

National Water Vole Database Project

**Part 1: PROJECT REPORT
for period 2013 - 2022**

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INTRODUCTION

The National Water Vole Database Project (NWVDP) is the only project of its kind in Britain. The database brings together and maps water vole and mink data in order to inform conservation efforts for water voles. Information about the project, including an interactive map, is held here: <https://www.wildlifetrusts.org/national-water-vole-database-mappingproject>.

The NWVD began in 2008, following revisions to the Biodiversity Action Plan (BAP) targets for water voles, which sought to create a shared vision for conservation across the devolved nations. The targets were: firstly, to maintain the range of water voles (730 occupied 10km grid squares, according to data available at the time), and secondly, to increase the range by an additional 105 occupied 10km grid squares by 2015.

A standardised method for storing and managing water vole and American mink data was devised, including setting out which data would be necessary to identify trends in distribution, and providing a standard method for analysing and mapping this data.

Previous reports tracked progress up to and beyond the 2015 target date, with the data available at the time suggesting that in the 10 years to 2015, there was a 30% decline in the places that these river mammals once lived across England and Wales.

The project now continues with two primary aims:

1. To assess the national status and trends of water vole distribution, and,
2. To use a geographic information system, or GIS, to enable strategic water vole conservation at the local, regional and national level.

2013-2022 Report

This report presents the latest update to the project, building on the detailed report of December 2020, which had sought to update our understanding of progress against the UK BAP targets. This report covers data for the 10-year period from January 2013 through to December 2022, and also draws on analysis of data from the period 2011 – 2020. Previous updates have obtained data pertaining to the entirety of Great Britain (GB), but due to an absence of funding, no new records were collated from Wales or Scotland during this edition. Funding to update the distribution and alert maps and create this report was provided by Natural England with in-kind contributions from The Wildlife Trusts.

METHODOLOGY

Data Collation and Formatting

At each report update, requests for water vole and mink presence and absence data are made to Local Environmental Records Centres (LERCs), PTES, individual Wildlife Trusts and other suppliers. This year, data was sourced solely from suppliers in England. However, it should be noted that the summary statistics relating to the period 2011 – 2020, referred to throughout this update, though not published as a stand-alone report, are based upon updated data obtained from both England and Wales. All data are quality-checked, cleaned, and formatted in Excel, ready for import and analysis in GIS.

Key Area Data Analysis and Mapping

The data is used to generate three tiers of map, which are explained in [Fig. 1](#).

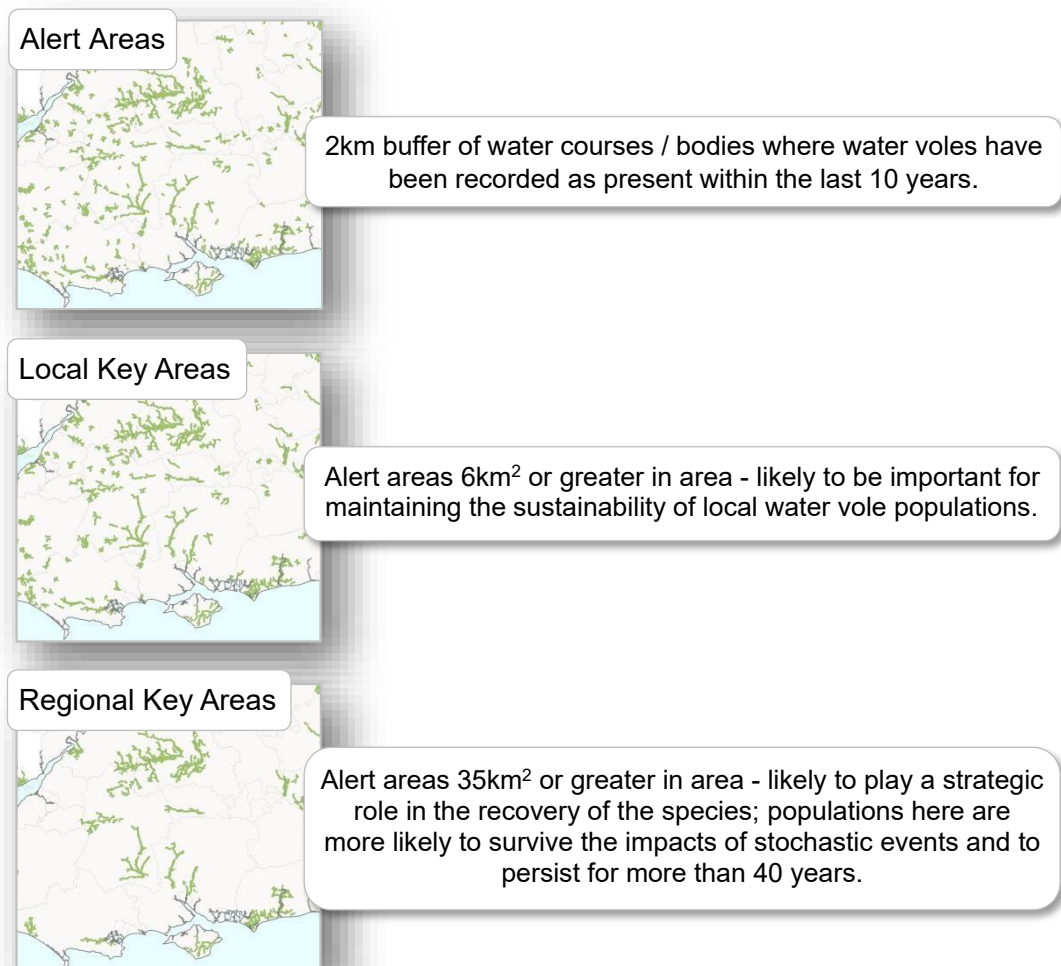


Fig. 1: The three tiers of map produced by the project.

The aim of the alert and key areas maps is to identify the areas known to support water vole populations and areas where some of the more robust populations may be found. Data covering a 10-year period is analysed to mitigate the skew caused by differences in surveyor effort and availability of data from year to year, and to ensure that Alert Areas are not lost due to changes in surveying capacity over time. It should be noted that the period covered by this report includes the duration of the Covid pandemic; the impact that this may have had on data collection is discussed in [Limitations](#).

The methodology for producing the alert and key areas mapping is based on work undertaken originally by the Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust, which is summarised in the second edition of the Water Vole Conservation Handbook (Strachan and Moorhouse, 2006). Mapping is produced by buffering water vole records to capture some of the potential surrounding habitat and areas within average water vole dispersal distance. A figure of 0.5km (measured from occupied watercourses) is used to capture surrounding habitat and a figure of 2km, as measured upstream or downstream from water vole records, is used to capture dispersal distance.

The three tiers of mapping (Alert, Local Key and Regional Key Areas, [Fig. 1](#)) have been produced for the 10 English River Basin Districts, for Wales, and for Scotland (12 sets of maps in total). An additional set of maps was introduced in the 2017 report in response to feedback from users, displaying current Alert Areas alongside Alert Areas based on historic data, in order to show areas previously favourable for water vole. Individual maps showing the Regional Key Areas across Britain and showing changes in RKAs since the previous report have also been produced. The full suite of maps is available in Part 2 of the report.

The methodology used to derive the alert maps is explained further in the [2017 project report](#) published by Hampshire & Isle of Wight Wildlife Trust and The Wildlife Trusts (McGuire & Whitfield, 2017).

Limitations

Data Accuracy

Data received are verified, further cleaned and formatted. However, due to the volume of records in the database, it is not possible to check each one for accuracy.

Recorder Effort

Recorder effort is an important factor to consider when comparing distribution over time; and funding for conducting water vole surveys has varied and reduced in several areas over recent years. In addition, the period covered by this update includes the duration of the Covid pandemic. It was expected that data collected during the survey seasons of 2020 and to a lesser extent 2021 might have been less numerous than in prior years, due to the direct impacts of national and local lockdowns which would have impeded surveying activity, and indirect impacts including subsequent capacity issues within environmental organisations (survey undertakers) or records centres (data providers). The data provided for these periods indicates that the number of surveys were not suppressed compared to prior years, records of water vole were in fact higher in 2021 compared to 2019, and therefore this is unlikely to have significantly affected results. In addition, by comparing averages between five-year periods, the impact of variations in effort over time, are reduced. Variations in spatial recorder effort are further reduced by analysing distribution by 10km grid squares.

Population versus Distribution

The outputs do not show population sizes, but rather the distribution of the species. Users should note that a square requires only one record to be positive, i.e., a record from even a single 1-hectare site within a 10km grid square would create the same output on the distribution map as records from multiple (or even all) 1-hectare sites within that square.

Areas of Known Water Vole Absence

In some parts of Britain, it is likely that water voles are now functionally extinct. Due to the 10year coverage in this report, some of these locations will feature as Alert Areas despite only absences being recorded there in recent years. However, the fact that these areas have, within the last 10 years, supported water vole populations suggests there is potential for reestablishment, given action to tackle the causes of their decline. It is hoped that the Alert Areas will continue to inform these conservation efforts such that robust water vole populations may be restored in the future.

Project Scope

The updated distribution and alert maps cover Scotland, England and Wales, although it should be noted that no new records were gathered for Scotland and Wales during this update.

RESULTS

Water Vole Distribution

Key Findings

- Despite a brief stabilisation of water vole distribution between 2014 and 2018, analysis indicates a subsequent recommencement of decline. 652 10km grid squares were recorded as occupied between 2018 and 2022, the lowest number since the calculation of the baseline in 2006.
- Based on the data now available, the overall decline in water vole distribution across Great Britain between January 2006 and December 2022 is currently estimated at 39%. For England alone, the figure stands at 31%.
- Since the last report (2020), 9 RKAs have lost their status, but 11 new RKAs have been identified.

The 2006 UK Biodiversity Action Plan set two key targets for water vole distribution, based on the data available at the time:

- Target 1: Maintain the current UK range (730 occupied 10km squares) of the water vole.
- Target 2: Achieve an increase in range by 50 new occupied 10km squares in the UK by 2010. Achieve a further increase in range by 55 new occupied 10km squares by 2015.

Since 2008, the NWVD has assessed the distribution of water voles against these targets. Data is analysed in five-year blocks to avoid the skew caused by fluctuations in recording effort, so for example the 2006 baseline is based on data from 2002 – 2006, and the 2022 occupancy level on data from 2018 – 2022. Since 2006, a trend of decline in distribution has predominated. Although abated by a brief period of stabilisation and slight growth between 2014 and 2018, numbers of occupied squares have continued to fall since, even declining beneath 730, the original baseline target. Using current records from the database, the calculated baseline for 2006¹ is 1071 occupied 10km squares (**Fig. 2**), considerably higher than the 652 returned in 2022, which is the lowest number seen during the period of analysis.

¹ As more historic data is incorporated into the national database, our understanding of distribution improves. Whilst present occupancy is only around 10% below the 2006 baseline, additional data tells us that distribution

This represents a 39% decrease in water vole distribution from the 2006 baseline.

Data collated for 2011 – 2020 indicated that the number of occupied grid squares was maintained at 730 in 2020, suggesting that there has since been a rapid decline in occupancy.

It should be noted that data has not been collated for Scotland and Wales since 2018 and 2020, respectively. This may be a contributory factor in the low grid occupancy in subsequent years. To account for this, figures were also calculated for England alone, as it is the only region with a continuous dataset in recent years. However, a decline was similarly evident (Fig. 3), albeit slightly less severe: an estimated 826 10km squares were occupied at the 2006 baseline, falling by 31% to 574 in 2022.

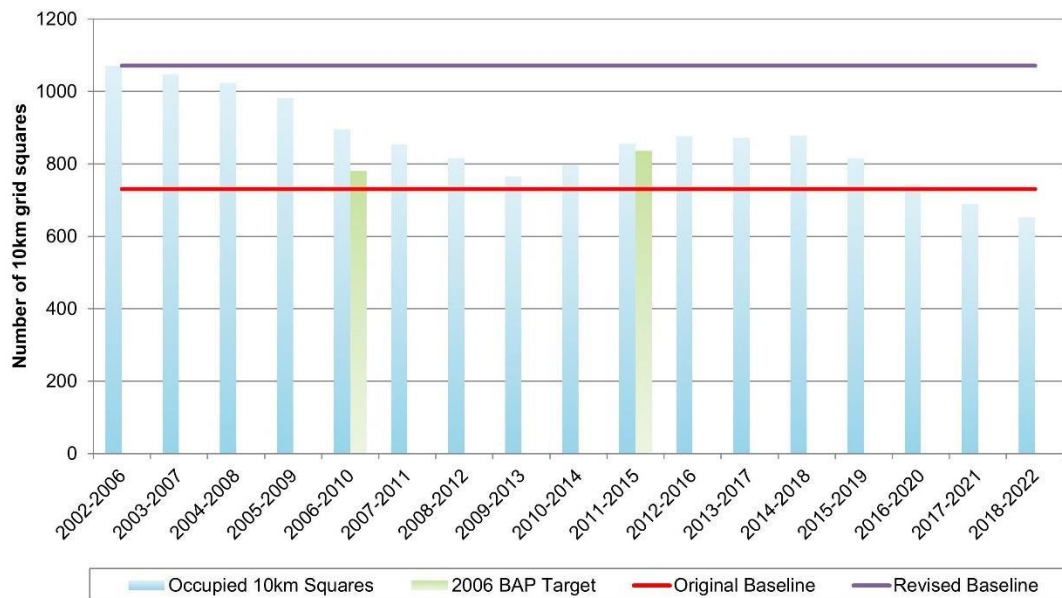


Fig. 2: Occupancy of 10km grid squares in England, Scotland and Wales by five-year reporting period, plotted against UK BAP targets, the 2006 baseline, and a revised baseline set using currently available data.

was in fact significantly higher than was thought at the time; this means that current occupancy in reality represents a significant drop below 2006 levels.



Fig. 3: Occupancy of 10km grid squares in England by five-year reporting period, plotted against a baseline set using currently available data.

Whilst considerable effort has been made to reverse the decline in water vole distribution, distribution has nonetheless fallen, and continues to fall, remaining significantly below the 2006 baseline. Furthermore, this decline is set against the context of an earlier extrapolated 94% decline in distribution between 1900 and 1998. (Strachan et al, 2011).

American Mink Distribution

The distribution of mink is a significant factor in water vole conservation. An efficient predator, its presence has decimated populations through direct predation as well as by impacting dispersal and breeding success, and its presence today is considered to be one of the key extant pressures preventing the recovery of water vole. To restore the species to a point where populations are viable in the long-term means ensuring that populations are resilient to, or free from, predation by non-native American mink.

As such, an understanding of the distribution of mink equips conservationists to take action to protect existing water vole populations, and to ensure that potential reintroduction sites offer the best chances of success. It enables deliverers to plan and undertake work to prevent the spread of, reduce (control) or potentially eliminate (eradicate) mink populations.

Prior mapping through the project provided a ‘total view’ of mink distribution by combining all records in the database up to 2012 into a single map. This map describes the full extent of mink distribution from the period when the first records were made, to a point in time of just

over a decade ago. Maps produced for this report then show the extent of mink distribution in the decade that followed and allow helpful comparisons between the ‘historic’ extent and mink’s ‘current’ distribution (Fig. 4).

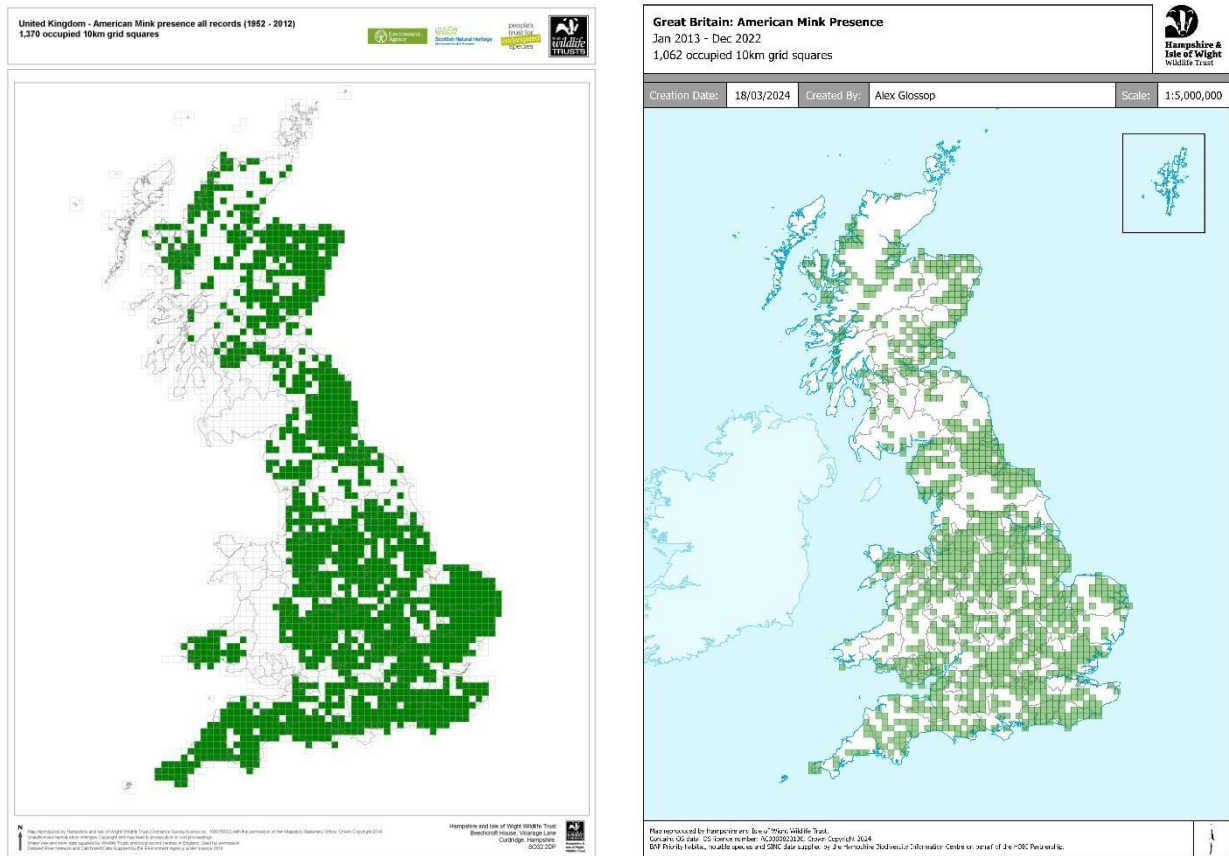


Fig. 4: Mink distribution (total extent) over the period 1952 – 2012 compared to the 10-year distribution over the period 2013 – 2022.

In the historic map, 1,370 10km grid squares contain records of mink. The map spans a period of approximately 60 years, so whilst not all squares are likely to have been occupied at all times, the map shows the greatest extent of the spread of American mink.

For the period 2013 – 2022, 1,062 squares show mink records, meaning that the area occupied by mink over this period is 308 grid squares smaller than the total historic extent of mink (even though the area occupied at any one time will never have been as large as 1,370 squares). The potential reasons for current distribution apparently being smaller than historic distribution are several. These include for example:

- It could be that mink are still present across their prior larger range, but recent records of their presence have not been made. This could particularly be a factor in areas where mink presence is well documented, as surveyors may not have made repeat

visit to areas well known to be occupied, as often the value of recording 'common' species is not clear.

- It could be that mink, being highly mobile, have vacated less-favourable areas as habitat quality and prey availability have changed. It is possible that animals would naturally vacate and recolonise areas over time, and that the current distribution simply represents a typical 10-year distribution within a larger potential range. However, practitioner observations on mink movements suggest that this is unlikely, with few habitats appearing unsuitable for them, and populations tending to naturally persist and, if anything, expand long-term, in the absence of any interventions to control them.
- It could be that mink distribution has reduced in response to control efforts. Here, looking at the map and comparing the density of grid square occupancy with the locations of known mink control schemes could indicate that this is the case. Areas of the map which are now noticeably less densely occupied include parts of Scotland, Northumberland, East Anglia, Hampshire and Cornwall – areas all associated with significant mink trapping programmes / water vole reintroduction projects.

Whilst in most cases a more detailed analysis would be required to reliably relate the decline in mink distribution to the mink control projects in the areas noted above, in the case of East Anglia the extent of the impact is well-documented.

In January 2024, the Waterlife Recovery Trust, which leads the mink eradication trial in the area, announced that across the project's core area (the central and eastern parts of the counties of Norfolk and Suffolk, an area of 5,852km², almost 5% of England), no evidence of mink was found during the 2023 breeding season. This result provides confirmation of the effectiveness of the methods employed, which centre on the use of 'smart' traps (which reduce both animal welfare concerns and volunteer effort compared to traditional traps), and the use of scent lures to attract the mink to the traps. The Trust have the ambition of rolling this methodology out across the country, and with recent funding from Natural England are expanding their work across a vast area around the existing project location, from the Thames to mid-Lincolnshire. The successes so far raise hopes that a mink-free Britain may soon be within reach.

Whilst the overall picture is one of a reduction in occupancy, there are some areas on the map which show mink range expanding into previously unoccupied areas, for example in parts of North and South Wales. This may represent a genuine expansion, the recent recording of mink

across areas where they were previously present but unrecorded, or a combination of the two. Whatever the true picture, this demonstrates the importance of data collection and collation, in order to understand the presence of American mink and to inform efforts to halt and reverse their spread for the benefit of water vole and a multitude of other native wildlife.

Changes in Regional Key Areas

RKA mapping was last undertaken for the period 2011 – 2020, with subsequent changes for the period 2013 – 2022 presented below. The results have been updated and are available in Part 2 of this report. A summary of the findings is presented in [Table 1](#), below.

Table 1: Summary of changes in Regional Key Areas between 2011 – 2020 and 2013 – 2022

Status	Criteria	Number of RKAs Affected	Area Change (sqkm)	
			Total	Average
New	Area increased above RKA threshold (35sqkm)	11	643.92	58.54
Increased	Increased in area	30	367.07	12.24
Maintained	No change or less than +/- 1sqkm change	6	1.78	0.30
Decreased	Decreased in area	17	-254.46	-14.97
Lost	Area decreased below RKA threshold (35sqkm)	9	-420.87	-46.76

11 new RKAs have been identified, all found in England. The new RKAs all represent the growth of existing LKAs, to the extent that they now meet the criteria for RKA. In one case, new records resulted in expansion that joined five separate LKAs together, forming a new RKA.

A further 30 existing RKAs have increased in area, with an average expansion of just over 12sqkm, while 12 RKAs retained their previous size.

While the decrease in area of 17 RKAs is troubling, the fact that a greater number have increased provides some positive context. Of those to decrease, most have seen an overall contraction from the extremities. However, of particular concern are the two instances where the decrease in area has split one previously large, single RKA into two smaller RKAs. This increases the risk of smaller, increasingly isolated populations developing, which are likely to be less viable in the long-term.

The final nine RKAs, present at the time of the last analysis, have lost their status due to a reduction in area below the 35sqkm threshold. This can generally be categorised in three ways: contraction, splitting into two smaller areas due to loss of a connecting Alert Area, or

complete loss of the entire area. In this edition, three RKAs fall into each of the three categories (Table 2). It should be noted that Scotland accounts for two of the three areas that were lost entirely, so this may reflect the lack of recent data from the region, rather than a complete disappearance of water voles.

Table 2: Assessment of changes resulting in loss of RKA status

RKA Location	Change
Beinn Eighe, Highland	Complete loss (possibly due to lack of records from Scotland)
Nr Dorusduain, Highland	Complete loss (possibly due to lack of records from Scotland)
Royston, West Yorkshire	Loss of connecting Alert Area, forming two LKAs and one Alert Area
Nr Glossop, Derbyshire	Loss of connecting Alert Area, forming two LKAs and one Alert Area
Shrewsbury, Shropshire	Complete loss
Rhayader, Powys	Contraction in area to LKA status (less than 35sqkm)
Between Chelmsford and Maldon, Essex	Loss of connecting Alert Area, forming two LKAs
Rye, East Sussex	Contraction in area to LKA status (less than 35sqkm)
Bridport, Dorset	Contraction in area to LKA status (less than 35sqkm)

Further work is critical to establish which of the changes are due to survey effort and which may be due to a genuine decline in water vole populations, particularly as RKAs represent some of the best habitat available to support the species in the long-term.

Taken in isolation, the changes to RKAs appear positive for water voles. The area covered by RKAs has increased by 5% since 2020, rising by 337sqkm to a total of 6924sqkm. More RKAs were identified (11) than lost (9), and significantly more increased (30) than decreased (17). However, this is at odds with the overall picture of reducing distribution. Although further study is required to truly understand the reasons for this, it may be reflective of successful work to restore key habitat areas, while declines continue in the wider countryside.

Progress against Biodiversity Targets

The NWVD draws together data which can inform action aimed at meeting conservation goals, as well as helping practitioners and policy makers to understand progress towards those goals. Although established to chart delivery towards meeting 2010 and 2015 BAP targets, the database today continues to serve a key function in both informing conservation efforts and in helping us to understand the ongoing changes in water vole distribution. Given the complexities and uncertainties involved in recording absolute numbers of water voles (see

Population Estimate below), distribution is, at present, the best measure we have of the species' Conservation Status. As such, understanding water voles' distribution, and changes to it, will remain critical to assessing progress towards achieving Favourable Conservation Status for the species, and halting the species' decline in line with new biodiversity targets set under the Environment Act 2021 (see [THE FUTURE OF WATER VOLE CONSERVATION](#)).

Population Estimate

The nature of water vole recording is prohibitive to a standard estimation of population; most surveys record presence or absence, rather than the number of individuals, so it is currently not viable to add counts to produce a total figure. However, it is possible to instead combine distribution data with population density. For this analysis, a density of four individuals per kilometre was assumed, based on the figure established by Mathews et al. (2018) which represents the median of density estimates in published literature. This was then multiplied by the total length of watercourses deemed likely to hold water voles. For this calculation, occupied watercourses falling geographically within the 2013 – 2022 dataset (Alert Areas, and for comparison, occupied 10km squares), were used as the current best representation of known water vole distribution.

The total length of watercourses within the Alert Areas was calculated to be 14,585.30km, giving a final population estimate of 58,341 water voles within Britain. The total length of watercourses within the occupied squares was calculated to be 46,535.60km, giving a final population estimate of 186,142 water voles within Britain. It can be concluded that the likely population is within this range, given that not all water courses will be occupied in every 10km square, but also that not all water courses with water voles present will be picked up by surveys.

Naturally, this figure should be treated as an estimate. Limiting factors include:

- The generalisation of the population density estimate. Not all habitats will hold four water voles per kilometre; for instance, reedbeds may hold between 25 and 50 individuals per hectare (Strachan et al. 2011), and even for linear habitats, the figure is an average, with upland and lowland environments having very different carrying capacities.
- As only watercourses within the most recent Alert Areas are included, only regions with a water vole record in the last 10 years contribute to the estimate. No allowance has

been made for additional, unrecorded water vole distribution, therefore the final total is likely to underestimate the true population.

- The water vole population fluctuates significantly throughout the year, experiencing a decline of approximately 70% during the winter. Winter mortality means that numbers will be suppressed in winter compared to a density-based estimate, since density figures in the literature are typically from pre- or post-breeding periods.

Few previous population estimates have been made, and a consistent method has yet to be established, making comparison to earlier figures difficult. Mathews et al. (2018) placed the population in England at 77,200 individuals, but it is impossible to know whether the lower 'Alert Areas' population figure calculated here reflects a decline in water vole population, is due to differences in method including smoothing of distribution areas, or is simply a result of the significant uncertainty inherent in this calculation. Further estimates are required in the coming years, if meaningful trends are to be identified from these figures.

Extent of Dataset

Table 3 shows the cumulative number of presence and absence records for water vole and mink held in the database, since publication of the first report in 2009. The figures in each column represent the total number of *records held* in the database up to the end of the year stated in that column. The total number of positive water vole records held to date is 164,577. Although the irregularity of recent updates makes precise analysis difficult, it is evident that the amount of data received by recent updates has increased, particularly since 2015. Empowerment of citizen scientists due to advances in recording technology and improved recording programmes by conservation bodies are both possible factors, although a detailed analysis of data sources would be required to determine with certainty. Regardless, the increasing flow of data into the project will only aid conservation efforts in the future.

It is important to note that the figures in the table represent the cumulative data held in the database for both presence and absence records used to analyse the spatial distribution of water voles, and do not suggest an increase in population size of either species.

Table 3: Total cumulative number of records held in the national database by year

Year	Water vole		American mink	
	Presence	Absence	Presence	Absence
2009	36,898	10,288	7,883	4,213
2010	42,006	10,463	8,582	4,213
2011	50,717	11,734	9,146	5,136
2012	62,080	12,512	12,730	5,282
2013	67,161	12,661	15,460	5,451
2014	71,922	12,913	16,109	5,645
2015	75,063	13,541	16,377	5,790
2016/17	94,474	16,089	18,456	6,637
2018	101,049	16,516	19,459	6,782
2019/20	148,753	17,495	21,522	6,972
2022/23	164,577	18,270	23,201	6,972

Some of the datasets collated by the project are extensive and include records dating back to the 19th Century. The earliest water vole and American mink records are dated 1861 and 1952, respectively. The majority of data, however, are from the mid-1990s to the present day. As refinements are made to databases held by Local Environmental Records Centres and additional past records are validated and digitised or removed due to ambiguity, revised datasets are occasionally supplied to replace some existing records in the project database.

Records by Data Supplier

Data for the current update was received from 44 different data suppliers across England, with historic records from 45 further data suppliers also used, including those from Scotland and Wales. The full list of current and historic data suppliers is included in Appendix 1.

Database of Reintroductions

As part of the project, the database of water vole reintroductions was updated for the first time since 2019. A further ten reintroductions were identified in the intervening period, including five in 2022. At time of writing, 60 known reintroduction projects have now occurred since 2001. The full database is included in Appendix 2.

THE FUTURE OF WATER VOLE CONSERVATION

The Environment Act 2021

Since the previous report was published, a landmark **Environment Act** has been brought into law, creating a range of conservation obligations which present significant opportunities for water vole conservation across England.

A section in the Act created an enhanced '**Biodiversity Duty**' by amending the Biodiversity duty contained in the Natural Environment and Rural Communities (NERC) Act 2006. This duty, which placed an obligation upon Public Authorities, including Local Authorities, and the Environment Agency to 'conserve' biodiversity, now in addition requires them to 'enhance' it through the exercise of their functions. This has positive implications for water vole conservation. For example, under the earlier obligation, when determining planning applications, Local Planning Authorities would previously have sought to limit harm to water vole in accordance with the duty, whilst under the strengthened duty they should also consider opportunities to *enhance* biodiversity, such as by considering habitat enhancement or creation opportunities to benefit water vole.

The Act also brought in a requirement for mandatory biodiversity gain as a condition of planning permission. Under this requirement, which came into effect for most sites in February this year, pre- and post-development levels of biodiversity must be calculated using a Defra-approved metric, and biodiversity must be left in a measurably better state than before the development took place, by a minimum of 10% compared to the baseline. This is termed '**Biodiversity Net Gain**'. The gain can be delivered through the creation or enhancement of habitats on-site or off-site, with habitat secured for at least 30 years via obligations such as conservation covenants. Under the metric, areas of 'strategic significance' for particular species or habitats score more highly, serving to discourage their loss (as developers would have to compensate more for the loss of an area classed as strategically significant than for one which is not) and also to encourage their enhancement (as creation or enhancement will score more highly, meaning developers can more easily meet their '10% increase' requirements). Such areas should be identified in 'a local strategic planning document', meaning that the Alert, Local Key and Regional Key Area maps generated from the National Water Vole Database would be a key resource that Local Authorities could draw upon to identify parts of their areas as being strategically significant for water vole.

In Part 1, Chapter 1 of the Act, requirements are set out for the establishment of a series of Environmental targets. Specified within the Act itself was a requirement to set a target to halt the decline in the abundance of species by 2030, and, in addition, the Act required at least one

further long-term biodiversity target to be set. Details of all **biodiversity targets** have since been set out in a **Statutory Instrument**. Building on the abundance target, a long-term target was set to then *reverse* the decline in species abundance by 2042, such that the species abundance index is higher than now, and at least 10% higher in 2042 than in 2030. Furthermore, a species extinction risk target requires that aggregate risk of extinction for all species in the 2022 Red List for England is reduced by 2042 compared to the baseline, and a habitat target requires the restoration or creation of 500,000ha of ‘wildlife-rich habitats’ by 2042. There is scope for all of these targets to benefit water vole, as set out further in **Table 4**, below.

Finally, the Act allows, for England, the development of ‘**Species Conservation Strategies**’, defined as ‘a strategy for improving the conservation status of any species of fauna or flora’. Natural England are tasked with preparing and publishing these strategies to safeguard the future of species at greatest risk, and their initial use is focused around securing better outcomes for particular species protected under the Wildlife and Countryside Act 1981 (WCA). The WCA creates legal obligations to protect particular species, such as by requiring action during the development of land to mitigate or compensate for any harm that would be caused to the species or its habitat. The strategies will find better ways to comply with these existing legal obligations, by identifying strategic actions that could better help to protect the species at risk and to improve their conservation status. Water vole is one of the first species for which a SCS will be established.

The Wildlife Trusts have worked with Natural England, The Mammal Society and other partners to inform the development of a pilot SCS for the East Anglia region. The strategy, still in draft, considers what Favourable Conservation Status would look like for the species in an East Anglia context (i.e. the objective that actions should aim to achieve), and identifies priorities for strategic action across strategy area to tackle the pressures impacting the species (i.e. how can the objectives be met). Potential actions posed by project partners include: support to **Local Authorities** around planning validation, data collection, model planning conditions and training for familiarisation with SCS requirements, changes to requirements and deliverables under **species licences**, and **strategic mink control and habitat enhancement**, through routes including BNG and environmental land management schemes. Work is ongoing to refine the proposals and put in place structures and resources for the piloting of the SCS from 2024 onwards.

Table 4: The potential benefits of Environment Act 2021 provisions to water vole conservation in England.

Environment Act Provision	Potential to benefit Water Vole
Enhanced Biodiversity Duty	<p>Applying to public authorities including, of relevance to water vole: Local Authorities (development control), and the Environment Agency, Internal Drainage Boards and Water companies (riparian management). Creates an obligation to ‘enhance’ biodiversity, building on the prior duty to ‘conserve’ it. This shifts the emphasis away from merely ‘avoiding harm’ through decisions and actions taken, to instead ‘providing benefit’. Where one exists, having regard to the provisions of a Species Conservation Strategy would be a key means of demonstrating compliance with the enhanced biodiversity duty.</p>
Biodiversity Net Gain	<p>Net Gain requirements in and of themselves create an incentive to avoid harm to, and deliver benefit for water vole, but this could be further enhanced by the identification of important water vole habitat as an area of ‘strategic significance’, informed by NWVD Alert and Key Area maps. BNG is also identified as a route through which the aims of the pilot SCS, and other future potential SCSs, could be delivered.</p>
Targets: Halt and reverse species decline	<p>The Statutory Instrument (SI) putting in place the legal detail of the ‘species abundance target’ (to halt a decline in the abundance of species by 2030) and the ‘species abundance: long term target’ (to reverse the decline of species abundance by 2042) confirms (via Schedule 2) that water vole (<i>Arvicola amphibius</i>) is one of the ~1200 species to be included within the target. This creates a driver to both monitor the status of the species, with the benefits that increased awareness of water voles’ status may bring to conservation efforts, and more directly, the driver to take action to halt and reverse the species’ decline.</p>

<p>Target: Reduce extinction risk</p>	<p>The SI similarly sets out the detail of the target to ‘reduce the risk of species’ extinction by 2042, when compared to the risk of species’ extinction in 2022.’ It applies to a set of baseline species, meaning those listed in the 2022 Red List Index for England, which includes water vole. This creates a further driver for species monitoring and conservation delivery as described for the species decline targets.</p>
<p>Target: Create or restore 500,000ha of habitat</p>	<p>This target requires the restoration or creation of 500,000ha of wildlife-rich habitat by 2042, outside of protected sites.</p> <p>Qualifying habitats are those listed under Section 41 of the Natural Environment and Rural Communities Act 2006 (which includes rivers, ponds, wetlands such as reedbeds and fens, and various lakes), or in Schedule 1 of the SI, which further includes streams and floodplain wetland mosaics.</p>
<p>Develop Species Conservation Strategies</p>	<p>As a species protected under the Wildlife and Countryside Act 1981, and frequently impacted by development proposals, water vole has been identified as one of the first species for which a SCS should be piloted. Initial activity will primarily benefit water vole in the pilot area of East Anglia, however some deliverables may have wider applicability and benefit, meaning that if the pilot is deemed a success, then other water vole populations around the country could also benefit from subsequent SCS establishment.</p>

Collectively, these provisions create a significant opportunity for the upscaling of water vole conservation delivery and, in terms of being able to monitor the changing status of water vole across England, a key and ongoing role for the National Water Vole Database.

Favourable Conservation Status

Based in part upon an understanding of the data held by the NWVD, Natural England have undertaken work to define Favourable Conservation Status (FCS) for water vole in England.

Favourable conservation status is considered to mean 'the minimum threshold at which we can be confident that the species is thriving and is expected to continue to thrive sustainably in the future'.

Three core parameters of FCS are:

- Natural range and distribution (where the species occurs).
- Population (how many there are of the species).
- The extent and quality of habitat supporting the species population.

At the time of publication, Natural England are consulting with expert stakeholders on the final definition of FCS for water vole in England, although an initial assessment of status against the draft definition has confirmed that water vole cannot currently be considered to be in favourable conservation status in England.

Once refined and confirmed, the definition will act as a metric against which the success of conservation efforts for the species in England can be gauged. Distribution and, by extension, population, can be derived from data held in the NWVD, meaning that the database will continue to provide a valuable means of charting progress with conservation efforts over time.

Water Vole Status across Britain

Natural England's above work provides important context because, since publication of the last update to the NWVD, the status of water vole across Britain has been assessed as set out in the Mammal Society's publication: [Red List for Britain's Mammals – Mammal Society](#)

The assessment determined the Red List Status for water vole across Britain as follows:

GB – Endangered

England – Endangered

Wales - Endangered

Scotland – Near Threatened

These classifications create a renewed focus on the plight of the species, with the assessment noting that English, Welsh and Scottish populations are all inferred to have declined very rapidly over recent years. Against UK, Welsh and Scottish government ambitions around nature recovery, these new assessments paint a worrying picture.

It is therefore hoped that the NWVD can continue to play a valuable role in communicating the extent of, and changes in, water vole distribution (and population), and to provide evidence with which to equip practitioners, policy makers and others to act.

UPDATED MAPPING

Monitoring Change in Regional Key Areas

RKA mapping was last undertaken for the period 2011 – 2020. The RKAs have been compared between the period 2011 – 2020 and 2013 – 2020. The results have been mapped and are available in Part 2 of this report, and the findings are discussed in more detail in the [Changes in Regional Key Areas](#) section. An extract of the new map is provided below in [Fig. 5](#).

This map can be used to demonstrate conservation success stories by illustrating those RKAs which have grown or are new. Importantly, it can also be used to identify areas of concern, where available data suggests a decline, and for which targeted survey work will help establish whether these regionally important populations are still present.

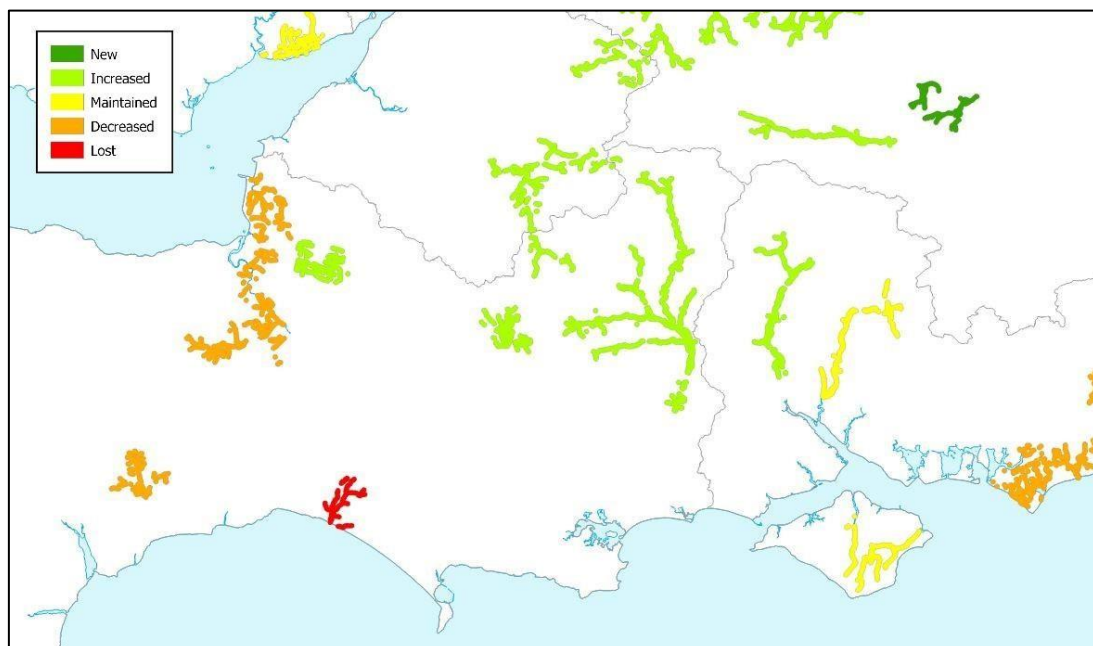


Fig. 5: Extract from the new map showing change in Regional Key Areas.

SUGGESTED USES OF THE MAPS

The maps from the National Water Vole Database Project could be used in numerous ways to further water vole conservation. The following list highlights some potential uses:

- **Habitat connection and expansion:**

- Use maps showing Local and Regional Key Areas to identify opportunities to expand key areas, or to connect smaller Local Key Areas to create a larger Regional Key Area.
- Identify opportunities for partnership working between neighbouring landowners, local authorities and conservation organisations, particularly by looking at where Local and Regional Key Areas cross administrative boundaries (and so may otherwise be overlooked).
- In England, feed LKA and RKA maps into Local Nature Recovery Strategies and Catchment Plans to indicate where funding for conservation efforts locally should be directed.

- **Focus survey effort:**

- Use historic Alert Areas to target survey effort to gather more up-to-date information on the status of water voles in those areas.
- Plan investigations into whether there is scope for reintroduction (if the habitat is still favourable), whether mink control is required or whether habitat restoration work is required in areas where water voles are no longer present.

- **Evidence for funding:**

- Use Local and Regional Key Area maps to inform the development of collectively agreed agri-environment scheme applications, supporting neighbouring landowners to select complementary options to benefit water vole.
- Include the maps as supporting evidence in funding bids for targeted conservation work.
- Use the maps to set funding priorities or assess grant applications. In England, this could include informing the targeting of future ELM funding.

- **Site protection:**

- Present Local Key Area maps as evidence to inform the designation and management of statutory and non-statutory sites.
- Consider the maps during Local Plan development and to inform responses to planning consultations.

• **Existing population protection:**

- Share alert maps with organisations that undertake regular maintenance tasks along watercourses, and so need to be aware of the potential presence of water voles. In England, this information could support Public Authorities in adhering to the enhanced 'Biodiversity Duty' placed upon them by the Environment Act.

CONCLUSION

As further records are added, the NWVD continues to advance our understanding of water vole distribution, facilitating more informed decision-making to aid water vole conservation. The database currently hosts almost 165,000 records of water vole presence, a true wealth of evidence. Recent updates, particularly since 2015, have yielded an increasing amount of data, reflecting an increase in recording. The commitment of the conservation community towards this species remains strong.

However, the picture painted by the data is less encouraging. The previous published report, covering the period 2009 – 2018, identified that the 2006 BAP targets were set too low, as they were based on an incomplete data set, and proposed revised targets for water vole distribution. A period of recovery was observed between 2014 and 2018, providing hope that the species could continue to expand its range once more. However, the latest analysis suggests that this stabilisation was temporary, and distribution has since continued to contract. Rather than climbing towards the revised targets, grid square occupancy has instead fallen below even the original targets. Only 652 10km squares are estimated to have been occupied from 2013 – 2022, the lowest figure in the 16-year study period, and a 39% decrease from the baseline number for 2006: 1071 occupied grid squares. It was postulated that the project's recent lack of data from Scotland and Wales may have contributed to these figures, but analysis suggested that water voles have suffered a similar contraction of 31% in England during the same period. In addition, it is possible that reduced survey effort during the Covid pandemic has had a bearing on the results. However, the number of records submitted in 2020 and 2021 both exceeded 2019, indicating that Covid may not have contributed more than other factors affecting recorder effort. Regardless of any limitations of data collection over this period, the general trajectory of water vole occupancy over the course of the project is clearly downwards. Furthermore, these figures are particularly concerning, given that the species had already been lost from approximately 94% of its former range in the decades before 2006.

A population estimate was calculated from the distribution data, assuming a population density of four water voles per kilometre of occupied watercourse. This puts the current British population between 58,341 - 186,142 individuals. However, there is significant uncertainty associated with the method and little comparable data, so caution is advised when drawing conclusions from these values. Repetitions of this calculation in future years will be necessary if trends are to be identified with confidence.

More positive news can be found in the analysis of RKA change. Comparison with the last iteration (2011 – 2020) indicates that the area covered by RKAs has increased by 5.1%, bringing the total up to 6924sqkm. When last assessed in 2020, the overall change had been negative compared to the prior report, so this expansion reverses that trend. 11 new RKAs were identified while only nine were lost, and significantly more increased in size than decreased. This constitutes tentative, but heartening evidence that water voles can expand outwards from their strongholds and recolonise neighbouring areas. The expansion of RKAs and the overall reduction in range are contradictory, but may indicate that successful conservation strategies are allowing water voles to thrive in their strongholds, while they continue to struggle in areas of lower conservation priority. If this is the case, it implies that more must be done to improve the general condition of the Britain's waterways, to allow the species to survive with less direct assistance.

In light of the above findings, and in order to further conservation efforts for the species across England, Wales and Scotland, it is proposed that the NWVD continues to be used:

- To provide Alert, Local Key and Regional Key Area maps which continue to inform land managers and policy makers about the recent or current presence of water voles in order to inform management practices, protection policies and species recovery efforts.
- To inform the development of key strategic approaches to nature recovery, including efforts to ensure that 30% of land is managed for nature by 2030, in line with international commitments.
- To underpin the setting of targets or ambitions which drive conservation efforts, in particular:
 - The developing definition of Favourable Conservation Status for England and any equivalents in Scotland and Wales.
 - The objectives of Species Conservation Strategies in England.
 - The aims of species recovery programmes across all three nations, and
- To monitor progress towards nature recovery ambitions, and in particular the target to halt the decline of species under the Environment Act 2021.

More than fifteen years after the establishment of the NWVD project, the project's outputs are no less relevant to our continued efforts to ensure the conservation and recovery of a species

often termed 'Britain's most rapidly declining mammal'. If we are to ensure that the water vole is not lost from our countryside, we must continue to make use of the project's outputs to inform policies, practices and conservation ambitions, interrogating and utilising this significant data resource to support decision making, project planning and to measure our impact. If we are unsuccessful in doing so, there is a real risk that the database will instead continue to chart the contraction and potentially the full loss of the population of this most charismatic of mammals – a failure that would be regarded by conservationists and communities alike as a monumental tragedy. It is our collective responsibility to ensure that this does not come to pass.

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APPENDIX

Appendix 1:

List of Project Data Suppliers

Suppliers of water vole and / or mink data for England, Scotland and Wales, 2008 onwards.

Suppliers of water vole and American mink data from 2008 onwards	
ENGLAND	
Bedfordshire and Luton Biodiversity Recording and Monitoring Centre (Beds & Luton records)	Isle of Wight Local Records Centre
Bedfordshire, Cambridgeshire & Northamptonshire, Wildlife Trust for (Cambs records)	Kent and Medway Biological Records Centre
Berkshire, Buckinghamshire & Oxfordshire Wildlife Trust	Lancashire Environment Record Network
Bristol Regional Environmental Records Centre	Leicestershire & Rutland Wildlife Trust
Buckinghamshire and Milton Keynes Environmental Records Centre (BMERC)	Leicestershire and Rutland Environmental Records Centre (LRERC)
Cambridgeshire and Peterborough Environmental Records Centre (CPERC)	Lincolnshire Environmental Records Centre (Greater Lincolnshire Nature Partnership)
Cornwall and the Isles of Scilly, Environmental Records Centre for	Merseyside BioBank
Cumbria Biodiversity Data Centre	Norfolk Biodiversity Information Service
Derbyshire Biological Records Centre (DBRC) c/o Derbyshire Wildlife Trust	North and East Yorkshire Ecological Data Centre
Devon Biodiversity Records Centre	North York Moors National Park Authority
Doncaster Local Records Centre	Northamptonshire Biodiversity Records Centre
Dorset Environmental Records Centre	Northumberland Wildlife Trust
Dorset Wildlife Trust	Nottinghamshire Biological and Geological Record Centre
Durham Wildlife Trust	Nottinghamshire Wildlife Trust
EcoRecord (Birmingham)	RECORD LRC for The Cheshire Region
Environmental Records Information Centre North East	Sheffield & Barnsley BRCs (Sheffield City Ecology Unit)
Essex Wildlife Trust	Sheffield & Rotherham Wildlife Trust
Essex Wildlife Trust Biological Records Centre	Shropshire Mammal Group c/o Shropshire Wildlife Trust
Gloucestershire Centre for Environmental Records	Somerset Environmental Records Centre
Greater Manchester Local Record Centre (GMLRC)	Staffordshire Ecological Record
Greenspace Information for Greater London	Suffolk Biodiversity Information Service
Hampshire & Isle of Wight Wildlife Trust	Suffolk Wildlife Trust

Hampshire Mammal Group	Surrey Biodiversity Information Centre
Herefordshire Biological Records Centre	Sussex Biodiversity Record Centre
Hertfordshire & Middlesex Wildlife Trust	Tees Valley Wildlife Trust (data provided by ERIC NE)
Herts Environmental Records Centre c/o Herts & Middlesex WT	Thames Valley Environmental Records Centre
Warwickshire Biological Records Centre	Wiltshire and Swindon Biological Records Centre
Warwickshire Wildlife Trust	Worcestershire Biological Records Centre
Waterlife Recovery East (East Anglia)	Yorkshire Wildlife Trust
West Yorkshire Ecology Service	

SCOTLAND	WALES
Argyll Biological Records Centre	Brecon Beacons National Park Authority
Cairngorms Water Vole Conservation Project	Gwent Wildlife Trust
Caithness Biodiversity Information Group	Natural Resources Wales
Fife Nature Records Centre (FNRC)	Radnorshire Wildlife Trust
Forestry & Land Scotland (formerly Forestry Commission Scotland)	Wildlife Trust of South & West Wales
Glasgow Museums Biological Records Centre	Wildlife Trusts Wales/ Ymddiriedolaethau Natur Cymru
Highland Biological Recording Group	Cofnod (North Wales)
John Muir Trust	Powys and BBNP Biodiversity Information Service
NBN Atlas	South East Wales Biodiversity Records Centre
North East Scotland Biological Records Centre	West Wales Biodiversity Information Centre
Perth Museum Biological Records Centre	
Scottish Invasive Species Initiative	
Scottish Natural Heritage	
South West Scotland Environmental Information Centre	
The McManus: Dundee's Art Gallery and Museum	
The Wildlife Information Centre (SE, Lothian, Borders and part-central Scotland)	
NATIONAL	
People's Trust for Endangered Species	

Appendix 2:

Database of Reintroductions

National Water Vole Database Project, Part 1: Project report for period 2013 – 2022

Known water vole reintroductions in Britain from 2001 onwards. Please note that coordinates have been approximated in some cases and may not represent the exact release site. Information for some releases has been redacted at the landowner's request.

Project ID No.	Project Name	Project Lead	Reintroduction Site	Grid Central East	Grid Central North	Year	No. of Animals
1	<i>Unknown</i>	Environment Agency Wales	Llangors	315000	225000	2009/10	400
2	Reintroducing water voles to the River Dore	Game Conservancy & Wildlife Trust	River Dore	335000	235000	2006-08	400
3	Trossachs Water Vole Project	Forestry Commission	Queen Elizabeth Forest Park - Aberfoyle	255000	705000	2008-10	1000
4	Water Vole Recovery Project	Severn Trent Water / Warwickshire Wildlife Trust	Brandon Marsh, Kirkby in Ashfield	455000	355000	2011	200
5	Water Vole Recovery Project	Severn Trent Water / Warwickshire Wildlife Trust	Netheridge Nature Reserve	385000	215000	2006	150
6	Arun and Rother Connections Project	Wildfowl and Wetlands Trust	Arundel	505000	105000	2006	200
7	<i>Unknown</i>	Wildfowl and Wetlands Trust	Barn Elms Reservoir	525000	175000	2001/02	150
8	<i>Unknown</i>	Essex Wildlife Trust	River Colne	605000	215000	2009/10	600
9	<i>Unknown</i>	Prologis Ltd / London Wildlife Trust	Dartford Park	555000	175000	2003/04	200
10	<i>Unknown</i>	Private Landowner	-	-	-	2002	<i>Unknown</i>
11	<i>Unknown</i>	RSPB / London Wildlife Trust	Rainham Marsh	555000	175000	<i>Unknown</i>	<i>Unknown</i>
12	<i>Unknown</i>	WildCRU	Pagham Harbour	485000	095000	2002/03	400
13	<i>Unknown</i>	WildCRU / BBOWT	Upper Thames	435000	215000	2003/04	200
14	<i>Unknown</i>	Tale Valley Trust	River Tale	305000	105000	2004/05	400
15	<i>Unknown</i>	EA / East Devon District Council	River Axe	335000	105000	2009/10	300
16	<i>Unknown</i>	Kent Wildlife Trust	Ruxley Gravel Pits	545000	175000	2001/02	200
17	<i>Unknown</i>	Gosport BC	Alver Valley	455000	105000	2012/13	400
18	<i>Unknown</i>	MOD Catterick	Foxglove Covert	415000	495000	2010	300
19	<i>Unknown</i>	Rutland and Leicestershire WT	Rutland Water	495000	305000	2011/12	800
20	<i>Unknown</i>	Ayresshire Rivers Trust	Ayresshire - Darley Burn, Troon	235000	635000	2011/12	150
21	<i>Unknown</i>	Ayresshire Rivers Trust	Ayresshire - Slaphouse Burn, Ayr	235000	615000	<i>Unknown</i>	<i>Unknown</i>
22	<i>Unknown</i>	Moors Valley Country Park	Moors Valley	415000	105000	<i>Unknown</i>	300
23	<i>Unknown</i>	Bristol Zoo - Chris Spelling, Hawk and Owl Trust	Portbury Docks	355000	175000	2003	<i>Unknown</i>
24	<i>Unknown</i>	Cumbria WT - MOD Alston	Alston, Cumbria	375000	545000	2004/05	<i>Unknown</i>
25	<i>Unknown</i>	Mammals Trust UK & Bedford Lakes Country Park	Bedford Lakes Country Park	505000	175000	2002/03	400
26a	The Meon Valley Water Vole Project	South Downs NP / Hampshire & Isle of Wight WT	River Meon: Upper Titchfield Haven	455000	105000	2013/14	564
26b	The Meon Valley Water Vole Project	South Downs NP / Hampshire & Isle of Wight WT	River Meon: Abbey Meadows, Titchfield	455000	105000	2014	173
26c	The Meon Valley Water Vole Project	South Downs NP / Hampshire & Isle of Wight WT	River Meon: Fontley	455000	105000	2014	60
26d	The Meon Valley Water Vole Project	South Downs NP / Hampshire & Isle of Wight WT	River Meon: Warnford	455000	105000	2014	14
26e	The Meon Valley Water Vole Project	South Downs NP / Hampshire & Isle of Wight WT	River Meon: Mayles Lane, Wickham	465000	125000	2014	247
26f	The Meon Valley Water Vole Project	South Downs NP / Hampshire & Isle of Wight WT	River Meon: Kingsmead	455000	115000	2015	43

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26g	The Meon Valley Water Vole Project	South Downs NP / Hampshire & Isle of Wight WT	River Meon: Mislingford, Kingsmead	455000	115000	2015/16	62
26h	The Meon Valley Water Vole Project	South Downs NP / Hampshire & Isle of Wight WT	River Meon: Holywell	455000	115000	2015/16	10
26i	The Meon Valley Water Vole Project	South Downs NP / Hampshire & Isle of Wight WT	River Meon: St Clairs, Soberton	455000	115000	2015	415
26j	The Meon Valley Water Vole Project	South Downs NP / Hampshire & Isle of Wight WT	River Meon: Brockwood House Meadow	465000	115000	2016	183
26k	The Meon Valley Water Vole Project	South Downs NP / Hampshire & Isle of Wight WT	River Meon: Exton	465000	125000	2016	169
26l	The Meon Valley Water Vole Project	South Downs NP / Hampshire & Isle of Wight WT	River Meon: Midlington	460800	117900	2016	205
26m	The Meon Valley Water Vole Project	South Downs NP / Hampshire & Isle of Wight WT	River Meon: East Meon	468400	121800	2017/18	278
26n	The Meon Valley Water Vole Project	South Downs NP / Hampshire & Isle of Wight WT	River Meon: Frogmore	468400	122100	2017	57
26o	The Meon Valley Water Vole Project	South Downs NP / Hampshire & Isle of Wight WT	River Meon: Drayton	466800	123400	2017/18	174
26p	The Meon Valley Water Vole Project	South Downs NP / Hampshire & Isle of Wight WT	River Meon Meon: Meonstoke	461200	119900	2017	16
26q	The Meon Valley Water Vole Project	South Downs NP / Hampshire & Isle of Wight WT	River Meon: West Meon	464300	123900	2018	163
27	Unknown	Westland Countryside Stewards (WCS)	Bude	225000	105000	2013/14	550
28	Unknown	Gwent Wildlife Trust - Alison Rees, Water Vole Project Officer	Magor Marsh	345000	185000	2013	200
29	Unknown	Natural Resources Wales / Wildlife Trust of South and West Wales	Ffrwd Farm Mire, Pembrey	245000	205000	2014	200
30	Unknown	Private Landowner	-	-	-	2014	120
31	Unknown	Private Landowner / Derek Gow Consultancy	Thurlestone	265000	045000	2014	150
32	Unknown	Essex Wildlife Trust	Thorley Wash	545000	215000	2015	Unknown
33	Unknown	Vale of Glamorgan Council, Natural Resources Wales, Wildlife Trust of South & West Wales	Cosmeston Country Park, Penarth	317634	169233	2017/18	200
34a	Unknown	WildCru	Ouse	465000	235000	2006	Unknown
34b	Unknown	WildCru	Ouse	465000	235000	2006	Unknown
35b	Unknown	WildCru	Lower Windrush	435000	205000	2005	Unknown
35a	Unknown	WildCru	Lower Windrush	435000	205000	2005	Unknown
36a	Unknown	WildCru	Thame	435000	205000	2006	Unknown
36b	Unknown	WildCru	Thame	435000	205000	2006	Unknown
37	Unknown	WildCru	Swere	435000	205000	Unknown	Unknown
38	Unknown	WildCru	Evenlode	445000	215000	Unknown	Unknown
39a	Unknown	WildCru	Glyme	445000	215000	2005	Unknown
39b	Unknown	WildCru	Glyme	445000	215000	2005	Unknown
40	Water Vole Recovery Project	Severn Trent Water / Warwickshire Wildlife Trust	Kirkby in Ashfield	445000	355000	Unknown	Unknown
41	Kingsnorth Water Vole Mitigation Scheme	Severn Trent Water / Warwickshire Wildlife Trust / Derek Gow Consultancy	Kingsnorth	585000	175000	2012	54
42	Unknown	National Trust / Derek Gow Consultancy	Malham Tarn	385000	465000	2016/17	303
43a	Restoring Ratty	Northumberland Wildlife Trust / Forestry Commission England / Tyne Rivers Trust	Kielder Water and Forest Park	365000	595000	2017/18	965
43b	Restoring Ratty	Northumberland Wildlife Trust / Forestry Commission England / Tyne Rivers Trust	Kielder Water and Forest Park	372606	588471	2019	284

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43c	Restoring Ratty	Northumberland Wildlife Trust / Forestry Commission England / Tyne Rivers Trust	Kielder Water and Forest Park	362701	591568	2019	237
43d	Restoring Ratty	Northumberland Wildlife Trust / Forestry Commission England / Tyne Rivers Trust	Kielder Water and Forest Park	363200	592700	2020	553
44	<i>Unknown</i>	Kent Wildlife Trust	Sevenoaks Wildlife Reserve	555000	155000	2015	50
45	Cumbria Water Vole Project	Eden Rivers Trust / Cumbria Wildlife Trust / Natural England / Environment Agency / MoD	Sandford Mire, Warcop	375000	515000	2010	80
46	Cumbria Water Vole Project	Eden Rivers Trust / Cumbria Wildlife Trust / Natural England / Environment Agency / MoD	Warcop Training Area	375000	515000	2007	100
47	<i>Unknown</i>	National Trust / Derek Gow Consultancy	Holnicote	290800	146000	2018	124
48a	Seaton Marshes	East Devon District Council	Seaton Marshes	325200	91600	2018	213
48b	Seaton Marshes	East Devon District Council	Seaton Marshes	329072	95559	2019	129
49	Box Moor	Box Moor Trust	Hemel Hempstead	504985	206063	2019	171
50	Riverlands	National Trust	Holnicote	291065	145814	2019	140
51	Cholmondley	Cholmondley Estate	Cholmondley Estate	354434	352201	2019	262
52	Cosmeston Lakes	Natural Resources Wales / Vale Council	Cosmeston Lakes	316874	169697	2017/19	400
53	River Ver	Herts and Middlesex Wildlife Trust	River Ver, west of St Albans	512000	210000	2021	150
54	Reintroducing Ratty at Trelusback Farm	Kernow Conservation / Mossy Earth Ltd.	Trelusback Farm	171207	038363	2022/23	219
55a	Bringing Ratty Back (Part 1)	Eden Rivers Trust	Haweswater	345000	515000	2023	204
55b	Bringing Ratty Back (Part 1)	Eden Rivers Trust	Lowther Estate	352000	522500	2023	161
56	Returning Water Voles to the Hogsmill	Citizen Zoo	Hogsmill River	520500	165200	2022	101
57	<i>Unknown</i>	Kernow Conservation	Upper River Cober	167500	031500	2023	100
58	Longleat Water Vole Project	Longleat	Longleat	381300	142300	2022	50
59	<i>Unknown</i>	Natural Resources Wales	Oxwich Nature Reserve	250000	187000	2022	200
60	<i>Unknown</i>	Game & Wildlife Conservation Trust	Bisterne, Lower Avon Valley	413500	101500	2022	60