a wider variety of wintering waterfowl than any other estuary in Suffolk. The BoEE count figures for 1984/89 showed that the average wader mid-winter population was 16,437 (peak 22,804). During that period the estuary supported one species of international and importance and five species of national importance (Wright 1989). Previous studies at Fagbury have shown that a large proportion of the estuary's nationally and internationally important species feed and roost at Fagbury (O'Brien & Ravenscroft 1985).

The Fagbury mudflat has been shown to support the highest diversity of macro-invertebrates of the estuaries in southeast England (Kay & Knight 1974) and the greatest biomass of mud invertebrates on the Orwell (Bowden & Ravenscroft 1985). More recently, a study carried out by the SWT indicated changes in the distribution and abundance of the invertebrate population of the Orwell (Beardall *et al* 1989).

In the years prior to the development research concentrated on assessing the potential implications for nature conservation of the proposed Felixstowe Dock expansion (Davidson & Evans 1985). This study was designed to research the effects of the recent and future development on the wading birds that feed and roost at Fagbury and whether the loss of the intertidal area at Fagbury effected the waterbird populations of the Orwell estuary as a whole.

The project was funded by the FD&RC and administered by the SWT. The study carried out over a four-year period was under the guidance of English Nature (EN), then known as the Nature Conservancy Council (NCC). It was the first study in the country to assess the impact of development on wading birds, before, during and after the reclamation of mudflats.

A working rapport was established between the Suffolk Wildlife Trust and British Trust for Ornithology (BTO) in order to co-ordinate the different areas of fieldwork required for the project.

This report documents various data collected in the winters of 1988/89, 1989/90, 1990/91 and 1991/92 during studies carried out at Fagbury and on the whole of the Orwell estuary. Comparisons have also been made with data collected during the winter of 1984/85 prior to the project period. Davidson and Evans (1985) identified six species of wading bird, Eurasian Oystercatcher, Ringed Plover, Grey Plover, Dunlin, Common Redshank and Ruddy Turnstone that used the Fagbury Flats as a feeding area.

Some of the data within this report has been used by Evans *et all* (1994) to assess the impact, caused by the development, on the wading birds using the Fagbury area and the implications for waders using the entire Orwell estuary.

5.2 Study Area

The Orwell estuary is to be found in Suffolk on the East Coast of Britain. The estuary is relatively long and narrow with extensive intertidal mudflats, totalling 713 hectares (Beardall *et al* 1988), throughout its length. The main tidal reaches extend from Wherstead Ooze in the northwest to Fagbury Flats in the southeast.

The upper reaches, north of the Orwell Bridge, at Ipswich, have now been almost entirely industrialised, likewise at the mouth of the estuary, at Felixstowe, extensive dockland development has occurred. Throughout the estuary's length there are five main marinas with a total, in excess of 2,000 craft either moored or on hardstanding.

Studies were concentrated at Fagbury (Fig.1) where the FD&RC proposed to develop a further 104 hectares, which includes 34 and 13 hectares of mudflat and saltmarsh respectively.

5.3 Orwell and Fagbury wader populations

5.31 Methods

The methods comprised of co-ordinated BoEE high water (roosting) counts, SWT low water (feeding) counts and population counts of feeding and roosting waders at Fagbury.

The high water roost counts were derived from the BoEE. These counts are co-ordinated by the BTO and co-sponsored by the BTO, the Royal Society for the Protection of Birds (RSPB) and NCC. The aim of the Enquiry is to monitor wader and wildfowl numbers on all British estuaries.

The Orwell estuary was divided into thirteen sections for the high water counts. Each count was made by a voluntary team of seventeen fieldworkers on a pre-selected date in the middle of the month to coincide with spring tides. The timing of each count was also specified, depending on the section to be counted, as two hours before and up to one hour after flood tide.

The low water feeding counts were a series of co-ordinated counts involving the Estuaries Project team of the SWT. Up to twelve volunteers acted as counters or as scribes. The Orwell estuary was divided into six major areas and then further subdivided into a total of seventeen sections. The counts were carried out two hours either side of low water and were made at a rate of one per month between September and April.

The population counts at Fagbury were a series of feeding counts, numbering between two and nine counts per day, between October and March. A series of high water roosting counts in addition to those of the BoEE, were also made over the same period.

The tables that appear in the species appraisal comprise of population counts at Fagbury and co-ordinated low water and high water counts. The population counts are counts made at intervals throughout the tide cycle and have been compiled into two categories; all counts and those made +/- two hours of low water. These data have been presented in the form of weekly means. Peak numbers from the co-ordinated high and low water counts have been used to compare the changes in wader numbers.

5.3.2 Results and species appraisals

Throughout the autumn period of 1988 waders encountered daily disturbances at Fagbury, some of which were prolonged ie surveyors and heavy plant (see 5.5). Any disturbance at low or mid-tide merely caused birds to move elsewhere on Fagbury mudflats. On some occasions they responded by moving to the disused oysterbeds under Fagbury Cliff.

The first real signs of change in the populations of waders feeding at Fagbury occurred soon after the first week of December when infilling commenced (see 5.4). From approximately the third week in December the populations of Dunlin and Redshank in particular declined in parallel with the loss of feeding areas (see Fig. 2). The preferred areas of feeding were lost within six weeks of the infilling operation and it was evident that the majority of species responded by moving away.

During the following winter of 1989/90 there was a major reduction in the intertidal area, substrate characteristics and invertebrate populations. Despite disturbances being far less frequent the wader populations were markedly down. Table 1 compares changes in the wader populations at Fagbury with those for the whole of the Orwell estuary during the two winters of 1988/89 and 1989/90.

	Orwell		Fagbury	
	Roosting	Feeding	Roosting	Feeding
E Oystercatcher	+1%	-33%	+266%	-44%
Ringed Plover	-46%	+34%	-68%	-90%
Grey Plover	-8%	-32%	-32%	-83%
Dunlin	+26%	-12%	-17%	-88%
C Redshank	-10%	+14%	-24%	-90%
Ruddy Turnstone	+53%	+29%	+65%	-97%

In the following winter of 1990/91 the species and numbers at Fagbury were similar to those of 1989/90 and during the fourth and final winter of the project, numbers only marginally changed.

The results detailed below deals with each of the key species separately.

Eurasian Oystercatcher

On the Orwell estuary during the winter period of 1988/89 between November and January the feeding and roosting population of Oystercatcher was constant. However, in February there was a sharp increase in numbers. This was probably due to birds coming from the Stour, as they are known to regularly move between the two estuaries. At Fagbury there was a similar pattern of events, although a decline in the feeding numbers was evident from the third week of December. The co-ordinated

feed counts in 1988 show that Fagbury held 49% of the Orwell's population during the early autumn period. Thereafter, the number feeding dropped markedly and by mid-February only 3% of the Orwell's population was feeding at Fagbury. The drop in numbers indicates that the infilling was having an effect on some of the birds. Over the next two winters the number feeding both on the Orwell and at Fagbury declined still further. The number feeding on the Orwell between 1988/89, 1989/90 and 1990/91 fell by 33% and 43% respectively from 742 to 500 to 286. Over the same period the numbers feeding at Fagbury showed a similar decline in feeding numbers (see Table 2). It was not until the winter of 1991/92, some three years later that feeding numbers increased both at Fagbury and on the Orwell.

In the winter period of 1984/85, based on peak counts, 83% of the Orwell's population fed at Fagbury. The numbers dropped to 5% during the construction phase, then still further in subsequent years. Comparing the peak counts between 1988/89 and 1984/85 there was a drop 10% on the Orwell estuary whereas at Fagbury there was a drop of 95% in the feeding numbers.

	84/85	88/89	%	89/90	%	90/91	%	91/92	%
Feed O	821	742	-10	500	-33	286	-45	468	+64
Feed F	678	36	-95	20	-44	6	-70	48	+700
% of O/F	83%	5%		4%		2%		10%	
Roost O	1,590	723	-55	726	+1	480	-34	613	+28
Roost F	1,485	59	-96	216	+266	54	-75	278	+425
% of O/F	93%	8%		30%		11%		45%	

The figures for roosting birds both on the Orwell and Fagbury show similar patterns of decline as undergone by the feeding birds. The number of Oystercatchers roosting at Fagbury during the winter of 1988/89 has declined by 96% when compared with the figures for 1984/85. The Orwell's population over the same period has also declined by 55%.

The population counts confirm the trend found by the co-ordinated counts, see Tables 14-17 of weekly means. The numbers for 1990/91, both for feeding and roosting birds, are low and probably due to the severe winter weather in February.

The population counts for 1988/89 show that the October peak was followed by a rapid decline in numbers and thereafter by a steady population which increased during the latter part of winter. On occasions some Oystercatchers were at roost four hours before high water. The following year, 1989/90, a further decline in numbers was evident. It was not until 1991/92 that an increase in the feeding numbers occurred.

Ringed Plover

The usual number of passage birds occurred during the autumn of 1988/89, as shown by the population counts and the co-ordinated counts for the Orwell estuary. At Fagbury, throughout the winter period, numbers fluctuated but overall appeared to be reasonably stable. There was no obvious detectable movement of birds away from Fagbury during the period. However, some individuals did move away, as was shown by birds that had been colour dyed.

	84/85	88/89	%	89/90	%	90/91	%	91/92	%
Feed O	234	204	-13	274	+34	197	-28	150	-24
Feed F	92	19	-79	2	-90	8	+300	49	+512
% of O/F	39%	9%		1%		4%		33%	
Roost O	620	625	+1	338	-46	133	-61	302	+127
Roost F	188	40	-79	13	-68	27	+108	91	+237
% of O/F	30%	6%		4%		20%		30%	

During the winter of 1988/89 the peak high water count for the Orwell of 625 was the highest for three years. Numbers fell in successive years and by 1991/92 had declined by 52% when compared to 1988/89. The numbers at Fagbury fell during 1988/89 and 1989/90 but increased again over the following two winters. However, the population roosting at Fagbury in 1991/92 was 52% less when compared with 1984/85.

The number of Ringed Plover feeding both on the estuary and at Fagbury is much less than those found at roost. Nevertheless, it is apparent from Table 3 that the same pattern of events as for the high water counts has occurred. At Fagbury, during the year of the development and the subsequent two years there was a substantial decrease in the numbers feeding. It was not until 1991/92 that numbers increased but were still 47% down when compared with 1984/85.

In 1984/85, Fagbury was a principle feeding and roosting site and held nationally important numbers. When comparing the figures for 1988/89 with those from 1984/85 Ringed Plover have declined by 79%.

When comparing the weekly mean of all counts with the weekly mean of the counts two hours either side of low water there appears to be a more subtle feeding strategy at low water. Similarly, as with other species, the number of Ringed Plover feeding at low water dropped from the second week of December soon after infilling commenced.

Grey Plover

During 1988/89 both high and low water counts for the Orwell estuary and Fagbury show that Grey Plovers peaked in February. Over the following three winters the number roosting on the Orwell and Fagbury were reasonably constant. The number feeding at Fagbury during 1988/89 peaked in December and the lower numbers that followed coincided with the start of the infilling work. In subsequent years there was a decrease in the numbers feeding, it was not until 1991/92 that numbers increased but were still 43% down when compared with 1984/85.

	84/85	88/89	%	89/90	%	90/91	%	91/92	%
Feed O	313	291	-7	198	-32	263	+33	156	-41
Feed F	64	53	-17	9	-83	8	-11	34	+325
% of O/F	20%	18%		5%		3%		22%	
Roost O	243	380	+56	350	-8	359	+3	248	-31
Roost F	92	66	-28	45	-32	48	+7	53	+10
% of O/F	38%	17%		13%		13%		21%	

The BoEE count for February 1989 of 380 birds was the highest number ever recorded on the Orwell and the average maxima over the five year period, 1984/89, of 255 is of national significance. Throughout the winter of 1988/89 18% and 17% of the Orwell's population roosted and fed at Fagbury respectively.

Dunlin

Fagbury was a preferred site for Dunlin (O'Brien and Ravenscroft 1985). In line with previous years findings the 1988/89 low water counts showed that Fagbury held 41% of the Orwell estuary's population during the early autumn period. By the third week of November the population on the Orwell had increased to 4,847 and at Fagbury to 483 which was 10% of the Orwell's population. The feeding population declined by 74% between December 19th (616) and January 16th (160) and declined still further in February by 26% (81% down on the Decembers figures). Likewise the numbers at high water between December 11th (600) and January 8th (63) had declined by 90%, while the Orwell's population remained at maximum winter levels until the second week of February. At Fagbury during the following winter (1989/90), the numbers counted at both the low and high water had declined still further although numbers feeding improved during the winters of 1990/91 and 1991/92. Despite this small recovery the number of Dunlin feeding at Fagbury in 1991/92 was 41% down when compared with 1988/89 and 77% down when compared with 1984/85.

	84/85	88/89	%	89/90	%	90/91	%	91/92	%
Feed O	17014	9837	-42	8652	-12	11054	+43	8873	-20
Feed F	1565	616	-61	73	-88	112	+53	364	+225
% of O/F	9%	6%		1%		1%		4%	
Roost O	12972	7900	-39	9933	+26	10813	+9	6786	-37
Roost F	1865	600	-68	500	-17	522	+4	4000	+666
% of O/F	14%	6%		5%		5%		59%	

Confirmation of Dunlin moving elsewhere from the Fagbury feeding area is borne out by the population counts at Fagbury. These counts (weekly means Tables 14-17) clearly show the population trend during the winter period of 1988/89. A steady build up of numbers occurred during October from 120 to 396 followed by a reasonably stable period through November when the number of birds remained around 550. The decline in Dunlin numbers occurred from the last week of November when a population of 574 (weekly mean) progressively decreased to 253 (weekly mean) at the end of January, a decline of 56%. A further decrease in numbers of 74% (88% down on the November figure) had occurred by the end of February.

The co-ordinated and population counts show that an influx of Dunlin, into the Orwell estuary occurred at the end of December.

Redshank

The low water counts for 1984/85 and 1988/89 indicate that around 10% of the Orwell estuary's population of Redshank fed at Fagbury. During the following three winters (1989/90 to 1991/92) the number had fallen to about 2%. The low water peak count at Fagbury in 1989/90 when compared with 1988/89 suggests that the feeding population had declined by 90%.

The peak number of 354 Redshank roosting at Fagbury in 1984/85 was 12% of the Orwell's population. The number in 1988/89 was much less, around 5% and over the following three winters remained reasonably constant.

	84/85	88/89	%	89/90	%	90/91	%	91/92	%
Feed O	2568	1718	-33	1958	+14	1788	-7	1652	-8
Feed F	245	155	-37	16	-90	32	+100	40	+25
% of O/F	10%	9%		1%		2%		2%	
Roost O	2972	1373	-54	1243	-10	1574	+27	1531	-3
Roost F	354	74	-79	56	-24	39	-30	52	+33
% of O/F	12%	5%		5%		3%		3%	

The population counts (+/- 2 hrs of low water) for 1988/89 show that, following the commencement of the infilling work, Redshank numbers declined by 43% in January and 67% in February when compared with the number in December. During the three winters of 1989/90 to 1991/92 very few birds, on average only 12, fed at Fagbury, a decline of 92% when compared with 1988/89.

Ruddy Turnstone

The number of Turnstone feeding at Fagbury during the winter periods of 1984/85 and 1988/89 was 15% and 21% of the Orwell's population respectively. Over the following two winters (1989/90 and 1990/91) numbers had fallen to between 1% and 4%. The low water peak count at Fagbury in 1989/90 when compared with 1988/89 suggests that the feeding population had declined by 97%.

The figures for 1988/89 and 1989/90 shows that Fagbury is the principle roost site on the Orwell for this species. Over the following two winters the number of Turnstone roosting at Fagbury declined, however, there was still 25% of the Orwell's population roosting there.

	84/85	88/89	%	89/90	%	90/91	%	91/92	%
Feed O	260	148	-43	191	+29	225	+18	142	-37
Feed F	40	31	-23	1	-97	9	800	14	+56
% of O/F	15%	21%		<1%		4%		10%	
Roost O	243	289	+19	442	+53	282	-36	286	+1
Roost F	92	190	+106	314	+65	65	-79	82	+26
% of O/F	38%	66%		71%		23%		29%	

The Fagbury population counts (+/- 2 hrs of low water) for 1988/89 show that prior to the commencement of the infilling work that there was only a small number, c15, of Turnstones feeding there. Over the next three winters the number feeding, on average, were less than ten birds.

5.3.3 Discussion

During 1988 over-wintering waders moving into Fagbury faced daily disturbances and a habitat that was rapidly disappearing under infill material. Soon after infilling commenced all species of wader responded to the loss of feeding area by a corresponding reduction in populations. Dunlin and Redshank were present in the highest numbers prior to infilling and showed the greatest response to the loss of habitat. Although, following the loss of habitat there was a substantial decrease in all

of the key species of wader, at times Ringed Plover, Grey plover and Turnstone were able to exploit the infill areas.

According to Goss-Custard and Durrel (1984) waders arriving in the autumn occupy those areas of an estuary that provide the best feeding conditions. In 1984 Dunlin, Grey Plover, Eurasian Oystercatcher, Ringed Plover and Ruddy Turnstone initially occupied Fagbury on arrival (O'Brien and Ravenscroft, 1985). In the autumn of 1988 this pattern of arrival into the Orwell estuary only occurred for four species, whilst in 1989 no species showed a preference for Fagbury. The average mid-winter maximum of feeding waders at Fagbury has declined from 1,796 in 1984/85 to 80 in 1989/90, a decline of 96%.

Prior to the development, Fagbury was a traditional roosting site for all six key species of wader. At the end of the project period (1992) only two species, Oystercatcher and Turnstone were roosting there albeit in much reduced numbers. After the project period no waders roosted at Fagbury.

The results clearly indicate that there was an impact on wading birds that roosted and fed at Fagbury over the winter period. Whether this impact at Fagbury had an effect on the whole of the Orwell's populations is hard to discern given the high year-to-year variability of numbers on the whole of the estuary.

Eight years on from the project period, all six species of waders discussed have changed their status on the Orwell estuary in different ways. The Oystercatcher has increased in feeding numbers and is now feeding throughout the estuary including areas in the upper reaches where previously they had rarely fed before. Ringed Plover numbers are no longer nationally important both during the winter or passage periods. The Grey Plover, too, is no longer a nationally important species on the Orwell but after low numbers around the 1990s are now increasing. The number of Dunlin at roost has steadily declined and are now the lowest ever recorded. Over the same period, feeding numbers have been erratic but the trend is downwards. Redshank numbers are stable/increasing. Turnstone are no longer a nationally important species during the winter or passage periods and their wintering trend is one of decline.

5.4 Progression of mudflat loss to infilling at Fagbury

The FD&RC received consent from the Secretary of State for the Environment in the latter half of September 1988 to develop their port facilities further into the Orwell estuary. Work commenced, on site, for Phase 1 of the Trinity Container Terminal immediately. Two dredgers, a bucket dredger (conveyor type) and a grab dredger, were deployed to remove all soft muds to a depth of 11 metres from the area where the quay and anchor walls were to be built. Working around the clock, the operation removed one million cubic metres of mud, which was subsequently dumped off shore on the Rough Towers, spoil fields.

At the end of October and the beginning of November activity increased in the form of surveyors, JCB's and bulldozers. At the western end of the mudflat a trench was excavated about 80 metres from the upper shoreline. In the second week of

November, track vehicles were levelling the land between Fagbury Cliff and the dock beach and in doing so the first spoil was pushed into the tidal area of the disused oysterbeds. By the end of November infilling had almost reached the break in the beach where tidal water entered to flow across the disused oysterbeds. Land levellers were also being deployed behind the sea wall, on arable land, to create the northern bund as part of the landscaping programme.

The land claim at Fagbury began at midday on Monday December 5th 1988 when, for the first time, dredged material was pumped ashore at a rate of approximately 3,000 cubic metres per hour.

Infilling, using sand and shingle progressed at a considerable rate. In only five days the dock beach had accreted by approximately 50 metres. By December 13th infilling, forming a shingle spit, had bisected a large portion of the mudflat and almost all of the oysterbeds had a covering of sand and silt to varying depths. A week later, at the western end of Fagbury Cliff, temporary bund walls were prepared to control the impending infilling of the saltmarsh. The footpath to the foreshore was now buried to a depth on almost one metre.

During the first week of the new year, 1989, the pumping ashore of infill was concentrated between the shingle spit and the low water line and during the following week, between the spit and the sea wall. The claimed area now extended approximately from the western end of the oysterbeds, seaward, to the shingle spit at an angle of 70 degrees.

The pumping medium bringing the infill material ashore had to escape across the mudflat and in doing so caused a wash, which deposited fine silt, to varying depths. Coupled with a natural slope of the infill most of the muddier substrate was lost.

By January 16th, only 42 days after pumping had commenced, the mudflat area of Phase 1, had been covered to varying depths by infill and silt. The scouring action of the pumping medium cut away the natural beach line forming a four-foot ridge before cutting new channels across the mudflat to the low water line. Infilling continued during early February to establish the level of the terminal and at this time an enormous pile of sand and shingle stood where the oysterbeds used to be. At this stage the saltmarsh was permanently waterlogged and engulfed in silt. Ditches were cut through the saltings to release the pumping medium and by the end of the second week in February most of the saltmarsh was beneath infill. The shingle spit extended the length required for Phase 1 (see Fig.2). At the end of February the area to be claimed was almost complete and pumping of infill was concentrated on arable land behind the sea wall.

At the end of March the infill area was a mountainous region of sand and shingle. A high wall had been created along the north-western section of the development, which in turn formed a new sloping beach.

Over 2.3 million cubic metres of infill were used in the land claim.

On completion of the infilling operation, sand and silts were deposited over a large area of mudflat outside of the Phase 1 boundary. This layer of consolidated silt and sand was extremely hard to penetrate depriving wading birds of their feeding grounds.

5.5 Disturbances to feeding waders due to infilling

In the 1970s the mudflats on the lower reaches of the Orwell, at Fagbury, were typically that of an estuarine environment, isolated, quiet and expansive. Any bait digger venturing out on the flats could have gone unnoticed. In October 1988, the mudflats, far removed from their original state, were no longer quiet or expansive and were subject to a variety of disturbances.

The remaining area known as the Fagbury Flats, situated on the lowest reach of the Orwell was made up of firmer muds and sands. Since the last extension of the dock (Trinity 1), it was noticeable that some areas of mudflat were changing and becoming more variable. The acute angle by which the new dock beach bisected the shore had contributed to the silting up and the formation of new mud banks. These mud banks were soft to a depth of around two feet before a firmer substrate was reached. Much of the flats were of firmer muds and unchanged but nearer to Fagbury Point and at higher tidal levels the substrate was of firm sand. Some areas of beach had been eroded by wave action and stripped of its shingle to expose stiff clay. A shingle hard had accreted onto the mudflat mid-way along the shore and was probably made up of displaced shingle from the beach.

With the onset of the infilling operation, the wading birds not only faced the obvious disturbances brought about by the colossal scale of the development but also had to contend with the catastrophe of a rapidly disappearing feeding area. These disturbances, coupled with mudflat losses, lead to increased competition for feeding areas and food and in turn created stressful conditions leading to untold pressures on the wading birds. To maintain the necessary intake of food to satisfy energy requirements, the waders had to compensate for the negative human environmental intrusion in order to survive.

The loss of feeding area and the decline in population size of wader species using Fagbury Flats is discussed in sections 5.3 and 5.4. The only favourable condition for the waders during the winter of 1988/90 was the exceptional mild weather.

From October, waders moving in from their summering areas built up in numbers in the usual way. This period, October to November, coincides with the local fishing season for Cod and Whiting when fishermen peak in numbers consequently from one to six bait diggers, some with their dogs, were a daily occurrence at the Fagbury Point end of the mudflat. As weekends approached, bait diggers appeared on the flats as if working in shifts, digging through the tide cycle when mud was exposed. This had the effect of pushing and concentrating waders to the middle and eastern end of the mudflats.

The continual disturbance was probably one of the main reasons why no Black-tailed Godwits were seen during this period.

Where bait digging was concentrated, Sanderling was the only wading species; apart from on occasions Turnstones nearer top tide that tolerated the diggers.

Disturbances to the wading birds occurred frequently through various activities from salvaging small dinghies to walkers and parties of school children on the beach. This became more apparent as the feeding area became progressively smaller.

Disturbances of longer duration occurred through workmen at the low water line installing and inspecting anchorage points and markers for the dredgers. Surveyors were regularly on the beach or mudflat during October and November. On occasions, tracked vehicles were on the mudflat. For example, on October 12th, a JCB plus five workmen were on the flats excavating a trench and caused at least 180 grey waders, mainly Dunlin, to leave the area.

Tide surges across the upper shore, due to large ships passing, caused premature flooding forcing birds to move away from the area.

Sometimes a combination of disturbances occurred simultaneously on different parts of the mudflats.

On December 5th, sand and shingle infill was pumped ashore from a dredger at anchor. The pumping medium escaping back to the sea caused premature flooding of the mudflat and for the first time a large feeding area was temporarily lost. Gulls congregated around the areas that were awash but at the same time wading birds were denied their normal feeding areas. When pumping coincided with low tide, large areas of water emulated a flooding tide thus depriving waders of their vital feeding areas.

The dredger, extracting sand and shingle from the seabed, worked seven days per week and twenty-four hours per day non stop (except for two days at Christmas) for almost five months. Most of the sand and shingle came from the Cork Spit area of the North Sea and the remainder came from the approaches to the new quay. The dredger held 5,700 cubic metres of spoil which was discharged in approximately one and a half to two hours. The frequency, three occurrences in a twenty-four hour period, by which infill was discharged ashore caused the greatest amount of disturbance. The pumping medium bringing the infill ashore resulted in the speedy and permanent loss of mudflat. From the very first discharge waterfowl responded to the loss of feeding area by moving away and this continued as more intertidal area was lost. Thus waterfowl were constantly under pressure.

The frequency by which the infill material contained food items was unknown as was the size, quantity and quality of prey item. Gulls, for instance, scavenged in large numbers, sometimes in excess of 700 birds, while on other occasions were absent. Obviously, the quality of dredge, in terms of prey, dictates somewhat the number of gulls that scavenged. A close inspection of one particular dredge after it had been pumped ashore revealed a high number of whelk shells, all of which housed a Hermit crab. Over fifty were counted in one small area but there must have been many more that were buried under the infill.

The pumping medium attracted waders in a more subtle way. Some waders created their own little niche to exploit the temporary food source. On the lea of the infill where no wash or foam occurred Dunlins and Sanderlings were able to feed. Longer legged waders such as Redshank were able to feed in deeper water. However, due to the sheer force of the pumping medium across the mudflats and the depth of water involved, large areas were rendered unsuitable for waders to feed. When the pumping stopped waders moved in to feed mainly around small pools and rivulets created by the pumping medium although this sequence of events did not always occur.

At times when pumping was in progress the birds were involved in more mudflat interchange and used the disused oysterbeds more readily. Unfortunately, sometimes pumping corresponded with workmen on the oysterbeds and on those occasions the birds had to move elsewhere. Disturbance in general through workmen and mechanical equipment both on the oysterbeds and on the mudflat plus the pumping of infill caused the birds to be much more mobile.

During the first week of December when the Fagbury mudflat was almost intact, the wash from the pumping medium coincided with low tide, the result was equivalent to flood tide for approximately 30% of the mudflat. As a consequence, the waders were forced to concentrate towards Fagbury Point where the substrate is only preferred by some species. Other waders had to move elsewhere.

By the third week of December the oysterbeds, a high water and alternative-feeding site, was lost due to infill material.

In the second week of January infilling had claimed almost all of the mudflat required for Phase 1 of the development, at this stage when pumping coincided with low tide there was practically no area available for feeding except for the sandier upper shore of Fagbury bay. By this time appreciable numbers of Dunlin and Redshank had permanently moved elsewhere to feed, discussed in section 5.3.

In line with the associated loss of feeding area and disturbance, increasing pressures were put on the wading birds. At this time it was noticeable that the majority of remaining Grey Plover that had been feeding territorially remained so, while those that were in communal gatherings moved to infill sites where feeding appeared to be a free for all and squabbling occurred. At about this time the remaining area left to feed was small, as was the number of birds, which resulted in disturbances occurring more readily.

5.7 Acknowledgements

The project was administered by the Suffolk Wildlife Trust with guidance from the Nature Conservancy Council through finances from the Felixstowe Dock & Railway Company. I would like to thank Nick Davidson of NCC and Charles Beardall for their valuable help throughout the project period.

Table 8

ORWELL & FAGBURY
HIGH & LOW WATER COUNTS FOR KEY SPECIES
EURASIAN OYSTERCATCHER

ORWELL high water count summary

Winter	Nov	Dec	Jan	Feb	Average	Peak	Month	Avg Max 1984/92
1984/85	1590	1488	1111	980	1292	1590	Nov	1022
1985/86	1200	1100	1680	1585	1391	1680	Jan	
1986/87	407	1015	282	720	606	1015	Dec	
1987/88	476	1350	900	1077	951	1350	Dec	
1988/89	373	330	327	723	438	723	Feb	
1989/90	368	278	453	726	456	726	Feb	
1990/91	305	466	123	480	344	480	Feb	
1991/92	444	214	395	613	417	613	Feb	

FAGBURY high water count summary

Winter	Nov	Dec	Jan	Feb	Average	Peak	Month	Avg Max 1984/92
1984/85	955	1485	1000	950	1098	1485	Dec	674
1985/86	1200	1083	1600	1550	1358	1600	Jan	
1986/87	170	1000	2	244	354	1000	Dec	
1987/88	380	510	700	400	498	700	Jan	
1988/89	0	1	*20	*59	20	59	Feb	
1989/90	0	0	3	216	55	216	Feb	
1990/91	54	27	33	7	30	54	Nov	
1991/92	91	8	35	278	103	278	Feb	

ORWELL low water count summary

Winter	Nov	Dec	Jan	Feb	Average	Peak	Month	Avg Max 1984/92
1984/85	372	412	773	821	595	821	Feb	530
1985/86	363	199	337	352	313	363	Nov	
1988/89	257	273	474	742	437	742	Feb	
1989/90	187	191	422	500	325	500	Feb	
1990/91	231	258	286	n/c	320	286	Jan	
1991/92	307	232	289	468	324	468	Feb	

FAGBURY low water count summary

Winter	Nov	Dec	Jan	Feb	Average	Peak	Month	Avg Max 1984/92
1984/85	174	164	678	622	410	678	Jan	169
1985/86	52	11	191	228	121	228	Feb	
1988/89	23	36	*16	*19	24	36	Dec	
1989/90	4	n/c	20	10	11	20	Jan	
1990/91	2	6	1	n/c	3	6	Dec	
1991/92	40	10	48	25	31	48	Jan	

Remarks * denotes land claim in progress

Table 9

**ORWELL & FAGBURY
HIGH & LOW WATER COUNTS FOR KEY SPECIES
RINGED PLOVER**

ORWELL high water count summary

Winter	Nov	Dec	Jan	Feb	Average	Peak	Month	Avg Max 1984/92
1984/85	620	520	383	167	423	620	Nov	417
1985/86	782	448	289	265	446	782	Nov	
1986/87	292	225	121	159	199	292	Nov	
1987/88	185	243	200	164	198	243	Dec	
1988/89	230	344	283	625	371	625	Feb	
1989/90	57	338	221	181	199	338	Dec	
1990/91	50	34	34	133	63	133	Feb	
1991/92	40	214	81	302	159	302	Feb	

FAGBURY high water count summary

Winter	Nov	Dec	Jan	Feb	Average	Peak	Month	Avg Max 1984/92
1984/85	188	16	43	8	64	188	Nov	82
1985/86	45	0	0	15	15	45	Nov	
1986/87	70	32	2	56	40	70	Nov	
1987/88	42	180	7	5	59	180	Dec	
1988/89	40	29	*3	*16	22	40	Nov	
1989/90	13	4	0	2	5	13	Nov	
1990/91	3	0	18	27	12	27	Feb	
1991/92	7	84	0	91	46	91	Feb	

ORWELL low water count summary

Winter	Nov	Dec	Jan	Feb	Average	Peak	Month	Avg Max 1984/92
1984/85	234	220	222	233	227	234	Nov	206
1985/86	173	104	177	127	145	177	Jan	
1988/89	204	198	164	138	176	204	Nov	
1989/90	274	73	120	106	143	274	Nov	
1990/91	152	130	197	n/c	160	197	Jan	
1991/92	35	61	150	142	97	150	Jan	

FAGBURY low water count summary

Winter	Nov	Dec	Jan	Feb	Average	Peak	Month	Avg Max 1984/92
1984/85	41	49	40	92	56	92	Feb	32
1985/86	8	4	24	14	13	24	Jan	
1988/89	3	19	*0	*3	6	19	Dec	
1989/90	0	n/c	0	2	1	2	Feb	
1990/91	6	8	6	n/c	7	8	Dec	
1991/92	0	13	35	49	24	49	Feb	

Remarks * denotes land claim in progress

Table 10

**ORWELL & FAGBURY
HIGH & LOW WATER COUNTS FOR KEY SPECIES
GREY PLOVER**

ORWELL high water count summary

Winter	Nov	Dec	Jan	Feb	Average	Peak	Month	Avg Max 1984/92
1984/85	243	207	234	147	208	243	Nov	273
1985/86	187	180	163	197	182	197	Feb	
1986/87	194	180	151	177	176	194	Nov	
1987/88	144	200	175	212	183	212	Feb	
1988/89	226	283	285	380	294	380	Feb	
1989/90	141	341	200	350	258	350	Feb	
1990/91	71	274	61	359	191	359	Feb	
1991/92	248	211	82	134	169	248	Nov	

FAGBURY high water count summary

Winter	Nov	Dec	Jan	Feb	Average	Peak	Month	Avg Max 1984/92
1984/85	89	92	58	21	65	92	Dec	72
1985/86	72	53	86	45	64	86	Jan	
1986/87	63	38	13	76	48	76	Feb	
1987/88	70	110	37	50	67	110	Dec	
1988/89	50	39	*0	*66	39	66	Feb	
1989/90	33	45	15	10	26	45	Dec	
1990/91	48	12	10	38	27	48	Nov	
1991/92	10	11	22	53	24	53	Feb	

ORWELL low water count summary

Winter	Nov	Dec	Jan	Feb	Average	Peak	Month	Avg Max 1984/92
1984/85	161	182	278	313	234	313	Feb	244
1985/86	152	196	234	242	206	242	Feb	
1988/89	18	252	271	291	208	291	Feb	
1989/90	198	193	171	148	188	198	Nov	
1990/91	263	200	203	n/c	222	263	Nov	
1991/92	156	122	138	107	131	156	Nov	

FAGBURY low water count summary

Winter	Nov	Dec	Jan	Feb	Average	Peak	Month	Avg Max 1984/92
1984/85	49	64	60	39	53	64	Dec	33
1985/86	31	16	22	26	18	31	Nov	
1988/89	30	53	*33	*35	38	53	Dec	
1989/90	8	n/c	8	9	8	9	Feb	
1990/91	7	8	7	n/c	7	8	Dec	
1991/92	13	2	34	17	17	34	Jan	

Remarks * denotes land claim in progress

Table 11

**ORWELL & FAGBURY
HIGH & LOW WATER COUNTS FOR KEY SPECIES
DUNLIN**

ORWELL high water count summary

Winter	Nov	Dec	Jan	Feb	Average	Peak	Month	Avg Max 1984/92
1984/85	7002	7183	12972	5683	8210	12972	Jan	8922
1985/86	4354	5900	4845	9500	6150	9500	Feb	
1986/87	6970	6075	5700	4500	5811	6970	Nov	
1987/88	5011	6000	6500	6146	5914	6500	Jan	
1988/89	6238	7645	7900	7836	7405	7900	Jan	
1989/90	5204	8975	9933	8166	8070	9933	Jan	
1990/91	2075	4027	1522	10813	4609	10813	Feb	
1991/92	4568	6786	5926	6750	6008	6786	Dec	

FAGBURY high water count summary

Winter	Nov	Dec	Jan	Feb	Average	Peak	Month	Avg Max 1984/92
1984/85	1865	520	1566	919	1218	1865	Nov	1411
1985/86	1050	0	619	500	542	1050	Nov	
1986/87	950	1600	127	207	721	1600	Dec	
1987/88	1150	900	1000	1000	1013	1150	Nov	
1988/89	200	600	*63	*220	271	600	Dec	
1989/90	500	300	43	16	215	500	Nov	
1990/91	51	37	300	522	228	522	Feb	
1991/92	13	3000	4000	2500	2378	4000	Jan	

ORWELL low water count summary

Winter	Nov	Dec	Jan	Feb	Average	Peak	Month	Avg Max 1984/92
1984/85	10883	12947	17014	13641	13621	17014	Jan	11292
1985/86	6202	8933	12065	12323	9881	12323	Feb	
1988/89	4847	9837	8512	7814	7752	9837	Dec	
1989/90	8652	8396	8275	5930	7813	8652	Nov	
1990/91	5894	5308	11054	n/c	7419	11054	Jan	
1991/92	6929	8873	7724	6039	7391	8873	Dec	

FAGBURY low water count summary

Winter	Nov	Dec	Jan	Feb	Average	Peak	Month	Avg Max 1984/92
1984/85	957	980	1565	795	1074	1565	Jan	710
1985/86	372	450	584	1530	409	1530	Feb	
1988/89	483	616	*160	*118	344	616	Dec	
1989/90	73	n/c	19	49	47	73	Nov	
1990/91	112	57	93	n/c	87	112	Nov	
1991/92	364	97	239	72	193	364	Nov	

Remarks * denotes land claim in progress

Table 12

**ORWELL & FAGBURY
HIGH & LOW WATER COUNTS FOR KEY SPECIES
COMMON REDSHANK**

ORWELL high water count summary

Winter	Nov	Dec	Jan	Feb	Average	Peak	Month	Avg Max 1984/92
1984/85	2972	2086	2625	1093	2194	2972	Nov	1558
1985/86	1070	750	739	868	857	1070	Nov	
1986/87	983	937	520	1100	885	1100	Feb	
1987/88	1306	1150	1600	1394	1363	1600	Jan	
1988/89	1217	1373	1254	1153	1249	1373	Dec	
1989/90	772	445	1243	1243	926	1243	Jan & Feb	
1990/91	1574	634	541	363	778	1574	Nov	
1991/92	375	459	1112	1531	869	1531	Feb	

FAGBURY high water count summary

Winter	Nov	Dec	Jan	Feb	Average	Peak	Month	Avg Max 1984/92
1984/85	172	354	131	148	201	354	Dec	136
1985/86	166	15	45	93	80	166	Nov	
1986/87	146	55	45	87	83	146	Nov	
1987/88	90	195	50	200	134	200	Feb	
1988/89	33	74	*39	*72	55	74	Dec	
1989/90	56	12	32	28	32	56	Nov	
1990/91	21	28	4	39	23	39	Feb	
1991/92	10	18	52	25	26	52	Jan	

ORWELL low water count summary

Winter	Nov	Dec	Jan	Feb	Average	Peak	Month	Avg Max 1984/92
1984/85	2568	1789	1665	1583	1901	2568	Nov	1867
1985/86	1516	1158	1443	1407	1381	1516	Nov	
1988/89	1515	1385	1718	969	1397	1718	Jan	
1989/90	1439	1958	1486	1799	1671	1958	Dec	
1990/91	1630	1184	1788	n/c	1534	1788	Jan	
1991/92	1652	1507	1358	1219	1434	1652	Nov	

FAGBURY low water count summary

Winter	Nov	Dec	Jan	Feb	Average	Peak	Month	Avg Max 1984/92
1984/85	124	137	245	183	172	245	Jan	101
1985/86	103	82	111	117	103	117	Feb	
1988/89	142	155	*73	*55	74	155	Dec	
1989/90	9	n/c	16	11	12	16	Jan	
1990/91	32	17	8	n/c	19	32	Nov	
1991/92	40	12	18	0	18	40	Nov	

Remarks * denotes land claim in progress

Table 13

ORWELL & FAGBURY
HIGH & LOW WATER COUNTS FOR KEY SPECIES
RUDDY TURNSTONE

ORWELL high water count summary

Winter	Nov	Dec	Jan	Feb	Average	Peak	Month	Avg Max 1985/92
1984/85	243	207	234	147	208	243	Nov	336
1985/86	425	535	165	140	316	535	Dec	
1986/87	184	91	101	116	123	184	Nov	
1987/88	317	236	144	423	280	423	Feb	
1988/89	289	263	107	204	218	289	Nov	
1989/90	243	442	187	250	281	442	Dec	
1990/91	282	158	71	109	155	282	Nov	
1991/92	245	211	170	286	228	286	Feb	

FAGBURY high water count summary

Winter	Nov	Dec	Jan	Feb	Average	Peak	Month	Avg Max 1985/92
1984/85	89	92	58	21	65	92	Dec	202
1985/86	273	460	20	30	196	460	Dec	
1986/87	115	50	9	41	54	115	Nov	
1987/88	220	130	50	300	175	300	Feb	
1988/89	103	190	*0	*83	94	190	Dec	
1989/90	162	314	89	42	152	314	Dec	
1990/91	65	31	43	16	39	65	Nov	
1991/92	82	56	7	21	42	82	Nov	

ORWELL low water count summary

Winter	Nov	Dec	Jan	Feb	Average	Peak	Month	Avg Max 1984/92
1984/85	260	174	239	201	219	260	Nov	189
1985/86	166	151	134	136	147	166	Nov	
1988/89	147	128	148	113	134	148	Nov & Jan	
1989/90	191	99	157	173	155	191	Nov	
1990/91	225	112	117	n/c	151	225	Nov	
1991/92	97	54	142	111	101	142	Jan	

FAGBURY low water count summary

Winter	Nov	Dec	Jan	Feb	Average	Peak	Month	Avg Max 1984/92
1984/85	40	31	30	22	31	40	Nov	18
1985/86	12	2	6	4	6	12	Nov	
1988/89	17	31	*13	*11	18	31	Dec	
1989/90	1	n/c	1	0	1	1		
1990/91	9	5	0	n/c	5	9	Nov	
1991/92	0	0	14	5	5	14	Jan	

Remarks * denotes land claim in progress

Table 14

FAGBURY POPULATION COUNTS OF WEEKLY MEANS 1988/89

Weekly Means (all counts)

Month/week	O1	O2	O3	O4	N1	N2	N3	N4	D1	D2	D3	D4
E Oystercatcher	112	86	25	11	11	9	14	10	11	17	21	16
Ringed Plover	45	50	21	26	9	20	9	16	9	14	22	6
Grey Plover	20	23	19	29	29	36	34	33	39	44	48	41
Dunlin	120	275	242	396	505	591	486	574	519	471	773	496
C Redshank	68	74	76	127	149	155	159	181	164	154	157	126
R Turnstone	37	35	28	22	13	22	19	25	16	19	24	9

Month/week	J1	J2	J3	J4	F1	F2	F3	F4	M1	M2	M3	M4
E Oystercatcher	7	11	17	26	24	27	27	34	37	0	56	59
Ringed Plover	6	21	4	14	7	12	4	10	12	0	5	16
Grey Plover	34	45	38	41	45	31	42	40	20	0	9	3
Dunlin	292	252	286	253	195	142	128	100	24	0	2	10
C Redshank	109	107	87	68	66	44	36	39	17	0	13	15
R Turnstone	20	18	22	16	20	9	13	12	11	0	9	12

Weekly Means (+/- 2 hrs. of low water)

Month/week	O1	O2	O3	O4	N1	N2	N3	N4	D1	D2	D3	D4
E Oystercatcher	111	79	28	11	9	7	17	14	12	20	36	19
Ringed Plover	16	52	16	20	11	17	6	12	8	14	22	7
Grey Plover	20	26	17	27	25	34	28	27	38	31	48	41
Dunlin	71	259	215	428	438	617	434	522	526	437	755	503
C Redshank	52	70	73	121	138	167	163	165	167	145	155	118
R Turnstone	41	25	24	18	12	23	17	13	17	15	24	7

Month/week	J1	J2	J3	J4	F1	F2	F3	F4	M1	M2	M3	M4
E Oystercatcher	11	15	18	29	25	30	24	37	32	0	47	77
Ringed Plover	1	23	3	15	8	12	3	15	13	0	4	19
Grey Plover	35	45	39	43	45	30	34	35	16	0	9	2
Dunlin	231	253	241	259	197	141	136	67	21	0	1	9
C Redshank	91	104	84	67	66	43	53	37	14	0	13	14
R Turnstone	14	19	19	16	14	8	14	11	7	0	8	13

Table 15

FAGBURY POPULATION COUNTS OF WEEKLY MEANS 1989/90

Weekly Means (all counts)

Month/week	O1	O2	O3	O4	N1	N2	N3	N4	D1	D2	D3	D4
E Oystercatcher	2	12	<1	9	<1	5	3	3	2	-	<1	0
Ringed Plover	17	7	3	3	1	0	6	1	2	-	6	4
Grey Plover	1	11	6	4	9	11	10	12	12	-	17	19
Dunlin	13	78	60	84	72	144	257	153	61	-	160	125
C Redshank	8	20	4	9	6	5	15	9	13	-	10	6
R Turnstone	8	14	6	12	18	8	12	7	9	-	6	19

Month/week	J1	J2	J3	J4	F1	F2	F3	F4	M1	M2	M3	M4
E Oystercatcher	8	4	15	14	15	15	21	20	14	22	32	29
Ringed Plover	3	4	1	7	14	17	12	11	10	14	25	13
Grey Plover	14	19	9	11	10	6	11	12	12	13	15	7
Dunlin	87	197	49	55	66	80	62	29	17	11	29	16
C Redshank	10	7	13	8	7	8	9	6	5	8	16	5
R Turnstone	6	4	4	6	5	10	3	3	2	4	4	7

Weekly Means (+/- 2 hrs. of low water)

Month/week	O1	O2	O3	O4	N1	N2	N3	N4	D1	D2	D3	D4
E Oystercatcher	2	10	<1	7	0	5	3	1	2	-	2	-
Ringed Plover	3	6	2	3	0	0	2	0	<1	-	9	-
Grey Plover	2	11	7	3	10	11	12	12	11	-	20	-
Dunlin	1	92	28	73	34	144	195	98	58	-	176	-
C Redshank	5	22	4	8	6	5	14	9	11	-	13	-
R Turnstone	4	6	5	10	7	8	4	4	4	-	5	-

Month/week	J1	J2	J3	J4	F1	F2	F3	F4	M1	M2	M3	M4
E Oystercatcher	10	-	18	19	14	11	21	20	10	10	31	32
Ringed Plover	0	-	0	14	14	22	14	12	14	4	27	12
Grey Plover	11	-	9	12	10	3	11	12	11	15	15	8
Dunlin	46	-	26	46	33	45	39	29	8	8	2	15
C Redshank	10	-	14	6	6	4	10	7	6	4	16	5
R Turnstone	4	-	3	4	4	7	3	3	2	3	3	6

Table 16

FAGBURY POPULATION COUNTS OF WEEKLY MEANS 1990/91

Weekly Means (all counts)

Month/week	O1	O2	O3	O4	N1	N2	N3	N4	D1	D2	D3	D4
E Oystercatcher	12	4	5	1	6	7	6	7	9	11	20	35
Ringed Plover	23	25	35	11	19	9	13	20	27	11	13	3
Grey Plover	6	10	8	9	12	12	11	14	14	13	20	13
Dunlin	41	115	205	201	208	137	160	123	219	94	191	163
C Redshank	21	16	29	15	19	23	17	19	18	16	18	17
R Turnstone	8	9	10	10	10	10	10	10	12	6	12	12

Month/week	J1	J2	J3	J4	F1	F2	F3	F4	M1	M2	M3	M4
E Oystercatcher	13	13	23	23	28	-	64	67	97	35	45	17
Ringed Plover	22	9	25	19	15	-	27	59	45	38	25	26
Grey Plover	16	17	25	16	18	-	19	21	29	5	6	10
Dunlin	183	103	189	62	102	-	200	115	251	291	200	123
C Redshank	5	5	7	9	17	-	13	16	30	24	13	26
R Turnstone	5	10	15	10	10	-	7	9	15	14	19	4

Weekly Means (+/- 2 hrs. of low water)

Month/week	O1	O2	O3	O4	N1	N2	N3	N4	D1	D2	D3	D4
E Oystercatcher	14	4	4	3	5	8	6	6	9	11	13	-
Ringed Plover	22	25	29	7	16	9	9	19	28	11	20	-
Grey Plover	7	11	8	11	13	13	9	16	17	11	22	-
Dunlin	44	107	172	15	161	107	121	105	124	65	136	-
C Redshank	20	16	25	16	18	24	16	21	21	14	20	-
R Turnstone	7	9	8	7	10	10	9	8	10	5	8	-

Month/week	J1	J2	J3	J4	F1	F2	F3	F4	M1	M2	M3	M4
E Oystercatcher	14	10	19	27	29	-	67	-	96	37	49	14
Ringed Plover	24	11	28	23	14	-	28	-	61	46	29	37
Grey Plover	15	19	25	15	14	-	17	-	18	5	8	6
Dunlin	71	48	88	52	91	-	194	-	177	107	129	206
C Redshank	6	5	8	8	17	-	17	-	38	18	19	26
R Turnstone	4	8	12	10	10	-	8	-	10	7	18	3

Table 17

FAGBURY POPULATION COUNTS OF WEEKLY MEANS 1991/92

Weekly Means (all counts)

Month/week	O1	O2	O3	O4	N1	N2	N3	N4	D1	D2	D3	D4
E Oystercatcher	47	49	25	31	15	17	11	18	24	35	10	36
Ringed Plover	14	8	16	20	16	23	14	9	11	28	4	18
Grey Plover	10	11	9	9	12	16	15	13	11	17	15	19
Dunlin	103	300	209	501	255	137	170	128	214	156	94	488
C Redshank	3	14	13	14	13	8	10	11	18	14	14	10
R Turnstone	11	6	3	2	4	3	3	1	2	2	3	9

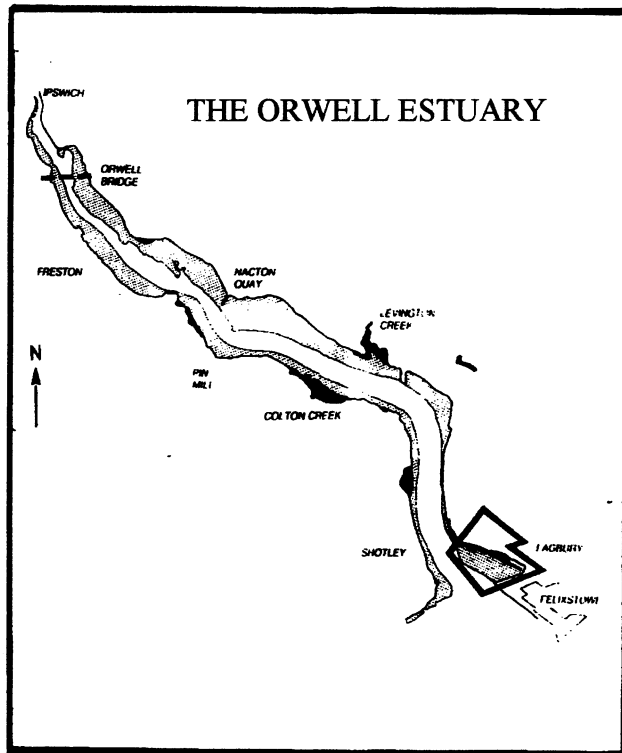
Month/week	J1	J2	J3	J4	F1	F2	F3	F4	M1	M2	M3	M4
E Oystercatcher	90	34	19	88	30	28	29	19	29	44	44	33
Ringed Plover	3	10	11	22	29	59	51	42	48	20	56	69
Grey Plover	23	10	11	16	35	23	25	16	22	22	17	15
Dunlin	81	147	600	163	128	389	197	112	128	171	56	29
C Redshank	5	10	18	20	18	24	17	20	18	11	25	18
R Turnstone	5	6	6	5	8	4	4	3	2	4	3	6

Weekly Means (+/- 2 hrs. of low water)

Month/week	O1	O2	O3	O4	N1	N2	N3	N4	D1	D2	D3	D4
E Oystercatcher	47	48	25	32	10	18	20	22	28	45	10	39
Ringed Plover	14	9	17	18	15	19	9	9	7	22	4	14
Grey Plover	9	11	10	9	13	16	15	13	14	13	15	18
Dunlin	104	253	206	312	185	112	156	111	107	149	94	273
C Redshank	3	15	13	15	11	8	11	11	19	15	14	10
R Turnstone	11	6	3	1	3	1	3	2	2	1	3	5

Month/week	J1	J2	J3	J4	F1	F2	F3	F4	M1	M2	M3	M4
E Oystercatcher	83	44	22	101	29	32	55	21	31	37	51	33
Ringed Plover	3	7	1	21	24	42	34	33	51	13	57	69
Grey Plover	24	12	18	18	34	19	20	15	24	14	19	15
Dunlin	76	138	47	173	94	144	180	75	97	45	53	29
C Redshank	2	17	17	20	21	23	22	19	19	11	26	18
R Turnstone	5	8	3	6	2	3	1	3	1	4	3	6

Figure 1



FAGBURY
STUDY
AREA

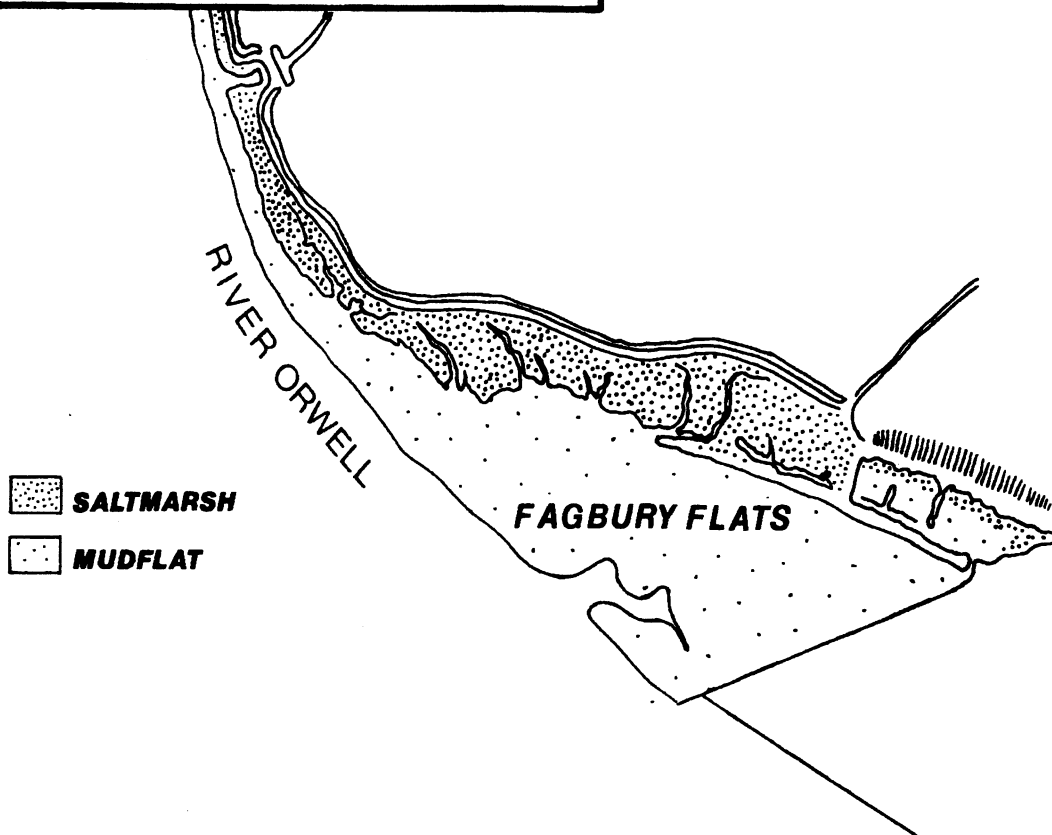
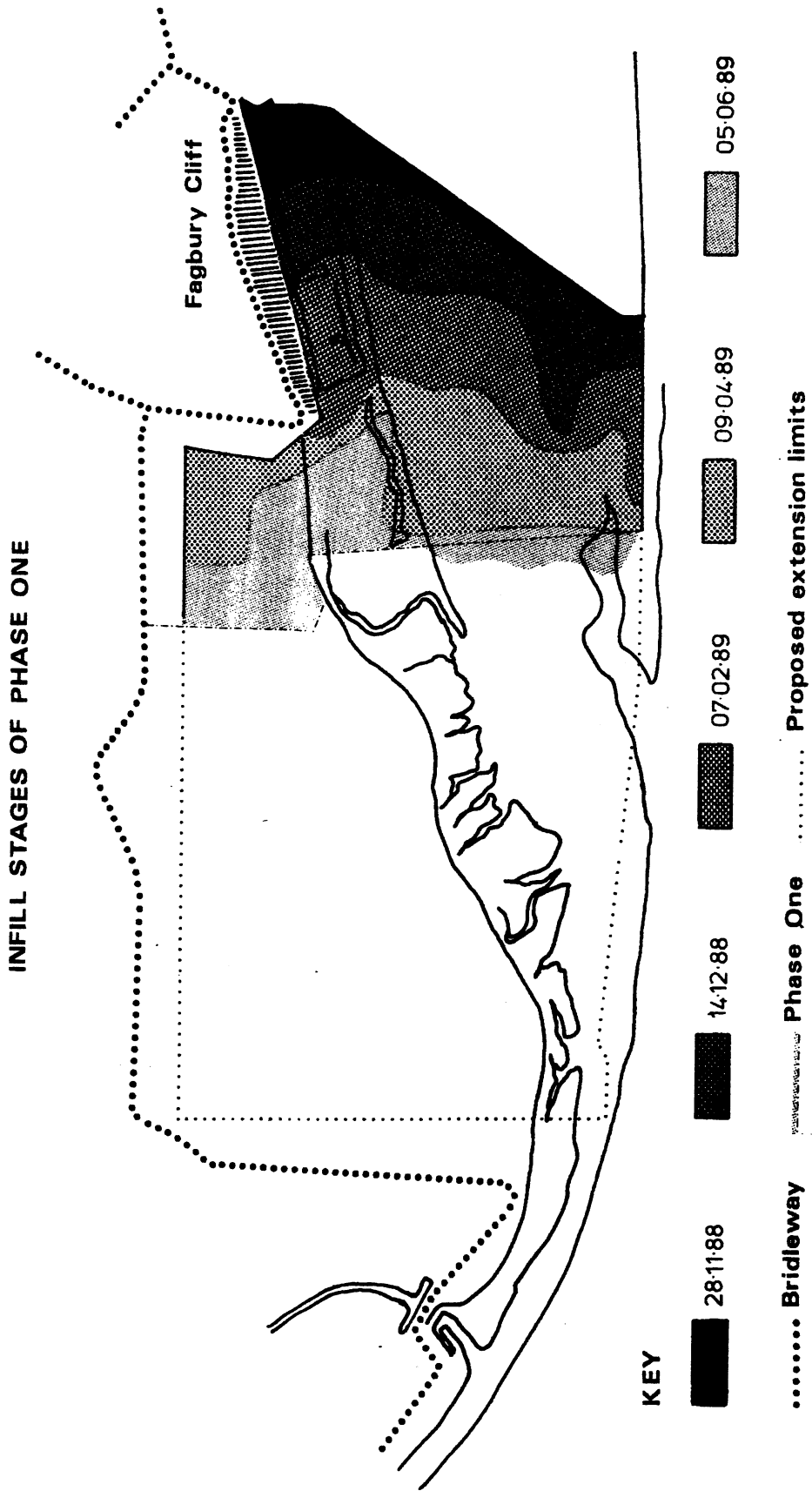


Figure 2



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