

Upper Nene Valley Gravel Pits SSSI Repeat Breeding Bird Survey 2013/14

Final Report

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NENE VALLEY
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1. Summary

The Upper Nene Valley Gravel Pits Site of Special Scientific Interest (SSSI) was designated in 2006. A key feature of interest of the SSSI is a nationally important breeding bird assemblage of freshwater lakes and marginal habitats. The SSSI was designated based on data that included a breeding wetland bird survey in 2003. Notable species included grebes, waders and ducks, grey herons, common terns, Cetti's warblers and yellow wagtails.

As part of the Nene Valley Nature Improvement Area (NIA) project, the breeding bird survey was repeated in 2013/14 to help assess change in the SSSI over the last ten years. The data will also help inform an assessment of the impact of recreation and access to the site, another strand of the NIA work. For further details of the NIA project (particularly see "objective 2 – public awareness and access", visit www.nenevalleynia.org).

Almost all of the SSSI was covered in 2013, plus two sites outside the SSSI (count units B and C). The southern half of Stanwick Lakes (count units M1-6 and M20), part of Thrapston Gravel Pits (count units P1-2 and P9), and Aldwinkle Gravel Pits (Q1-3) had to be surveyed in 2014.

Note that a large spreadsheet accompanies this report setting out all the results. If you have not received a copy alongside this report please contact colin.wilkinson@rspb.org.uk.

Results:

The overall quality of the Nene Valley's breeding bird assemblage has clearly fallen in the ten years since 2003. In the last decade, the Nene Valley seems to have lost shovelers, ringed plovers and redshanks as breeding species. Probable significant local declines are evident in grey herons, gadwall, oystercatchers, little ringed plovers, common terns, cuckoos, kingfishers, sand martins, yellow wagtails, sedge warblers and reed buntings.

The Nene Valley grey heron population seems to have declined much *more* than in the UK as a whole, and the reduced numbers of gadwalls breeding locally may be a particular concern given the large *increase* in the UK as a whole, over roughly the same period.

In some cases, helping local populations to increase is likely to be straightforward if we provide the right habitat. For example, common terns, sand martins and little ringed plovers are known to respond quickly if appropriate shingle islands, sand cliffs etc are provided that meet their needs. By contrast, our ability in the Nene Valley to hold on to some other birds will be no less of a challenge than keeping them as British breeding species at all. For example, cuckoos and yellow wagtails are undergoing significant national declines driven by wider land use change, effects that are perhaps being exacerbated by the onset of climate change here and on their wintering grounds. These are massive issues extending far beyond the Nene Valley in terms of their scope, impacts, and feasible solutions.

On a more positive note, local populations of little and great crested grebes, mute swans, tufted ducks, lapwings and water rails remain more or less as they were in 2003. Little egrets have colonised the valley in line with their astonishing spread across southern England since first breeding in the UK in 1996. Grasshopper warblers have increased, although the population is still small. And since 2003, Cetti's warblers have increasing their numbers more than twelve times over.

2. Acknowledgements

The survey was organised by the RSPB on behalf of the Nene Valley Nature Improvement Area (NIA) partnership.

The NIA partnership is grateful to the land owners and site managers for allowing access to their land for the survey.

We also want to thank our volunteers. Every aspect of this project relied heavily on volunteers: conservatively, well over 500 hours of volunteer time went to support this project. Those listed below offered their skills and time to carry out the surveys, often at an unsociably early hour of the day!

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We also thank volunteers Bev Potts, who spent many days transferring piles of paper data into spreadsheets, checking and rechecking the data; Tom Bregman, who helped analyse much of the data; and Ezra Lucas who updated this document to include the data from the 2014 surveys.

The original survey report in 2003 referred to in the analysis was written by Steve Brayshaw on behalf of the RSPB, Natural England and Northamptonshire Wildlife Trust.

Cover photographs (top left to bottom right):

Wilson's Pit near Higham Ferrers by Colin Wilkinson; oystercatcher by Tom Marshall (rsbp-images.com); common tern by Chris Gomershall (rsbp-images.com); grey heron by John Bridges (rsbp-images.com); reed warbler by Kaleel Zibe (rsbp-images.com); cuckoo by Nick Martin; mute swan cygnets by Colin Wilkinson; Strixton Lake by Kirsty Brannan.



Introduction

3.1 The Nature Improvement Area (NIA)

The Nene Valley is one of 12 NIAs that were selected through a national competition announced in the Natural Environment White Paper in 2011. More information about the competition and the national NIA programme can be found on this [website](#).

The Nene Valley NIA covers an area of about 41,000 hectares. It runs through the heart of Northamptonshire, from Daventry in the west to the eastern fringes of Peterborough. It includes the floodplain of the River Nene and its tributaries such as the Ise, Brampton Branch, Willow Brook, Wootton Brook and Harpers Brook.

Work in the NIA is being coordinated through a wide partnership of public, private and voluntary sector organisations, working with local communities and volunteers to re-create and re-connect natural areas along the valley. For the first three years of its existence, the NIA programme has five objectives, each of which is being led by a specific organisation. These objectives and the lead organisations are:

1. Growth and development will support, value and benefit the natural environment resulting in net gain in biodiversity by 2020 (Northamptonshire County Council).
2. Enhance public awareness, access and benefits of the NIA in a sustainable and sympathetic way, while ensuring that the designated sites at the core remain in favourable condition (the RSPB).
3. Improve ecological status of the river and enhance ecosystem service provision (the River Restoration Centre)
4. Strengthen the ecological network through effective engagement with farmers and landowners (Northamptonshire Wildlife Trust).
5. Investigate the potential to market the ecosystem services provided by the Nene Valley (the University of Northampton)

The 2013 Repeat Breeding Bird Survey is one strand of work being carried out under Objective 2. Further information about this NIA can be found at www.nenevalleynia.org.

3.2 The Site of Special Scientific Interest

The Upper Nene Valley Gravel Pits Site of Special Scientific Interest (SSSI) was designated in 2006 based on survey work carried out in 2002 and 2003, supplemented by additional published data from other years. The SSSI underpins a designation of international importance, the Upper Nene Valley Gravel Pits Special Protection Area (SPA). The SPA was classified in 2011 under the European Birds Directive, for its internationally important wintering waterbird populations. Between October and March each year, the SPA supports over 1% of the British wintering populations of golden plovers and bitterns, over 1% of the NW European population of gadwalls, and an assemblage of over 20,000 wintering waterbirds of all species.

It is government policy that all SPAs in the UK should also be designated as SSSIs, so when the case for classifying the SPA was being developed in 2001-04, Natural England, the RSPB

and Northamptonshire Wildlife Trust worked together with local specialists in dragonflies, aquatic invertebrates and aquatic plants to assess the case for designating the SSSI in parallel. Ultimately, the SSSI was designated based on a broader range of features of interest than the SPA it underpins. The full Upper Nene Valley Gravel Pits SSSI citation can be found on [Natural England's website](#). The summary of reasons for notification reads:

"[The Upper Nene Valley Gravel Pits SSSI] is a nationally important site for its breeding bird assemblage of lowland open waters and their margins (including the largest nesting colony of grey herons Ardea cinerea in Northamptonshire), wintering waterbird species, an assemblage of over 20,000 waterbirds in the non-breeding season and a rare example of wet floodplain woodland."

3.3 The purpose of the repeat breeding bird survey

From this repeat breeding bird survey, we can tell if:

- Particular species have increased or decreased significantly, and compare these trends to the national picture for context;
- Whether there has been any redistribution of breeding birds across sites in the SSSI;
- Whether overall species diversity has increased or decreased significantly.

These results are valuable in their own right, to help monitor changes in the breeding bird community over the last 10 years and as a new baseline from which to assess future change and the effectiveness of delivery of NIA objectives. Also, by coupling these results with the findings from the visitor survey work and other research, we may be able to identify where action may be needed to mitigate recreational disturbance.

When the SSSI was designated it was assessed as being entirely in favourable condition. However, since then Natural England has assessed the whole site as being "at risk" from recreational disturbance. Northamptonshire is part of England's second-largest growth area, known as the Milton Keynes and South Midlands sub-region. This growth comes on top of an already large human population living in a busy county. Many people enjoy visiting countryside sites in the NIA. More people living in Northamptonshire means more visits to the countryside. This must be encouraged in an age when fewer people than ever before (especially children) have regular contact with nature, but it needs to be done in a way that does not worsen pressures on wildlife and the natural environment.

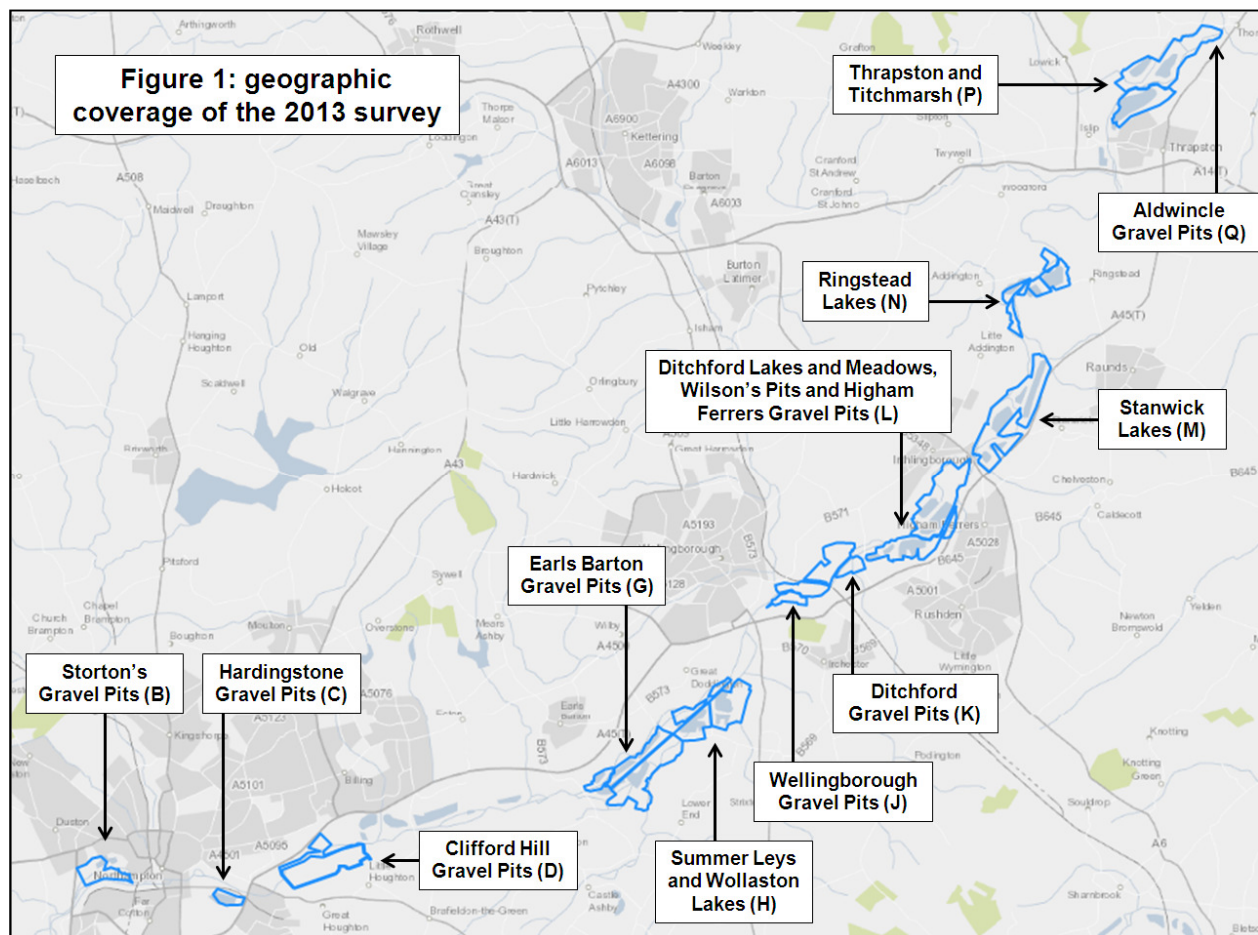
To address this challenge – in the words of objective 2, to "*enhance public awareness, access and benefits of the NIA in a sustainable and sympathetic way, while ensuring that the designated sites at the core remain in favourable condition*" – several strands of work are being carried out by the NIA partners. In particular, a major survey of visitors to sites in the SPA/SSSI took place in 2012/13, carried out by consultants Footprint Ecology Ltd on behalf of the partnership. This survey has provided valuable information about visitor origins, numbers, activities, preferences and awareness of the NIA. To help assess whether visitor pressure is affecting the wildlife of the NIA we also need to have up-to-date ecological survey information. The repeat breeding bird survey is a key part of this.

4. Method

4.1 Survey method

The method followed for this survey was laid down in 2003, when the original survey was carried out to help build the case for designating the SSSI. To ensure comparability, the same method was followed in 2013/14.

The area covered by the 2013/14 survey is shown below. Detailed maps of each area can be found at Appendix 1. The survey area is broken down into “survey sites” which were assigned a letter, and each of these is further broken down into “survey units” which were given a number. Thus any lake in the survey area can be referred to by a letter/number code. See appendix 3 for some further details.



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Each volunteer was assigned a survey area measuring between 50-100 hectares. This is a reasonable area for one person to cover in about 3-4 hours.

For each survey unit they agreed to cover, volunteers were provided with one survey form and a large-scale map (originally 1:10,000 scale). The survey form included a checklist for all bird species seen or heard in the survey unit and a longer, detailed form to record full counts and evidence of breeding activity in 31 “target” water bird species.

The 31 target species were:

Little grebe	Pochard	Cuckoo
Great crested grebe	Tufted duck	Kingfisher
Cormorant	Water rail	Sand martin
Grey heron	Little ringed plover	Yellow wagtail
Little egret	Ringed plover	Grey wagtail
Mute swan	Oystercatcher	Cetti's warbler
Shelduck	Lapwing	Grasshopper warbler
Gadwall	Snipe	Sedge warbler
Teal	Redshank	Reed warbler
Garganey	Common tern	Reed bunting
Shoveler		

See appendix 3 for further details of why these species were selected for survey.

Survey units were visited four times wherever possible, with one visit per month from April to July 2013 (or in 2014). Volunteers were asked to schedule their visits within specific time frames and as close as possible to the optimum dates (for 2013) listed below. Time windows for 2014 were similar. This was to ensure as much consistency as possible across counts taking place on different sites across the SSSI.

- Visit 1 13 April to 21 April (optimum weekend 13/14 April)
- Visit 2 11 May to 26 May (optimum weekend 11/12 May)
- Visit 3 8 June to 23 June (optimum weekend 15/16 June)
- Visit 4 6 July to 21 July (optimum weekend 13/14 July)

Volunteers were asked to survey between sunrise and 1100 hours if possible, or in the three hours before dusk as the next best option. These are the periods when many birds tend to be most active.

Volunteers were asked to carry out a preliminary visit before starting surveys, to identify hazards and complete their risk assessment, and to identify access to and routes around the site. Having picked a route, volunteers were advised to stick to it for all four visits for consistency, but to consider reversing the direction of travel for one or two visits so that any one part of the site was not always visited at the same time of day.

Volunteers were asked to consider where the 31 target species were most likely to be found within the site based on their feeding and nesting preferences, and spend most time checking those habitats. For example, particular attention was paid to:

- Islands and less accessible spits of land, whether vegetated or not;
- All margins of lakes;
- Stands of reeds, bulrushes, willow and alder carr woodland, etc.

Dry grassland, scrub and woodland were less likely to hold the target species (though grasshopper warblers and cuckoos can occur in these areas), so if time was a constraint, volunteers were advised that they could move through these habitats more quickly.

Cormorants, grey herons, little egrets, common terns and sand martins tend to nest in a few highly visible colonies, but are often seen hunting for food on other sites well away from their colonies. Similarly, there are large numbers of non-breeding mute swans in the valley all year round, in addition to breeding pairs holding territory on suitable waters. For these species, volunteers were asked to distinguish between birds genuinely breeding at a site, non-breeding birds, or birds seen feeding or resting there away from colonies elsewhere in the valley.

Confirmation of breeding was desirable where this could be easily detected. However volunteers were asked not to cause unnecessary disturbance by searching for nests in undergrowth or flushing birds from nests to see contents.

No breeding details were recorded for very common water birds like coots, moorhens, mallards, feral geese etc, but if present they were ticked on the checklist.

For the 31 target species, exactly what volunteers were asked to record depended on the species, its breeding ecology and habits. Data categories included:

- Calling or singing birds (especially in small and/or secretive species like water rails, Cetti's warblers)
- Single adults (e.g. grebes)
- Lone males (e.g. ducks)
- Lone females (e.g. ducks)
- Groups of males, females or mixed sexes (e.g. ducks)
- Pairs (e.g. grebes)
- Young – downy chicks and recently fledged young. Where young were seen, volunteers were asked to record each brood separately, with the chick growth stage as a fraction of the full-sized adult, e.g. whether they were $\frac{1}{2}$ grown or $\frac{1}{4}$ grown.
- Number of apparently occupied nests (e.g. herons, cormorants), incubating adults (if no actual nest is built, as in terns and some waders) or occupied burrows (e.g. sand martins, kingfishers). Volunteers were asked to mark all nest locations on the maps.

Volunteers were also asked to watch out for any evidence of breeding and to note this down. Evidence of confirmed or probable breeding could include:

- An occupied nest, scrape or burrow, and/or the presence of downy or recently fledged young.
- Adults carrying food or nest material to a probable (hidden) nest site, or a faecal sack away from it.
- Presence of eggshells or dead young – whether naturally hatched and discarded by the adult, or predated remains.
- Agitation, alarm calls, threat displays or “broken wing” display (used by some birds to distract ground predators – and humans – away from a nest or hidden young).
- Courtship behaviour, copulation, etc.

4.2 Data analysis method

All bird populations are presented as estimates of the number of pairs, even where the fieldwork recorded something different, such as singing males. Population estimates are shown as a minimum-maximum range. If a species was not confirmed breeding anywhere, the minimum is

zero. For each species, either the minimum count or maximum count is taken as the best indicator of the actual number of breeding pairs. Which value has been used for each species is shown in Table 1.

The choice of whether the minimum or maximum value is the best indicator of the true population depends on the ecology and habits of the species in question. Some species are obvious and visible, including in their nesting habits and visibility of any young. In such cases, the minimum figure is likely to be the better estimate because most if not all breeding attempts will have been detected. Examples of these species include herons, great crested grebes, cormorants, sand martins and the breeding waders.

The minimum estimate is also used for species where it is best to be “precautionary” in assessing whether a breeding attempt has taken place. For example, quite large numbers of ducks remain in the valley well into the spring following the winter peak, but very few of these will breed. In the case of tufted ducks, for example, the minimum count based on the number of broods seen will be far closer to the true population than a figure based on the much larger numbers of migrant tufted ducks lingering in the area until April and May.

The maximum estimate is used as the best indicator of the true population for widespread species with secretive nesting habits. This includes all the “small birds”, water rails, cuckoos and kingfishers. In effect, if these birds were seen or heard in suitable habitat they are assumed to be breeding in the area.

The table in Appendix 2 summarises the approach to assessing breeding status (i.e. confirmed, probable, or possible breeding), what evidence was counted in each case, and notes any issues picked up in analysis.



Part of survey unit H1 at Summer Leys LNR – the single most diverse site for breeding birds in the SSSI. Photograph by Colin Wilkinson.

5. Results

Table 1 presents population estimates for the 31 target water bird species in 2003 and 2013/14, calculates trends in that period, and compares the trend in the Nene Valley with the best available equivalent trend for the UK as a whole, over roughly comparable periods. Before reading this table, there are several important points to note.

These population estimates are for all the survey units covered in both 2003 and 2013/14. They are not population estimates for the SSSI, as such. Some survey units outside the SSSI are included here.

Other caveats apply to interpreting the trends calculated for the Nene Valley, and comparing local with national trends. Please read the notes following Table 1 carefully.

Table 2 presents data looking at site occupancy by survey unit, between 2003 and 2013/14 (i.e. how many sites was a species apparently breeding on in 2013 or 2014 compared to the first survey?) This is potentially important because a population may remain stable or only decrease a little, but become more vulnerable if that population is concentrated into fewer sites.

Table 3 calculates the SSSI index value for the whole SSSI and for individual survey sites within the SSSI. See Appendix 3 for an explanation of what the index value means and how it is calculated.



Cattle grazing at Wilson's Pits, near Higham Ferrers. Active management of habitat is important for some specialised breeding birds in the Nene Valley. Photograph by Colin Wilkinson.

Table 1 – Estimated number of breeding pairs of “target” water birds, 2003 and 2013/14, and comparison with UK trends

Species	2003		2013/14		Actual change 2003-2013/14 (pairs)	% Change 2003- 2013/14 (see note 2)	% Change (UK) for comparison (see note 3)	Source for % Change (UK) (see note 4)
	Min (pairs)	Max (pairs)	Min (pairs)	Max (pairs)				
Little grebe	5	11	3	10	-2	-40*	-10	1
Great crested grebe	43	131	50	104	7	16	27	1
Grey heron	66	66	32	37	-34	-52	-21	2
Mute swan	57	70	57	57	0	0	4	1
Shelduck	0	4	0	0	0	0	7	1
Gadwall	10	99	3	50	-7	-70*	107	1
Teal	0	74	0	0	0	0	N/A	No trend available
Garganey	0	1	0	0	0	0	N/A	No trend available
Shoveler	2	28	0	2	-2	-100	N/A	No trend available
Pochard	0	4	0	4	0	0	N/A	No trend available
Tufted duck	14	222	20	272	6	43	13	1
Water rail	0	6	0	7	1	17	N/A	No trend available
Oystercatcher	7	17	2	10	-5	-71*	-4	1
Little ringed plover	6	15	1	2	-5	-83*	N/A	No trend available
Ringed plover	5	13	0	0	-5	-100	-37	3
Lapwing	6	21	4	7	-2	-33*	-35	1
Snipe	0	1	0	0	0	0	-25	1
Redshank	3	38	0	0	-3	-100	-31	1
Common tern	71	86	53	53	-18	-25	-24	1
Cuckoo	0	18	0	11	-7	-39*	-28	1
Kingfisher	5	29	2	13	-16	-55	-48	1
Sand martin	97	97	1	1	-96	-99	37	1
Yellow wagtail	4	12	1	2	-10	-83*	-20	1
Grey wagtail	1	8	1	3	-5	-63*	-56	1
Cetti's warbler	0	5	2	66	61	1220	40	4

Grasshopper warbler	0	1	0	4	3	300*	2	1
Sedge warbler	3	281	16	171	-110	-39	-11	1
Reed warbler	0	231	13	272	41	18	0	1
Reed bunting	4	275	18	190	-85	-31	8	1
Little egret	0	0	5	7	5	N/A	N/A	No trend available
Cormorant	Not counted		32	32	N/A	N/A	-9	1

Notes:

- 1) Shading in either the “minimum” or “maximum” columns for 2003 and 2013/14 indicates which estimate has been used as the best indicator of the true breeding population, and used to calculate the actual change in number of breeding pairs.
- 2) Considerable care needs to be taken when reading and interpreting many of these percentage changes in estimated breeding populations in the Nene Valley between 2003 and 2013/14. Calculating percentage change on very small populations is statistically unsound. For example, in the case of little grebes, the 60% “decline” merely reflects the fact that in 2003, 5 pairs were confirmed breeding, and in 2013/14, only 2. In fact the overall “probable” breeding population remained roughly constant. Those percentage changes that should be interpreted with particular care are marked with an asterisk. Results for each species are interpreted in section 5.
- 3) Where possible, we have provided a UK trend for comparison, drawn from published information and for the closest available equivalent time period covered by the Nene Valley surveys. In most cases this is from the British Trust for Ornithology’s UK Breeding Bird Survey, for the period 2002-2012. Further information on the sources is provided below. In no case has it been possible to find a UK trend for the exact same period of 2003-2013/14, so exercise caution when comparing local and national trends.
- 4) Sources for % Change (UK) – numbers refer to the far right hand column in Table 1:
 1. British Trust for Ornithology (BTO) Breeding Bird Survey (BBS) data, UK (2002-2012)
 2. BTO Heronries Census data, UK (2002-2012)
 3. Conway et al (2008) reported in the BTO Bird Atlas 2007-2011 (Balmer et al, 2013)
 4. BTO Constant Effort Sites data, UK (2002-2012) – change in adult Cetti’s warbler populations

Table 2: Comparison of site occupancy by species, 2003-2013/14

	Site occupancy in 2003				Site occupancy in 2013/14				Change in no of count units, 2003-2013/14
	Confirmed	Possible	Total	% Occupany (of 74 survey units)	Confirmed	Possible	Total	% Occupany (of 76 survey units)	
Little grebe	4	6	10	13.7	3	6	9	11.8	-1
Great crested grebe	28	31	59	80.8	35	16	51	67.1	-8
Grey heron	5	0	5	6.8	6	0	6	7.9	+1
Mute swan	38	6	44	59.5	35	0	35	46.1	-9
Shelduck	0	3	3	4.1	0	0	0	0.0	-3
Gadwall	8	31	39	52.7	2	21	23	30.3	-16
Garganey	0	1	1	1.4	0	0	0	0.0	-1
Shoveler	2	7	9	12.2	0	2	2	2.6	-7
Tufted duck	5	39	44	59.5	9	35	44	57.9	0
Water rail	0	5	5	6.8	0	4	4	5.3	-1
Oystercatcher	7	9	16	21.6	2	7	9	11.8	-7
Little ringed plover	4	6	10	13.5	1	0	1	1.3	-9
Ringed plover	2	3	5	6.8	0	0	0	0.0	-5
Lapwing	2	8	10	13.5	2	1	3	3.9	-7
Snipe	0	1	1	1.4	0	0	0	0.0	-1
Redshank	2	16	18	24.3	0	0	0	0.0	-18
Common tern	3	2	5	6.8	2	0	2	2.6	-3
Cuckoo	0	13	13	17.6	0	10	10	13.2	-3
Kingfisher	5	21	26	35.1	1	12	13	17.1	-13
Sand martin	1	0	1	1.4	1	0	1	1.3	0
Yellow wagtail	3	7	10	13.5	1	1	2	2.6	-8
Grey wagtail	1	7	8	10.8	1	2	3	3.9	-5

Cetti's warbler	0	4	4	5.4	1	33	34	44.7	+30
G'hopper warbler	0	1	1	1.4	0	3	3	3.9	+2
Sedge warbler	1	59	60	81.1	12	39	51	67.1	-9
Reed warbler	0	48	48	64.9	5	39	44	57.9	-4
Reed bunting	4	59	63	85.1	11	43	54	71.1	-9
Little egret	0	0	0	0	2	0	2	2.6	+2
Cormorant	Not counted			N/A	5	0	5	6.6	N/A

Table 3 – Calculation of SSSI index values for survey sites

Locality	Survey site code	Breeding index		Change in index
		2003	2013	
Storton's GPs	B	12	23	+10
Hardingstone GPs	C	8	9	+1
Clifford Hill GPs	D	15.5	13	-2.5
Earls Barton GPs	G/H	50.5	34.5	-16
Ditchford GPs	J/K/L	31.5	38.5	+7
Stanwick Lakes	M	39	30.5	-8.5
Ringstead GPs	N	16	18	+2
Thrapston GPs	P	23.5	25	+1.5
Aldwinckle GPs	Q	12	11	-1
	Combined	53.5	46.5	-7

Notes:

The breeding bird assemblage index for the Nene Valley as a whole in the period 1999-2003 was calculated as 45.5. This value was based on the 2003 survey plus published bird records for the preceding four years (i.e. 1999-2003). For direct comparison purposes, Table 3 uses the index values for 2003 only.

6. Discussion

6.1 Does the SSSI still qualify on the quality and diversity of its breeding water bird assemblage?

The “threshold” index value for a site to qualify as SSSI based on its breeding water bird assemblage is 31 (see Appendix 3 for an explanation of the SSSI breeding bird assemblage index).

On this basis, as seen in Table 3, survey sites G/H (Earls Barton gravel pits, Grendon Lakes, Summer Leys and Wollaston Lakes) and sites J/K/L (Wellingborough and Ditchford gravel pits, Wilson’s Pits and Higham Ferrers gravel pits) all remain nationally important for breeding water birds in their own right. However, the index for sites G/H has dropped significantly – well below the threshold, in the case of site H.

The overall breeding bird assemblage index of the Upper Nene Valley Gravel Pits SSSI has fallen quite significantly compared to 2003, from 53.5 to 46.5. This is mainly a reflection of the apparent loss of shoveler, redshank, ringed plover and of not adding any “new” species since 2003 (cormorant and little egret are not used in calculating the SSSI index). So although the SSSI index still comfortably exceeds the threshold of 31, it is now much closer to the average index for the five year period 1999-2003, which was 45.5.

Although the 1999-2003 five-year average index was the one used to evaluate the case for designating the SSSI, the results in 2003 and 2013/14 are more directly relevant and comparable here, because the same survey method and an equivalent amount of effort was made in these two years. The index values for the four years prior to 2003 were derived from a mix of surveys and ad-hoc sightings, and many sites will not have been checked at all in those years.

While it is reassuring to see that the SSSI index still exceeds the qualifying index threshold, there are reasons for concern. Table 1 makes it clear that some species that help the SSSI achieve its index value only occur in very small numbers, and/or only on a handful of sites. It would be relatively easy to lose these species and so the index could fall again, perhaps dropping below the threshold in future.

Also, there are weaknesses with the way the breeding bird assemblage index works, as a tool to measure progress against site conservation objectives. The method only requires one pair of any given species to be present, for the index value of that species to be added to the tally. From the point of view of the index, it makes no difference if there are 1,000 pairs of common terns breeding in the SSSI, or just one. Also, the index theoretically allows “species trading” to occur. For example we lost redshanks from the SSSI by 2013, a species which ought still to be breeding in the valley. Had a single brood of, say, pochards been spotted, though, the overall index would have increased by 2! This has not happened in the Nene Valley so far, but it is a risk.

Therefore, the more important results here for considering whether conservation action is necessary, and where, are the actual population estimates and trends, rather than the SSSI index. The next section discusses the results for most of the 31 target species in turn.

6.2 Population levels and trends in the target species:

Little grebe: this species tends to be much harder to detect than great crested grebe, generally staying close to vegetation during the breeding season. Breeding is often only confirmed once young are seen, and even this can be difficult. We have taken the minimum number of pairs as the best indicator of the population, but this does not allow for the failure of some breeding attempts at incubation stage, so the actual population will probably be higher than the 3 pairs shown in Table 1. Looking at the maximum as well as the minimum estimate, the little grebe population in the Nene Valley appears to be essentially stable, subject to a caveat that the population is very small and still potentially vulnerable to change – we have identified this species as being of moderate conservation concern locally, because of this.

Great crested grebe: ostensibly, the methodology set down in 2003 only counted great crested grebes if occupied nests or broods were seen – the assumption was that all nests could be seen, or at least that all nests would lead in time to young appearing. It became obvious to us in 2013 that this approach could seriously under-estimate the number of pairs and that in any case, the results in the 2003 report clearly do account for “probable” breeding great crested grebes based on the persistent presence of pairs on a site.

Great crested grebe nesting attempts would not be detected if the nest was hidden and if the attempt failed at incubation stage. As in 2003, during analysis we allowed for undetected nests by counting pairs in 2+ months, as “probable” breeders. So although we have used the “minimum” number of great crested grebe pairs based on confirmed breeding (40), the actual number of breeding pairs is probably closer to the maximum of 82. Taking all this into account, the local great crested grebe population appears to be stable or slightly increasing, and is of low conservation concern.

Grey heron: most herons nest in waterside treetops, building large stick nests which remain highly visible at least until leaf burst in the spring. In this survey, visits in April provided the most reliable counts. The only uncertainty about whether a nest is in use arises if both adults happen to be away from the nest early in the season, and eggs or very young chicks can’t be seen below the nest lip. Table 1 therefore uses the minimum estimate as the best indicator of the population.

The British Trust for Ornithology organises an annual heronry census, which helps build a more complete picture of this species’ local fortunes over the last 10 years:

Table 4 – BTO heronry census data for Nene Valley sites, 2003-2013

Site code	2003	2007	2008	2009	2010	2011	2012	2013
C1	0	-	-	-	-	-	-	5
G1	9	11	10	7	4	1	3	3
L5/6	20	6	16	10	9	8	15	8
N5	2			6	2	2	2	7
P3	35	32	26	20	17	6	9	9
Glebe Lake, Billing GPs	-	3	6	10	11	10	6	-
Totals	66	52	58	53	43	27	35	32

Overall numbers of grey herons nesting in the valley (including at sites not in the SSSI) have declined by more than half since 2003. Most of these losses have occurred at what were the two largest sites, at Wilson's Pits (site code L5/6) and Heronry Lake at Titchmarsh LNR (site code N5). The only good news in terms of the Nene Valley is that a new heronry appears to have established itself at Hardingstone gravel pits (site code C1) since 2003, though this is outside the SSSI. The mixed heronry/cormorant rookery at site G1, at Earls Barton gravel pits, was seriously disturbed in early spring 2013 by an illegal shooting incident, which resulted in the loss of many cormorant nests and probably caused some herons to desert as well.

Even taking into account trends on Nene Valley sites outside the SSSI, therefore, the heron population has declined significantly since 2003, a matter of high conservation concern in a local context.

It has been suggested that the heron population at Pitsford Water SSSI (also in the NIA) is apparently doing well. However, it is important that the Upper Nene Valley Gravel Pits SSSI continues to provide high quality breeding and feeding habitat for grey herons as well.

Mute swan: probably the most obvious of all the valley's water birds, with large herds of resident, non-breeding swans present as well as breeding pairs on almost every suitable lake. It is assumed that all breeding attempts are detectable at nest stage (though in 2013, mute swans still managed to surprise some surveyors by "revealing" young late in the season when no nest was seen beforehand). Table 1 therefore uses the minimum estimate as the best indicator of the population. The mute swan breeding population in the Nene Valley appears to be stable, and healthy, and is of low conservation concern. The large non-breeding population probably means that almost all habitat that is potentially suitable for breeding, is occupied.

Shelduck: numbers of shelducks in the Nene Valley have always been low and given their breeding requirements (for a large nesting burrow close to water) will probably remain so, as there is little suitable habitat available. No pairs were confirmed breeding in 2003 or 2013/14. One pair at Summer Leys LNR (site H1) showing interest in a hole on the scrape was the only indication of possible breeding in 2013. We consider shelducks in the Nene Valley to be of low conservation concern.

Gadwall: as with most ducks, gadwalls are only likely to be confirmed breeding when downy young are seen. Assessing population size is further complicated by the presence of lingering winter migrants in April. It is next to impossible to know if a female is taking a break from a nest, has tried and failed to nest, or is not breeding at all. Table 1 uses the minimum number of pairs (based on broods seen) as the best indication of the actual breeding population. On this basis, the already small breeding population in 2003 has declined somewhat, with just two broods at site B3 (Storton's gravel pits) and one brood at site K9 (Wellingborough gravel pits). That this may not be just down to bad luck is suggested by the fact that the maximum "probable" breeding population also dropped from 75 to 43 pairs. This has happened in spite of the fact that across the UK as a whole, the breeding population has increased significantly. On this basis, we have classed breeding gadwalls locally as being of moderate conservation concern.

Teal, pochard and garganey: these ducks do not appear to breed in the Nene Valley. Teal and pochard are common winter migrants and many individuals lingered into the spring in 2013, but

no indication of breeding was found in either species. Garganeys are scarce summer migrants. Two individuals occurred on site units G4 and H2 but there was no indication that breeding took place. Trend calculations are irrelevant. We have classed all three species as being of low conservation concern locally.

Shoveler: the breeding population of shovelers in the Nene Valley is very small. Like most ducks they are secretive when nesting and usually the only indication of breeding is when ducklings are seen. Notwithstanding the fact that 2 pairs were confirmed nesting in 2003 and none in 2013/14, we have concluded that the shoveler population in the Nene Valley appears to be broadly stable, subject to a caveat that the population is very small and still potentially vulnerable to change – we have identified this species as being of moderate conservation concern locally, because of this.

Tufted duck: one of the commonest winter migrant ducks, tufted ducks breed in small numbers. Fourteen broods of tufted ducks were seen in 2003 and twenty broods were seen in 2013/14. The actual breeding population is probably higher than this, allowing for nests that failed at incubation stage. However, using the minimum population estimate is best as the possible maximum estimate is highly inflated by large numbers of non-breeding tufted ducks lingering into the spring. The population appears to be stable, and is of low conservation concern locally.

Water rail: extremely secretive, water rails are often only detected from their squealing calls from dense wetland vegetation. They are one of very few UK birds that the BTO cannot provide a reliable national trend for. In the context of this survey, any water rail present in suitable habitat for two or more months was assumed to be breeding. Almost the same (small) number of water rails were recorded in both 2003 and 2013/14. On this basis the local population is assumed to be stable and of low conservation concern.

Oystercatcher: big, noisy, and black and white, any breeding oystercatchers are usually easy to spot. Numbers have dropped since 2003, from 7 confirmed pairs in 2003 to just two in 2013/14. Such a small population is always vulnerable to change but with the UK population remaining stable we have classed oystercatchers as being of moderate conservation concern locally.

Little ringed plover: these waders have shown themselves to be highly responsive to new habitat being created in (for example) active gravel pits, and tend to disappear from more mature habitats unless efforts are devoted to maintaining bare ground habitat for them free of competitive ground nesting species and predators. The drop in population from 6 confirmed pairs in 2003 to one in 2013/14 reflects the steady maturation of habitats in the Nene Valley. It is telling that the only confirmed breeding in 2013/14 was at Summer Leys LNR, a site which is carefully managed for nature. No national trend is available from the BTO, but the Bird Atlas 2007-2011 (Balmer et al, 2013) shows the UK population and range is still increasing, so locally we have classed little ringed plovers as being of moderate conservation concern.

Ringed plover: though some ringed plovers were seen during the 2013 survey, these all appear to have been passing through on migration. Like the closely related little ringed plover, ringed plover numbers fell from 2003 to 2013/14 – but in this case, no pairs at all were even suspected of breeding. The reasons for this decline are probably similar to those for little ringed

plover. Nationally, ringed plovers seem to be undergoing a moderate decline and the situation locally may reflect this. Locally we have classed ringed plovers as being of moderate conservation concern.

Lapwing: breeding lapwings are usually quite easy to detect and distinguish from passage birds and lingering winter migrants, of which hundreds visit the Nene Valley. The breeding population is very small – just 6 confirmed breeding pairs in 2003, and 4 in 2013/14. On this basis the population appears to be basically stable, but is highly vulnerable because of its small size. Therefore we have classed lapwings as being of moderate conservation concern locally.

Snipe: although they remain a common winter visitor, snipe were essentially extinct in the Nene Valley as a breeding species by 2003, and that situation remains unchanged. Significant habitat creation or restoration would probably be needed to attract breeding snipe back to the area. We have classed snipe as being of moderate conservation concern locally.

Redshank: as with ringed plovers, redshank numbers have fallen from low (3 confirmed pairs in 2003) to zero in 2013/14. The fact that no pairs were even counted as “possible” breeders compared to 34 pairs in 2003 suggests this is not just a blip. Nationally redshanks are undergoing a significant decline in range and population, and the situation in the Nene Valley seems consistent with that broader picture. We have classed redshanks as being of moderate conservation concern locally.

Common tern: these birds nest in colonies on shingle islands or artificial rafts in the Nene Valley. Three colonies were recorded in 2003 and two of these locations still held terns in 2013/14 (survey unit H1 at Summer Leys LNR and M21 at Stanwick Lakes). The colony at Summer Leys grew slightly from 40 pairs in 2003 to 50 in 2013, but the colony at Stanwick Lakes has dropped from at least 30 pairs in 2003 to only three pairs in the 2013/14 survey. While common tern numbers on rafts at Pitsford Water SSSI (also in the NIA) are apparently doing well it is important that the Upper Nene Valley Gravel Pits SSSI continues to provide good quality habitat for this species as well. Nationally, common tern trends are stable. Having only one substantial colony in the SSSI makes this a highly vulnerable population, so we have classed common terns as being of high conservation concern in the context of the Nene Valley.

Cuckoo: cuckoos are quite a challenging species to come up with an accurate estimate of a local breeding population. Famously, they parasitise smaller birds by laying their eggs in foster-species’ nests. Calling males seem to move around quite large territories in a bid to attract several females to lay eggs in host nests within their “patch”. This can mean many neighbouring survey units all seem to have a cuckoo on them at some point! Some care has been taken in producing these population estimates to try to reduce double-counting, and the result – an apparent decline from 18 pairs in 2003 to 11 in 2013 – is broadly consistent with the ongoing decline being seen in the UK (and especially in lowland England). Given the overall population size is small we have classed cuckoos as being of moderate conservation concern locally.

Kingfisher: it can come as a surprise to some people just how common and widespread kingfishers are. Actually spotting nests or fledged young is difficult, but individuals and pairs crop up in many places and are assumed to be breeding somewhere in the area. As with cuckoos, some care has been taken to try to reduce double-counting as kingfishers are often

seen on lakes that are plainly not suitable breeding habitat, offering no sand or clay banks for the birds to burrow into. Looking at the change in the maximum number of pairs from 2003 to 2013, some of the decline from 29 to 13 pairs may be due to differences in data interpretation. Equally, kingfisher populations tend to suffer during prolonged freezing weather, so the winters of 2011/12 and 2012/13 in particular may have caused a decline in the local breeding population. Evidence does suggest that kingfisher populations can “bounce back” given moderate winter weather, so we have classed kingfishers as being of moderate conservation concern locally.

Sand martin: like little ringed plovers, sand martins are quick to take advantage of new sand and gravel workings and tend to move on once extraction ends. They can be attracted to nest in artificial banks but there currently are none of these provided in the SSSI. In 2003, there was one colony of sand martins at the site which was in the process of being restored by Hanson, and which is now part of Stanwick Lakes. This site no longer offers the right habitat. Peculiarly for a colonial nesting species that normally burrows into sand cliffs, in 2013 a single pair was spotted using a drainage hole in the old concrete loading bay structure on survey unit H9, just north of Summer Leys LNR. We have classed sand martins as being of moderate conservation concern locally.

Yellow wagtail: yellow wagtails were scarce in the SSSI in 2003 and virtually absent in 2013/14 survey. Only one breeding attempt was confirmed, at Ringstead Lakes, and even this may actually have occurred on arable land just outside the SSSI. Taking the maximum number of pairs into account it seems clear that the local trend is mirroring the significant national decline that is taking place, with 12 probable breeding pairs in 2003 and just 2 in the 2013/14 survey. We have classed yellow wagtails as being of moderate conservation concern locally. Broader changes in agricultural habitats are probably responsible for this decline.

Grey wagtail: the tiny population of grey wagtails in the area surveyed appears to have dipped slightly, moving only from 8 pairs in 2003 to 3 in 2013/14, including one confirmed breeding attempt. Normally preferring to breed and nest by flowing water, we should not be surprised that grey wagtails do not appear to thrive by the quiet, still lakes and ponds of the Upper Nene Valley Gravel Pits SSSI. A wider survey of the weirs, sluices and lock gates of the River Nene and its tributaries would probably find many more pairs breeding. Even so, nationally, grey wagtails have suffered a moderate decline over the period 2000-2010, and locally we have classed them as being of moderate conservation concern, given that the population in the SSSI is apparently small and therefore vulnerable.

Cetti's warbler: the outstanding success story of this survey, Cetti's warblers have undergone a more than a twelve-fold increase in population and a six-fold increase in local range within the Nene Valley, in just 10 years. As with most of the “small birds” the population estimate is based on counts of singing males. Singing male Cetti's warblers are very noisy and even seem actively to respond to human presence by singing. We also found males showed strong affinity to small areas within sites: many were heard singing from the same thicket or bush two or three months in succession. Remarkably for a bird that hardly ever shows itself well, a complete family of singing male, and a female feeding two fledged chicks, was visible at Stanwick Lakes in 2014. The local increase of +1220% over the ten years far exceeds even the very positive national trend over a similar period, of +40%. Cetti's warblers have been classed as being of low

conservation concern locally but as a species listed on Annex I of the EU Birds Directive, the Nene Valley population may be of greater than local significance.

Grasshopper warbler: while the grasshopper warbler population in the Nene Valley remains small, with one possible pair in 2003 and four in 2013/14, the trend is in the right direction and consistent with the positive national picture. Several additional singing (or “reeling”) males were heard but not counted as they were just outside the survey area. Locally we have classed grasshopper warblers as being of low conservation concern, subject to the caveat that the population is small and therefore still vulnerable.

Sedge warbler: counts of singing male sedge warblers showed a potentially worrying decline, from 281 to 171 territories. The national population over a similar period was basically stable, and there seems to be plenty of suitable habitat available in the Nene Valley, so it is possible that either the late spring affected the results or we are seeing the effect of something happening on their African wintering grounds. However, the decline in sedge warblers should be contrasted with the slight increase in reed warblers, which can be found in similar habitats and are also long-distance summer migrants. We have classed sedge warblers as being of high conservation concern in the context of the Nene Valley.

Reed warbler: based on counts of singing males, reed warblers increased from 231 to 272 pairs between 2003-2013/14 (+18%). Part of this might be due to slight increases in the amount of reedbed habitat over the period – for example, 12 males were found at survey unit L8, most of them in a small dense reedbed that in 2003 was simply a wet scrape and had just one singing male. Locally we have classed reed warblers as being of low conservation concern.

Reed bunting: based on counts of singing males, reed buntings appear to have undergone a moderate decline between 2003-2013/14, from 275 to 190 pairs (-31%). If this is so, then it is not consistent with the slightly positive national trend over a similar period of +8%. Therefore we have classed reed buntings as being of moderate conservation concern in the context of the Nene Valley.

Little egret: little egrets first bred in the UK in 1996 and have since spread across East Anglia and Southern England. They have now colonised the Nene Valley and were confirmed breeding in 2013 at Kinewell Lake (site N5) and at Earls Barton gravel pits (site G1) with at least 5 occupied nests in total. In both cases, the egrets were nesting amongst breeding grey herons and cormorants. This species is classed as being of low conservation concern in the Nene Valley – it seems likely to continue to increase its breeding population.

Cormorant: as far as we know, the 2013/14 survey was the first time all nesting cormorants had been counted in the Nene Valley in a consistent way. They build highly visible, large stick nests in tall waterside trees, often in colonies (though one or two sites also had lone nests).. The result of 32 confirmed nests is based on counts taken in April, before leaf burst began to obscure nests. Sadly, two weeks prior to the 2013 April survey date, the colony of cormorants nesting at survey unit G1 (Earls Barton gravel pits) suffered a serious incident of illegal shooting which certainly caused loss or desertion of several cormorant nests and probably also affected the heronry in the same trees. Because the nesting population is small and located on only a

few sites, and because of the very real threat of persecution (or calls for licensed killing) we have classed cormorants as being of moderate conservation concern in the Nene Valley.

Site occupancy

Table 2 suggests that most species have not significantly changed their distributions. This table uses a rather simplistic approach and further work could be done on changes in range and site occupancy from the data available. For now, results worth pointing out are:

Great crested grebe: while the population has increased a little, the site occupancy percentage has dropped, suggesting a slight contraction and concentration into fewer sites. Even so, breeding great crested grebes still occurred on two-thirds of the survey units surveyed in 2013/14.

Mute Swan: mute swans appear to be showing a slight contraction in their breeding range. There does not appear to have been any change in the actual number of breeding pairs across the surveyed area but these pairs are now more concentrated into a slightly smaller number of sites. Breeding mute swans are now found on less than half of the sites surveyed in 2013/14 compared to being seen in almost sixty-five percent of survey sites in 2003.

Given that no shelducks, garganeys, ringed plovers or redshanks were confirmed breeding in 2013, adding in “possible” breeding sites in Table 2 for these species gives a falsely positive impression. The 2013 range in these cases was effectively zero.

Cetti's warblers increased their site occupancy from just one in twenty sites in 2003 to almost half of all survey units in 2013/14, consistent with the huge increase in the population.

6.3 Overall bird diversity

Surveyors recorded the presence of all bird species seen or heard which were considered to be using a site for breeding, feeding or resting. This was a lower priority than surveying for the 31 target species discussed in detail above, but nevertheless has provided a dataset of some general interest and value. A complete checklist for all survey units is available in the accompanying spreadsheet or by request to colin.wilkinson@rspb.org.uk. The following observations of general interest can be drawn:

A total of 108 bird species were recorded across all sites. Eighty-five of these can reasonably be counted as confirmed, probable or possible breeders, either within the survey area or in habitats very close by. The remainder are considered to be non-breeding summer records, winter visitors lingering into the spring, or passage migrants.

In descending order, the most widespread species were coots (recorded on 94% of survey units), mallards (88%), mute swans (87%) and reed buntings (84%). This probably reflects the adaptability of these species to a wide range of habitats and sizes of water bodies, and perhaps their tolerance of human presence.

Overall species richness on sites ranged from 67 species on the main part of Summer Leys Local Nature Reserve (survey unit H1), 64 species on Northampton Washland at Clifford Hill

(D1), 62 at Titchmarsh Local Nature Reserve (P4) and 61 on the main lake at Higham Ferrers gravel pits (L10), down to fewer than 10 species on some very small water bodies.

If one counts only the birds likely actually to be breeding, then Summer Leys LNR with 57 species, Titchmarsh LNR with 54 species, Delta Pit at Rushden Lakes (site L5) with 53 species, Kinewell Lake (site N5) with 52 species and the main Higham Ferrers gravel pit (L10) with 51 species are all outstanding in terms of diversity, and these sites also host several species with more restricted breeding distributions within the valley.

As a very general rule, it is clear that sites that are specifically managed for wildlife tend to hold more bird species. While this is what we would expect, it does underline the importance of protecting and managing core areas in the Nene Valley primarily for biodiversity.

Wetland specialist birds aside, the surveyors recorded a few species of local conservation significance. Chief amongst these were turtle dove (one, possibly two birds calling in scrub at sites L10/11); grey partridge (recorded on four sites); and willow warbler (which appears still to be doing well in the Nene Valley, being recorded on 62% of count units in 2013/14. Turtle doves in particular are disappearing from England at such an alarming rate that even recording one territory is a record of County importance now.

It is equally interesting – and potentially alarming – to contemplate the species that were not found at all in spite of the fact that we might hope that suitable habitats still exist in the Nene Valley. For example, no lesser spotted woodpeckers, no tree sparrows, and no willow tits were recorded anywhere.

6.4 Were 2013 and 2014 “normal” breeding seasons?

The winter of 2012/13 was quite cold and the freezing weather lasted right to the end of March. This may have meant duck numbers in April and May stayed high (potentially leading to an over-estimate of “probable” breeding numbers) and may have delayed the onset of egg laying in some species. For summer migrants, it could also have delayed their arrival on their breeding grounds with knock-on effects later in the season. How significant are these issues likely to have been?

We cannot rule out the possibility that several cold winters between 2003 and 2013/14 have reduced the populations of some resident birds through mortality. This might well have been a factor in the apparent decline in kingfishers, for example.

There certainly were plenty of ducks still present on sites during the April 2013 counts, and to a lesser extent in May. However, the estimates of breeding populations in ducks use the minimum value (see Table 1) based on numbers of broods seen, so in this sense the late spring will not have led to an over-estimate of breeding duck populations.

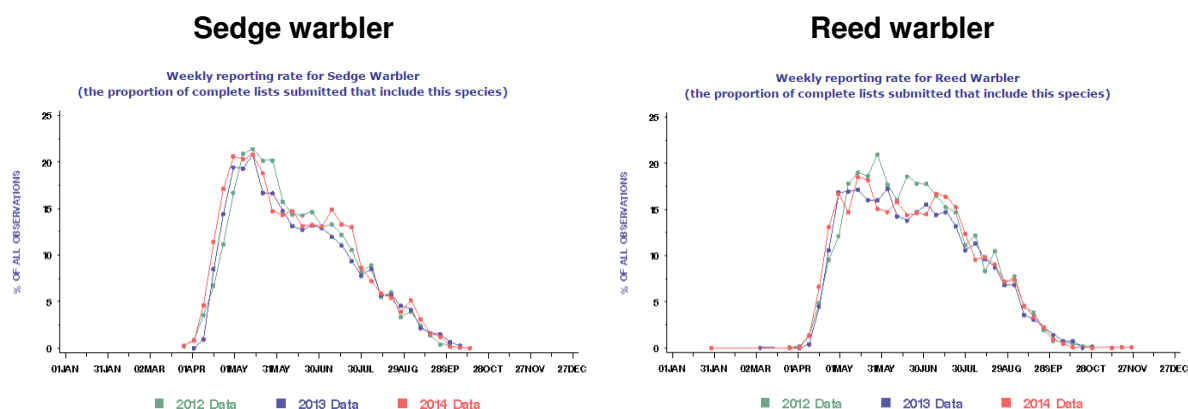
We simply do not have data to show whether egg laying dates were later than average in 2013. In many cases we do not even have reliable data to know what the average is, even for fairly obvious and visible nesting species like great crested grebes. But to take one species for which data is available from the BTO, the average date of the first clutch of eggs for sedge warblers is given as 23 May, with a range of 7 May - 5 July. BTO BirdTrack data for sedge warblers

suggests that in 2013, their spring arrival date was delayed by perhaps 8-12 days compared to the long term average (i.e. into the second week of April rather than around the end of March). The same graph (see Figure 2) also suggests overall reporting rates for sedge warblers in the UK fell a little below the long term average. These UK results are consistent with what we saw in the Nene Valley – very few sedge warblers were recorded before mid-April, and overall numbers seem to be down. Contrast these data with the right-hand graph for reed warbler: again we see a slight delay in arrival dates (though perhaps only by 5-8 days) in 2013, but the total reporting rate quickly achieved the historical level.

The winter of 2013/14 it was much milder than previous years (or even the average), as well as being much wetter, with an almost complete absence of frosts. This means that there might well have been a higher winter survival rate for resident birds going into the 2014 breeding season. This could have slightly increased the numbers of breeding birds in the 2014 survey sites when compared to the trends expected from the 2013 survey.

This is all rather circumstantial evidence but it suggests that while cold weather may have delayed the onset of breeding very slightly in 2013 compared to the average, the UK winter is not likely to be responsible for overall changes in the populations of summer visitors.

Figure 2 – BTO BirdTrack reporting rates for sedge and reed warblers, kingfisher and great crested grebe in between 2012 and 2014.



Other water birds begin breeding much earlier than April/May: grey herons are one example. The BTO website gives 12 March as the average date for first egg laying, with a range of 19 February – 2 May. The heronry at survey unit L5 (Delta Pit) was visited on 12 May 2013 and well grown young were visible. The heronry at survey unit N5 (Kinewell Lake) also had visible young as early as 14 April 2013, which strongly suggests eggs were laid well within the usual time frame.

So, in conclusion, while we can't yet rule out the possibility that two severe winters in 2011/12 and 2012/13 have reduced the overall populations of some resident birds, the weather will not somehow have prevented surviving birds from nesting. It may have simply meant a slight delay in the start of the breeding season for a few. Given that the survey ran to July, we can expect to have picked up most birds that did breed.

7. Conclusions:

The overall quality of the Nene Valley's breeding wetland bird assemblage has clearly fallen since 2003, both in terms of species diversity and populations.

In the decade between these two surveys, the Nene Valley seems to have lost shovelers, ringed plovers and redshanks as breeding species. Snipe were already locally extinct as a breeding species by 2003, and have not recovered.

Probable significant local declines are evident in grey herons, gadwall, oystercatchers, little ringed plovers, common terns, cuckoos, kingfishers, sand martins, grey and yellow wagtails, sedge warblers and reed buntings. For some of the summer migrants in this list (birds that winter in sub-Saharan Africa), problems on their migration routes and wintering grounds may be significant factors. But ensuring that habitats on their breeding grounds remain in good condition is still critically important to the future of all these species, locally and nationally.

Many of these local declines are roughly consistent with the national picture, and perhaps should be expected (though not accepted as inevitable!) However, the Nene Valley grey heron population seems to have declined much *more* than in the UK as a whole, and the reduced numbers of gadwalls breeding locally may be a particularly worrying puzzle given the large *increase* in the UK as a whole, over roughly the same period.

If some of these declines continue, then in another ten years it is likely the Nene Valley will have lost several of these breeding species completely.

On a more positive note, many species are holding their own, or increasing. Local populations of little and great crested grebes, mute swans, tufted ducks, lapwings and water rails remain more or less as they were in 2003. Little egrets have colonised the valley in line with their astonishing spread across southern England since first breeding in the UK in 1996. And Cetti's warblers have "arrived" in a big way since 2003, increasing their numbers twelve times over and far outstripping even the huge and ongoing national increase.

8. Recommendations for conservation action

The results emphasise the importance of those parts of the SSSI that are actively managed as nature reserves, like Summer Leys LNR, Titchmarsh LNR, and Wilson's Pits. The most specialised wetland birds tend to be found on these parts of the SSSI, so as far as resources and opportunities permit, these nature reserves should continue to be well managed, buffered from surrounding land uses, and if possible made even larger.

The heronries in the Nene Valley should continue to be carefully monitored. We recommend that the habitat quality at each heronry should be assessed by a suitably qualified ecologist, including factors like tree condition and presence of disturbance. If any actions can be identified that would improve local productivity at heronries, these should be carried out.

Disturbance to heronries (which also often host breeding cormorants and little egrets) should be kept to a minimum. Most such heronries are in fairly inaccessible locations, like islands, but where access onto the ground beneath heronries is possible, measures to deter this should be put in place (e.g. ditches, path diversions, blocking informal trails with brushwood).

All incidents of illegal shooting etc of cormorants should be reported to the police, Natural England and the RSPB, and investigated as far as possible.

Possible reasons for the apparent local decline in breeding gadwalls should be investigated by a suitably qualified ecologist. Any recommendations for changes to habitat management or actions to address other factors like human disturbance should be followed up by site managers.

A SSSI-wide review of sites that offer (or could be made to offer) suitable bare shingle islands and shallow margins suitable for breeding waders (oystercatcher, lapwing, little ringed plover, ringed plover, redshank) and common terns should be carried out. Where existing islands have become unsuitable, or where good opportunities to create new islands can be identified, these actions should be pursued by site managers.

Common terns in particular may benefit from provision of more artificial nesting rafts. However, this is a less sustainable measure than creating bare shingle islands, as outlined above.

If an opportunity arises (e.g. through restoration of new mineral workings at Great Billing), a large area of new priority habitats including reedbeds and wet grassland is particularly desirable to help buffer and link to the small areas of such habitat within the SSSI. This would benefit local populations of several species for which the SSSI is designated.

Sand martins would be likely to benefit from any new mineral workings in the Nene Valley for as long as extraction takes place. In the meantime (subject to funding) artificial nest banks may help them remain a feature of the wetland landscape.

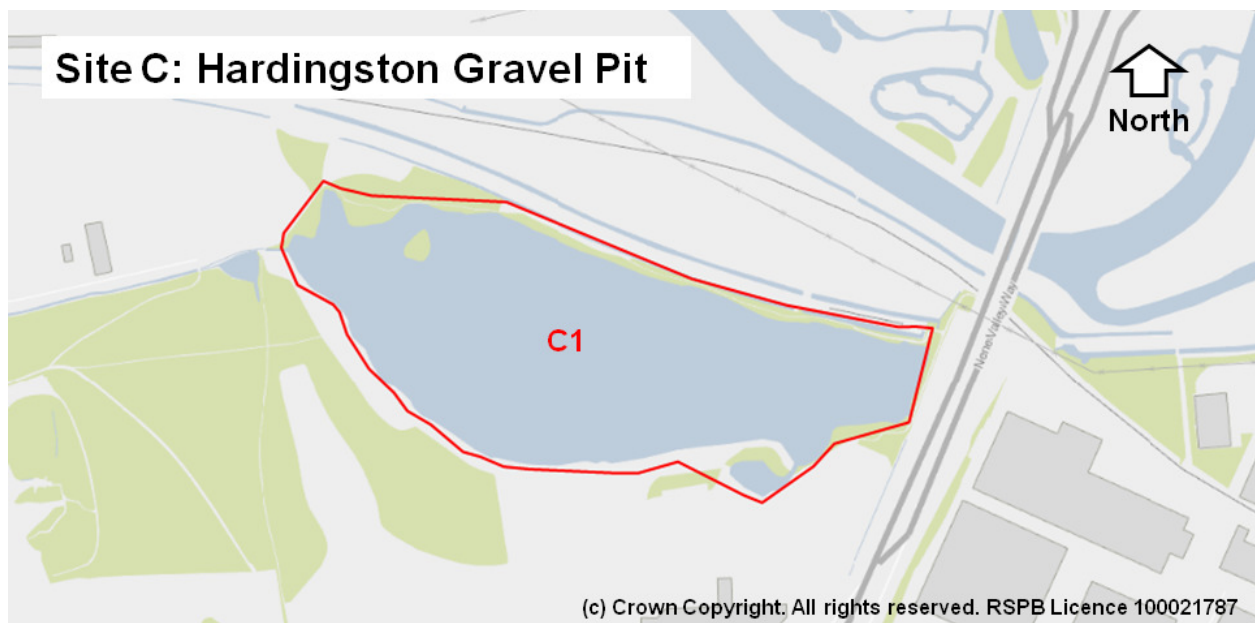
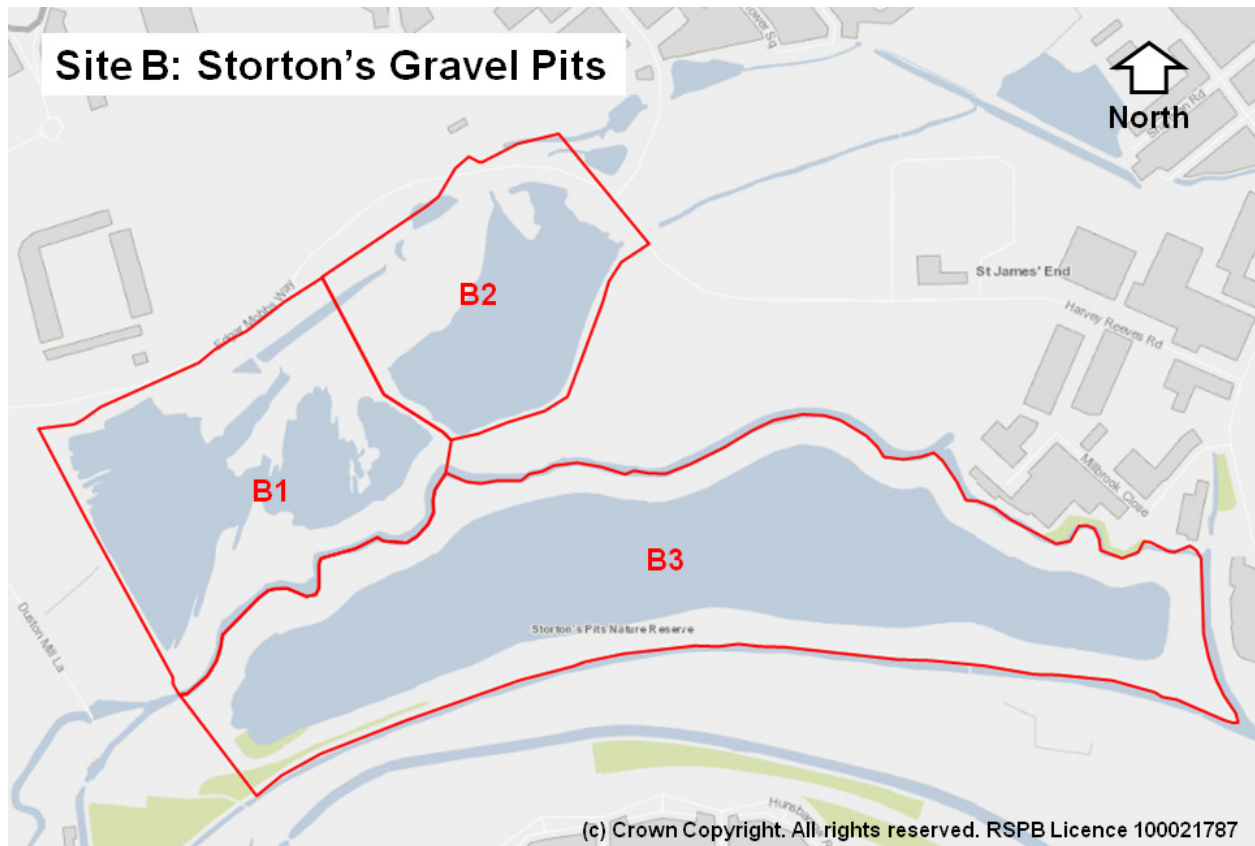
Measures to improve the areas of fen, reedbed and mixed scrub at the margins of lakes may benefit sedge warblers, which appear to have suffered a decline in the valley since 2003.

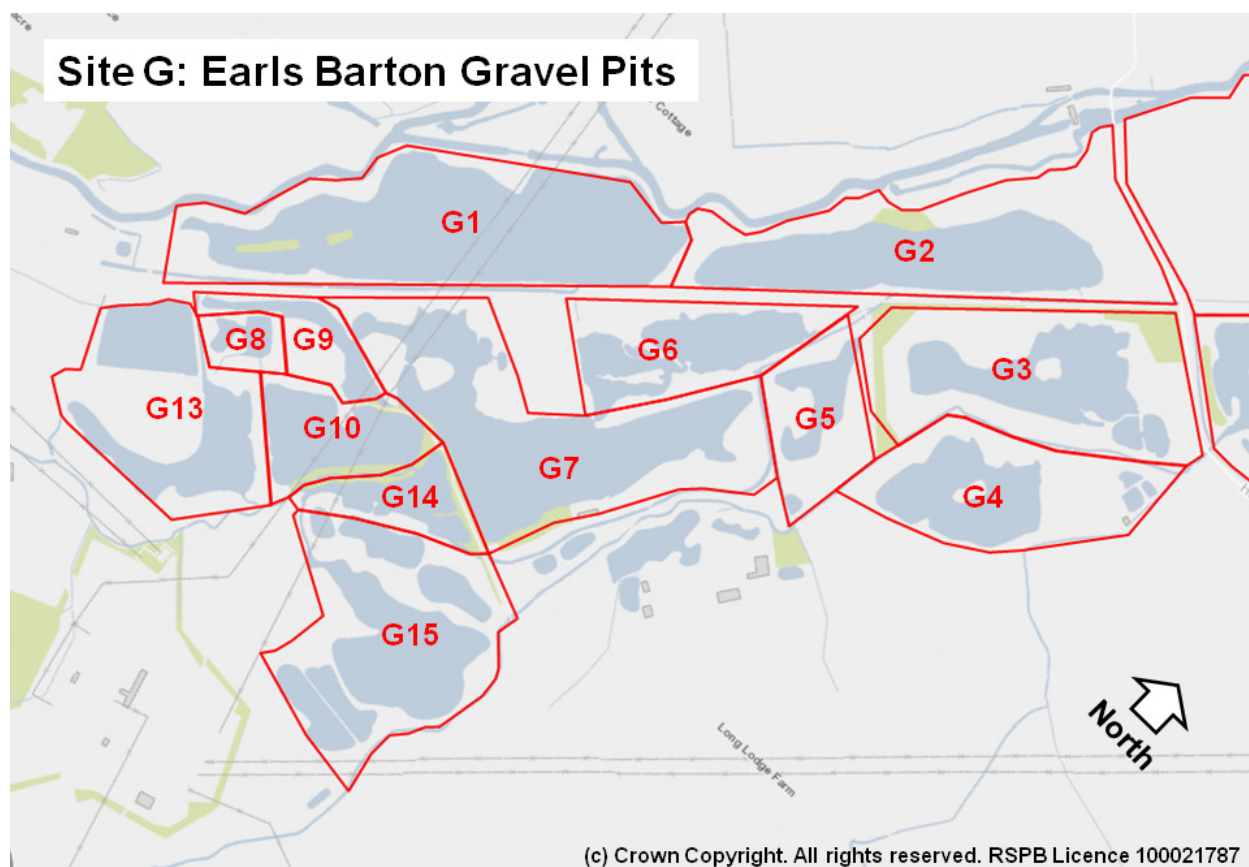
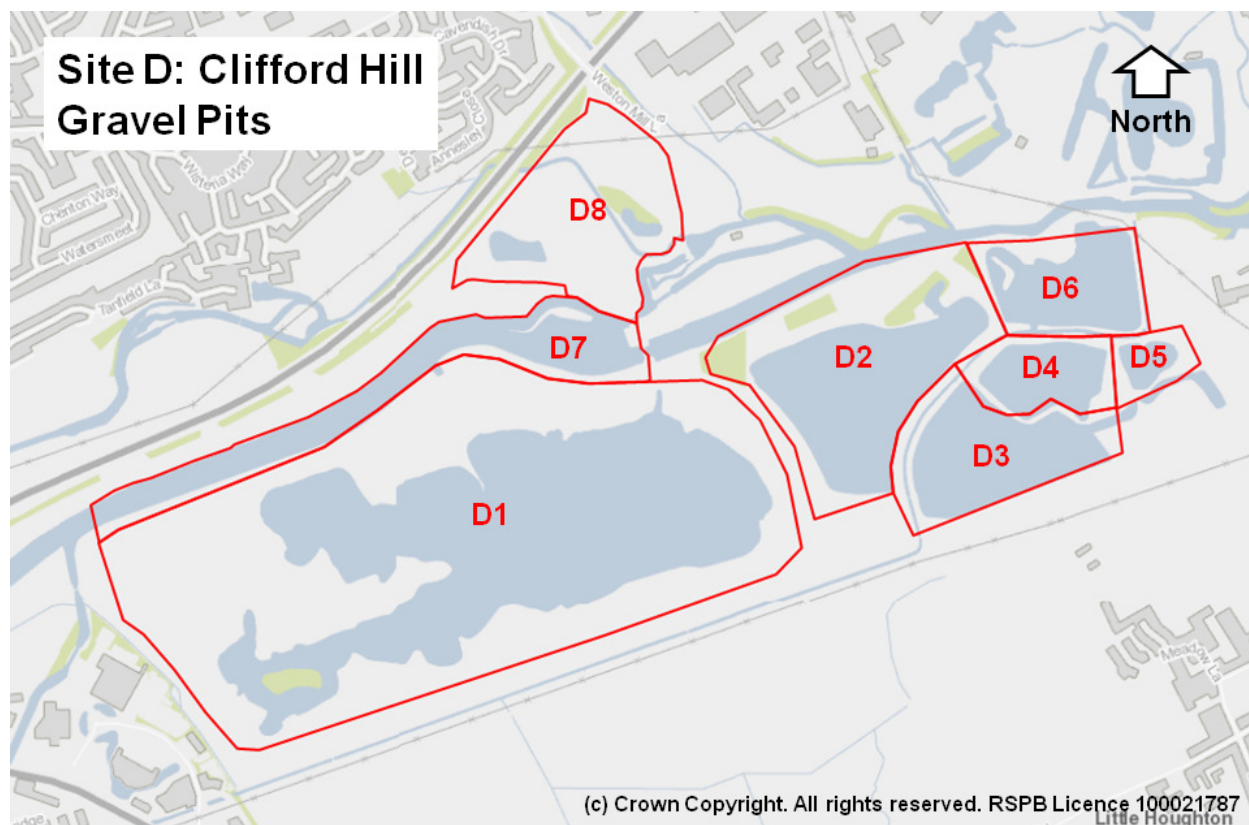


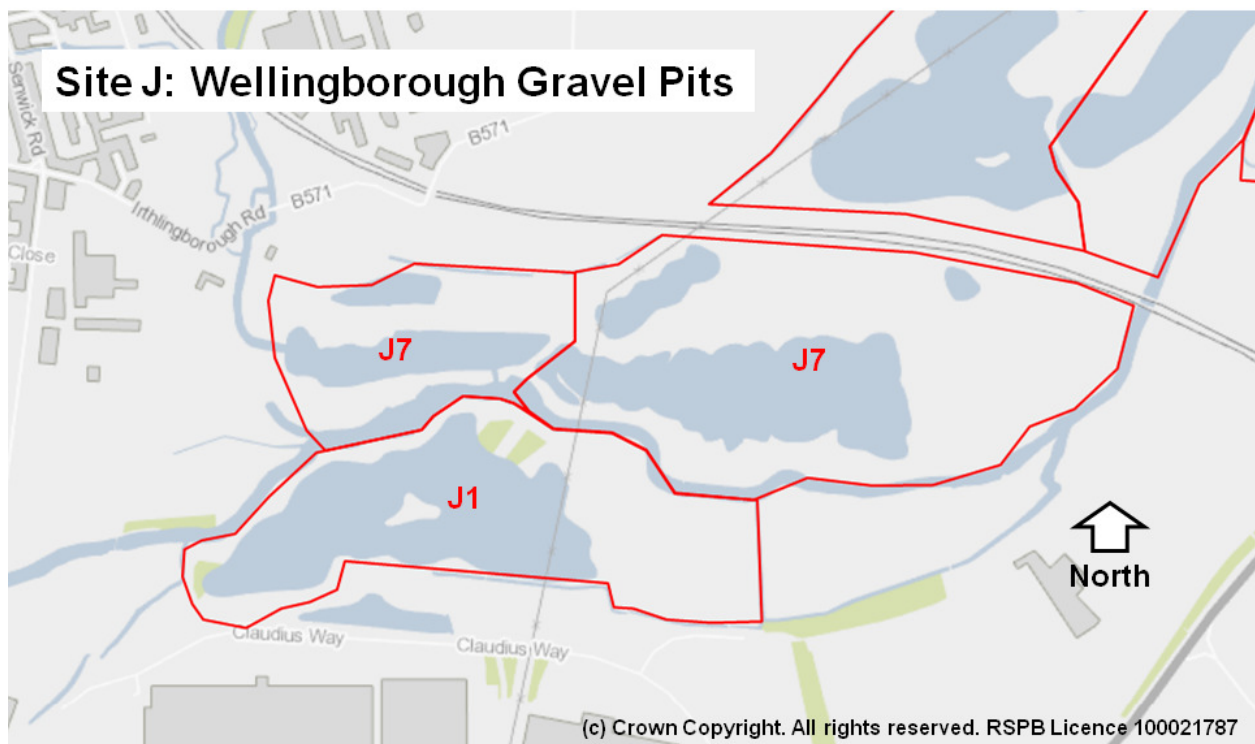
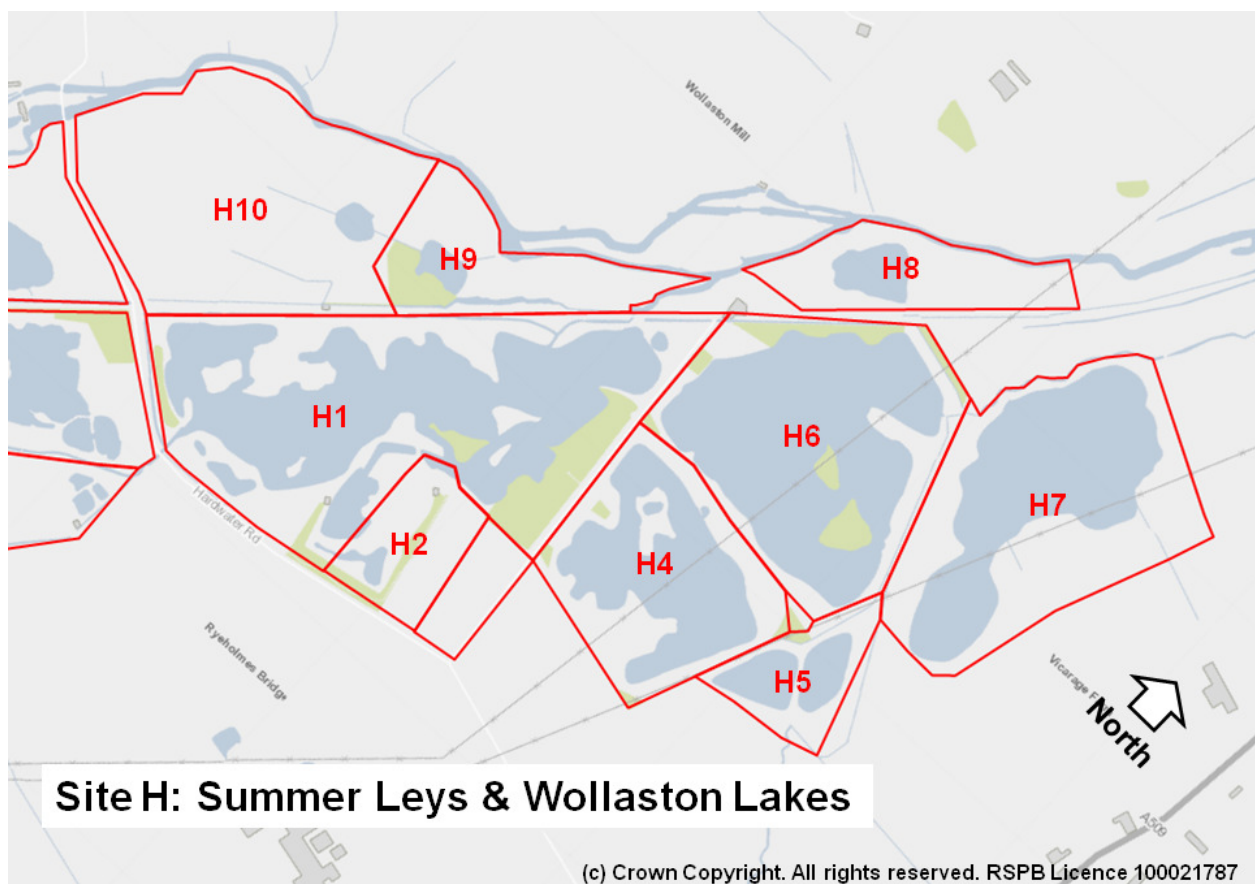
A pair of gadwalls in spring. Photograph by Colin Wilkinson.

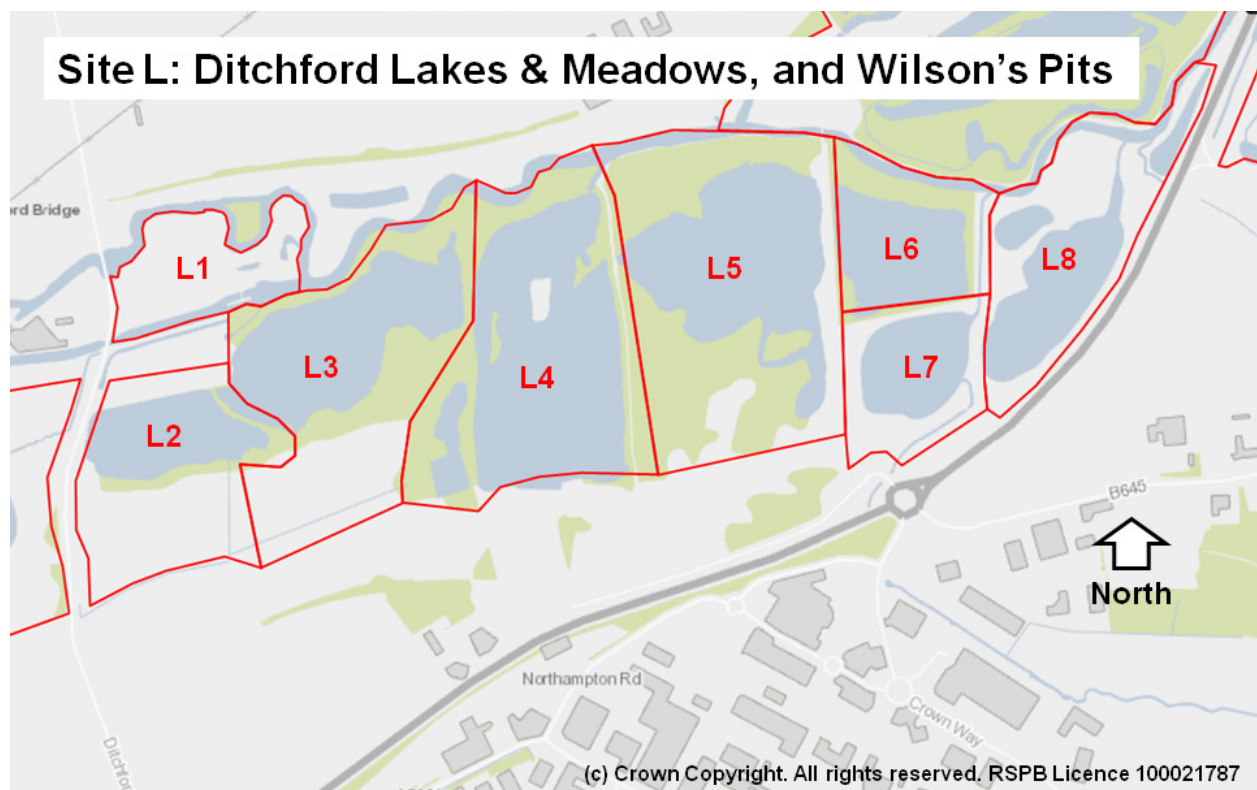
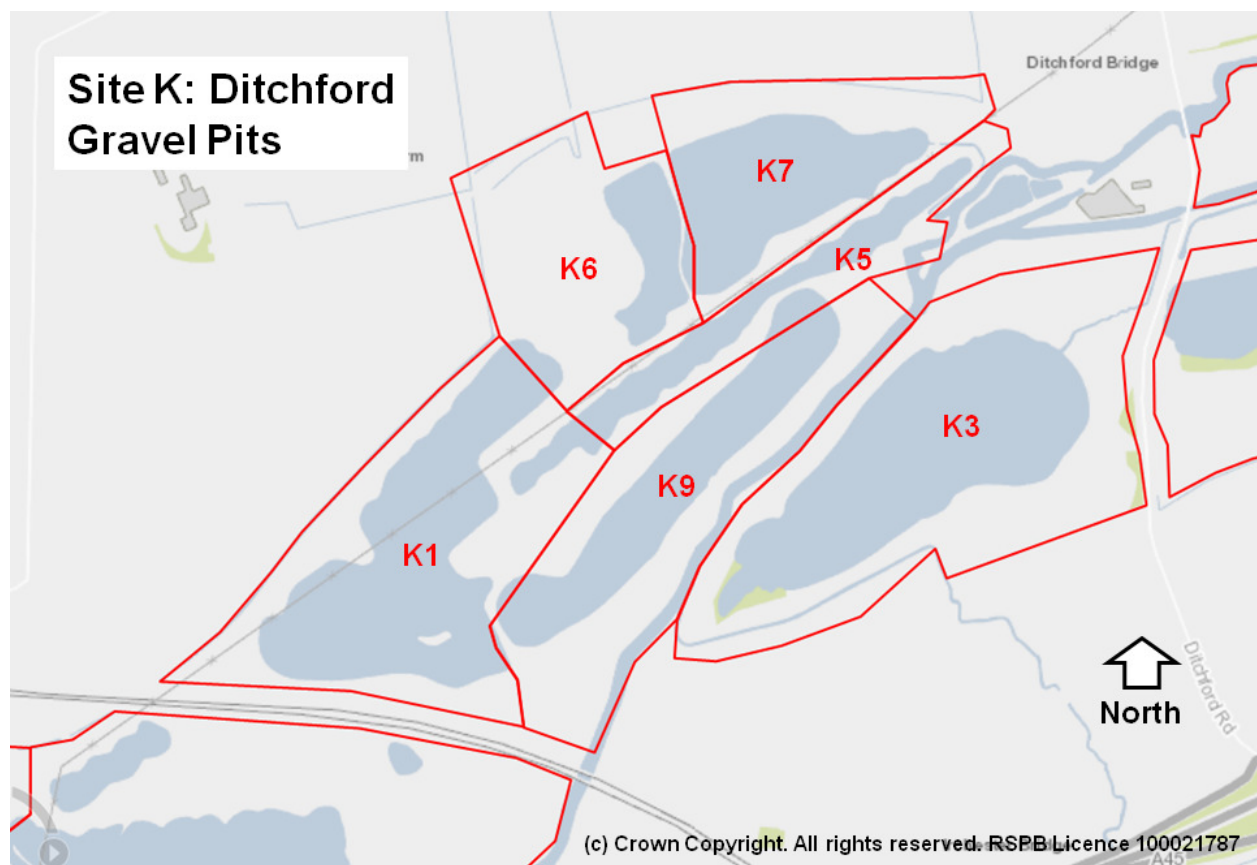
Appendix 1: Survey units used in 2013/14

Note that count units M1-M6, M20, P1-2, P9 and Q1-3 were surveyed in 2014. All others were surveyed in 2013.

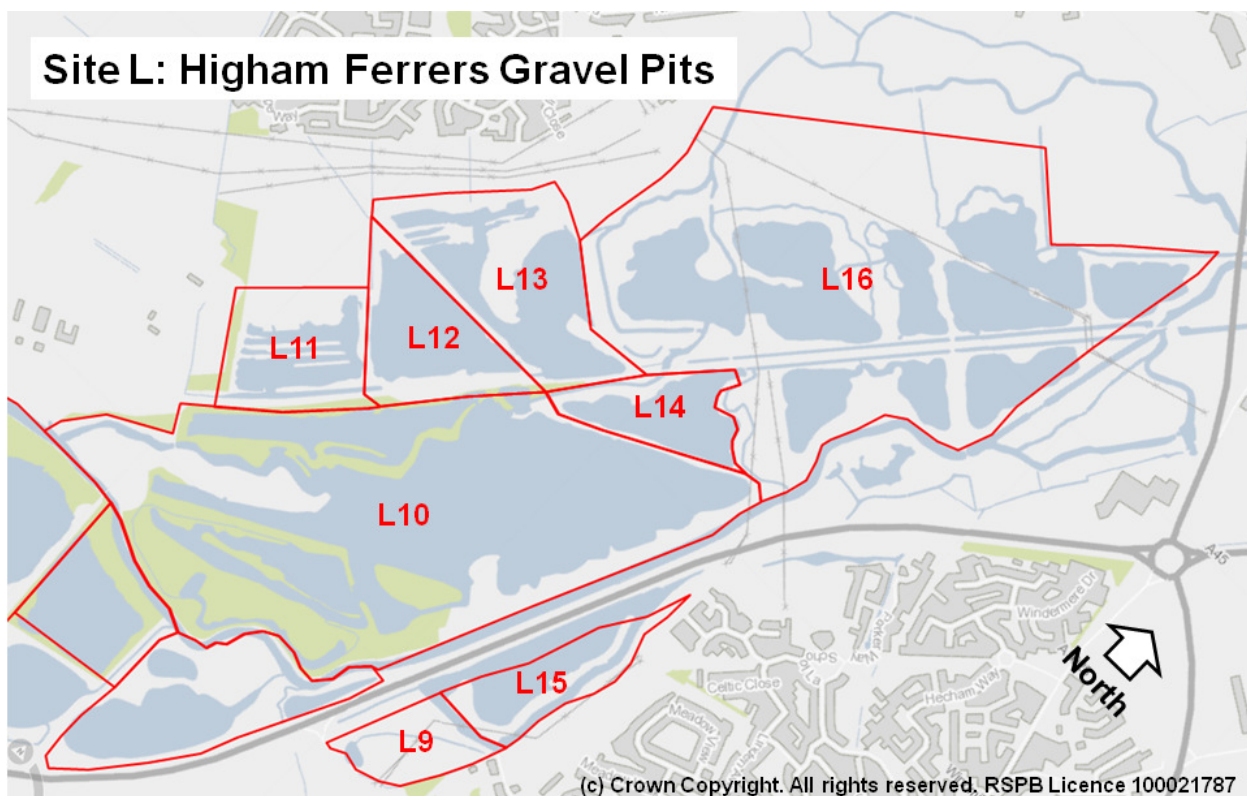




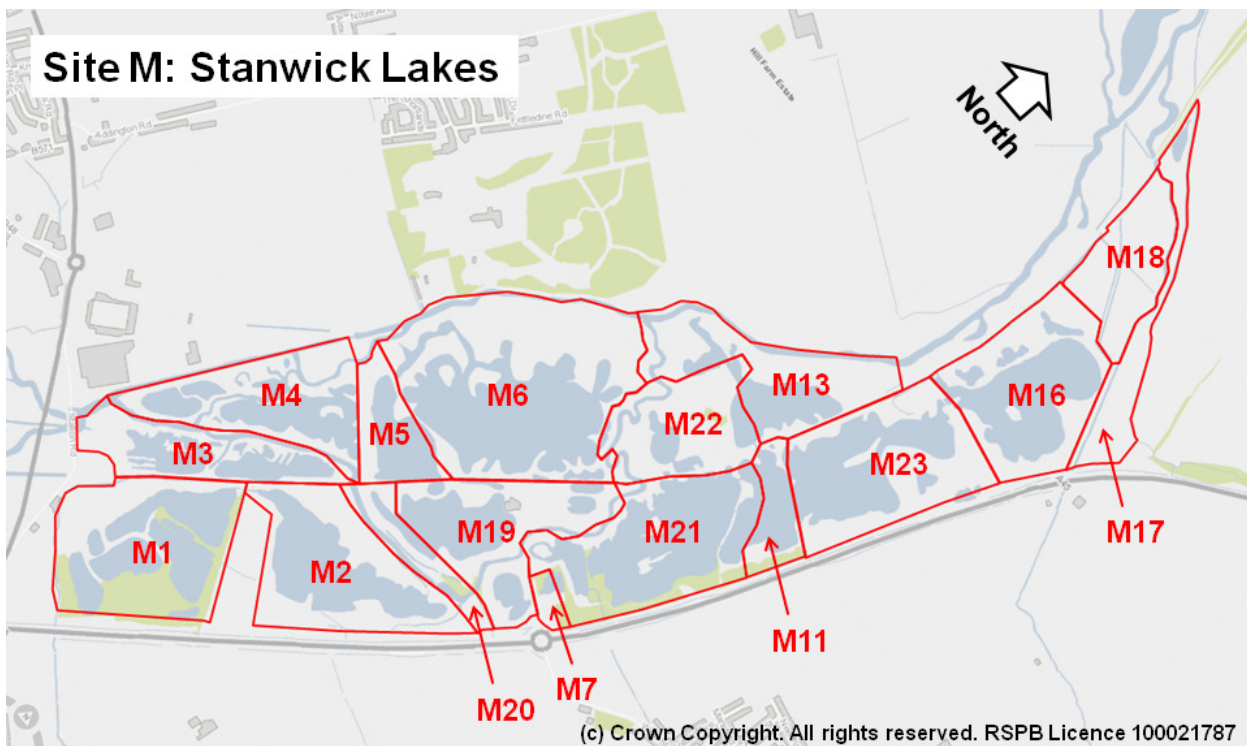


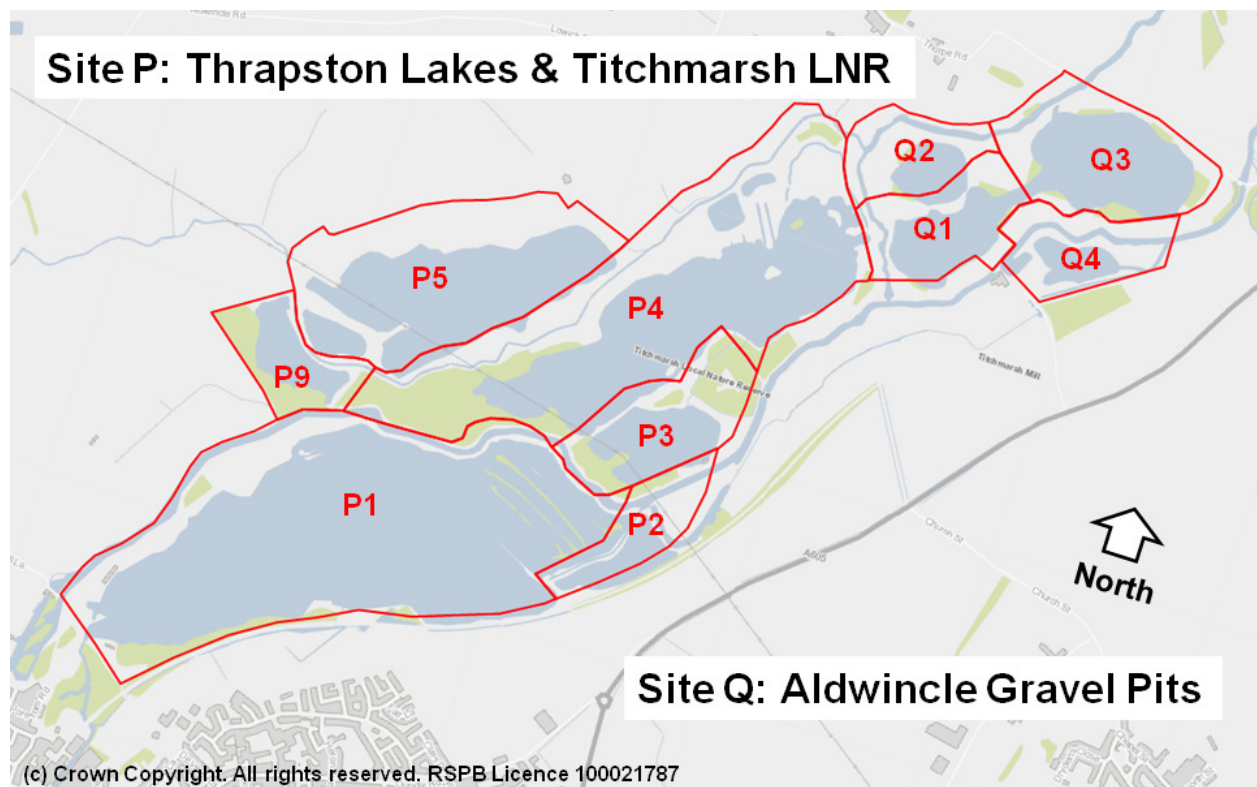
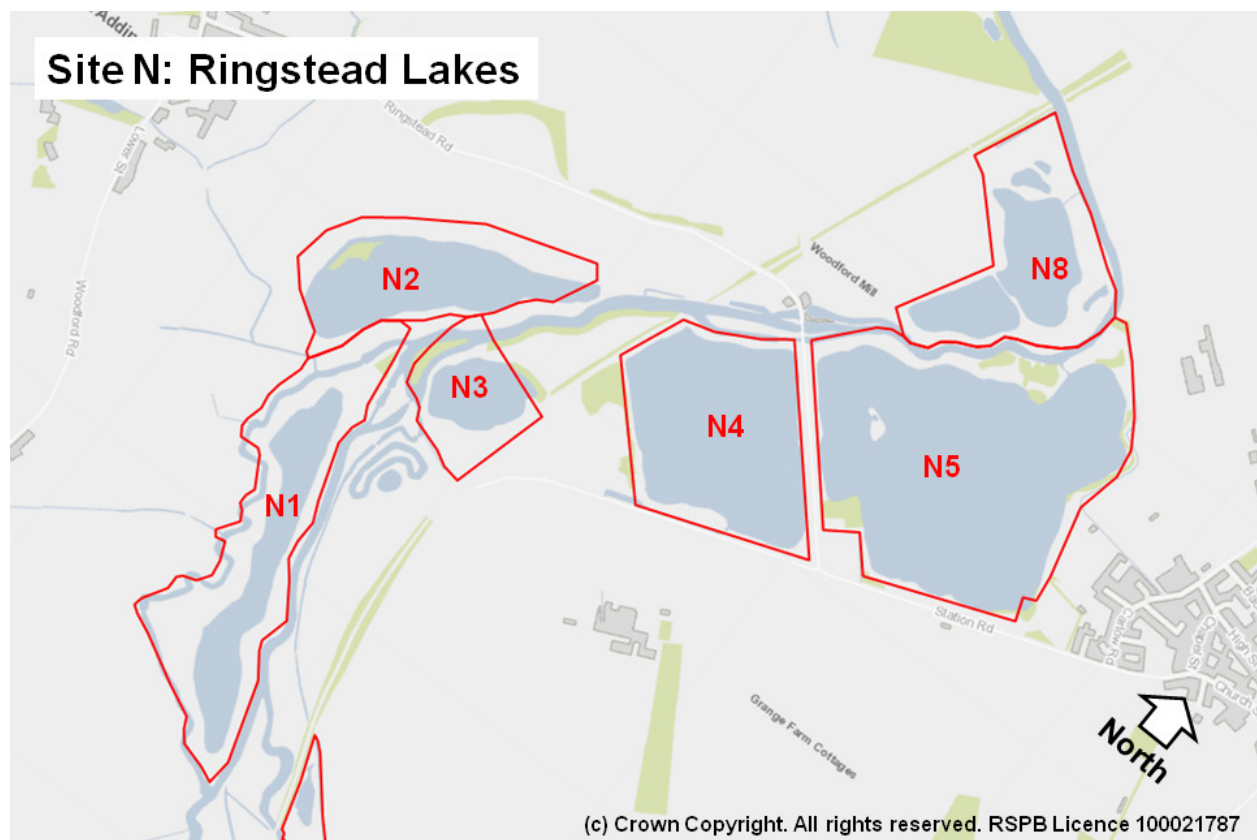


Site L: Higham Ferrers Gravel Pits



Site M: Stanwick Lakes





Appendix 2: Method for recording and analysis breeding numbers and status for target species

Species	What the surveyor will have counted	Analysis of breeding status			Explanatory notes
		Confirmed	Probable	Possible	
Little grebe	<ul style="list-style-type: none"> Pairs Nest locations or signs of nesting activity Broods (inc growth stage) 	Occupied nests and/or young (broods) recorded	Singing birds and/or pairs present in 2+ months	Individuals present in 2+ months, not singing, no territorial behaviour	
Great crested grebe	<ul style="list-style-type: none"> Pairs Nest locations or signs of nesting activity Broods (inc growth stage) 	Occupied nests and/or young (broods) recorded	Not applicable - see comment	Not applicable - see comment	If breeding is not confirmed it is assumed, as nests and juveniles are readily observable, that any birds seen are not breeding.
Cormorant	<ul style="list-style-type: none"> Apparently occupied nests 	Occupied nests recorded	Not applicable - see comment	Not applicable - see comment	Nests are normally highly visible, so birds present at sites with no nests are assumed to be non-breeding (or visiting from colonies elsewhere)
Shelduck	<ul style="list-style-type: none"> Pairs, single males, single females, groups Nest locations or signs of nesting activity Broods (inc growth stage) 	Occupied nests and/or young (broods) recorded	Not applicable - see comment	Not applicable - see comment	Nests and young are normally highly visible, so birds present at sites with no nests are assumed to be non-breeding.
Grey heron	<ul style="list-style-type: none"> Apparently occupied nests 	Occupied nests	Not applicable - see comment	Not applicable - see comment	Nests are normally highly visible, so birds present at sites with no nests are assumed to be non-breeding (or visiting from colonies elsewhere)
Little egret	<ul style="list-style-type: none"> Apparently occupied nests 	Occupied nests	Not applicable - see comment	Not applicable - see comment	Nests are normally highly visible, so birds present at sites with no nests are assumed to be non-breeding (or visiting from colonies elsewhere)
Mute swan	<ul style="list-style-type: none"> Apparently occupied nests 	Occupied nests and/or young (broods) recorded	Not applicable - see comment	Not applicable - see comment	Nests and young are normally highly visible, so birds present at sites with no nests are assumed to be non-breeding.
Teal	<ul style="list-style-type: none"> Pairs, single males, single females, groups Nest locations or signs of nesting activity Broods (inc growth stage) 	Occupied nests and/or young (broods) recorded	Not applicable	Not applicable - see comment	
Breeding ducks (excluding teal): Gadwall Garganey Shoveler Pochard Tufted duck	<ul style="list-style-type: none"> Pairs, single males, single females, groups Nest locations or signs of nesting activity Broods (inc growth stage) 	Occupied nests and/or young (broods) recorded	Not applicable	Males/pairs present in 2+ months	
Water rail	<ul style="list-style-type: none"> No and location of 	Occupied nests	Singing birds	Singing birds	

	calling birds <ul style="list-style-type: none"> No and location of adults and juveniles seen 	and/or young (broods) recorded	present in 2+ months (April and May)	present in only one month (April or May)	
Breeding waders (excluding snipe): Oystercatcher Little ringed plover Ringed plover Lapwing Redshank	<ul style="list-style-type: none"> Birds showing breeding behaviour (evidenced by pairs, song or display on ground/in the air, territorial disputes, active nest) Non-breeding birds (flocks of 5 or more birds) 	Occupied nests and/or young (broods) recorded, or adults performing distraction display	Territorial/courts hip behaviour noted in 2+ months	Birds present in all months but territorial behaviour noted in one month only	
Snipe	<ul style="list-style-type: none"> Number of drumming/chipping birds Number of non-breeding birds 	Occupied nests and/or young (broods) recorded	Drumming or chipping birds recorded in April or May	Birds present in April or May but not drumming or chipping	
Common tern	<ul style="list-style-type: none"> Apparently occupied nest sites Young (inc growth stage) 	Occupied nests and/or young (broods) recorded	Not applicable - see comment	Not applicable - see comment	Nests are normally highly visible, so birds present at sites with no nests are assumed to be non-breeding (or visiting from colonies elsewhere)
Cuckoo	<ul style="list-style-type: none"> Calling males and females Any young being fed at or off host nest 	Young in host nest or being fed by hosts off nest	Calling males and/or females in May	Not applicable	
Kingfisher	<ul style="list-style-type: none"> Apparently occupied nest sites Single birds Pairs Fledged young 	Occupied burrow recorded. Adults fish carrying, or recently fledged juvenile birds.	Adults present in 2+ months	Birds present in 1 month only	Any birds present are assumed to be breeding somewhere in the locality. Check adjacent sites to avoid double-counting.
Sand martin	<ul style="list-style-type: none"> Apparently occupied nest burrows 	Occupied burrows	Not applicable - see comment	Not applicable - see comment	Nests are normally highly visible, so birds present at sites with no nests are assumed to be non-breeding (or visiting from colonies elsewhere)
Yellow wagtail		Occupied nests and/or young (broods) recorded. Family parties (recently fledged young). Food-carrying adults.	Pair at suitable nest site in May/June. Singing male in April/May.	Individuals/pairs (adults and/or juveniles) present in June.	
Grey wagtail		Occupied nests and/or young (broods) recorded. Family parties (recently fledged young). Food-carrying adults.	Individual or pair at suitable nest site in 2+ months. Singing male in April/May.	Individual/pair at suitable nest site at least one month (May and or June only)	
Cetti's warbler		Occupied nests and/or young (broods) recorded. Food-carrying adults.	Singing male present in 2+ months (April and May)	Singing male present in only one month (April or May)	Despite these definitions the species is assumed to be breeding at all sites where it is present, on the basis of the significant numbers present in suitable habitat.
Grasshopper warbler		Occupied nests and/or young (broods) recorded. Food-carrying adults.	Singing male present in 2+ months	Singing male present in only one month	
Sedge warbler		Occupied nests and/or young (broods)	Singing male present in 2+ months	Singing male present in only one month	Despite these definitions the species is assumed to be breeding at all sites where it

		recorded. Food-carrying adults.			is present, on the basis of the significant numbers present in suitable habitat.
Reed warbler		Occupied nests and/or young (broods) recorded. Food-carrying adults.	Singing male present in 2+ months	Singing male present in only one month	Despite these definitions the species is assumed to be breeding at all sites where it is present, on the basis of the significant numbers present in suitable habitat.
Reed bunting		Occupied nests and/or young (broods) recorded. Food-carrying adults.	Singing male present in 2+ months	Singing male present in only one month	Despite these definitions the species is assumed to be breeding at all sites where it is present, on the basis of the significant numbers present in suitable habitat.

Appendix 3: Additional details about the survey method

Explanation of numbering of survey areas, 2003-2013/14

In 2003, the area of potential interest for SSSI designation was divided up into “survey sites” (clusters of lakes) which were given letter codes (see Figure 1). Each survey site was subdivided into “survey units” (generally, an individual lake and its immediate surroundings) which were given number codes. Thus any lake could be referred to by a letter/number code. This was necessary as few lakes have widely recognised and universally accepted names.

Thus at the start of the 2003 survey, survey sites ran from site “A” (Kislingbury Gravel Pits) upstream of Northampton, to site “Q” (Aldwinkle Gravel Pits) far downstream towards Peterborough. In the end, the SSSI designated in 2006 did not include all of these sites: notably, sites A, B and C (Kislingbury, Storton’s and Hardingstone Gravel Pits) and site I (Irchester Gravel Pits) were not designated as part of the SSSI.

In 2013/14, the main focus was on covering the sites that did become part of the SSSI, so sites A, B, C and I were lower priority, though in the event a volunteer came forward who was able to cover Storton’s and Hardingstone Gravel Pits (sites B and C). Kislingbury and Irchester Gravel Pits (A and I) were not resurveyed. This is why the results tables found in this report appear to omit certain sites.

Detailed maps of all survey units included in the survey in 2013/14 are available in Appendix 1. Note that due to unforeseen circumstances, parts of Stanwick Lakes (site M) and Thrapston Gravel Pits (site P), and Aldwinkle Gravel Pits (site Q) were covered in 2014.

Rationale for the choice of target species, 2003 and 2013/14

The “[Guidelines for Selection of Biological SSIs](#)” drawn up by the Joint Nature Conservancy Committee are used by Natural England to assess sites for designation include a method for assessing the value of breeding bird communities (or “assemblages”) found in particular habitats. Species considered to be characteristic of a habitat are listed and given an “index” value (in effect, a point score). That index value is higher for birds that are scarce or localised in the UK.

The Guidelines set a threshold index level for each habitat type. In principle, if the combined index values of the various bird species found breeding on a site exceed the relevant threshold, then the site may be eligible for designation.

The principal breeding bird assemblage of the Nene Valley relates to lowland waters and their margins. The characteristic species of this type of habitat, as defined by the BTO and listed in the Guidelines, are shown below. Very abundant species are not assigned index values or included in the assessment. The index threshold for SSSI selection based on this breeding bird community is 31.

Species	Index	Species	Index	Species	Index
Little grebe	2.5	Tufted duck	3	Black tern	6
Great crested grebe	3	Red-breasted merganser	3	Cuckoo	2
Black-necked grebe	5	Marsh harrier	5	Kingfisher	3
Bittern	5	Montagu's harrier	6	Yellow wagtail	1
Grey heron	3	Spotted crane	6	Grey wagtail	2
Mute swan	3	Water rail	3	Cetti's warbler	4
Shelduck	2	Avocet	4	Grasshopper warbler	2
Gadwall	4	Little ringed plover	4	Savi's warbler	5
Teal	3	Ringed plover	3	Sedge warbler	4
Pintail	5	Snipe	2	Reed warbler	2
Garganey	5	Redshank	2	Marsh warbler	5
Shoveler	4	Red-necked phalarope	5	Bearded tit	4
Pochard	4	Common tern	3	Reed bunting	1

Those familiar with bird trends over recent decades might question why (for example) the index value for a breeding snipe is only 2, lower than a mute swan and the same as reed warbler. This is because the index values in the Guidelines are based on the populations present in Britain in the 1980s and have not been updated since, so no account can be taken in this process of population changes in the last 30 years.

The 26 species marked in bold above were target species in the Nene Valley in 2003 (i.e. it was thought likely they may be found breeding). In addition to these, the 2003 survey also targeted oystercatchers, lapwings and sand martins – species that were scarce in a Northamptonshire context, but felt to be equally characteristic of lowland lakes and margins. These latter three species did not contribute to the assessment of the proposed SSSI but are of conservation concern in the area.

In 2013/14, the focus was again on these 29 target species, but we also added cormorant and little egret, making 31. Consistent with their rapid expansion in England as a breeding species since 1996, little egrets have recently colonised the valley as a scarce breeding species nesting alongside grey herons and cormorants, and are likely to increase further. Cormorants were added because of the potential for applications for licences to cull them to protect local fisheries, and the very real threat of incidents of illegal killing. It may prove useful to have an accurate record of the cormorant breeding population to go alongside the data gathered year round under the Wetland Bird Survey run by the British Trust for Ornithology.

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