Changes in numbers of waterbirds in the Cley Square 2004-2018.

Introduction

Data availability

The data used come from the nationally co-ordinated Wetland Bird Survey (WeBS) counts (a web link given at the end gives full details). These counts are made once a month over high tide on a day when there is a very high tide in the morning. Local counts are made in the Cley Square by teams of wardens and volunteers at four sites Blakeney Harbour, Blakeney Freshes, Cley Marshes and Salthouse Marshes such that the entire coastal zone including tidal areas, salt marshes, adjacent freshwater marshes and wet meadows between Blakeney Point and Kelling Hard are covered.

Fifteen of the commoner wetland bird species counted have been selected for examination: Dark-bellied Brent Goose, Shelduck, Wigeon, Gadwall, Teal, Mallard, Moorhen, Oystercatcher, Avocet, Ringed Plover, Lapwing, Dunlin, Ruff, Black-tailed Godwit, Curlew and Redshank.

Year-round count data for the selected species are available for most months for Cley Marshes from August 1997, for Salthouse Marshes from May 1999 and for Blakeney Freshes from January 2000 but only from April 2003 for Blakeney Harbour. Some earlier count data are also available but only for the winter months. There were no counts at Blakeney Freshes for the period May-December 2003.

Data analysis

Changes in the numbers of a species have not been determined by examining the counts for a calendar year but by examining the counts over a 12-month cycle. The cycle goes from July to June for wildfowl and from June to May for most waders. Each cycle therefore aims to include the effects of production of fledged youngsters, autumn migration, mortality for a complete winter period and return migration in spring. This is not ideal for a species such as Avocet that is a breeding species that then leaves the area in autumn to moult and with only a few individuals returning to over-winter so the cycle goes from October to September for this species. The data examined were from July 2004 to June 2018 for Brent Geese, ducks, Ringed Plover and Moorhen, from June 2004 to May 2018 for other waders except Avocet where the data from October 2003 to September 2017 were used.

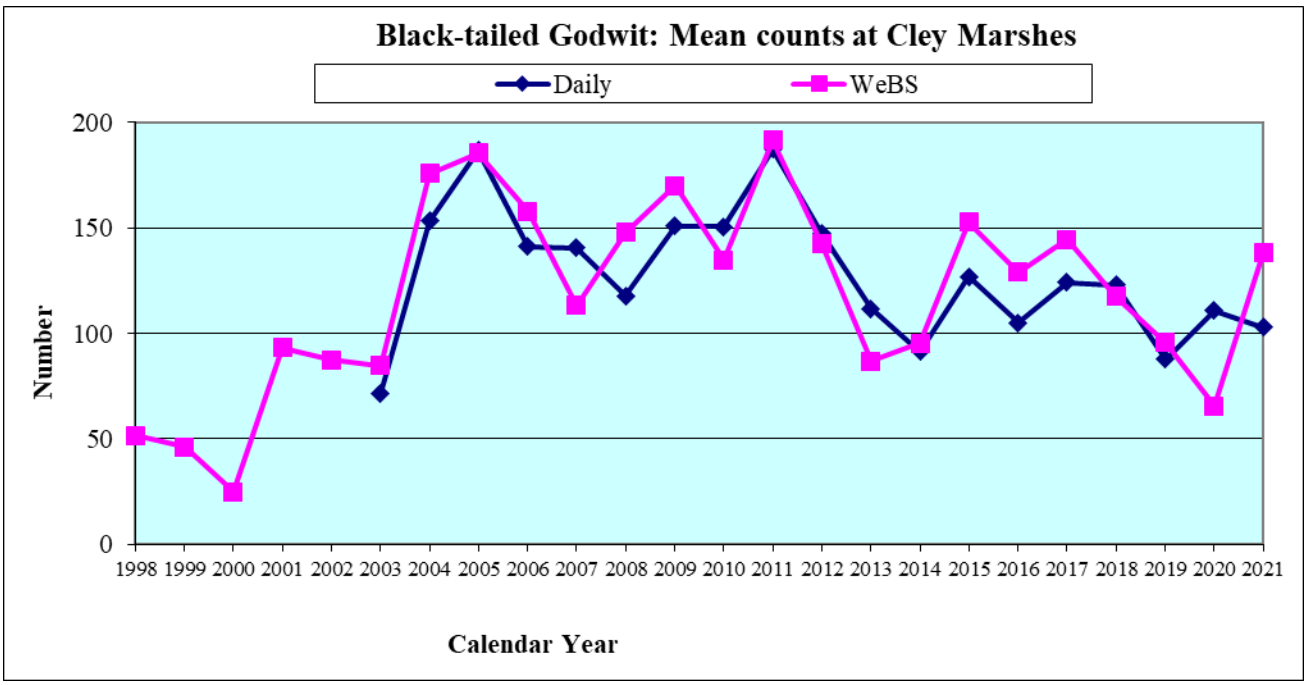
A simple but very crude analysis has been made based on making estimates for those months where a count is missing or incomplete at one of the four sites. A proper statistical analysis would instead fit a model to the actual available data only. The estimate for a site and month with a missing or incomplete count was calculated based on the counts there for the other months in that 12-month cycle and whether or not the pattern of occurrence for that species has changed radically over the years. If the pattern of occurrence is relatively stable then all the data were used to determine monthly indices (the proportion of the total count for a year due to a month). If it is not stable then the data for a shorter time period were used. Part counts were compared to the estimate and the higher value used. If the part count was higher than the estimate then the part count was treated exactly as if it was a normal valid count for that month. If an estimate had a part count that was less

than the estimate but higher than 75% of the estimate then the estimate was treated as a normal valid count for that month and used in the determination of the monthly indices. Occasionally the missing counts in the 12-month cycle would normally have contributed more than 25% of the total sum of the counts for that cycle and it was therefore considered that no clear annual trend had been established for that species, year and site. The estimate was then calculated by averaging the counts for the four closest years with counts for that species, month and site. The Blakeney Harbour count in fact consists of counts made in ten different subsectors and the data for the years 2016 to 2018 was analysed by subsector.

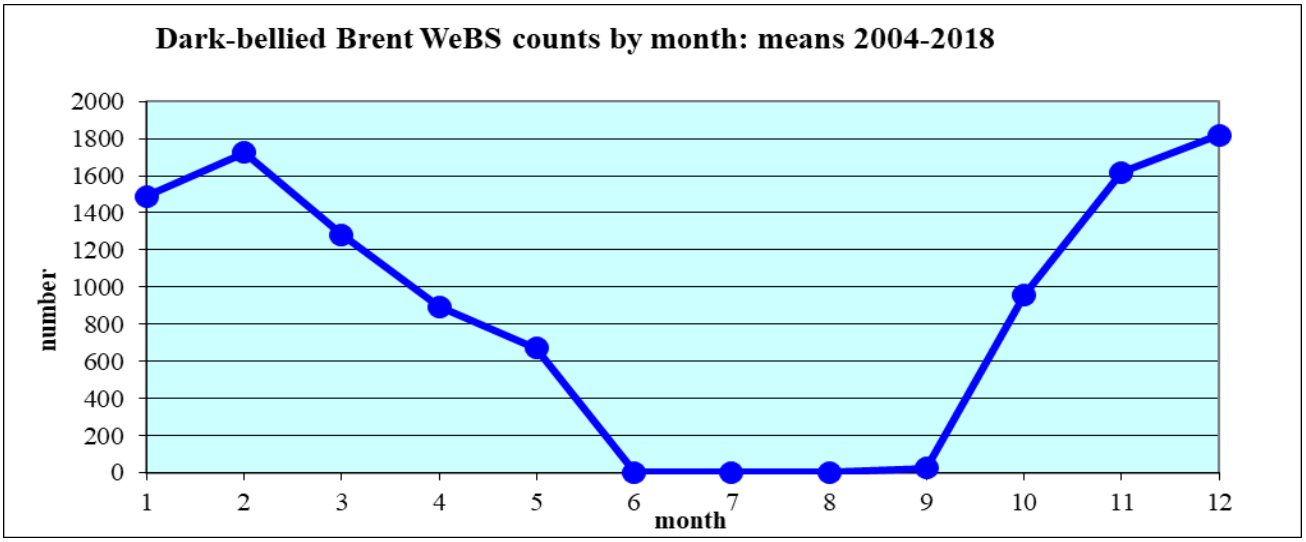
Presentation of Results

Two graphs are shown for each species. The first shows how numbers vary during the calendar year and gives the mean total count for each month averaging over the years from 2004 to 2018. The second graph shows how numbers have changed over the years. The mean counts are given for the total area averaging over the twelve months of the annual cycle. Four-year moving average trend lines have been generated in order to make a comparison with national 10-year smoothed trends for the species as given in the WeBS online report Waterbirds in the UK 2017/18.

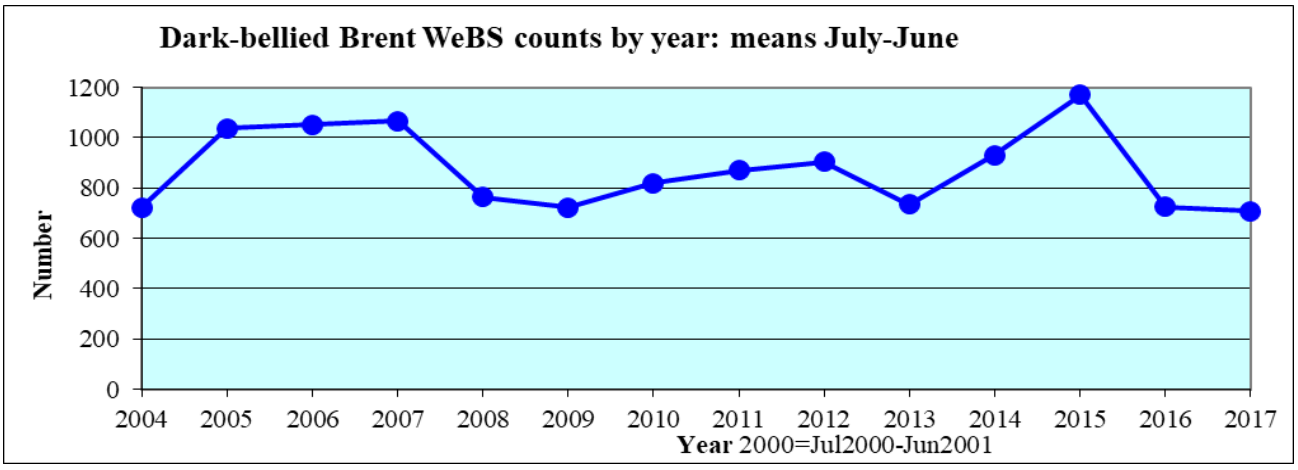
It could be questioned how representative a count made on one specific day will be for a month. Black-tailed Godwits have been counted at Cley Marshes more or less daily from 2003. The following graph compares the average of the twelve WeBS counts for a given year with the average of the mean daily counts for each month in that year. The resultant overall trends do look similar.



Dark-bellied Brent Goose

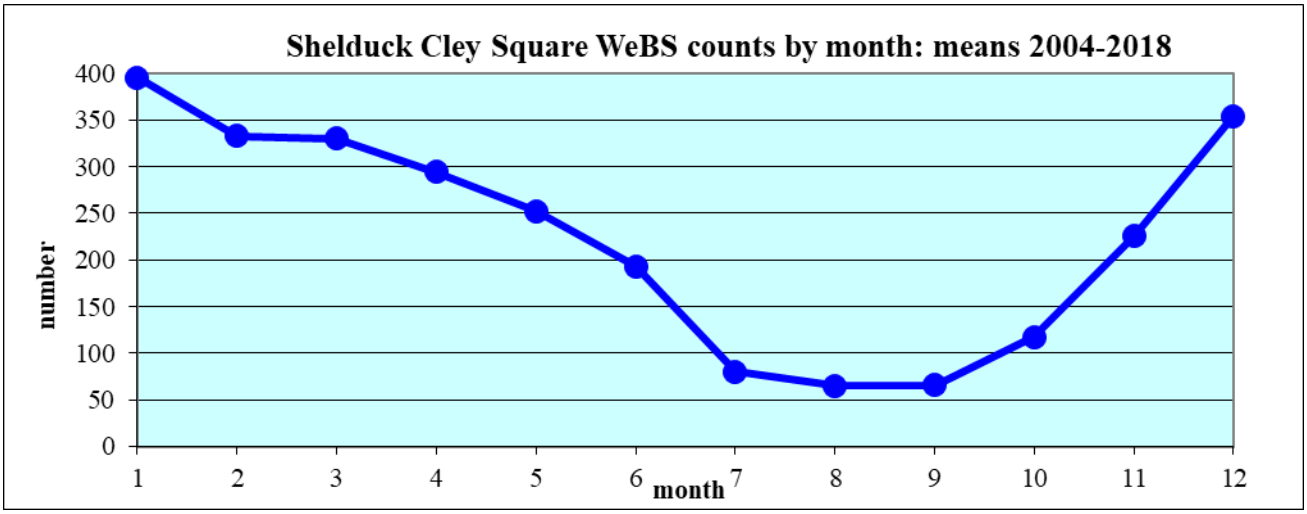


Dark-bellied Brent is a winter goose that starts arriving in September and the flocks concentrate in the saltmarshes of Blakeney Harbour at the start and end of their stays. In the middle of winter their daily routine is for flocks to leave their roost sites in the Harbour then fly out to areas such as Blakeney Freshes, Cley Marshes and Salthouse Marshes to wash and then feed in fields. Fortunately, they tend to remain in Blakeney Harbour on mornings with big high tides when WeBS counts are made and a perfect count is when none are counted elsewhere. Large flocks did sometimes get seen and counted at the other sites and there is always uncertainty as to whether these had already been counted in Blakeney Harbour or not. The mean monthly counts peaked at about 1200 birds for Blakeney Harbour and 1700 birds for the whole area. The pattern of occurrence appears to be relatively stable apart from there being fewer birds counted in October in the early years than there have been in the years since.

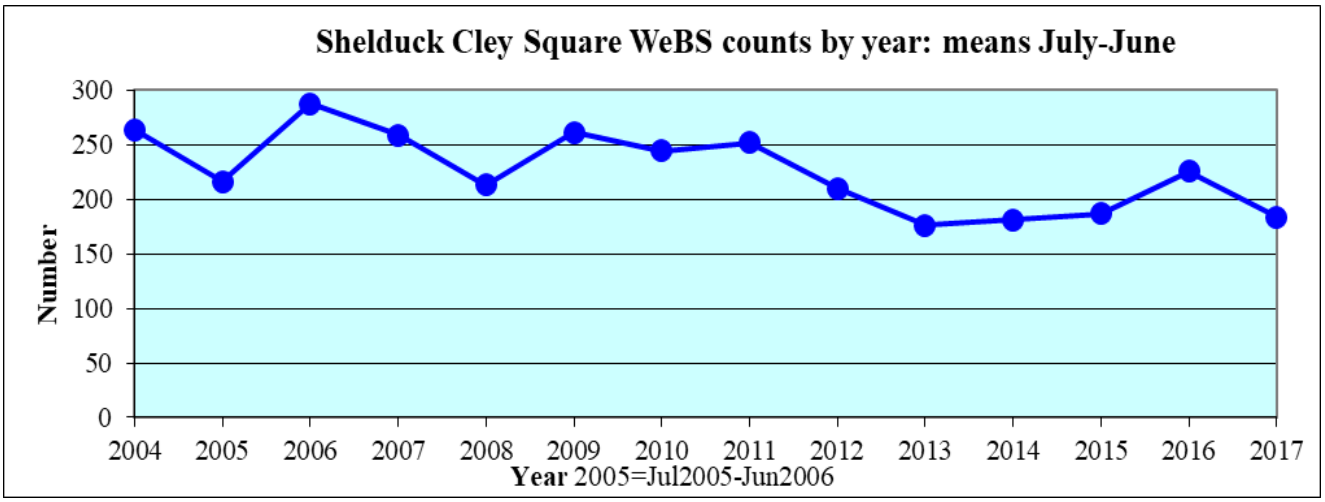


Counts have been averaged over the usual annual cycle of July to June. Mean counts peaked in Blakeney Harbour for the winters of 2005/6 to 2007/8 and again in the winter of 2015/16. Numbers appear to have now dropped back to a low level. There is currently a Medium Alert in the Long Term (25 years) for Dark-bellied Brent in the North Norfolk Coast SSSI due to a 42% decrease in numbers and a High Alert due to a 50% decrease since the baseline winter of 1993/4.

Shelduck

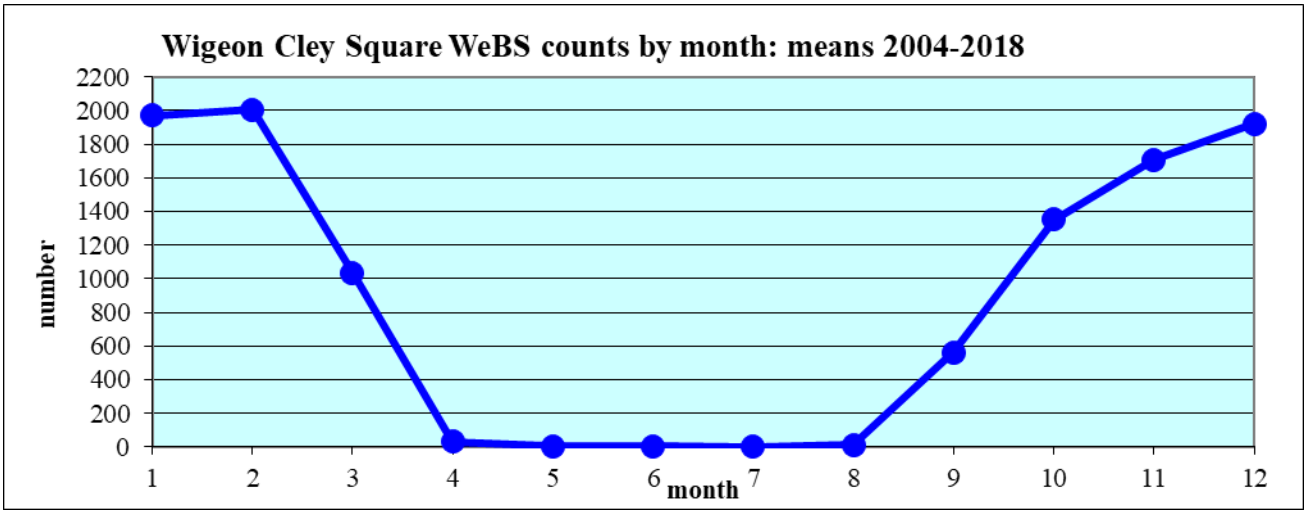


Total numbers of Shelduck counted are at their highest (about 350 birds) in midwinter and decrease steadily through the calendar year to August. The breeding adults start leaving in June eventually just leaving those guarding creches of youngsters. Some of the departed adults are replaced by youngsters when they are large enough to be included in the counts. Numbers increase again significantly when the overwintering adults eventually return after completion of their moult on the east side of the North Sea. The largest numbers were in Blakeney Harbour except in the late summer and early autumn when family parties at Cley Marshes dominated the counts. Numbers of Shelduck appear to have been relatively stable during the spring and breeding season over the years but there was a reduction in numbers present in the autumn and midwinter in the later years.

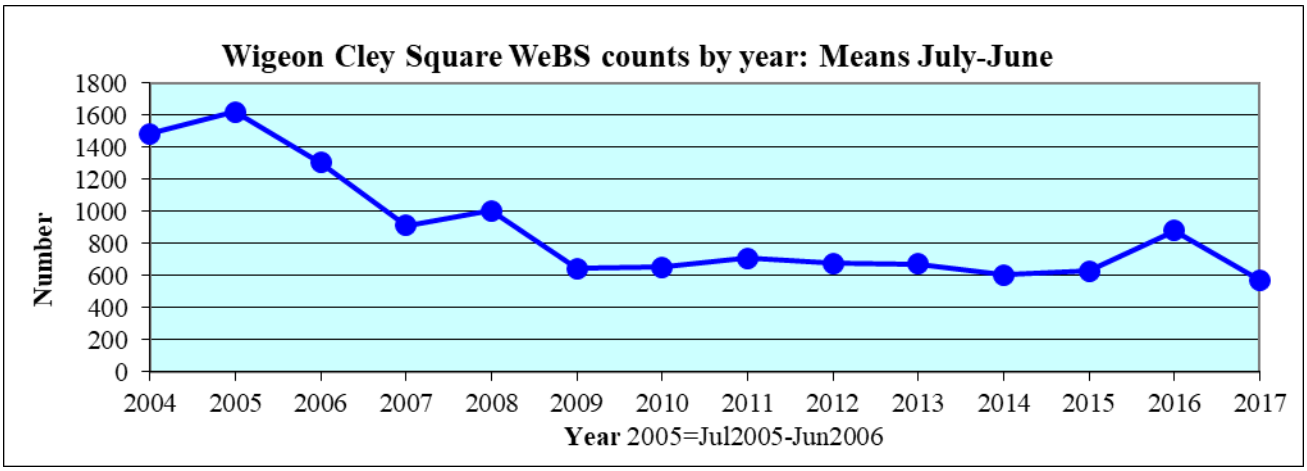


Counts have been averaged over the usual annual cycle of July to June. Counts of Shelduck in the Cley Square appear to be some 28% lower for the period 2013/14 to 2015/16 than they were for the period 2004/5 to 2011/12. There were higher numbers in 2016/17 but followed by a return a similar level.

Wigeon

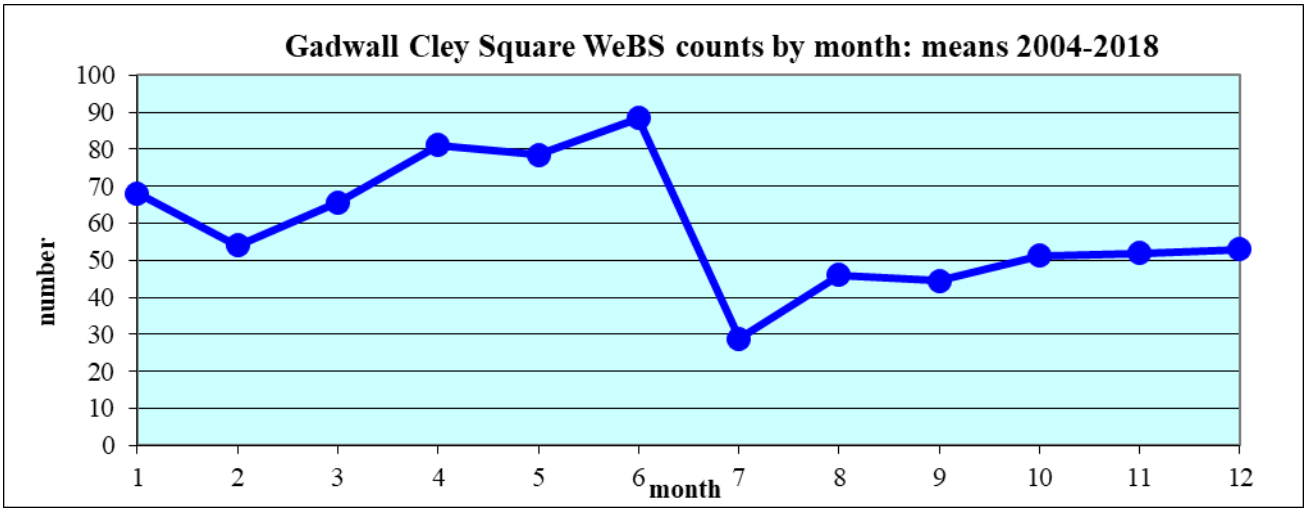


Wigeon are a winter duck that start arriving in September and initially concentrate in the saltmarshes of Blakeney Harbour then disperse to meadows and freshwater pools at Cley, Salthouse and Blakeney Freshes. Mean numbers peaked in midwinter at about 1900 birds. They were basically absent for five months. The numbers have clearly declined in midwinter but the pattern of occurrence seems relatively stable except that numbers in October have not declined whereas they have for other months.

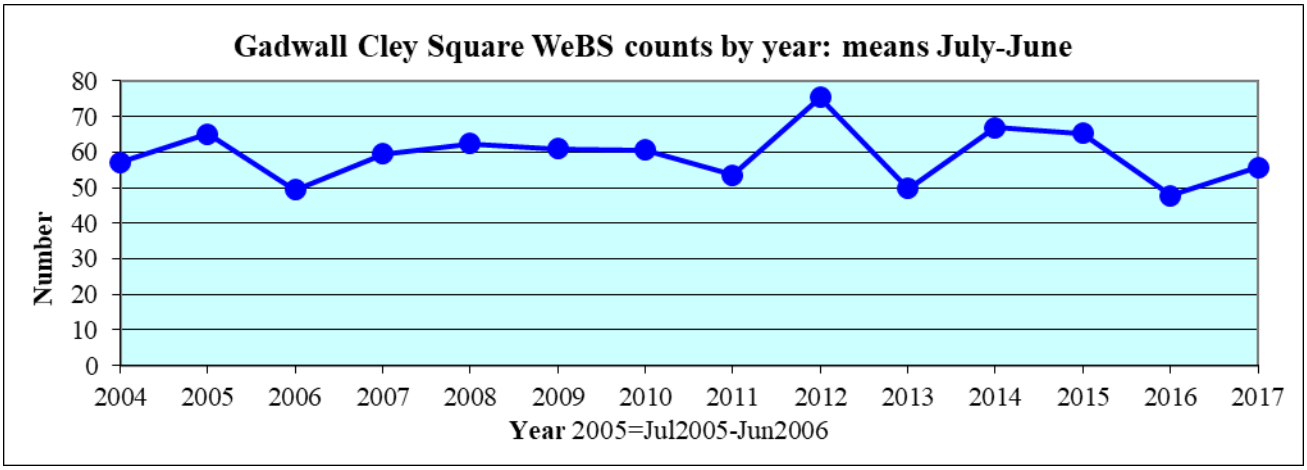


Counts have been averaged over the usual annual cycle of July to June. Numbers of Wigeon in the Cley Square appear to have decreased markedly by over 50% from 2004/5 to 2009/10. Numbers counted had been relatively stable since but increased in 2016/17 before returning back down to the same level in 2017/18.

Gadwall

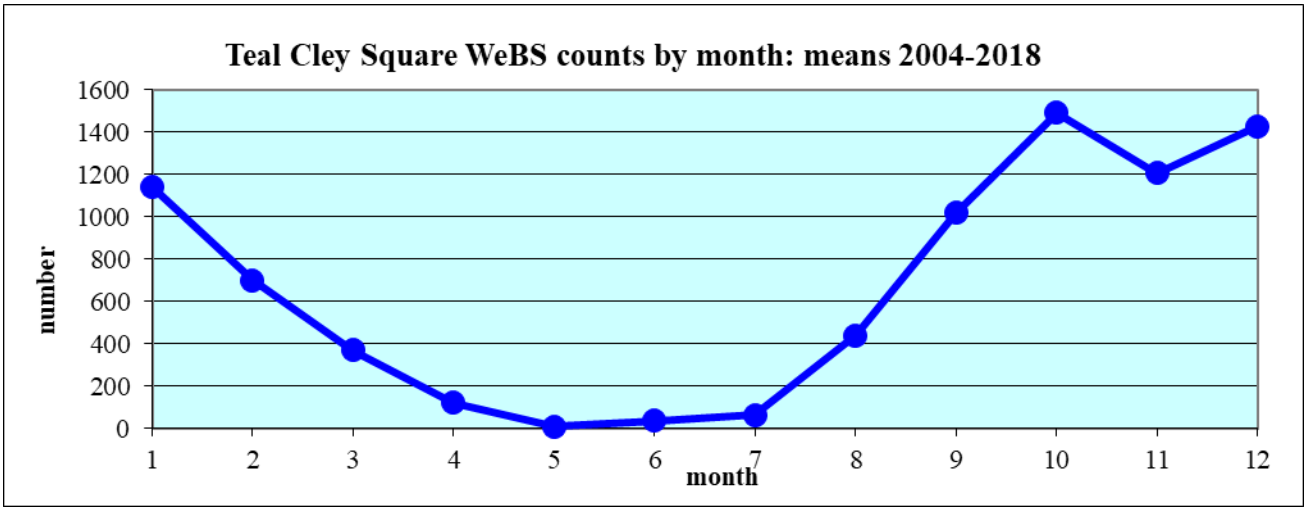


A resident duck but it appears that there is an exodus of birds in July to moult, apart from those females with ducklings. The majority of the birds are to be found at Cley Marshes. Mean numbers peaked in June at just under 90 birds. The only change in the pattern of occurrence of Gadwall is a large drop in the numbers counted in May and June for recent years.

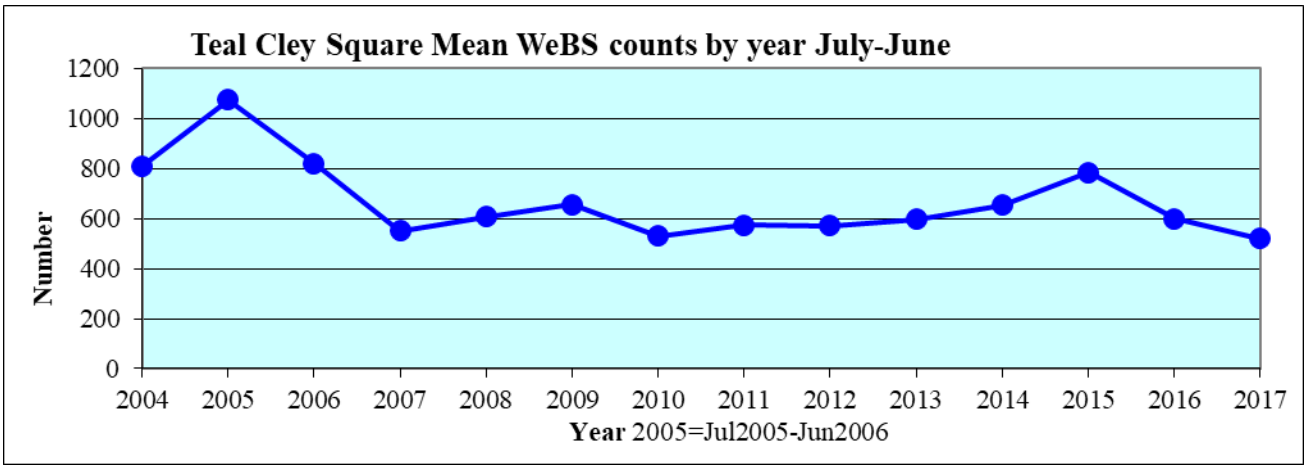


Counts have been averaged over the usual annual cycle of July to June. There does not appear to be any clear systematic change in numbers over the years since 2003/4.

Teal

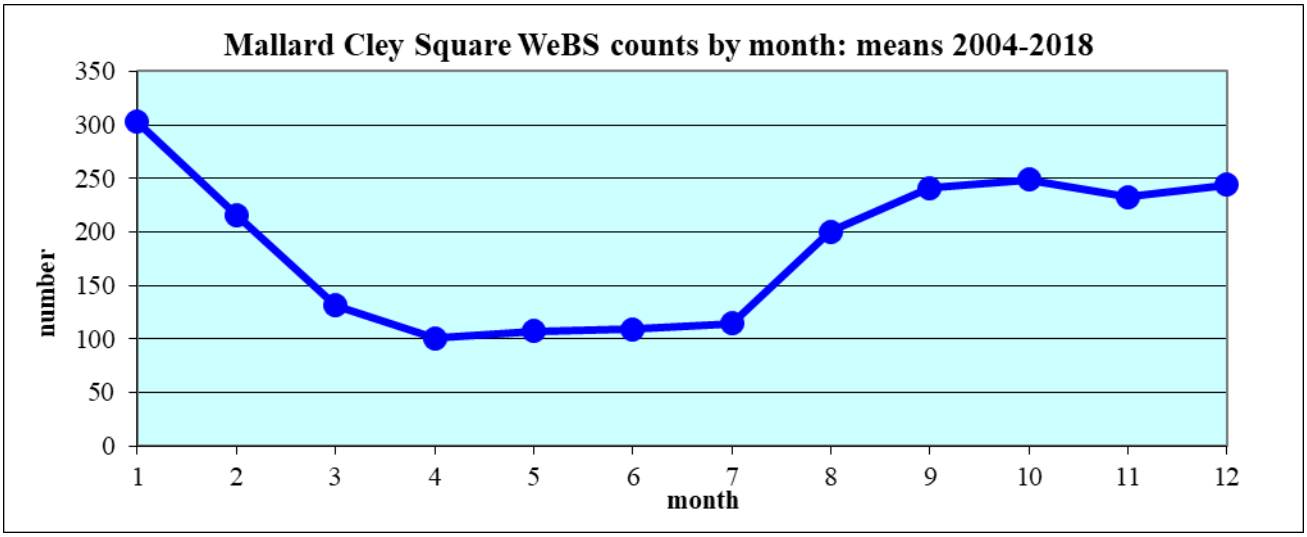


A winter duck with mean numbers that peaked at about 1400 birds in the autumn and early winter. They concentrate at Cley Marshes on arrival but some move into other areas in the mid-winter. The pattern of occurrence was relatively stable except that far more birds were present in September in the early years.

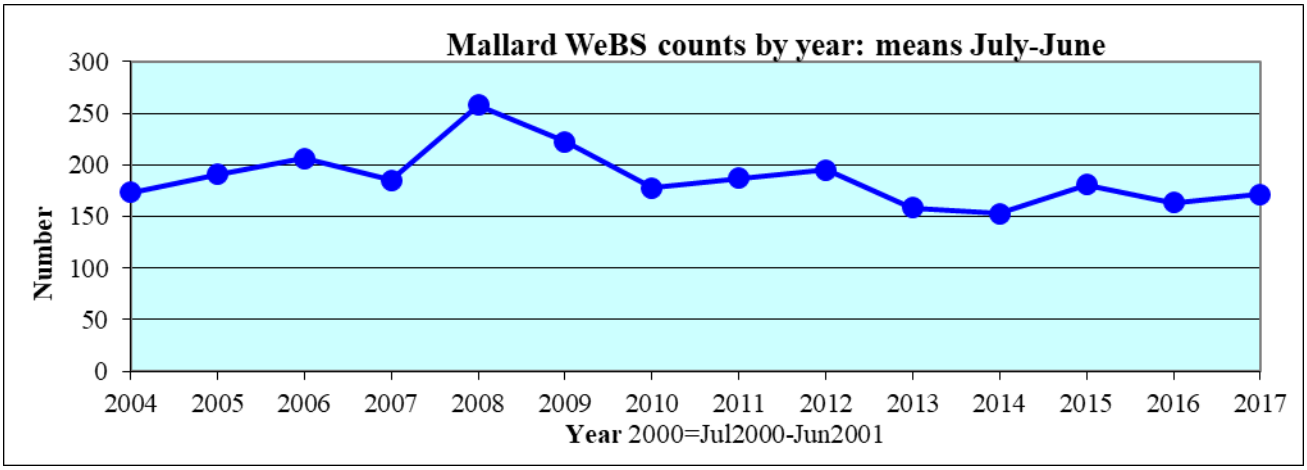


Counts have been averaged over the usual annual cycle of July to June. Numbers of Teal in the Square appear to have decreased markedly from winter 2005/6 to winter 2007/8 and then stabilised at a level at least 25% lower. Numbers in winter 2015/16 were boosted by good numbers being counted on Blakeney Freshes.

Mallard

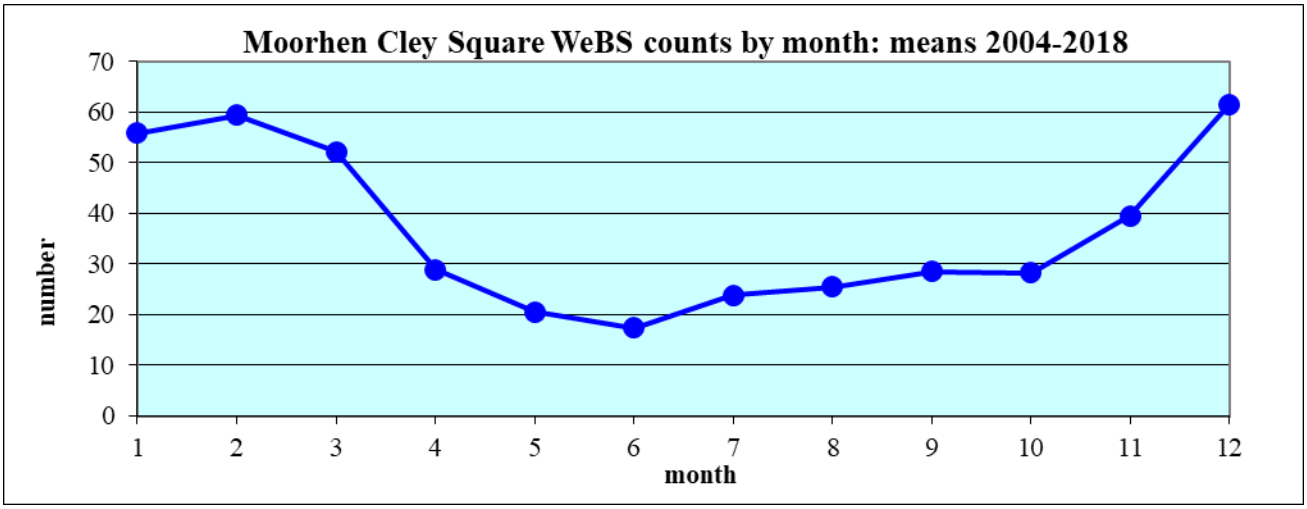


About 100 birds were counted in the breeding seasons and 200-300 in the autumn and winter months. Birds appear to concentrate at Cley Marshes on arrival in August but then disperse. The numbers of birds counted in the breeding season were relatively stable but fewer were counted in midwinter in recent years.

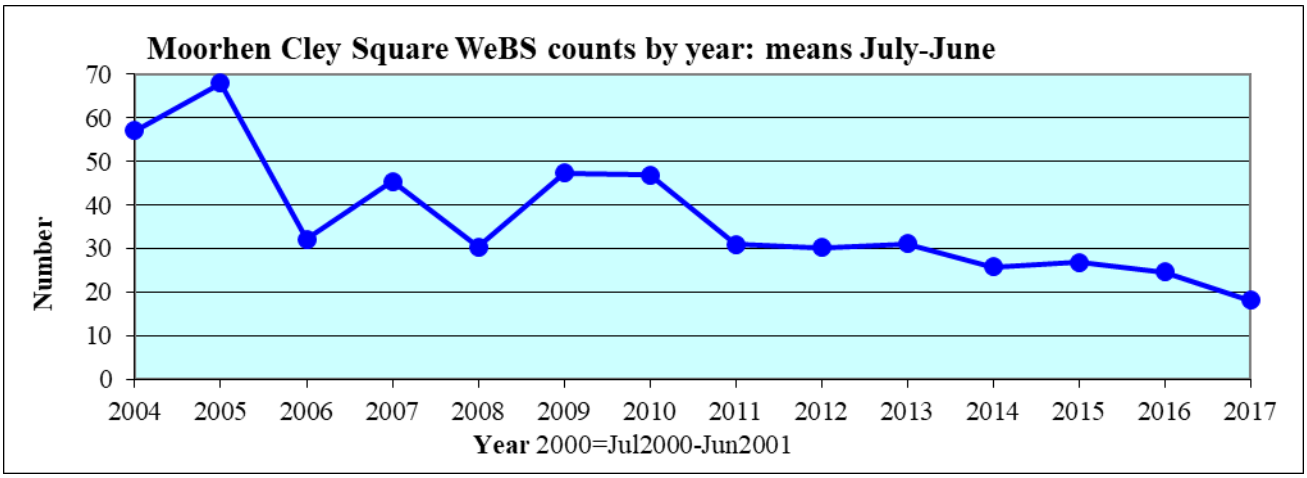


Counts have been averaged over the usual annual cycle of July to June. Numbers of Mallard counted peaked in 2008/9, when there were good numbers on Blakeney Freshes, but otherwise have been relatively stable.

Moorhen

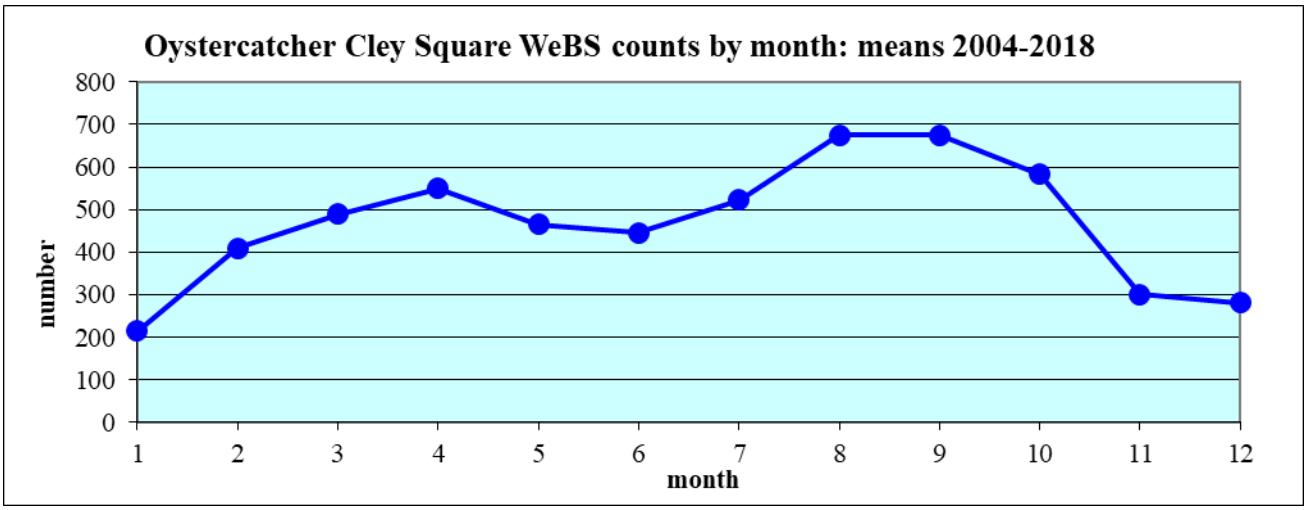


Numbers of Moorhen counted were much higher in winter. This was possibly partly due to birds leaving drains and ditches to feed in the meadows and becoming more visible. The species has only been recorded three times on the Blakeney Harbour. There has now been a clear large change in pattern of occurrence for Moorhens with no longer any large increase in the numbers counted during late autumn and midwinter. The species used to be present in reasonable numbers on the Blakeney Freshes count but none have been recorded there on recent counts.

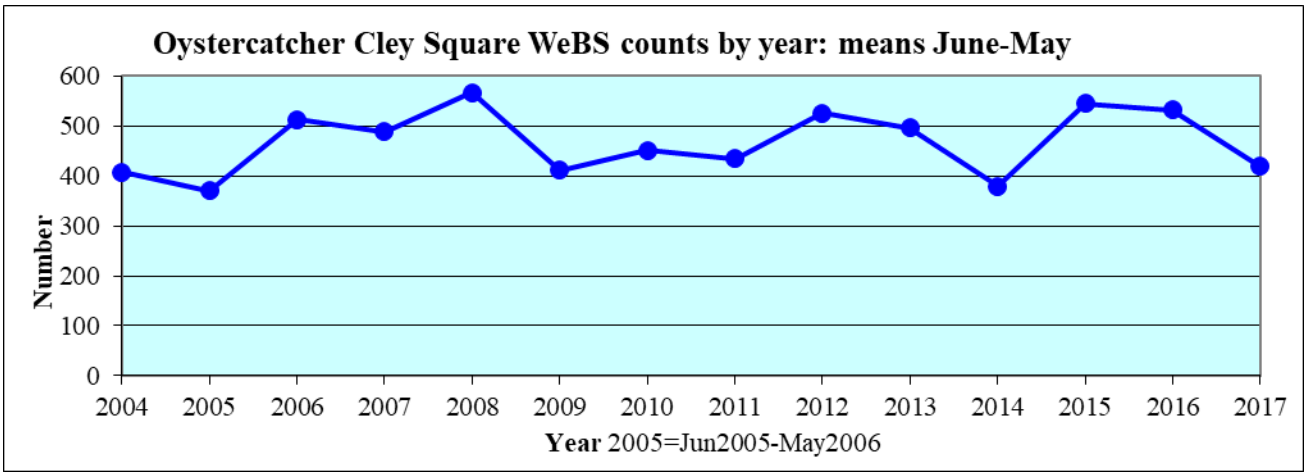


Counts have been averaged over the usual annual cycle of July to June. A very worrying decrease in numbers counted is evident.

Oystercatcher

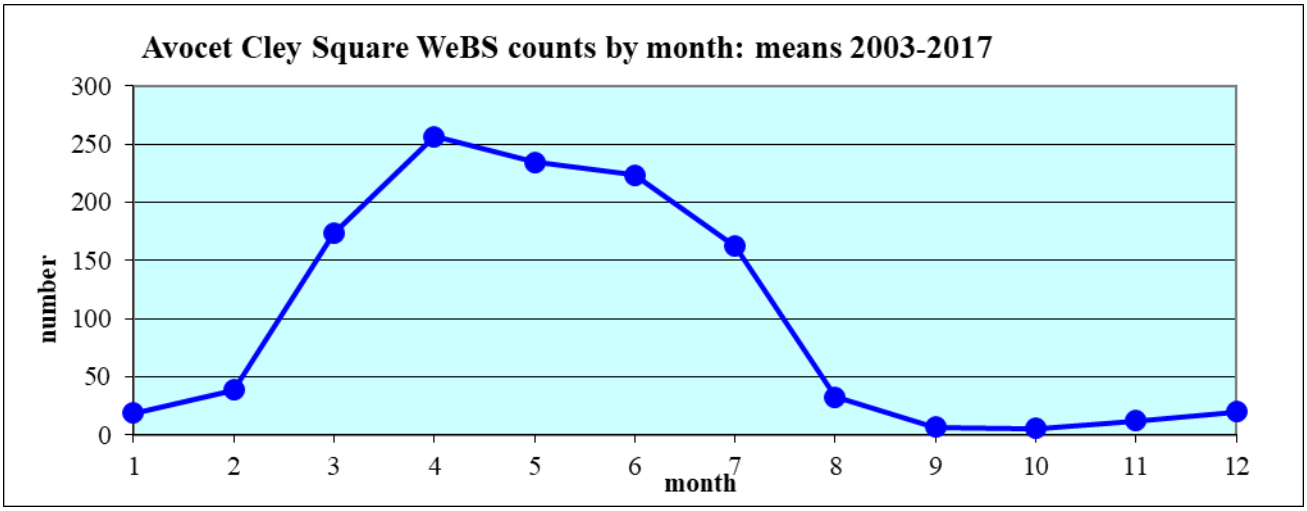


The vast majority of Oystercatchers present in the Cley Square are in Blakeney Harbour. The mean breeding season population was about 400 birds. Mean numbers peaked in September during autumn migration at over 700 birds then decreased to a mid-winter low of about 250 birds before increasing to over 500 during spring migration. The pattern of occurrence seems relatively stable apart from some particularly high counts in the autumn in the later years.

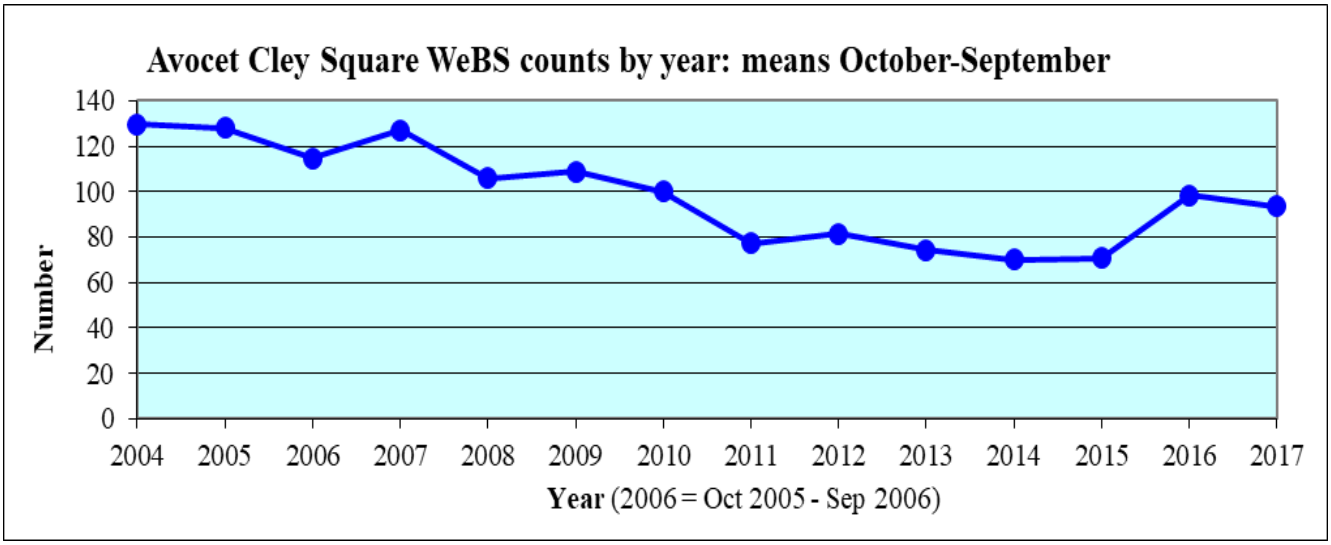


Counts have been averaged over an annual cycle of June to May. Numbers of Oystercatchers in the Cley Square appear to have been relatively stable.

Avocet

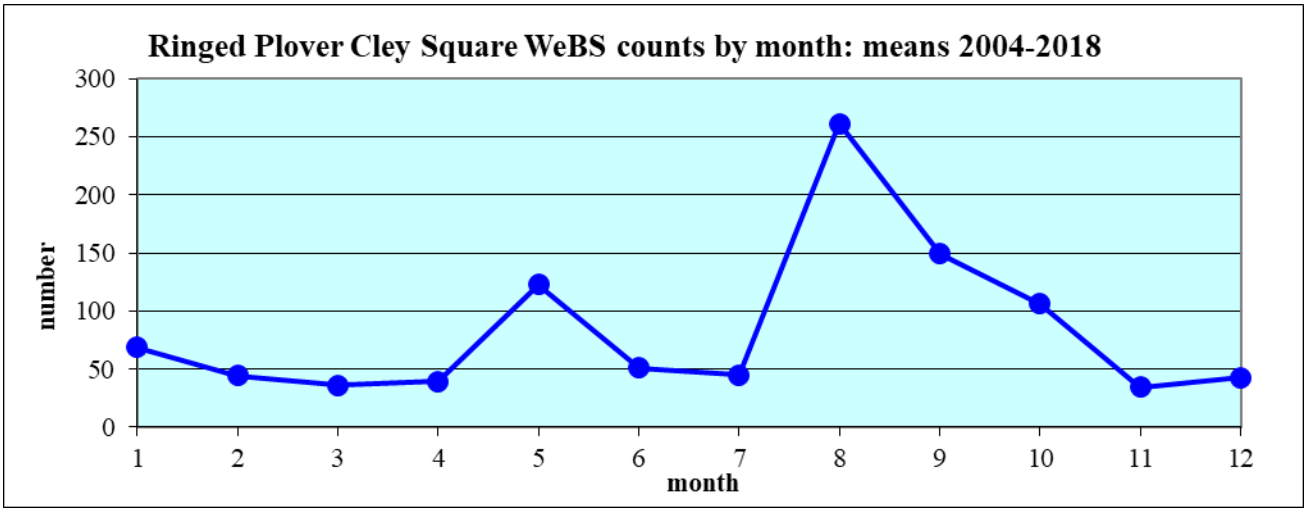


Avocets concentrate at Cley Marshes where the numbers are of national significance in the breeding season. Birds arrive in substantial numbers in March and numbers peaked in April and May at over 200 birds. In recent years birds have dispersed a little to also breed in the other count areas. Virtually all of them leave to moult in the autumn with only a few returning afterwards to overwinter. Analyses are therefore based on an annual cycle from October to September and the data for the period October 2003 to September 2017 used. The pattern of occurrence was relatively stable over the years for this species.

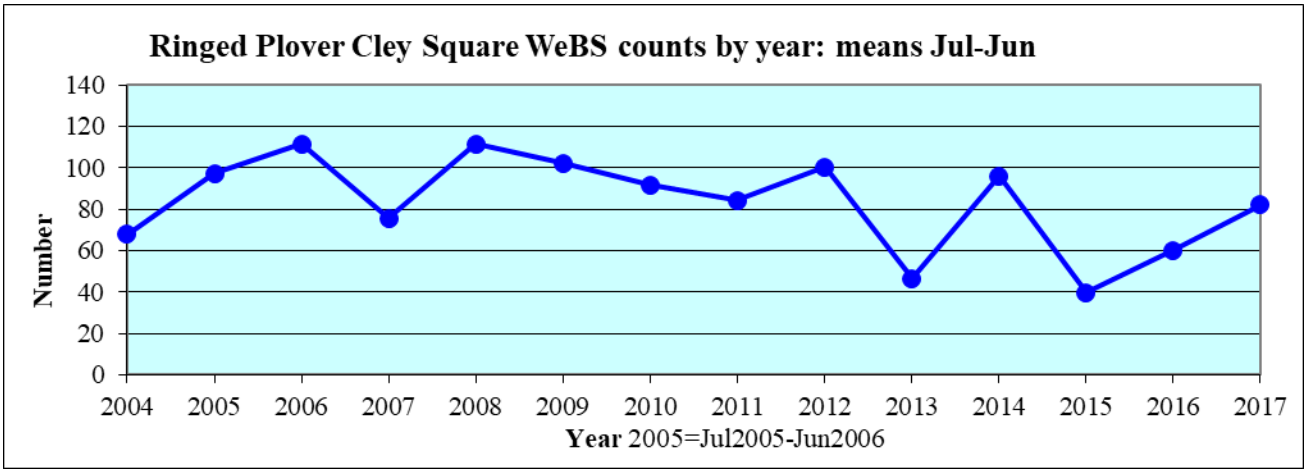


Total numbers of Avocets in the Square had been dropping since 2003-4 but there was a partial recovery in the years 2016-17 and 2017-18.

Ringed Plover

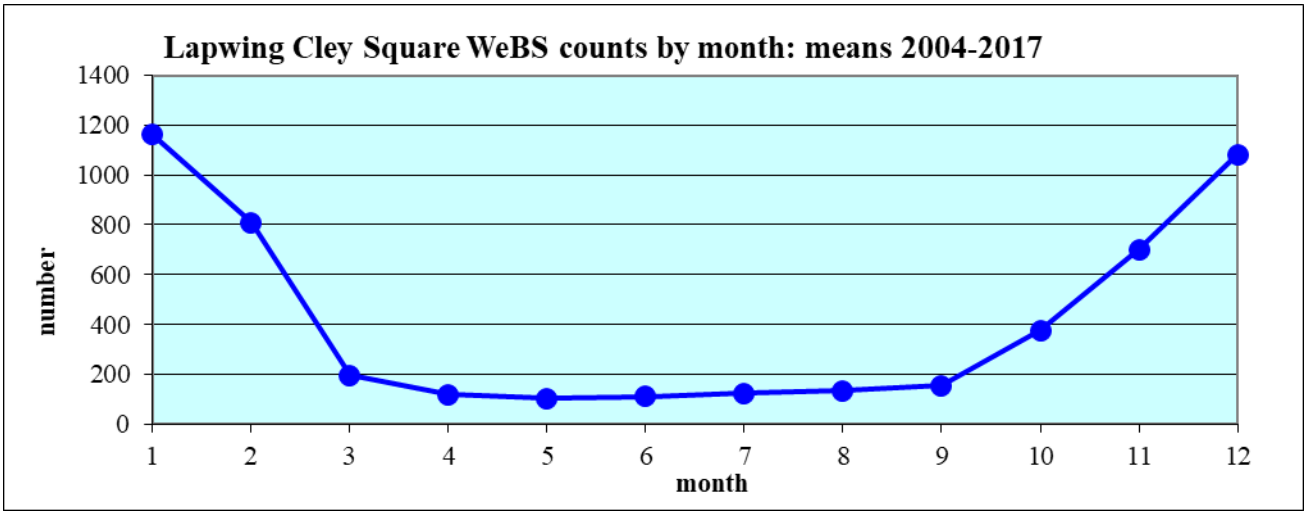


Blakeney Harbour has the majority of the Ringed Plovers to be found in the Square. Hardly any are seen on the Blakeney Freshes count and few at Salthouse. About 50 birds were counted in the breeding season. Mean numbers peaked at about 250 birds when northern migrants passed through on autumn migration and again in May on spring passage at about 100 birds. The highest counts during autumn migration were in September in most recent years rather than in August.

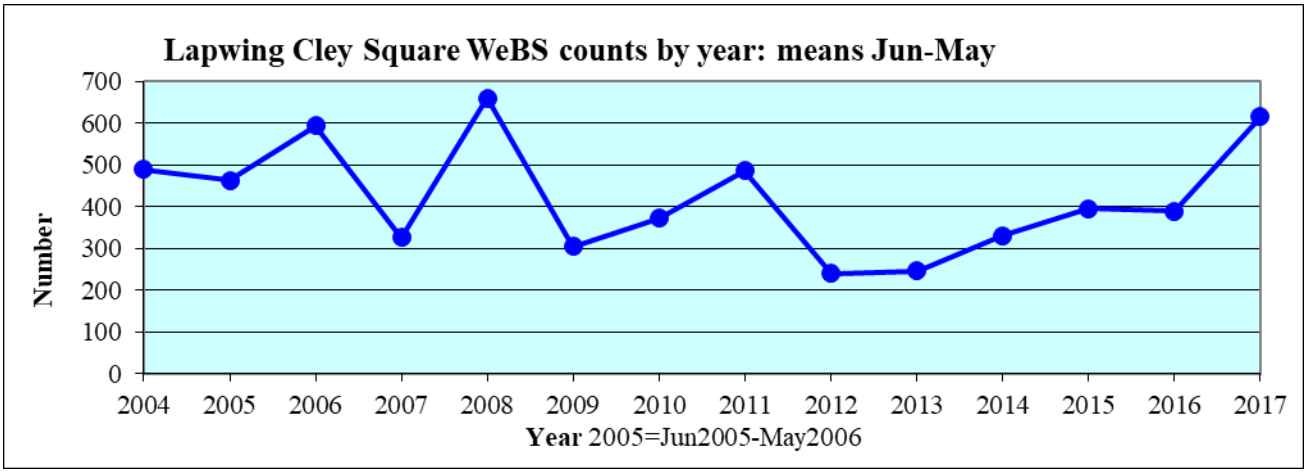


Counts have been averaged over an annual cycle of July to June as birds from the race breeding in the tundra can still be heading north in June. Numbers of Ringed Plover counted appear to fluctuate as a result of years with particularly low counts (2004/5, 2007/8, 2013/14 and 2015/16). Overall, there appears to be a decline in numbers since 2008/9. The current Long Term estimate of the reduction in numbers for the North Norfolk Coast SSSI is 54%.

Lapwing

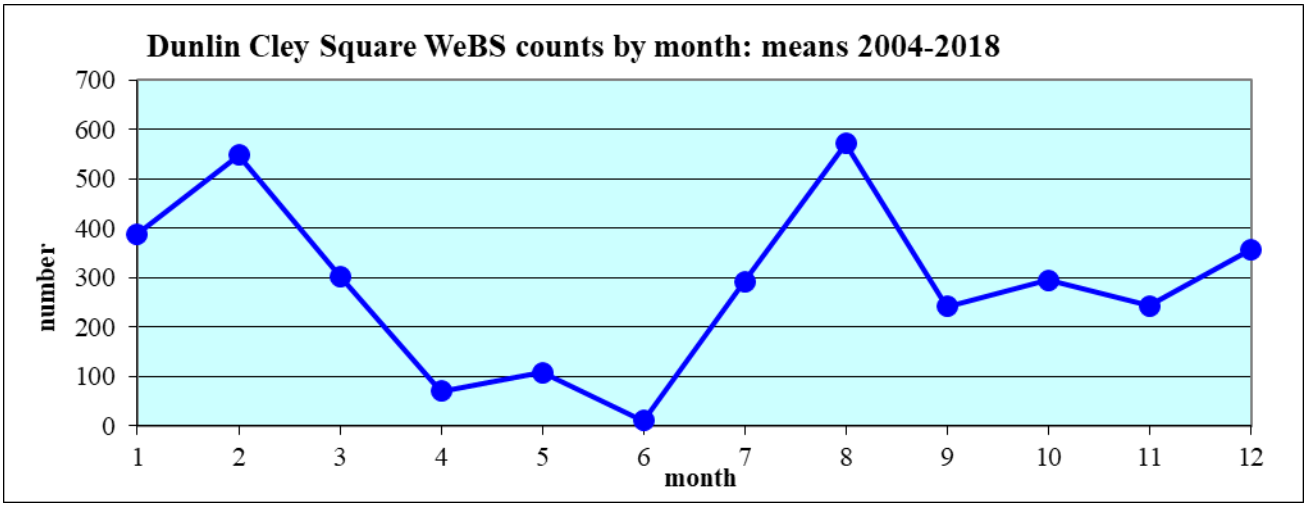


Mean Lapwing counts peaked in midwinter at over 1000 birds with the highest numbers at Cley Marshes. About 100 birds were counted during the breeding season. There does not appear to be any obvious large change to the pattern of occurrence over the years.

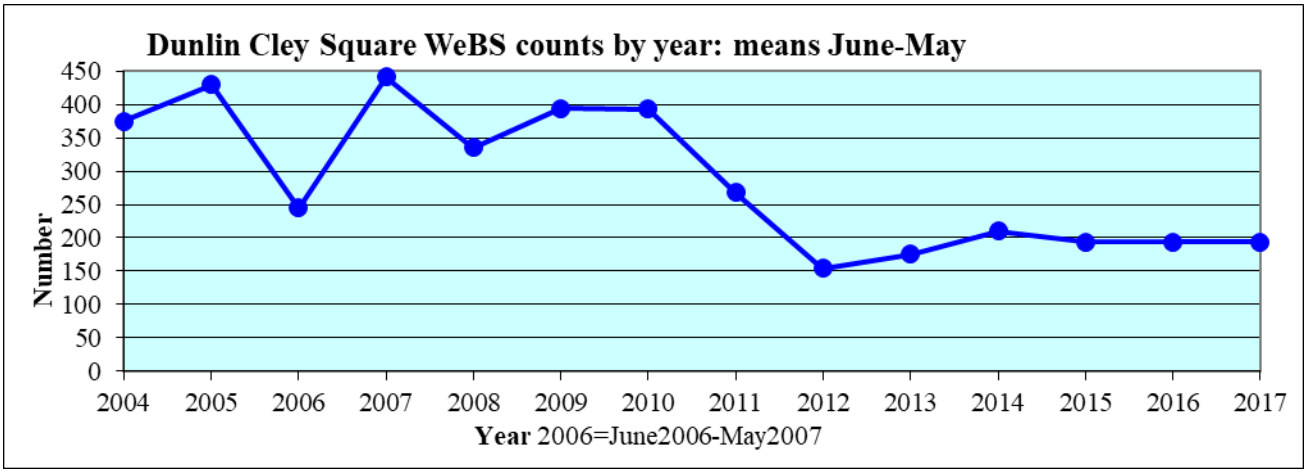


Counts have been averaged over the usual annual cycle for waders of June to May. Numbers counted have fluctuated markedly between years. Numbers overall seem to have decreased from 2004/5 to 2012/13 then increased with a particularly high count in 2017/18.

Dunlin

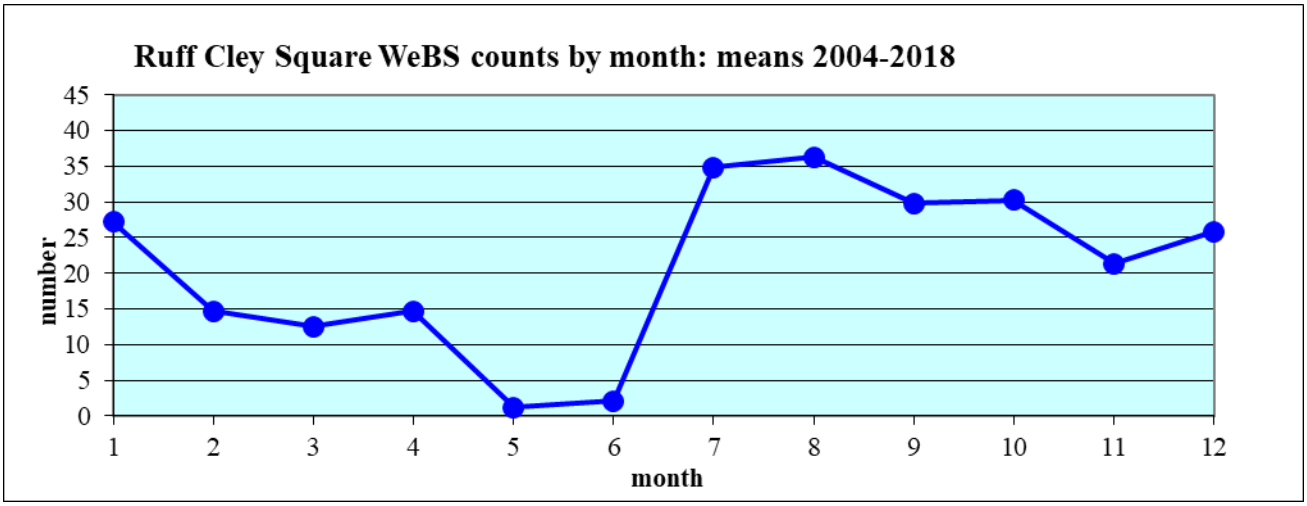


Dunlins were mainly recorded on the Blakeney Harbour and Cley counts. Virtually no birds were present in June. Mean counts have peaked in February and August. Dunlin is one of the three wader species where there has been a noticeable change in pattern of occurrence over the years. Numbers seen on autumn passage have decreased markedly but remained similar in late winter and during the spring.

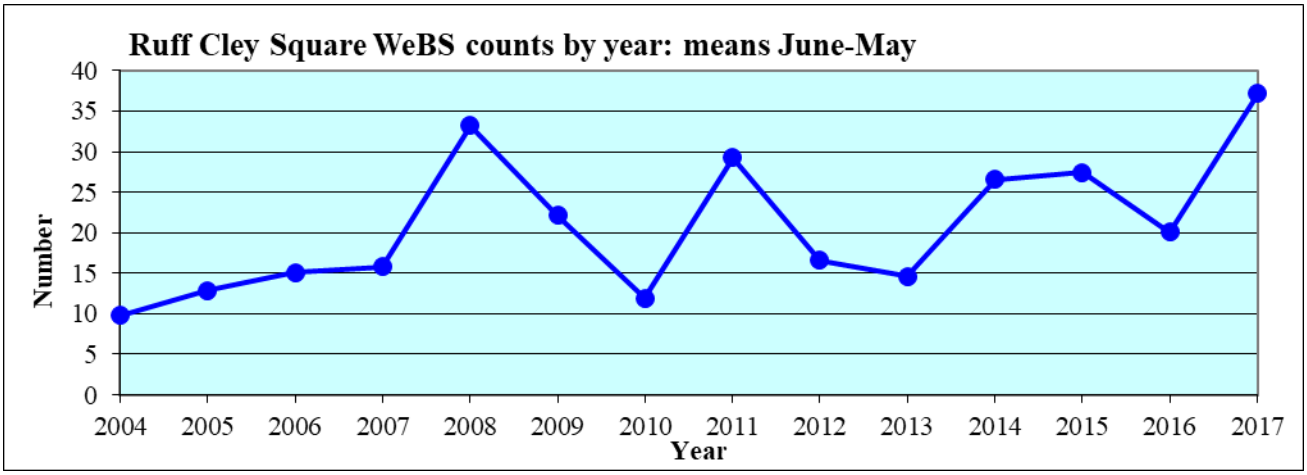


Counts have been averaged over an annual cycle of July to June. Mean numbers counted at Cley Marshes averaged just over 70 for the years 1998/9 to 2004/5 then increased to 175 for the years 2005/6 to 2010/11 before decreasing back towards the level of the turn of the century. Numbers in Blakeney Harbour have fluctuated. Total numbers counted in the Square decreased sharply from 2010/11 to 2012/13 by 60%. This was followed by a slight recovery. The current Long-Term estimate of the reduction in numbers for the North Norfolk Coast SSSI is 37%.

Ruff

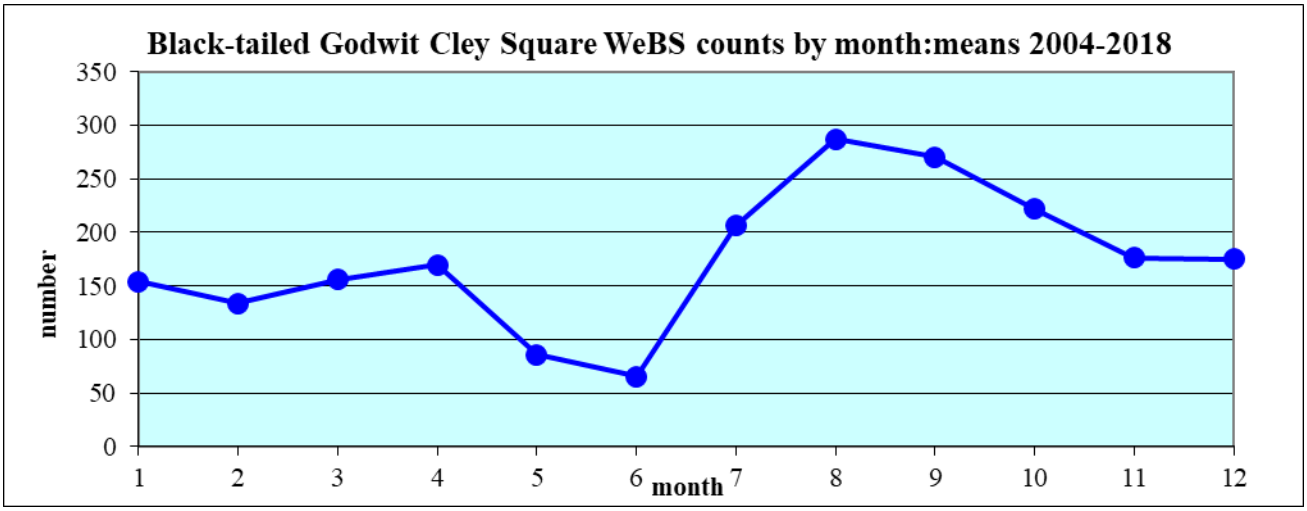


Ruff has primarily been an autumn passage migrant when about 35 birds were counted. Typically, about 20 birds were counted in winter and smaller numbers were present during spring migration. Virtually all birds are seen at Cley Marshes. Just one flock has ever been recorded on a Blakeney Harbour count. There has been a large change in the pattern of occurrence for this species. In the early years numbers on spring passage were comparable to those on autumn passage and the highest counts in fact came in midwinter. Numbers counted in autumn were far higher than those counted on spring passage and in winter for later years.

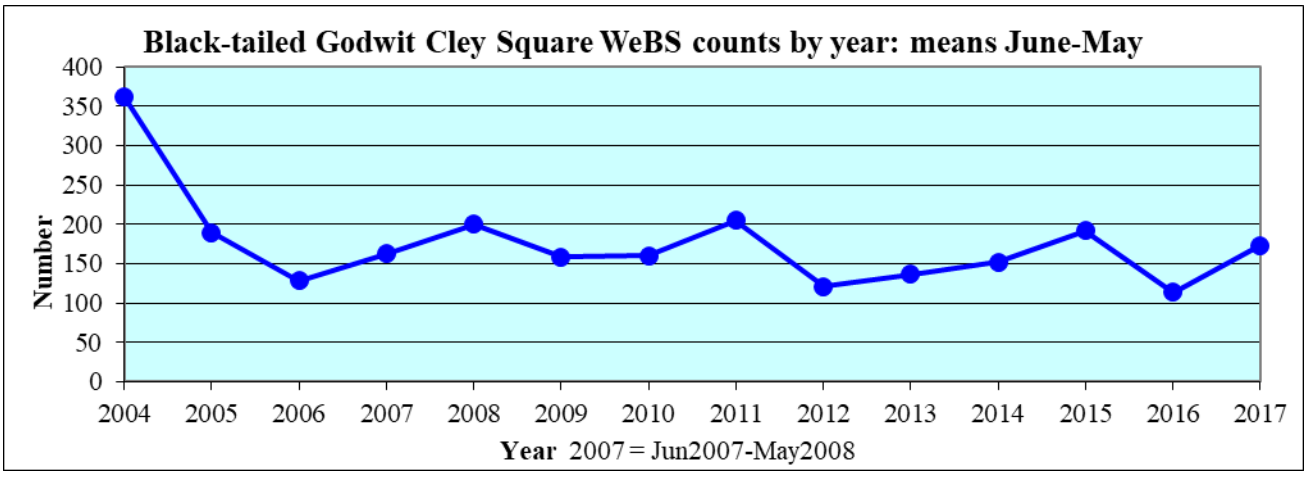


Counts have been averaged over an annual cycle of June to May. It appears that there was a large drop in numbers of Ruff counted from 2002/3 to 2004/5, that there have been wild fluctuations in numbers since but that the overall trend had been for them to increase to 2017-18.

Black-tailed Godwit

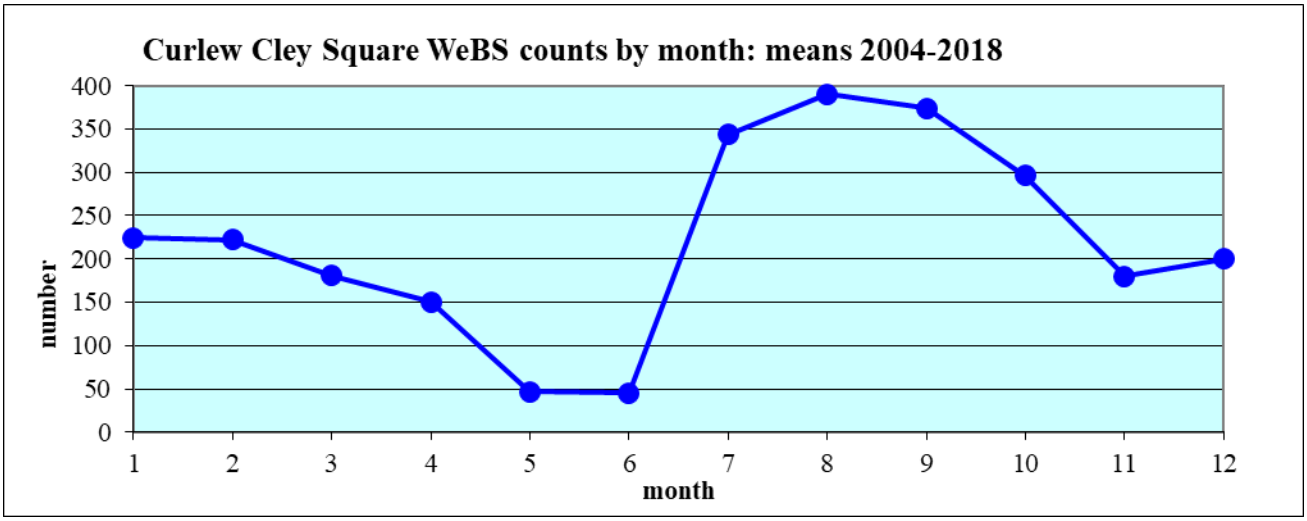


Numbers have been at their lowest in June when the first failed breeders appear. The highest mean counts were obtained in August when autumn migration peaks. The majority of the birds roost on Cley Marshes feeding in the scrapes, meadows (when wet) and lagoons there and in autumn in stubble fields nearby. About 150 birds were counted in midwinter and numbers were just a little higher during spring migration. Some first-summers are present in May when the adults are on the breeding grounds in Iceland. Black-tailed Godwit is another wader whose pattern of occurrence in the Cley Square has changed a lot during these years. Numbers counted during spring passage used to be similar to those counted on autumn passage but are now substantially lower.

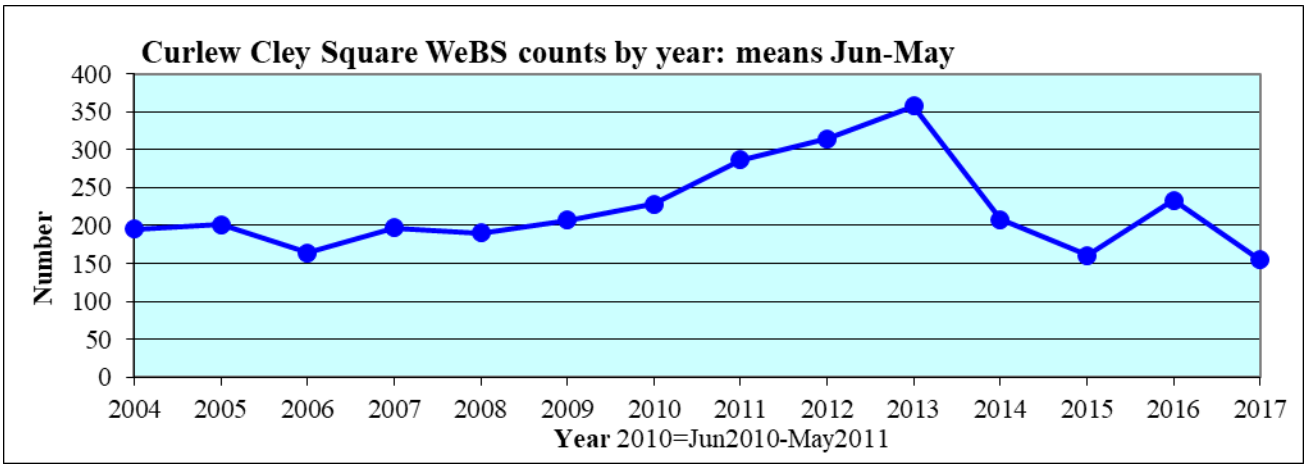


Counts have been averaged over the usual annual cycle for waders of June to May. Total counts peaked in the Cley Square in 2004/5 at over 350 birds/month when there were high numbers during both the spring and autumn migrations and birds occurred in significant numbers on Blakeney Freshes and at Salthouse Marshes as well as at Cley Marshes. Mean counts for years since have varied between 100 and 200 birds/month with a slightly decreasing trend as the years have passed.

Curlew

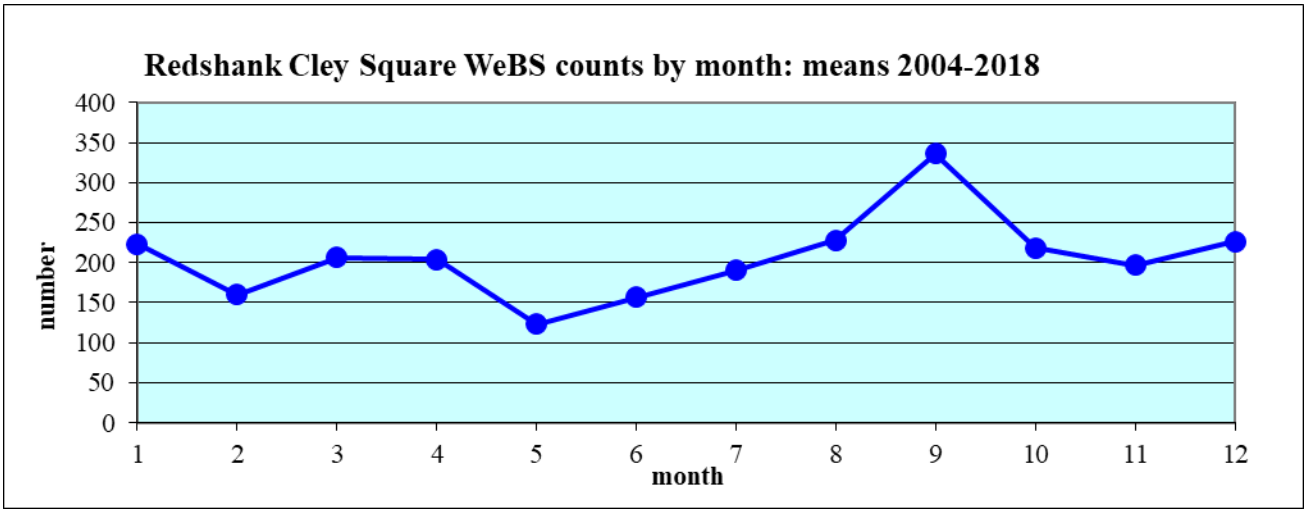


Numbers of Curlew peaked at about 400 birds during the autumn migration. Around 200 birds overwintered and just a few birds (presumably mainly immatures) were present during May and June. Most of the birds were to be found in Blakeney Harbour. There did not appear to be any obvious large change to the pattern of occurrence over the years.

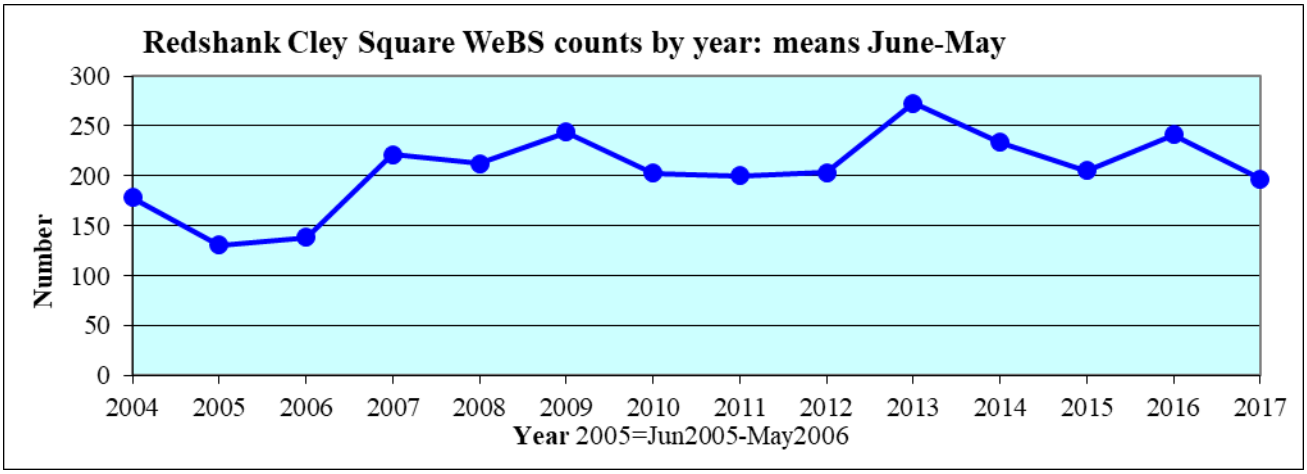


Counts have been averaged over the annual cycle of June to May. The overall trend had been of increasing numbers counted as the years passed. There was an exceptional count of 1289 birds in July 2013. Numbers have fallen since back to the level at the start of the period.

Redshank



The main numbers of Redshank were, as one would expect, to be found in Blakeney Harbour but the numbers at Cley Marshes during the breeding season were almost as high. Mean numbers counted increased during the autumn and peaked at just over 300 birds in September. On average about 200 birds were present in midwinter. There was a small influx of spring migrants in March and April. The autumn peak was not so pronounced in the years at the start and end of the total time period.



Counts have been averaged over the usual annual cycle for waders of June to May. Overall, the total numbers counted seem to have increased from 2003/4 to 2013/4 but it also seems that this is heavily influenced by low counts in 2005/6 and 2006/7 and the high mean count for 2013/4 that was due to an exceptional count of 772 birds in September. Counts now appear to have reduced back towards the level of those in the earlier years.

Mean counts for each species

Species	Mean monthly count	Mean count for peak month	Peak Month
Brent Goose	859	1818	December
Shelduck	226	396	January
Wigeon	884	2006	February
Gadwall	59	88	June
Teal	668	1492	October
Mallard	187	303	January
Moorhen	37	61	December
Oystercatcher	467	676	August
Avocet	99	256	April
Ringed Plover	83	261	August
Lapwing	422	1161	January
Dunlin	286	572	August
Ruff	21	36	August
Black-tailed Godwit	175	287	August
Curlew	221	390	August
Redshank	206	336	September

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Relative importance of the four sites

Species	Blakeney Harbour	Blakeney Freshes	Cley Marshes	Salthouse Marshes
Brent Goose	80%	5%	12%	4%
Shelduck	60%	6%	29%	5%
Wigeon	30%	24%	26%	20%
Gadwall	4%	7%	74%	14%
Teal	12%	12%	64%	12%
Mallard	17%	25%	46%	12%
Moorhen	0%	22%	43%	35%
Oystercatcher	94%	2%	3%	1%
Avocet	4%	6%	78%	13%
Ringed Plover	81%	0%	17%	2%
Lapwing	12%	13%	63%	12%
Dunlin	52%	1%	44%	3%
Ruff	1%	5%	85%	9%
Black-tailed Godwit	3%	8%	81%	8%
Curlew	75%	10%	10%	6%
Redshank	68%	5%	19%	7%

Estimated changes in numbers over the ten-year period 2007/8 to 2017/18

Species	National 10-year change	Cley Square 10-year change
Brent Goose	+5%	-11%
Shelduck	-13%	-25%
Wigeon	-3%	-50%
Gadwall	+16%	+2%
Teal	+14%	-21%
Mallard	-12%	-12%
Moorhen	-26%	-53%
Oystercatcher	-12%	+5%
Avocet	+24%	-33%
Ringed Plover	-23%	-21%
Lapwing	-20%	-16%
Dunlin	0%	-47%
Ruff	-2%	+109%
Black-tailed Godwit	+31%	-25%
Curlew	-21%	0%
Redshank	-9%	+31%

Getting further information on WeBS counts

These counts form part of the national Wetland Bird Survey (WeBS) which involves volunteer birdwatchers making monthly counts of non-breeding waterbirds across the UK and sending them to the British Trust for Ornithology. WeBS is a partnership between the British Trust for Ornithology, the Royal Society for the Protection of Birds and the Joint Nature Conservation Committee (the latter on behalf of the Council for Nature Conservation and the Countryside, the Countryside Council for Wales, Natural England and Scottish Natural Heritage), in association with the Wildfowl and Wetlands Trust. The data collected are used to assess the size of waterbird populations, determine trends in numbers and distribution, and assess the importance of individual sites for waterbirds, in line with the requirements of international conservation Conventions and Directives. The four counts made in the Cley Square are part of the overall count made for the North Norfolk Coast SPA site, which has SSSI status, and is a site of national importance for several of the species counted.

The latest national report, 5-year and 10-year trends for counts for the North Norfolk Coast SPA and other detailed information can be found at

https://www.bto.org/our-science/projects/wetland-bird-survey

David Wileman 7-3-23.