



NatureSpace District Licensing Scheme: Monitoring Results (2019-2023)



This is the fifth year of monitoring for the NatureSpace great crested newt District Licensing scheme. Between February 2018 and December 2023, the Newt Conservation Partnership created or restored 358 ponds and provided 1,149 hectares of suitable terrestrial habitat for great crested newts. Over this period, the compensation scheme met or exceeded all the regulatory requirements of strategic licensing in all areas for both aquatic and terrestrial habitat.

In total, great crested newts were recorded at 58% of compensation sites and in 42% of individual ponds created or restored under the scheme before December 2022. These occupancy levels are far in excess of national and regional averages and, as the scheme's relatively young ponds mature, occupancy is likely only to increase. The monitoring programme also evidences the wider benefits of the scheme for other priority species and wetland plants, including regionally and nationally rare plants.

In its first five years, the NatureSpace scheme is making a significant contribution to the conservation of great crested newts and many other freshwater plants and animals.

Introduction

This is the monitoring report of the Newt Conservation Partnership, with summary results for the 2023 monitoring programme of the NatureSpace great crested newt District Licensing scheme.

The Newt Conservation Partnership (NCP) is the delivery body of the NatureSpace great crested newt District Licensing scheme (naturespaceuk.com). We are a community-benefit society set up specifically to create and restore high quality aquatic and terrestrial habitat for great crested newts. Established in 2018, the scheme compensates for great crested newt habitat lost or degraded by development and is an alternative to standard licensing routes. The scheme is regulated by Natural England.

Great crested newt populations have declined primarily due to aquatic and terrestrial habitat loss and fragmentation. The NCP works to counter this by creating, restoring and managing high quality, clean water ponds, connected by high quality terrestrial habitat to built freshwater networks where great crested newt populations can thrive. Our work is supported by expert knowledge from project partners, Amphibian and Reptile Conservation and Freshwater Habitats Trust, who set best practice for pond and amphibian conservation.

Our main objective is to achieve a net improvement in the conservation status of great crested newts in the regions in which we operate (Fig. 1). To do this, we create or restore at least four high

quality ponds for every occupied pond lost through development. We also compensate for terrestrial habitat lost or damaged because great crested newts spend about 80% of their lifecycle on land. We have legally-binding 25-year agreements with landowners so that the management needed to maintain the habitat we create or restore is secured and funded for the long term.

The results in this summary report are based on data from the comprehensive annual monitoring of all our compensation habitat created or restored from 2018 to 2022, which is vital for understanding and measuring our ecological success. In addition, we carry out an annual landscape-scale survey, which allows us to compare the compensation pond monitoring results with background newt occupancy across the first area licensed under this scheme, known as the 'South Midlands'¹. We share our findings with landowners, local record centres and partner organisations to support wider great crested newt conservation.

For more information about the Newt Conservation Partnership please visit:

www.newtpartnership.org.uk

¹ The great crested newt NatureSpace District Licensing scheme was originally set up for the following Local Planning Authorities (LPAs): Aylesbury Vale, Bedford Borough, Central Bedfordshire, Milton Keynes, South Oxfordshire, Vale of White Horse, Oxford City.



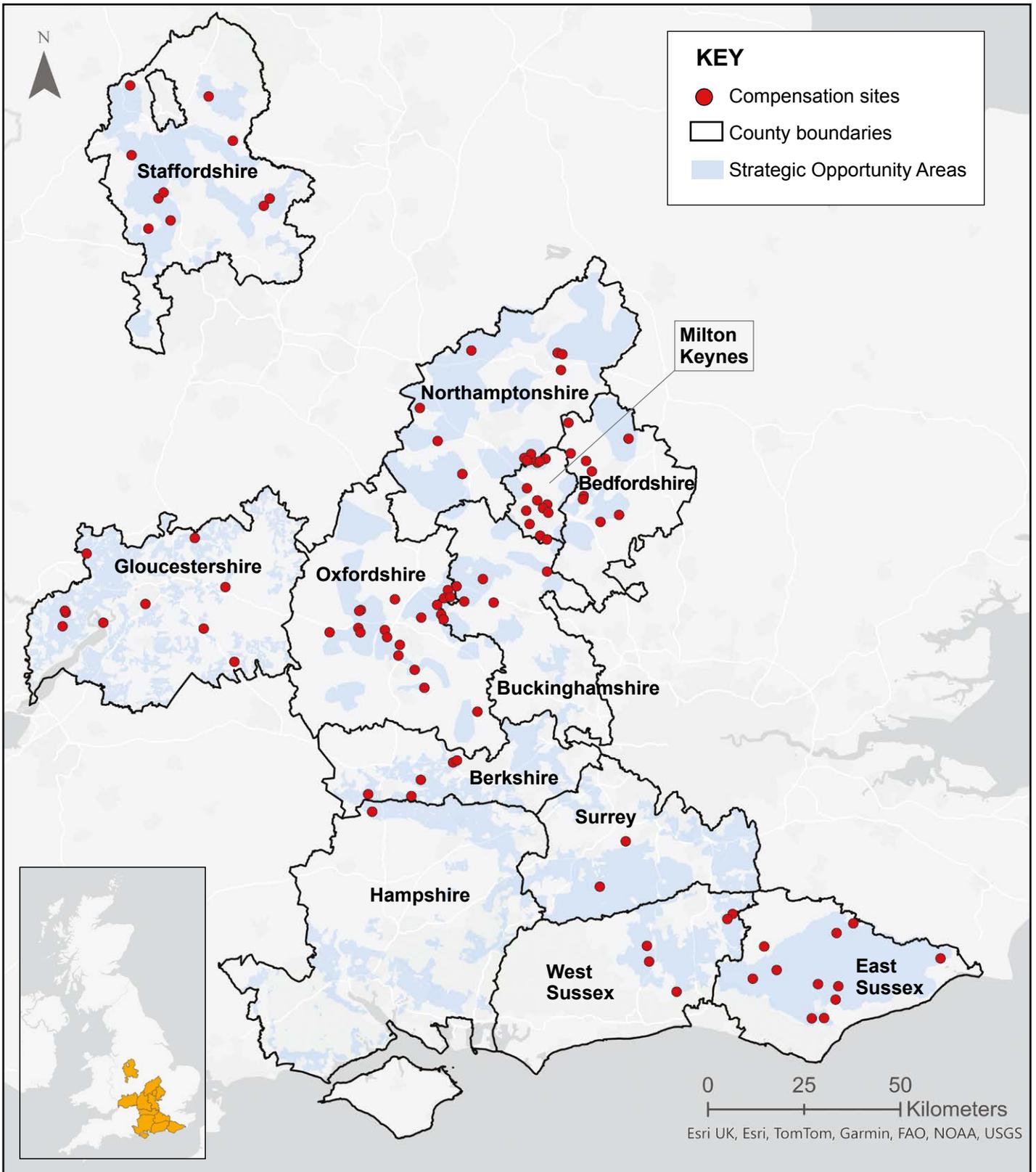


Fig. 1. Map of compensation sites created between 2018 and 2023, showing Strategic Opportunity Areas (SOAs). SOAs are derived from great crested newt habitat suitability modelling and expert knowledge from a range of stakeholders and are a key component of the scheme’s conservation strategy. It is a licence requirement that at least 60% of ponds created or restored as part of the scheme are located in SOAs. Some regions have less compensation sites than others because their LPAs joined the scheme recently. For example, some Hampshire and West Sussex LPAs joined the scheme during 2023.

Compensation Sites Progress

Between February 2018 and December 2023, NCP created or restored 358 ponds (“compensation ponds”) at 122 compensation sites across the participating planning authorities (a full list can be found at naturespaceuk.com/the-scheme/where-we-operate). We are focusing on pond creation (Fig. 2) because we want to increase the density of ponds in the landscape to address historic pond losses. New ponds can also be located and designed to maximise conservation benefits.

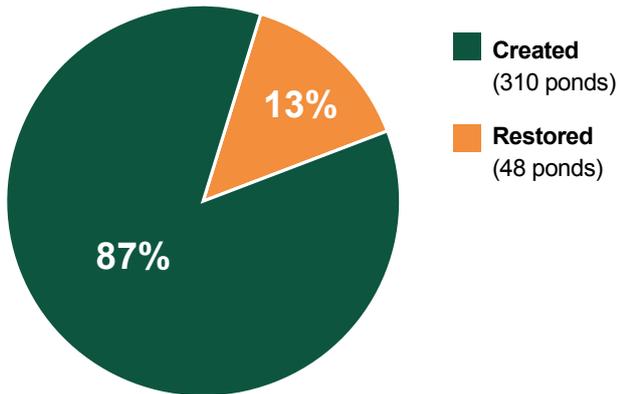


Fig. 2. The number of compensation ponds created and restored from 2018 to December 2023.

Aquatic habitat (pond) compensation

A core principle of the scheme is to provide net gain for great crested newts in the area we operate. For each occupied pond lost to development we create or restore at least four compensation ponds, i.e. a 4:1 ratio. For degraded ponds, the compensation requirement ratio is 2:1. We are well ahead of development impacts (Fig. 3) with 358 ponds created or restored compared to a 128 ponds compensation requirement. We provided 232 ponds over and above what is currently required to compensate for development as part of the NatureSpace District Licensing scheme.

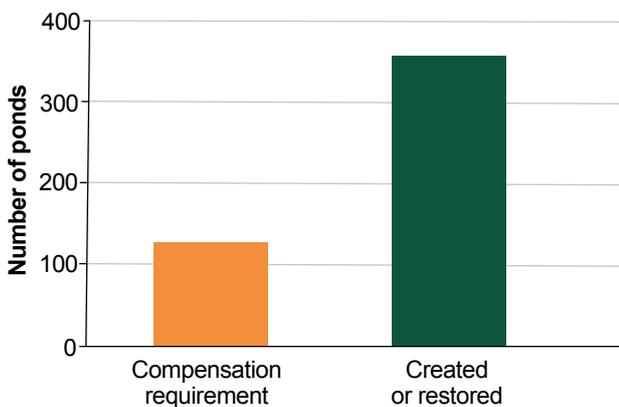


Fig. 3. Pond compensation provision for development impacts authorised through the NatureSpace scheme.

NCP pond failure rate² is very low at less than 1%. Only two ponds have been removed from the scheme to date – both because of an unexpected lowering of the water table. These ponds are not included in the results presented in this report. Our pond failure rate is low because the NCP delivery team works to best practice principles. In addition, funding is available as part of the scheme to allow for extensive site investigations (Fig. 4) prior to pond creation or restoration, and to fix issues as they arise post-creation, which is common. For example, some ponds may need to be protected from excessive dog or livestock disturbance by fencing to ensure suitable conditions for newt breeding are maintained. Another common problem is hidden agricultural drains, which often require a second phase of on-site work with a contractor to block them.



Fig. 4. NCP Project Officer assessing substrate in a test pit.

² Ponds are considered failed when they have not been colonised by great crested newt or reached a HSI score higher than 0.7 after a period of four years.

Terrestrial habitat compensation

In addition to providing high quality ponds, the NatureSpace scheme compensates for terrestrial habitat damaged or destroyed (directly or indirectly) by developments at a ratio of 1:1. We are, again, well ahead of impacts and have provided more than twice the current requirement of the scheme (Fig. 5). Up to December 2023, we have provided 1,149 hectares of suitable terrestrial habitat for great crested newts, while 504 hectares were required by the scheme.

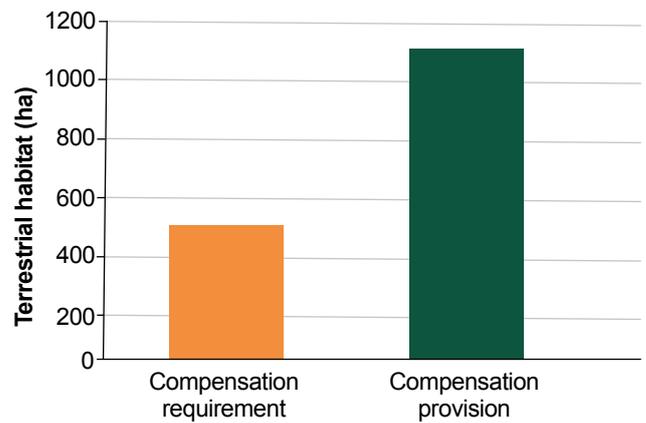


Fig. 5. Compensation requirement and provision of great crested newt terrestrial habitat.

Monitoring Methods

The aim of the monitoring programme is to assess the conservation outcome of the scheme and ensure high quality habitat is delivered and maintained in the long term. We use three standardised methods to survey compensation ponds.

Environmental DNA

Environmental DNA (eDNA) refers to genetic material that is released by organisms into the environment. Surveys for eDNA collect, isolate and identify this genetic material to identify species present. We use this method to detect the presence of great crested newts in compensation ponds. All created and restored ponds are sampled annually for great crested newt eDNA during May and June, the year after creation/restoration.

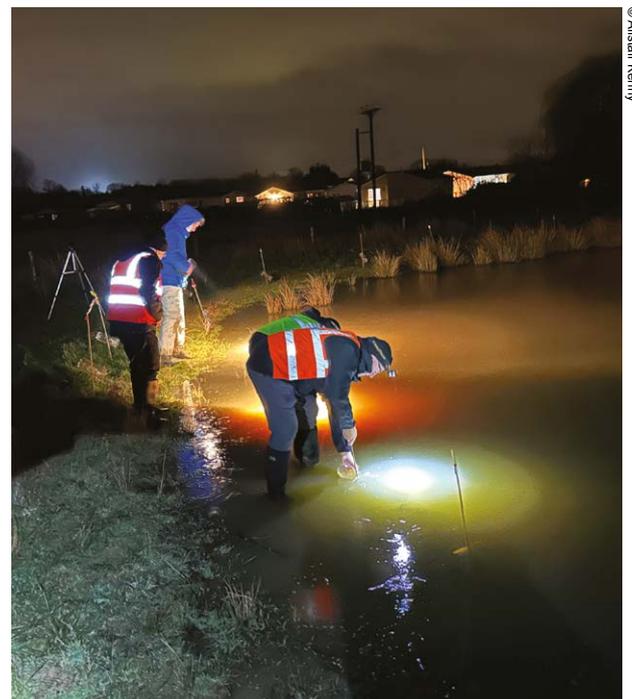
Habitat Suitability Index

The Habitat Suitability Index (HSI) is a numerical index³ which represents the potential of aquatic and terrestrial habitat to support great crested newts. In general, ponds with high HSI scores are more likely to support great crested newts than those with low scores. This is a useful index but ponds with a low index may also support newts, as shown by recent research which reported that as much as 20% of 'Poor' ponds have great crested newts⁴.

Population assessment

In addition to eDNA and HSI, we use population assessment methods at a small selection of compensation sites to measure the impact of habitat creation on the local newt population. At these 10 sites, in both compensation ponds and other ponds within 500 m, we carry out egg searches, and bottle

trapping and night torch surveys to count individual newts. Population assessment is repeated every three years at the selected sites to build long-term data.



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Fig. 6. Every year, all NCP surveyors attend a bespoke and comprehensive monitoring training course led by experts in herpetology and pond ecology. In 2023, the course was delivered by Emeritus Professor Richard Griffiths (DICE, University of Kent and NCP Director), Dr Andrew Buxton (NatureSpace) and Dr Naomi Ewald (Freshwater Habitats Trust).

³ Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000) Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). *Herpetological Journal*. 10 (4). pp. 143-155.

⁴ Buxton, A. S., Griffiths, R. A. (2022) A revised system for interpreting great crested newt habitat suitability indices. *Herpetological Journal*, 32 (3). pp. 114-119. (<https://doi.org/10.33256/32.3.114119>)

Monitoring Results

Over five years of monitoring, great crested newts have been recorded at 58% of compensation sites and in 42% of compensation ponds. These results show the scheme is providing conservation benefits regionally and locally. As most of the compensation ponds are still very new (only one to two years old), occupancy is expected to increase as ponds mature. Great crested newt occupancy is already higher in compensation ponds than in the surrounding landscape.

Pond occupancy (2023 monitoring season)

A total of 243 compensation ponds created or restored up to December 2022 were surveyed for great crested newt presence during spring 2023. At the pond level, we recorded the highest pond occupancy since the scheme began, with great crested newts found in 38% of compensation ponds (Fig. 7).

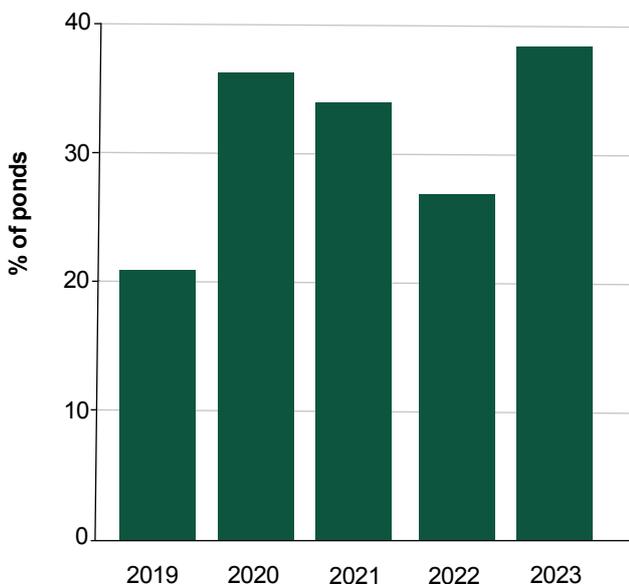


Fig. 7. Great crested newt occupancy in compensation ponds by monitoring year. The relatively low occupancy rate in 2022 is likely to be due to drought.

Given that over half of the compensation ponds were created or restored just one to two years ago (Fig. 8), the colonisation rate is very high. Pond occupancy is likely to rise as these waterbodies become better established (e.g. with vegetation suitable for egg-laying) and are found by newts from existing populations of nearby ponds by natural dispersal.

Restored ponds had higher occupancy rates than created ponds (Fig. 9). This is largely because restored ponds are already established in the

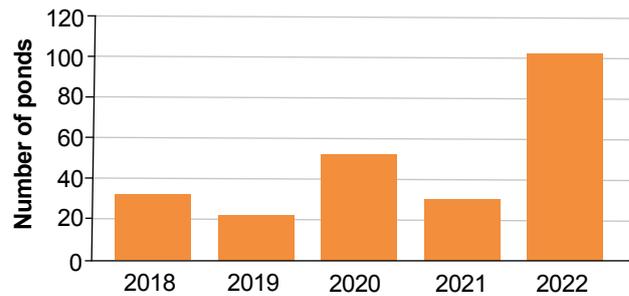


Fig. 8. Number of compensation ponds created or restored annually from 2018 to 2022 and monitored in 2023. 54% of ponds are one to two years old.

landscape and often have remnant great crested newt populations even if conditions are unsuitable for breeding. Creating new ponds is critical to increase the density of ponds in landscapes where many have been lost over the past century, reducing connectivity for great crested newt metapopulations. New ponds are also located strategically near existing populations, expanding breeding habitat. They can also be designed according to best practice principles, with extensive shallows that are critical for thriving populations of amphibians and other freshwater plants and animals.

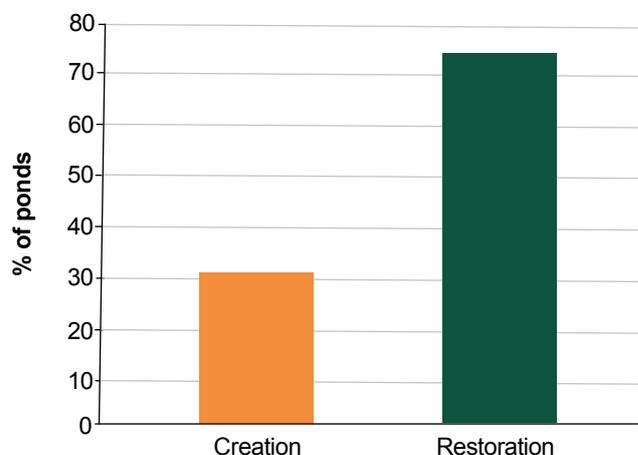


Fig. 9. Great crested newt occupancy in ponds created and restored. In total, we surveyed 207 newly-created ponds and 36 restored ponds in 2023 i.e. all the ponds created or restored by NCP up to December 2022.

Pond occupancy results for 2019-2023

Great crested newt presence in individual ponds can change year on year depending on weather conditions and natural metapopulation dynamics, as demonstrated by results presented in this report and the long-running national monitoring programme for the species funded by Natural England. Because of this, the analysis of occupancy data over a five-year monitoring period is a more reliable indicator of occupancy than the annual 'snapshot' survey. Overall, 42% of compensation ponds and 58% of compensation sites have been occupied by great crested newt at least once over the past five years (Fig. 10). Again, we expect these occupancy figures to increase as our sites mature. 42% of monitored compensation ponds were only created in the year preceding the survey. It is also expected that terrestrial habitat changes from intensive to semi-natural land use, such as arable reversion, will take some time before they show an effect.

Pond age and great crested newt occupancy

Pond age is an important factor for great crested newt occupancy in new ponds. The rate of pond colonisation by both animals and plants varies greatly as it also depends on the proximity of compensation sites to existing populations, landscape connectivity and local conditions, including substrate and disturbance.

An analysis of great crested newt occupancy in relation to pond age shows that, as can be expected, ponds three to five years old are far more likely to be occupied by great crested newt than ponds one to two years old (Fig. 11). The occupancy rate in ponds created or restored between 2018 and 2020 is 58-86%. In contrast, for ponds delivered between 2021 and 2022 occupancy is currently only 18-29%.

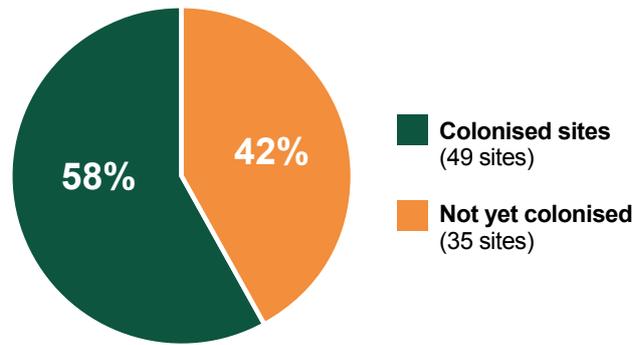


Fig. 10. Great crested newt occupancy at site level over the period 2019-2023. Occupancy is likely to continue to increase as sites become more established. One of the reasons why site colonisation rates are higher than pond colonisation rates is because ponds in a cluster or network may fluctuate between being sources and sinks for the great crested newt population in different years.

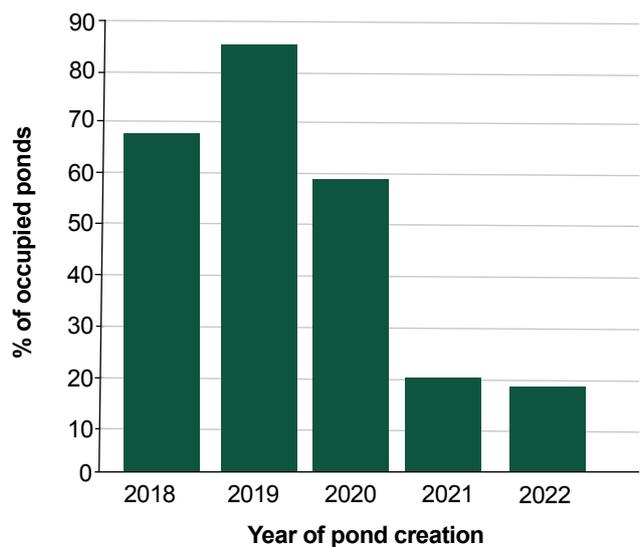


Fig. 11. Great crested newt occupancy for all monitoring seasons (2019-2023) for ponds created or restored in different years. This shows that, as can be expected, older ponds have higher occupancy than younger ponds.

Habitat Suitability Index (HSI)

In addition to occupancy data, we record great crested newt Habitat Suitability Index (HSI) for each pond. In 2023, 80% of the ponds surveyed had an Excellent or Good HSI score (Fig. 12). Only 5% of compensation ponds had an HSI score of Below average or Poor because they were dry or impacted by wildfowl, or they were in more urban areas. These encouraging results reflect our high standards in terms of compensation site selection and best practice for pond creation and restoration, as set by our partners Amphibian and Reptile Conservation and Freshwater Habitats Trust.

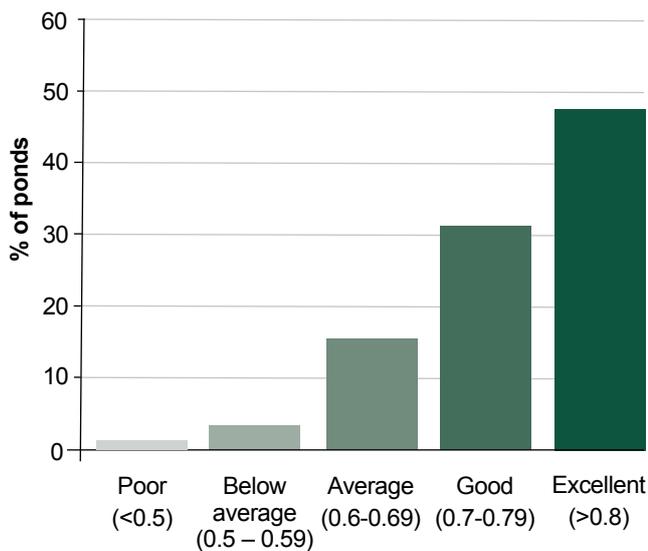


Fig. 12. HSI results for compensation ponds monitored in 2023. Ponds with high HSI scores provide better quality habitat than ponds with lower scores.



Fig. 13. A great crested newt caught in a bottle trap as part of our population assessment survey.

Population assessment

In 2023, we assessed the great crested newt population at four new compensation sites which had been created in 2022. Surveys included 22 compensation ponds and eight pre-existing ponds (Table 1).

Some of the newly-created ponds surveyed had not yet been colonised by great crested newts as they had been in the ground for less than one year, so this provides a baseline for future population assessments. It is too early to draw conclusions from this baseline population assessment and we will return to these sites every three years to repeat the survey. We did, however, confirm the presence of great crested newt populations within dispersal distance, including at sites where there were no previous records (Fig. 13).

Table 1. Population assessment surveys in 2023. Peak counts of great crested newts in new and pre-existing ponds at four compensation sites. All selected sites are one year old and the data collected provides a baseline.

	Site 1	Site 2	Site 3	Site 4
	Northamptonshire	Staffordshire	Berkshire	Gloucestershire
<i>Creation/ Restoration date</i>	<i>October 2022</i>	<i>July 2022</i>	<i>November 2022</i>	<i>October 2022</i>
Pre-existing ponds				
Number surveyed	1	4	2	1
Peak count	9	10	27	17
Compensation ponds				
Number created	10	5	0	2
Number restored	0	0	4	1
Peak count	0	1	8	1

Landscape-scale Monitoring

As part of the NatureSpace scheme, landscape-scale monitoring is carried out annually in 40 x 1 km grid squares across the 'South Midlands'. The aim of the programme is to understand how well compensation ponds perform against the background regional landscape-scale occupancy and against national monitoring data. The 1 km squares were selected randomly to provide a representative sample of ponds for assessing great crested newt occupancy in the region. Ponds in the same squares are surveyed annually using eDNA and the HSI for each pond is also recorded.

The 2023 results confirm that average occupancy of compensation ponds was higher than both the national and the regional averages for ponds in the wider 'South Midlands' landscape (Fig. 14). Our data also shows that the ponds in the 'South Midlands' have a rate

of occupancy by great crested newt above the national average making this a high occupancy area for the species.

The annual occupancy results for the 'South Midlands' ponds (i.e. the same ponds randomly selected and re-surveyed every year) illustrates the natural variability year on year (Fig. 15), largely due to weather conditions and source-sink dynamics. This emphasises the importance of long-term monitoring at the local, regional and national levels to gain a good understanding of great crested newt populations.

Ongoing monitoring of the NatureSpace scheme in future years is essential to provide information about great crested newt conservation status, and about the effectiveness of district licensing in providing significant biodiversity benefits for great crested newts.

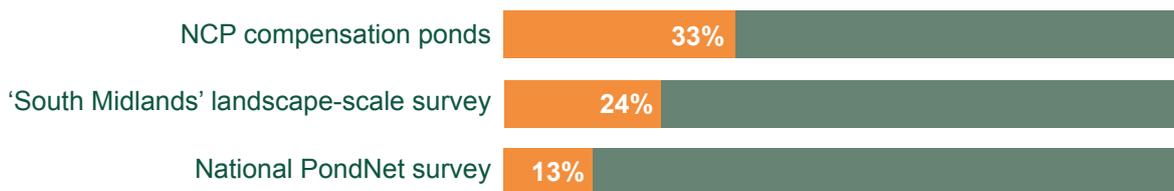
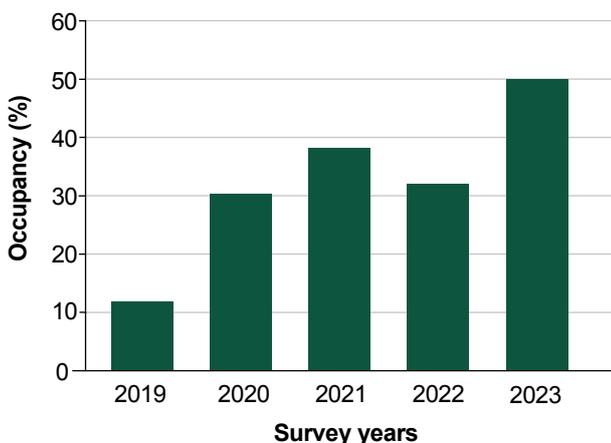


Fig. 14. Great crested newt average occupancy results for NCP compensation ponds, the regional 'South Midlands' landscape-scale survey and the great crested newt national monitoring survey.

NCP compensation ponds



South Midlands landscape-scale survey

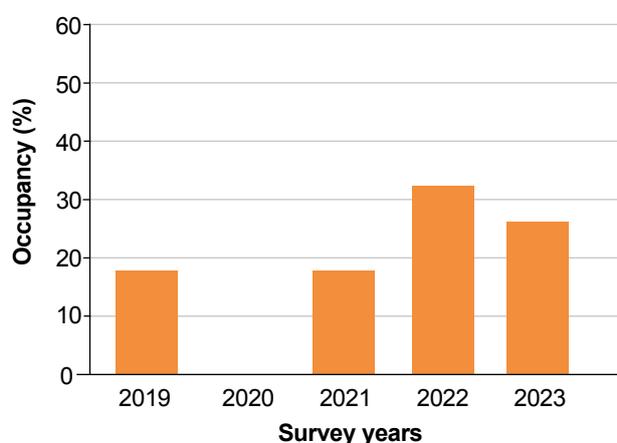


Fig. 15. Great crested newt occupancy in compensation ponds and in randomly selected ponds in the 'South Midlands' landscape-scale survey from 2019 to 2023. Note cluster bias has been removed according to the methods used by the national great crested newt monitoring scheme, and the data stratified according to the zones of the NatureSpace habitat suitability model to ensure comparability of results. The 'South Midlands' landscape-scale survey did not take place in 2020 because of the COVID-19 pandemic.

Wider Benefits of the NatureSpace District Licensing Scheme

Created and restored ponds and terrestrial improvements delivered through the NatureSpace scheme provide new high quality habitat for many freshwater plants and animals as well as great crested newt. Overall, 130 (53%) ponds created or restored by NCP have reached priority habitat status⁵, and both regionally and nationally uncommon plant species have already been recorded in our relatively young ponds – all by natural colonisation.

To better understand the wider benefits of our work, our partner Freshwater Habitats Trust surveyed a selection of compensation ponds for wetland plants using standardised methods in summer 2023. This, together with other species records collected as part of the Newt Conservation Partnership monitoring scheme or anecdotally by Project Officers during site visits, has allowed us to carry out a preliminary priority pond assessment. The results are very encouraging, and we aim to continue and expand this aspect of monitoring in future.

Wetland plants

A total of 43 ponds were surveyed for plants in 2023 using the PSYM⁶ method. All the ponds surveyed in 2023 were created three to five years ago and so are still relatively young. Overall, 84% of the ponds surveyed achieved a Good quality score (Fig. 16), which means they are priority ponds. This is an exceptional result and illustrates how creating clean water ponds according to best practice can lead to very quick gains for freshwater wildlife.

Plant diversity in NCP compensation ponds averaged 17 species and ranged from 10 to 34 species. Again, this is a very positive finding considering the average number of wetland plant species in 'wider countryside' ponds in England is seven⁷.

The ponds created as part of the scheme also provide new habitat for regionally and nationally uncommon plants. We are pleased to report that the new population of the regionally-rare common bladderwort (*Utricularia vulgaris*) and the nationally-rare lesser water-plantain (*Baldellia ranunculoides*, Vulnerable) that were recorded during the 2022 survey season were still present in the same ponds in 2023.

A new population of red pondweed (*Potamogeton alpinus*, Vulnerable) was discovered in a new pond created in an intensively managed agricultural landscape in Northamptonshire. The site is located near a designated site where this species is known to occur, illustrating how locating new ponds close to existing high quality sites can provide a stepping stone, which is vital for the conservation of rare species.

There were also several new records of common species which have declined due to habitat loss and changes in land use, or that are county-rare where they were recorded, including common-yellow sedge (*Carex demissa*) and blunt-leaved pondweed (*Potamogeton obtusifolius*).

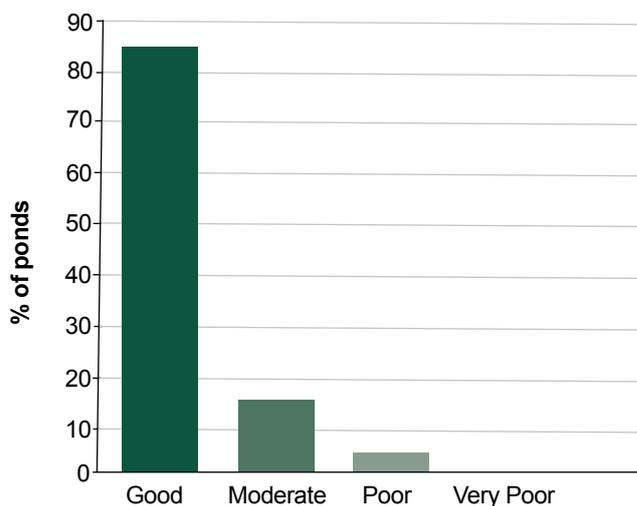


Fig. 16. PSYM score for 43 compensation ponds surveyed for wetland plants in 2023. The Predictive SYstem for Multimetrics (PSYM) is a reference-based method which uses diversity and rarity metrics to provide an overall ecological quality status for ponds. It is one of the methods used to assess the priority status of a pond.

⁵ <https://jncc.gov.uk/our-work/uk-bap-priority-habitats/>

⁶ PSYM: Predictive Systems for Multimetric method which assesses the ecological quality of ponds and is one of the criteria for priority pond assessment

⁷ <https://www.ceh.ac.uk/our-science/projects/countryside-survey>



Fig. 17. A new pond after creation and three years later. New ponds vegetate rapidly by natural colonisation.



Fig. 18. Large numbers of common toad tadpoles observed at a compensation pond during spring 2023.

Other amphibian records

During the annual monitoring of our compensation sites, we encounter and record other species of amphibians (Fig. 19). These anecdotal records of common toad and small newt species are an additional indicator of the benefits of our conservation work for wider biodiversity. For example, the priority species common toad, which has declined throughout England in recent decades, is already recorded in at least 35 compensation ponds.

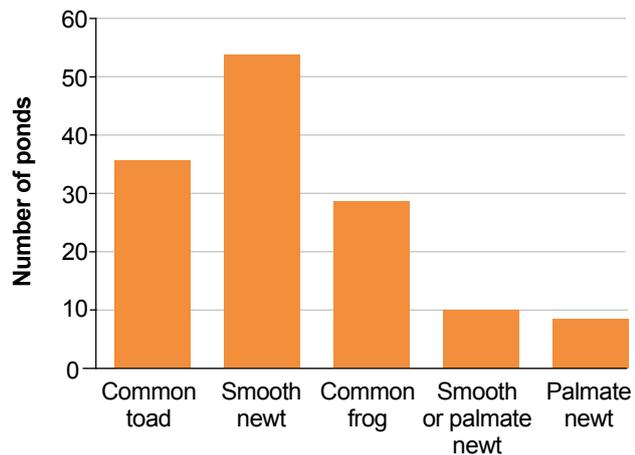


Fig. 19. Anecdotal records of amphibian species other than great crested newt in compensation ponds.



Fig. 20. All the new compensation ponds in Shabbington Wood support extensive stands of stoneworts – an indicator of clean water and sometimes used by great crested newt to lay their eggs on.

CASE STUDY: 10 Acre Field

LPA: West Northamptonshire Council

Number of ponds: 8

Land use: Arable reversion to species-rich grassland

10 Acre Field is a four-and-a-half-hectare compensation site on private farmland in the south-east of Northamptonshire. Although much of the surrounding landscape is dominated by arable farming, there are important areas of semi-natural habitat near to the site, most notably the woodlands, ponds and grasslands of Yardley Chase SSSI which is approximately 1.5 km away.

Initial ground investigations at the former arable field revealed shallow topsoil low in nutrients, including very low phosphorus levels. The owners reported that the ground became severely waterlogged during winter with no known underdrainage which had resulted in low yields and failed crops. The land had effectively been abandoned for cereal crop growing and they were seeking an alternative use for the field.

In early spring 2021, NCP created eight trial pits to assess water-holding capability for potential ponds. The test pits revealed heavy clays throughout the field. Following a prolonged wet spring, the trial pits filled with both ground and surface water and held water up until summer. Water testing revealed that the water was clean, unpolluted by nitrate or phosphate.

In late summer 2021 a complex of eight ponds was created in the field (Fig. 21). The ponds all varied in size, ranging from 300 to 650 m². Pond designs were drawn up to create wide drawdown zones with extensive shallow water, submerged spits and bars to add a variety of underwater micro-topography, and deeper more permanent areas of water to act as a refuge in some ponds.

In autumn of that year, the surrounding ground was prepared by a local farmer and sown with a wildflower and grass seed mixture comprising native species such as crested dog's-tail (*Cynosaurus cristatus*), ox-eye daisy (*Leucanthemum vulgare*), and common knapweed (*Centaurea nigra*). This grassland is now

managed as a hay meadow with an annual July cut and bale. Once fully established, the site will be grazed during autumn with livestock from adjacent fields. We have created two hibernacula for newts and other amphibians and have left approximately 0.5 hectares of natural re-generation/scrub which will remain as non-intervention areas. The entire site is under a 25-year management plan with annual funding to ensure it is kept in optimal condition.



The year following pond creation, monitoring results showed all ponds were negative for great crested newt, as they were only just establishing. In 2023, only two years after the ponds were delivered, we were pleased to find evidence of breeding great crested newt (confirmed by egg searching) in four of the eight ponds. The nearest known great crested newt breeding pond is approximately 500 m from the site so it is encouraging to see rapid colonisation of the ponds.

This area of Northamptonshire and north Milton Keynes has become a focus for our work with 37 compensation ponds created for the scheme so far, all within 1.5 km of Yardley Chase SSSI. The majority of these compensation sites are linked at the landscape-scale by a series of disused rail lines which would once have served the Yardley Chase military area. This now acts as a linear connectivity feature, aiding movement and dispersal of great crested newts and other wildlife across the landscape.

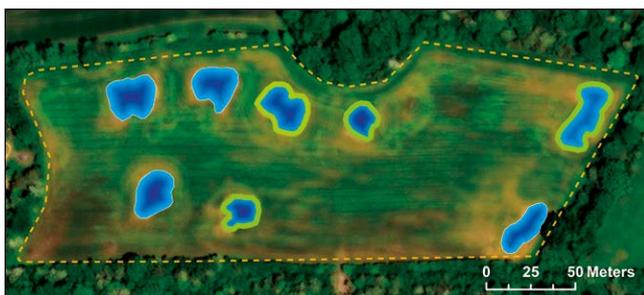


Fig. 21. Aquatic (ponds) and terrestrial compensation at 10 Acre Field. Eight ponds were created in 2021 and four of them (green outline) already had evidence of breeding great crested newts in 2023.

CASE STUDY: Shabbington Wood

LPA: Buckinghamshire Council

Number of ponds: 5

Land use: Forestry

Shabbington Wood SSSI is a large semi-natural woodland in an intensively-managed, agricultural landscape on the border of Oxfordshire and Buckinghamshire. It is designated primarily for its invertebrate fauna and is owned and managed by Forestry England. The site has also been designated as a county-level Important Freshwater Area because of the practical conservation work that has taken place there over the past decade, including the creation of a network of clean water ponds for freshwater wildlife.

This was the first compensation site secured for the NatureSpace great crested newt District Licensing scheme. In spring 2018, five new clean water ponds were created in an area that had been clear-felled of conifers a couple of years previously (Fig. 22). The ponds range in surface area from 120 to 375 m² and are 0.8 to 1.2 m in depth. The substrate is a mixture of very heavy and fine clays, with likely groundwater inflow at around 1 m depth. The soil tends to stay wet all year round and is waterlogged in winter. The pond locations were selected so that they have extensive, semi-natural surface-water catchments and a clean water source. As with many wild ponds, their water level fluctuates considerably depending on weather patterns. By 2022, great crested newts had been recorded in all compensation ponds, including evidence of breeding. We are now tracking population growth every three years through population assessment surveys.

The NCP compensation ponds extended the existing network of eight great crested newt ponds that were created in 2011 by partners Amphibian and Reptile Conservation and Freshwater Habitats Trust as part of the Million Ponds Project, in collaboration with Forestry England (Fig. 22).

Before these two phases of pond creation, most of the ponds in the wood provided poor habitat for great crested newt because they were small, shaded or dried up

annually. These types of pond are not optimal for great crested newt breeding, but they are an important habitat in their own right, particularly in semi-natural landscapes where water quality is good. Creating new clean water ponds, rather than restoring or modifying existing ponds, has increased the range of pond types at the site, providing new habitat for many freshwater plants and animals.

Working in partnership with Forestry England over the past decade to create an extensive network of clean water ponds has led to excellent benefits for freshwater wildlife, including increasing the number of breeding ponds for great crested newts from two to 18 (Fig. 22). These ponds also support breeding populations of another priority species, the common toad, which has shown large declines in recent decades. We intend to undertake a freshwater invertebrate survey in the future to gain more information on this group but it is clear that the dragonfly population has proliferated following pond creation. Some regionally uncommon plants were also recorded in the new ponds in 2023 as part of our 'wider benefits' monitoring programme, including common yellow-sedge (*Carex demissa*) and bristle club-rush (*Isolepis setacea*). Most ponds also have extensive stands of stoneworts – clean water indicators which were not recorded in the woods prior to the creation of these 13 new clean water ponds.

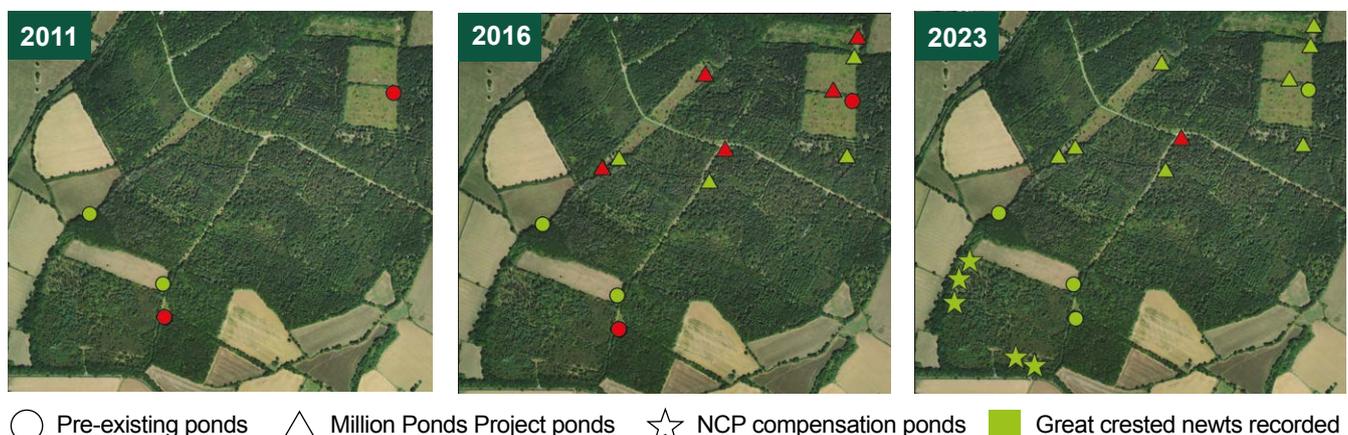


Fig. 22. This network of new ponds has increased great crested newt breeding habitat from two to 18 ponds in about 10 years, and provided new high quality habitat for other freshwater species.

CASE STUDY: Robinswood Hill Country Park

LPA: Gloucester City Council

Number of ponds: 3

Land use: Country Park
in urban fringe

Robinswood Hill is located next to Gloucester, offering 100 hectares of semi-natural habitats to the south-east of the city. Historic grazing and quarrying has created a mosaic of habitats, including ponds which support all three species of native newts. Gradual urban expansion, combined with the change in land use, has resulted in pond decline, increased disturbance and reduced connectivity to the wider countryside. Without intervention, there was a risk that the existing great crested newt population would seriously decline.

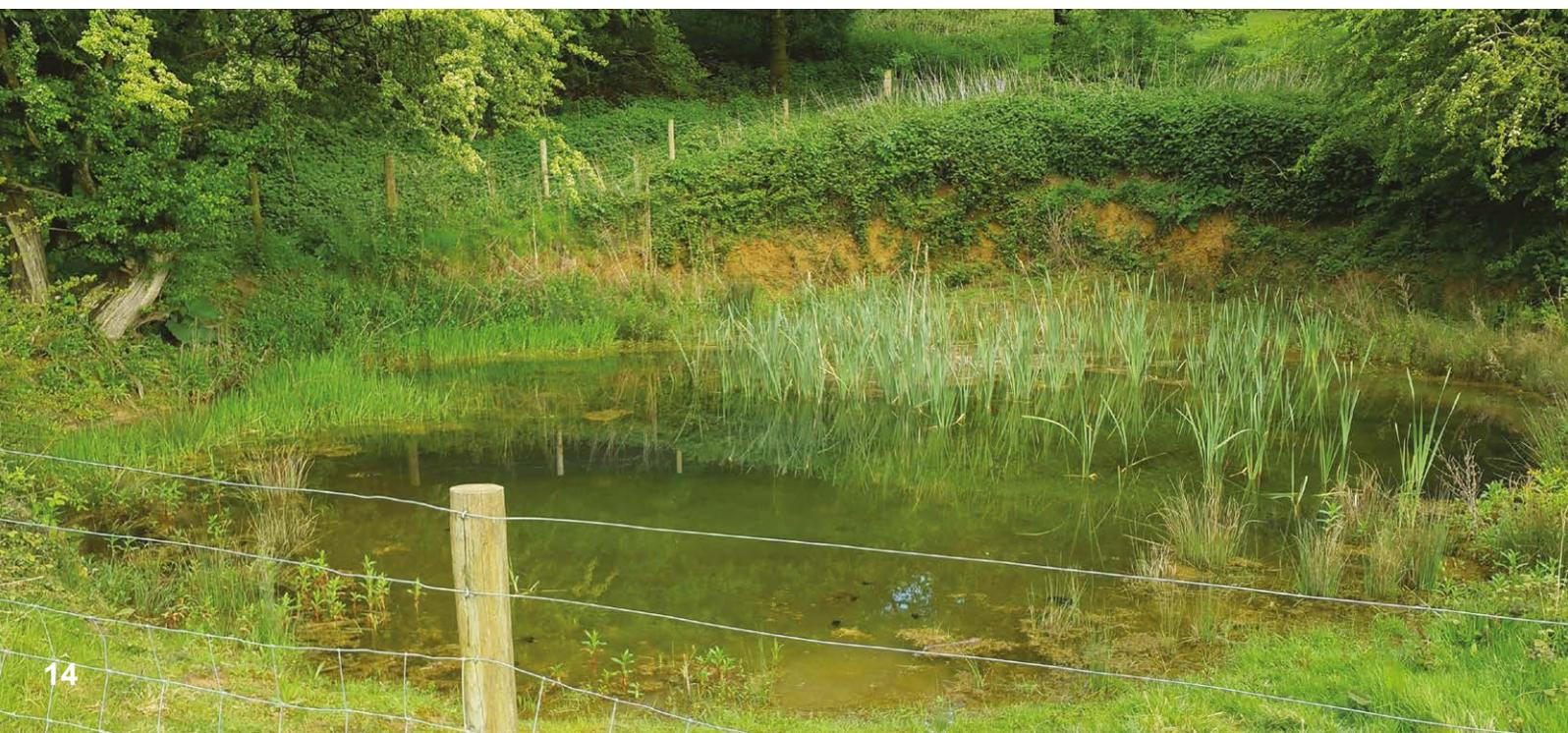
In November 2019, as part of the scheme, NCP was able to restore three ponds (Fig. 23), which were either dry or completely silted up. By the 2020 monitoring season (i.e. less than a year after restoration works) great crested newt had already been recorded in two ponds and in 2023 the species was detected in all three ponds. These results illustrate how pond restoration can quickly lead to the provision of high quality habitat for great crested newt, particularly at a site where most ponds are at a late succession stage and there is no suitable space for new ponds.

Managing land for wildlife in a country park, however, can be challenging. The Countryside Unit at Gloucester City Council has been dedicated to managing their ponds post-restoration, removing litter and maintaining fencing around the ponds to reduce disturbance, particularly from dogs. One of the biggest challenges is controlling the invasive plant parrot's feather, which appeared on one of our restored ponds two years after restoration. Working in partnership with the Council, we intend to continue our conservation work at Robinswood Hill by delivering more habitat for great crested newts at the south side of the park.

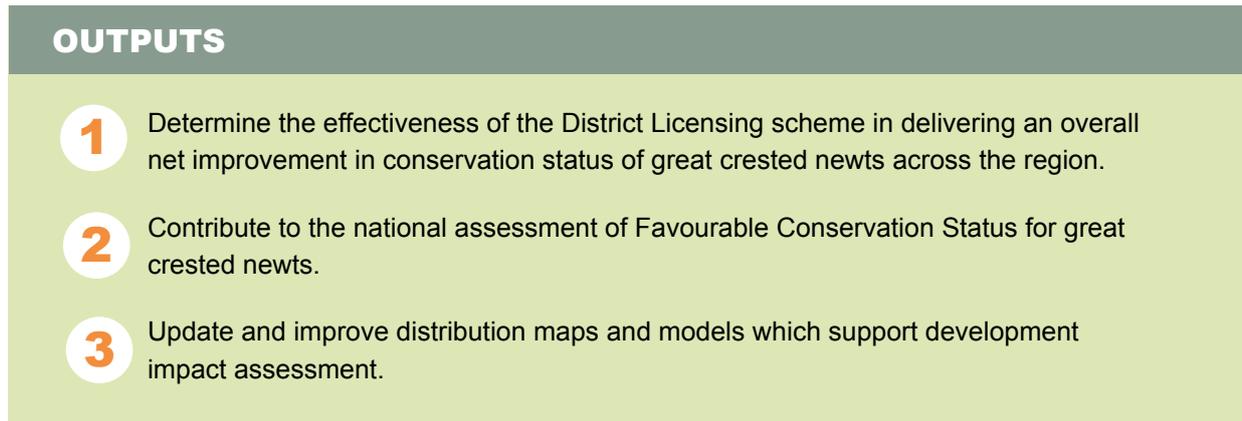
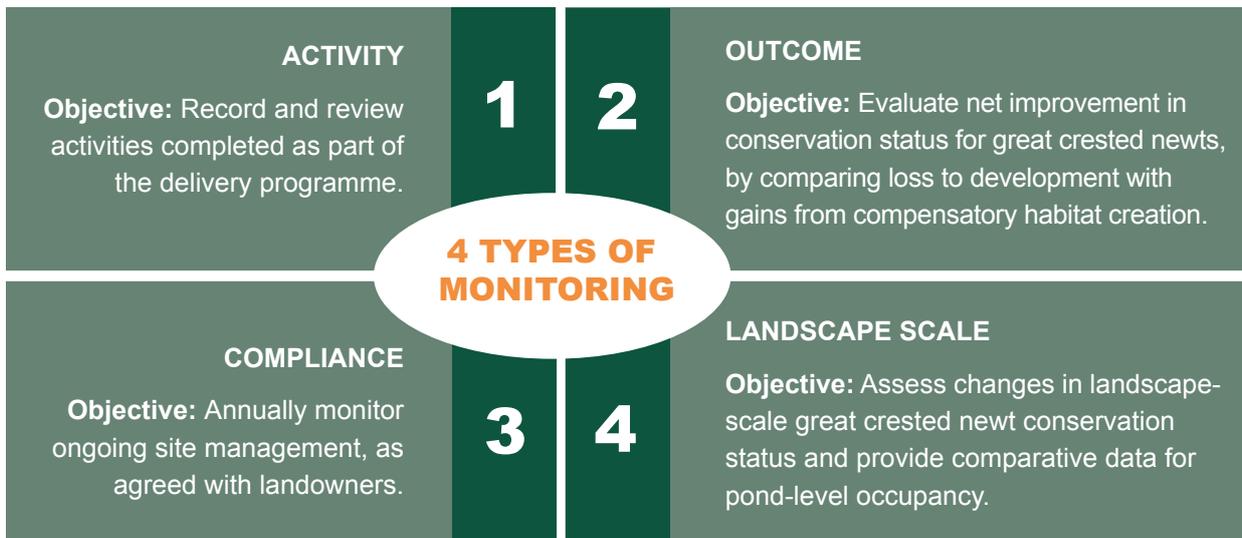
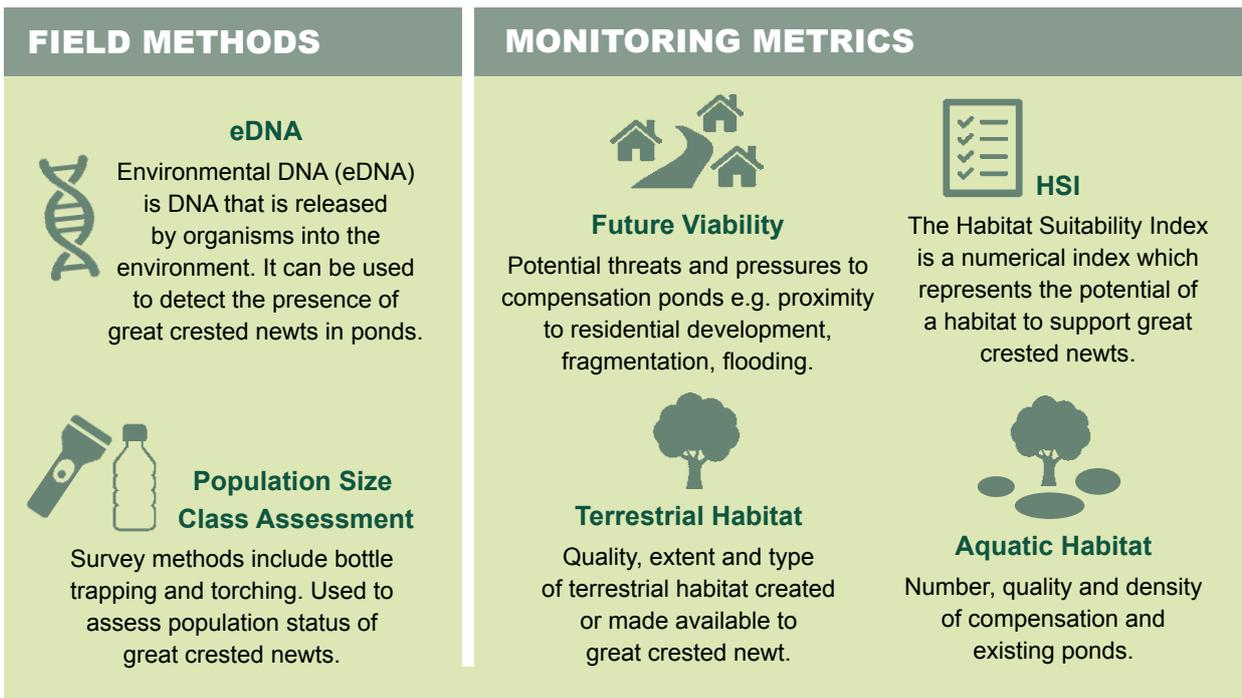


Fig. 23. Location of compensation ponds (green stars) at Robinswood Hill Country Park and existing ponds (blue dots) in the surrounding landscape.

This way, we aim to further extend the number of high quality breeding ponds for great crested newt and strengthen connectivity between the local population and the wider landscape.



Monitoring Programme Overview





The NatureSpace District Licensing Scheme is in operation across: Berkshire, Bedfordshire, Buckinghamshire, East Sussex, Gloucestershire, Hampshire, Milton Keynes, Northamptonshire, Oxfordshire, Staffordshire, Surrey and West Sussex.

naturespaceuk.com/district-licensing/where-we-operate/



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