CONSERVATION & MONITORING REPORT 2020: 5

Wensleydale Dormouse Project Report



YORKSHIRE DALES
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Wensleydale Dormouse
Project Report

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WENSLEYDALE DORMOUSE PROJECT EXECUTIVE SUMMARY

The Wensleydale Dormouse Project was a three year collaborative project between the Yorkshire Dales National Park Authority (YDNPA) and the People's Trust for Endangered Species (PTES) that started in April 2017. The project objective was to create a contiguous network of appropriately managed woodlands and hedgerows in the mid-Wensleydale area, to facilitate the expansion of the Dormouse population from the successful original re-introduction site at Freeholders' Wood and the supplementary re-introduction site near Carperby.

In order to achieve this, five key areas of work were identified and specific targets determined. The project aims and delivered outcomes were as follows:

HEDGEROW SURVEY

The aim was to survey all the existing potential connectivity routes to identify the quality and extent of the linear hedgerow landscape features in the project area.

A total of 44.34 km of boundary features were assessed, including 12.78 km of hedgerows that were surveyed in accordance with the standardised methodology as recommended by PTES and detailed by Defra (2007).

HEDGEROW MANAGEMENT

The aim was to ensure that a minimum of 2.1 km of existing unmanaged or gapped hedgerow will be brought into appropriate management and/or 'gapped up'.

A total of 2.9 km of hedgerows have been brought into appropriate management.

NEW HEDGEROW PLANTING

The aim was to plant a minimum of 1.7 km of new hedgerow.

By April 2020 1.6 km of new fencing and hedgerow creation had been completed. A further 0.2 km of fencing had been completed but was not planted due to Coronavirus restrictions but will be completed by the end of the 2020/21 planting season. A total of 1.8 km of new hedgerow will have been created.

WOODLAND MANAGEMENT

The project aim was to bring ten small wooded areas (*c.* 2.5 ha in total) into appropriate management for Dormice.

> *Ten woodland areas totalling 4.18 ha have been brought into appropriate management for Dormice.*

RAISING AWARENESS

The aim was to organise and deliver four workshops/meetings for land managers and stakeholders in the project area, produce an annual monitoring report and submit project summary papers/report.

These aims were reviewed during the course of the project and revised with two workshops completed and another arranged to take place on 19 March 2020. The latter was due to be delivered with the BOOM Species Restoration Project in order to assist with the Cumbrian Dormouse re-introduction project that was due to be undertaken in summer 2020 but, postponed due to Coronavirus restrictions. A replacement live webinar detailing Dormouse ecology and conservation theory presented by PTES was delivered on 11 September 2020 and the workshop provisionally re-arranged for 17 March 2021. In addition annual reports of the Dormouse monitoring at in Freeholders' Wood in 2017 and 2018 have been published, with reports assessing the status of the Dormouse population in Freeholders' Wood and reviewing the supplementary re-introduction scheme in Wensleydale published. A paper summarising all the Dormouse conservation work in Wensleydale has been submitted to the Yorkshire Dales Naturalists' Union for publication. The project also featured on two regional TV programmes, a number of talks on the project were given to conservation groups, and there was a presentation detailing the work of the project at the National Dormouse conference in 2019.

PROJECT EVALUATION

All the specific aims of the Wensleydale Dormouse Project were completed and in respect to the capital works, the original targets were exceeded. This has delivered the over-arching project objective in creating a network of hedgerows connecting the Dormouse re-introduction sites with other potentially suitable woodlands in the mid-Wensleydale area

(see Figure 6). Although the project has now been ended, there have been a number of subsequent additional hedgerow and woodland planting schemes that have been proposed by some landowners. This shows that the project has successfully raised awareness of Dormouse conservation and that with the continued support of landowners and other key stakeholders, positive conservation management will continue to increase the area of, and connectivity between appropriately managed woodland and hedgerow habitats. This will hopefully facilitate the expansion of the Dormouse population in the mid-Wensleydale area.

INTRODUCTION

Following a successful re-introduction of Hazel Dormice *Muscardinus avellanarius* (hereafter referred to as Dormice) into Freeholders' Wood in 2008, Yorkshire Dales National Park Authority (YDNPA) staff had been looking for opportunities to increase the area of suitable woodland habitat and connectivity for Dormice in the adjacent areas of Wensleydale. Some new native woodland and hedgerow planting schemes were subsequently completed by a small number of individual landowners, primarily as part of agri-environment scheme agreements. Although some progress had been made, it was proving very difficult to deliver landscape scale management where hedgerow connectivity is such a crucial objective and the land is privately owned by different landowners, often where contiguous habitat features such as a woodland or hedgerow may have multiple compartments or sections under different ownership.

Landscape scale delivery of habitat connectivity also requires a significant amount of landowner liaison which was not feasible with the existing YDNPA staff resource at the time. Although some of the habitat management that was required to create the hedgerow connectivity could be funded through agri-environment schemes, there were some aspects of the management work that needed to be undertaken for Dormice that did not match the prescriptions within the schemes. It was also known that a number of landowners in the key areas were not in any form of agri-environment agreement, and so additional funding for capital works would be required.

There were two developments that helped to facilitate a landscape scale conservation project for Dormice in mid-Wensleydale in 2016. The strategic review of the national Dormouse re-introduction scheme undertaken by White (2014) included a number of recommendations, including a change from delivering range expansion to consolidating existing populations. It was also recommended that further supplementary re-introductions should be considered close to sites with existing populations in order to create viable metapopulations, rather than have multiple widely dispersed sites.

In addition to this, the Wensleydale Strategy was developed by a partnership of organisations, businesses, individuals and groups brought together by the Yorkshire Dales National Park Authority (YDNPA) and the Yorkshire Dales Rivers Trust. The strategic vision was to identify the key issues affecting the Wensleydale catchment and their

potential solutions, with one of the main nature conservation aims to improve the environment of Wensleydale and its tributary dales for the benefit of people and nature.

In order to determine the feasibility of developing a specific Dormouse project, the YDNPA carried out scoping work to using the QGIS Geographical Information System and aerial photographs to identify the core woodland areas in mid-Wensleydale potentially suitable for Dormice. Any existing linear boundary features between them were also identified and an assessment made of existing hedgerows to give an indication of whether they were in a better or worse condition, and the extent of non-existent hedgerow (gaps) was estimated. These data were used to estimate the extent and cost of new hedgerow and woodland planting that would be required to create a connected woodland network. In addition, the amount of project officer time that would be needed to implement these capital works was estimated. The project was then developed with the People's Trust for Endangered Species (PTES).

This report provides details of the Wensleydale Dormouse project framework, delivery of the objectives and recommendations for any similar landscape scale projects that might be developed elsewhere in the country.

PROJECT DELIVERY

The Wensleydale Dormouse Project was a three year collaborative project between PTES and the YDNPA that started in April 2017. The main project objective was to create a contiguous network of appropriately managed woodlands and hedgerows in the mid-Wensleydale area, to facilitate the expansion of the Dormouse population from the successful original re-introduction site at Freeholders' Wood and the supplementary re-introduction site near Carperby.

In order to deliver this objective, four key actions were identified:

- Hedgerow Survey - all the existing linear hedgerow landscape features identified in the project development phase would be surveyed to determine their quality and extent. Other boundary features would also be assessed. The results would be used to refine the provisional hedgerow connectivity that had been identified to link the two re-introduction sites and other woodlands within the defined project area, and help to prioritise other woodland and hedgerow management improvements.

- Hedgerow Management – the scoping work identified a minimum of 2.1 km of existing unmanaged or gapped hedgerow that would need to be brought into appropriate management and/or 'gapped up'. The results of the hedgerow survey would be used to draw up more detailed management plans for each hedgerow section.

- New Hedgerow Planting – the scoping work identified a minimum of 1.7 km of new hedgerow that would need to be planted. Match funding was secured from the Yorkshire Dales Millennium Trust (YDMT) to contribute towards the cost of this.

- Woodland Management - a minimum of ten small wooded areas (c. 50 sq. m) would be brought into appropriate management for Dormice.

The creation of new hedgerows and management of existing hedgerows in the wider project area would be dictated by the quality of connectivity, ecological, archaeological and/or landscape constraints and also landowner involvement.

In addition, the project looked to raise awareness of Dormouse conservation and the appropriate woodland and hedgerow management that would be required by:

- Organising and delivering four workshops/meetings for land managers and stakeholders.

- Publication of an annual monitoring report, a final project summary report and,

- Publication of a summary paper for either the Yorkshire Naturalists Union (YNU) or Yorkshire Mammal Group (YMG) journals.

PROJECT FRAMEWORK AND FUNDING

Funding provided by PTES enabled a project officer to be appointed two days a week for the duration of the three year project, starting in April 2017 and ending in April 2020. The project officer undertook the liaison with landowners, the hedgerow survey and subsequent refinement of the connectivity routes. In addition, all the hedgerow, woodland and fencing specifications were written, contracts put out to tender and site visits undertaken with potential contractors. The successful contractors were then supervised and completed works were checked prior to payment.

The monitoring of Dormouse populations at the two sites undertaken as part of the National Dormouse Monitoring Programme (NDMP) was coordinated by the YDNPA Wildlife Conservation Officer and undertaken by YDNPA staff and volunteers. The project officer was one of the trainees in the survey training programme and has subsequently qualified for a Natural England (NE) Monitoring Licence.

The raising awareness programme was undertaken by the YDNPA Wildlife Conservation Officer and the project officer.

The cost of the capital works were funded from a number of sources:

- PTES provided additional funding to cover the cost of the management improvements of existing hedgerows and woodlands.

- The YDMT provided match funding towards the cost of planting 1.7 km of new hedgerows.

- The Woodland Trust (WT) provided 4590 trees, stakes and guards.

- YDNPA funding contributed towards the cost of hedgerow and tree planting and some unforeseen costs of tree felling and installation of culverts.

PROJECT MANAGEMENT

The project was managed by the YDNPA, working to a Memorandum of Understanding between YDNPA and PTES.

Annual meetings were held between the two organisations to review progress, highlight any issues and if appropriate, revise or amend project targets.

PROJECT DELIVERY

HEDGEROW SURVEY

Project aim: To survey all the existing potential routes to identify the quality and extent of the linear hedgerow landscape features in the project area.

Project Aim Achieved: A total of 44.34 km of boundary features were assessed by the Project Officer (plate 1) including 12.78 km of hedgerows that have been surveyed in accordance with the standardised methodology as recommended by PTES and detailed by Defra (2007).

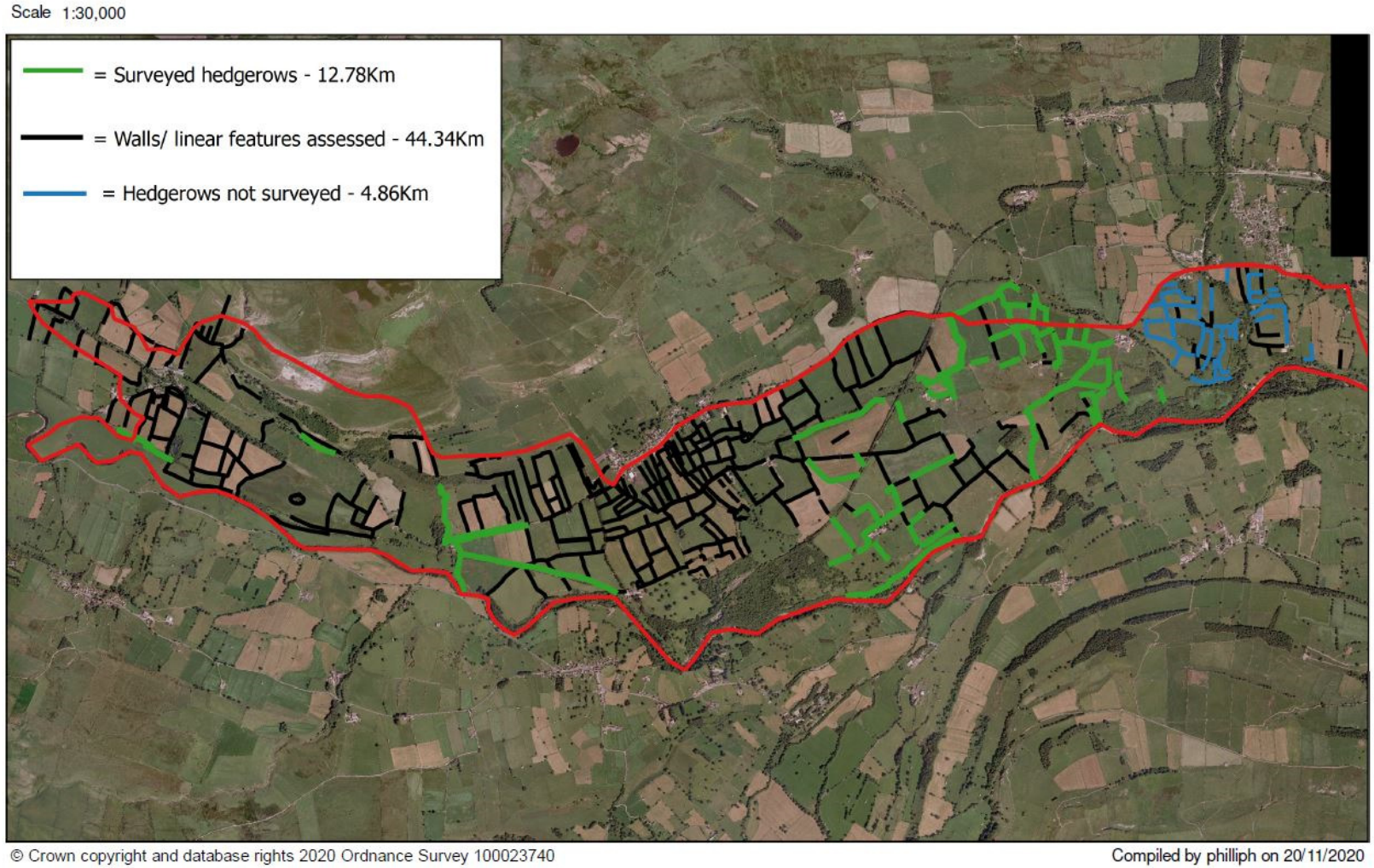


***Plate 1**. The Project Officer undertaking hedgerow surveys*

During the project development phase, the original estimate of the length of linear boundary features in the core project area that needed to be assessed was 27.5 km. When landowner permissions for survey work had been obtained for each land holding, the opportunity was taken to assess and survey additional boundary features outside of the original primary connectivity routes. This additional information will be used to faciliate additional planting and management after the end of the project. Unfortunately, acess permissions were not received from all of the landowners within the project area, and so it was not possible to undertake survey work of all the hedgerows and field boundaries.

The location of the linear boundary features that were surveyed are shown in Figure 1.

Figure 1. *The location of hedgerows and other linear boundary features surveyed as part of the Wensleydale Dormouse Project.*



HEDGEROW MANAGEMENT

Project aim: Ensure that a minimum of 2.1 km of existing unmanaged or gapped hedgerow to be brought into appropriate management and/or 'gapped up'. The range and scale of management to be revised based on the results of the hedgerow survey.

Project Aim Achieved: 2.9 km of hedgerow brought into appropriate management.

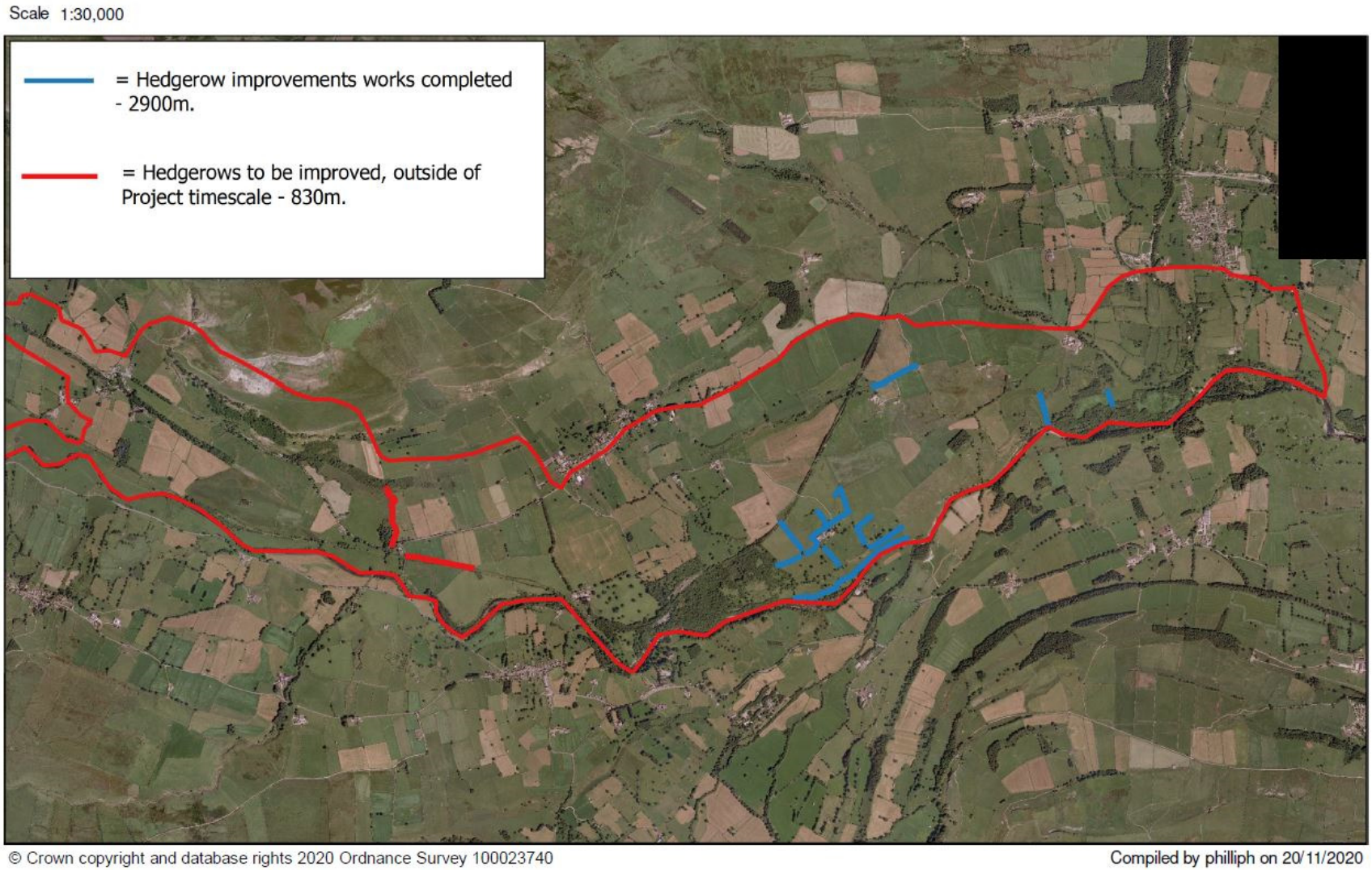


Plate 2. *'Gapping up' of hedgerows at Hollins Farm.*

It was previously hoped that some of the proposed works could be carried out with additional funding from the Countryside Stewardship Hedgerows & Boundaries Grant. Unfortunately the conditions attached to the grant and the processes involved in the application proved to be a barrier for the particular landowner.

The locations of the completed hedgerow management works are shown in Figure 2.

***Figure 2**. The location of hedgerow management work undertaken as part of the Wensleydale Dormouse Project.*



NEW HEDGEROW PLANTING

Project Aim: A minimum of 1.7 km of new hedgerow will be planted subject to funding from the Yorkshire Dales Millennium Trust.

Project Aim Achieved: By April 2020 1.6 km of new fencing and hedgerow creation had been completed. A further 0.2 km of fencing had been completed but was not planted due to Coronavirus restrictions. The contract for the outstanding planting has been let and will be undertaken during the 2020/21 planting season.



Plate 3. *New hedgerow planting at Hollins Farm.*

The location of new hedgerow planting can be shown in Figure 3 below. A number were extra wide, triple row hedgerows, (*c.* 2m thick), and are shown in Figure 4.

Figure 3. *The locations of new hedgerow planting completed by the end of the Wensleydale Dormouse Project.*

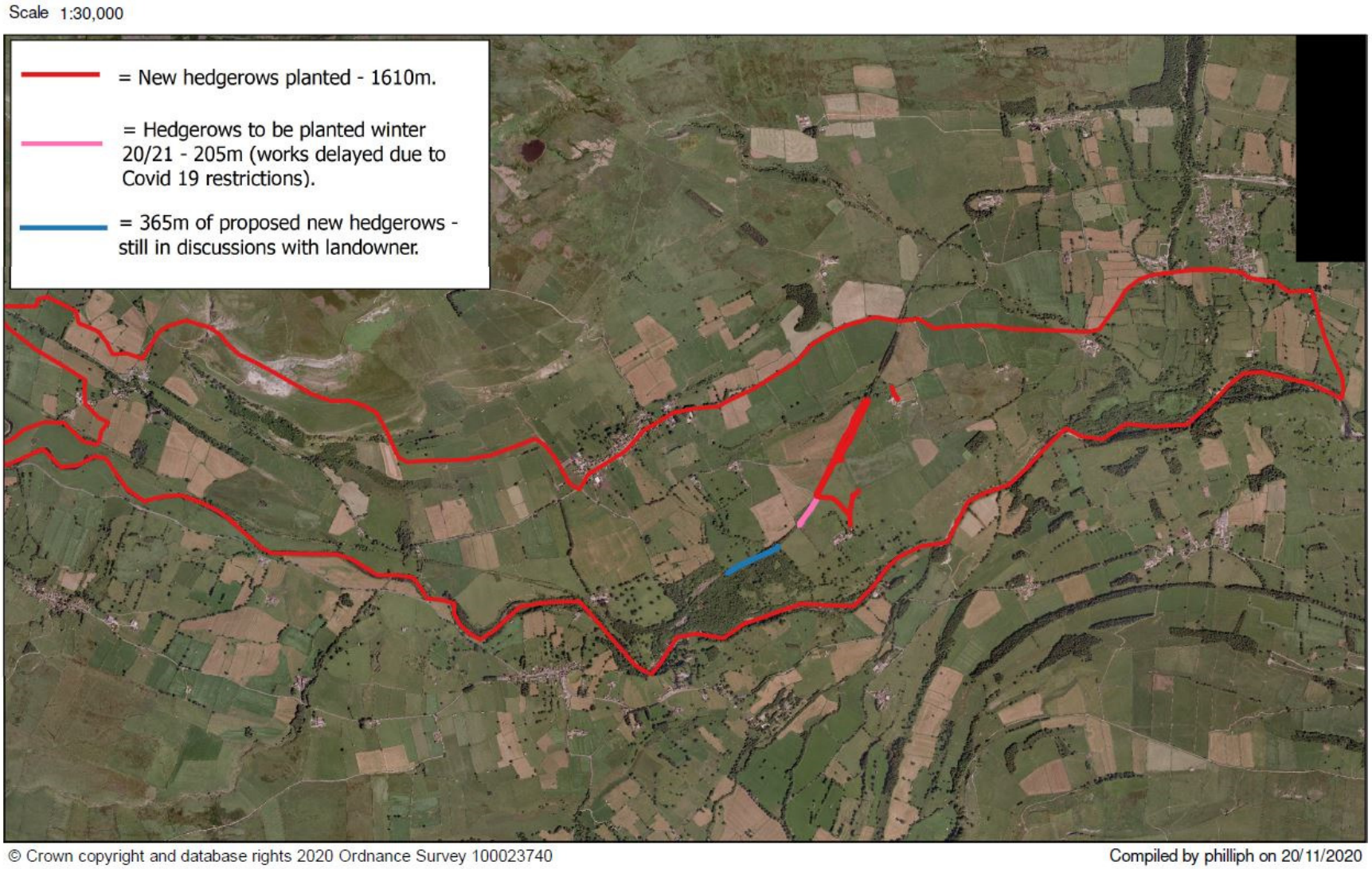
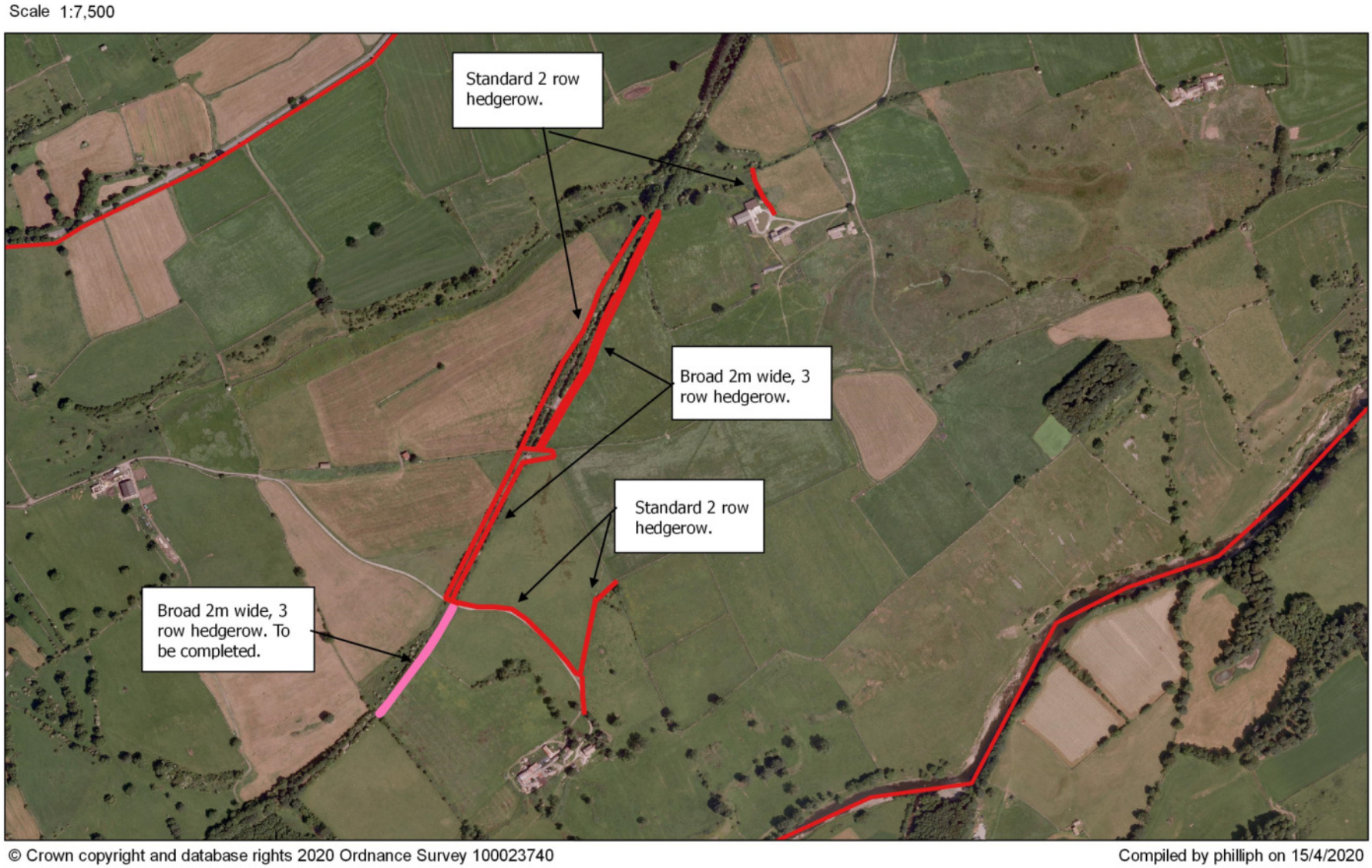


Figure 4. The locations of additional broad new hedgerow planting completed by the end of the Wensleydale Dormouse Project.



WOODLAND MANAGEMENT

Project aim: To bring ten small wooded areas (*c.* 2.5 ha in total) into appropriate management for Dormice. The range and scale of management will be dependent on the results of the hedgerow survey.

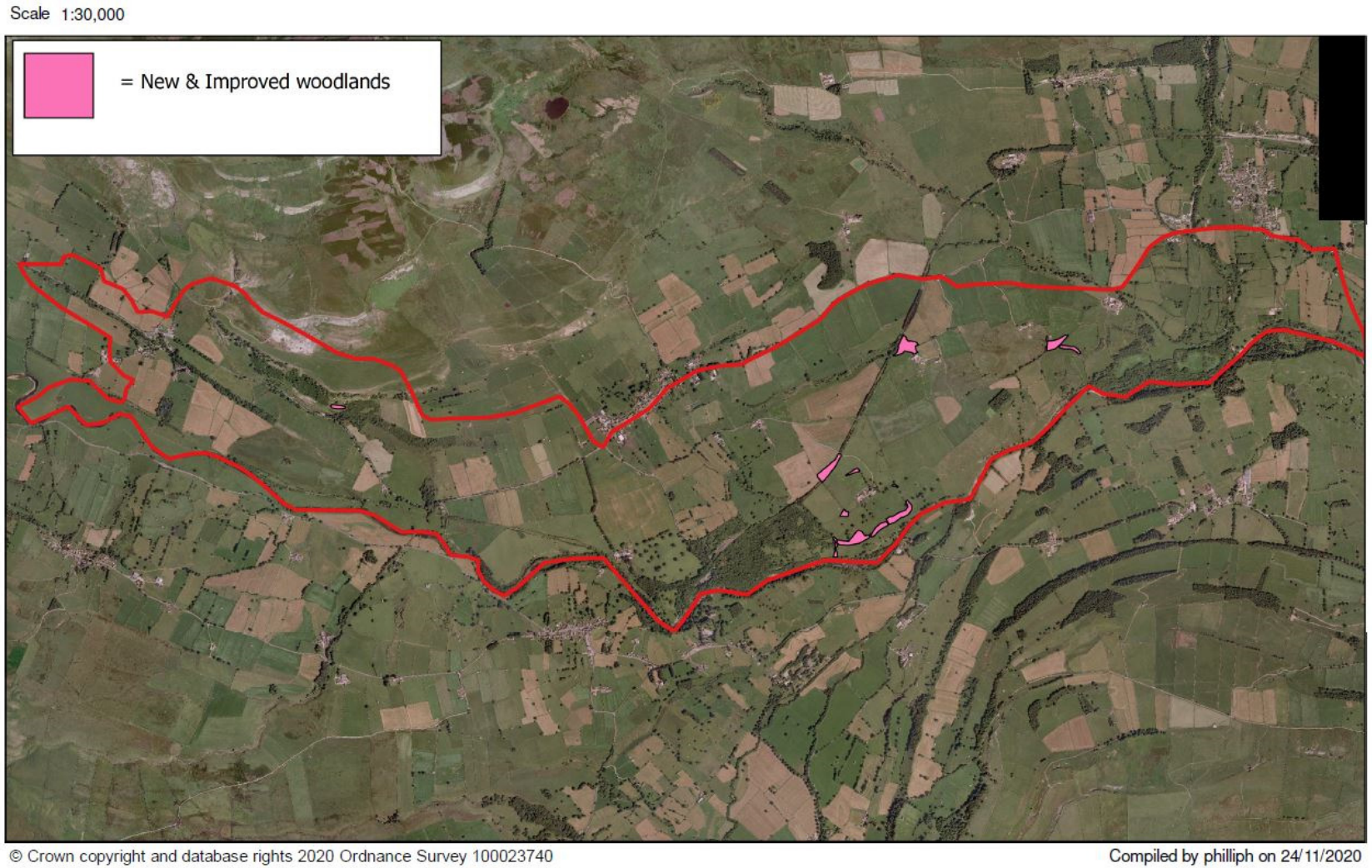
Project Aim Achieved: a total of ten small wooded areas covering 4.18 ha have been brought into appropriate management.



***Plate 4**. Woodland enhancement and creation at High Thoresby.*

The location of new or improved woodland management areas are shown in Figure 5.

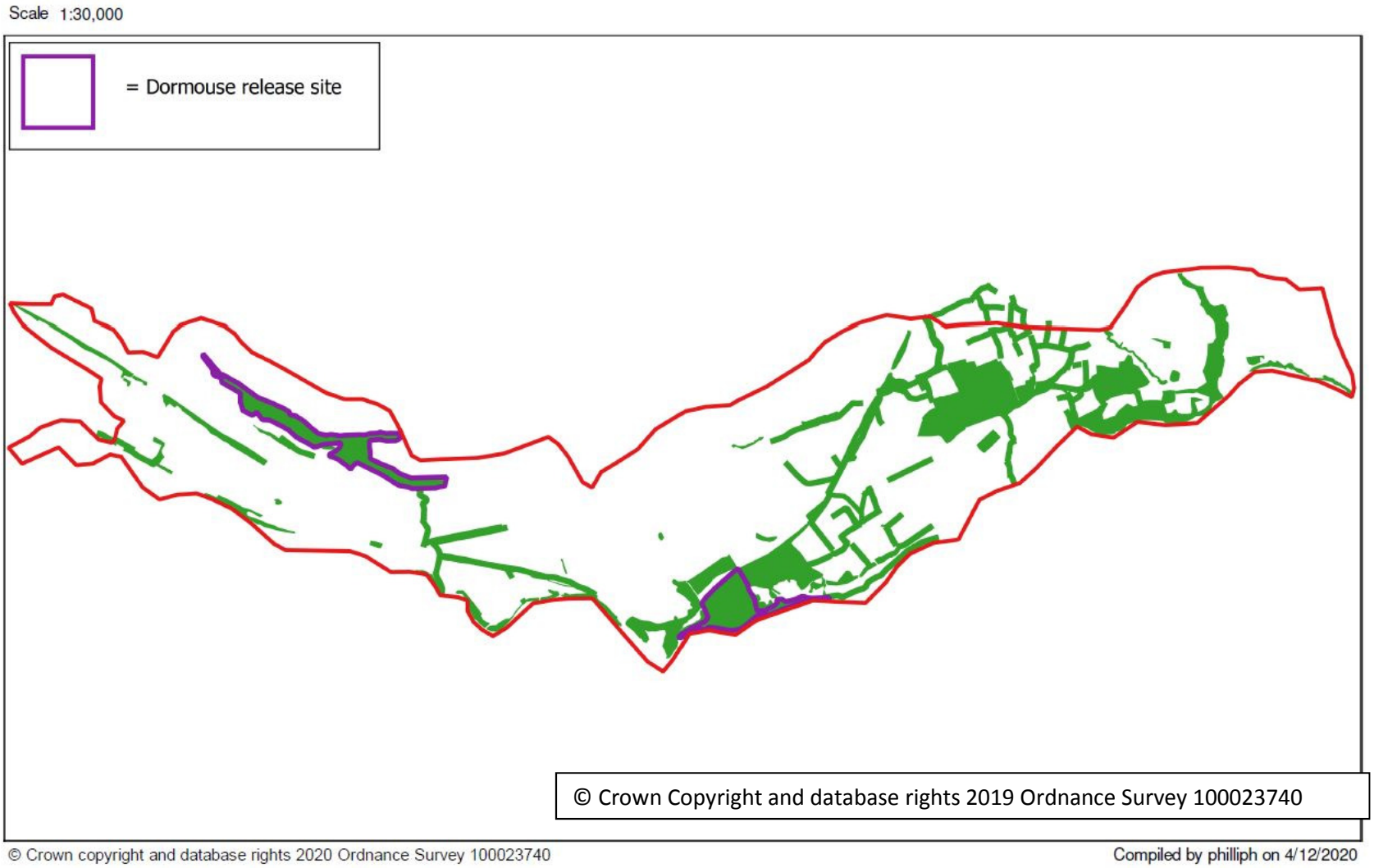
Figure 5. *The location of new or improved woodland areas completed as part of the Wensleydale Dormouse Project.*



HABITAT CONNECTIVITY

The areas where work undertaken as part of the project that included new hedgerow planting, hedgerows brought into good management, woodland enhancement and creation works, are shown in Figure 6 along with existing woodland habitat within the project area. Although there are a few sections where, for example, roads may bisect a hedgerow or woodland, the objective of creating a contiguous network of hedgerow and woodland habitats within the project area has been achieved.

Figure 6. *The hedgerow and woodland habitat present in the Wensleydale Dormouse Project area.*



RAISING AWARENESS

Project aim: Organise and deliver four workshops/meetings for land managers and stakeholders in the project area, production of an annual monitoring report and submit project summary papers for submission to Yorkshire Naturalists Union and Yorkshire Mammal Group journals.

Revised Project Aim Completed: Although the original aims were revised, an appropriate raising awareness programme was successfully delivered. This included:

Publication of annual reports detailing the Dormouse monitoring work in Freeholders' Wood in 2017 (Court and White, 2018), and in 2018 (Court, 2019). Annual summaries have also been published in the Yorkshire Mammal Group journal *Imprint.*

A report assessing the status of the Dormouse population in Freeholders' Wood has been published and is available here Court (2020a).

A report reviewing the supplementary re-introduction scheme in Wensleydale has been published and is available here Court (2020b).

A paper by Court and Hibbs summarising the Dormouse conservation work in Wensleydale has been submitted to the Yorkshire Naturalists' Union Journal *The Naturalist* for publication. Additional work to deliver the raising awareness objective is shown in Table 1.

Table 1. *Details of the work that has been undertaken to raise awareness of the Wensleydale Dormouse Project that has been undertaken in the project area between April 2017 and April 2019.*

Date	**Activity**
2 August 2017	A talk to residents and visitors on Dormouse conservation in the YDNP and the Wensleydale Dormouse Project at Hawes by YDNPA Wildlife Conservation Officer.
12 September 2017	Dormouse workshop at Carperby Village Hall with presentation on Dormice ecology, conservation and details of the Wensleydale Dormouse project undertaken by the Project Officer and YDNPA Wildlife Conservation Officer. All local landowners and tenants in the project area were invited along with local residents.
18 October 2017	Filming by ITV for a piece on the Dormouse conservation and monitoring work in Freeholders' Wood, and the habitat management work to be undertaken as part of the Dormouse project. The piece was featured on ITV Yorkshire and Tyne Tees regions.
19 December 2017	A talk on Dormouse conservation in the YDNP and the Wensleydale Dormouse Project at Hawes by YDNPA Wildlife Conservation Officer.
26 April 2018	Talk to the YDNPA all staff meeting on Grant Funding Successes: The Wensleydale Dormouse Project by YDNPA Wildlife Conservation Officer.
26 May 2018	A workshop for CIEEM members and Yorkshire Mammal Group on red squirrel and Dormouse conservation, including a summary of the 2016 Dormouse re-introduction, and discussions around the landscape scale aims and objectives of the Wensleydale Dormouse Project by YDNPA Wildlife Conservation Officer
19 September 2018	BBC Look North filmed the Dormouse monitoring at Freeholders' Wood and details of the Wensleydale Dormouse Project to feature in a programme aired in spring 2019. .
16 November 2019	Presentation on Wensleydale Dormouse Project at the National Dormouse Conference at Reading University. For more details see here.

In addition to and out with the funding agreement it was agreed that:

- PTES would cover the costs of running a training course for volunteer licence seekers in the YDNP, with YDNPA providing a venue.

- YDNPA will coordinate and undertake monitoring at the two re-introduction sites for the foreseeable future**.**

It was originally planned to run four workshops for landowners and local residents, with the initial one held in Carperby, one of the villages in core project area on 6 September 2017. It was poorly attended by the former and so after discussion with PTES, the programme was revised to deliver the following:

Delivery of a workshop for CIEEM members and the Yorkshire Mammal Group on Red Squirrel and Dormouse conservation on 26 May 2018. This included a half day session on the Dormouse re-introduction schemes and the Wensleydale Dormouse Project.

A workshop to include a theory session for volunteers and trainee licence holders from both the YDNP and BOOM Species Restoration Project, as part of the Cumbrian Dormouse re-introduction project that was due to be undertaken in summer 2020. The workshop was due to take place on 19 March 2020 but, was postponed due to Coronavirus restrictions. A replacement live webinar detailing Dormouse ecology and conservation theory presented by PTES, The BOOM Species Restoration Project and YDNPA took place on 11 September 2020 with 42 attendees and the workshop has been provisionally re-arranged for 17 March 2021.

It was also agreed that the staff time spent on the additional raising awareness work including features on two TV programmes, a presentation on the project at the National Dormouse Conference and several talks to local natural history groups within the YDNP was at least equivalent to the time required for organising a fourth workshop.

PROJECT LEGACY

Although direct funding to employ a project officer has ended, the project has ensured that there are a number of legacies in place that will enable further positive management for Dormice to be undertaken in mid-Wensleydale. There is now a defined project area, where any future new woodland or hedgerow planting can be targeted specifically at Dormouse conservation. In particular, the assessments of boundary features within the wider project area will provide baseline data that will be used to prioritise and target areas where any new planting would be most beneficial, particularly where it improves habitat connectivity. The information will also be used to inform the management requirements for any woodland or hedgerow restoration schemes that come forward. Subject to funding being available there is also the potential for repeat surveys to be undertaken to assess changes in the extent and condition of hedgerows.

Landowners, land managers and other key stakeholders in the mid-Wensleydale area are now much more aware of the conservation requirements of Dormice. It is hoped that this will lead to more pro-active approaches from landowners to enquire about options for new planting. There are, for example, already discussions between landowners and the YDNPA Trees and Woodlands Team about creation of a further 365 m of hedgerows, and several enquiries about the potential for new woodland planting in the months after the project finished.

The number of fieldworkers licenced to handle dormice has increased from four to seven, which will considerably increase the options for future monitoring. This will include looking to determine any dispersal of Dormice out of the re-introduction sites along hedgerows and into the areas of that have been planted as part of the project.

The various talks and promotional activities have made both local communities and conservationists in the county more aware of Dormice and their conservation requirements. It has also helped to highlight the importance of appropriately managed and connected habitats in a landscape that will hopefully enable keystone species like Dormice to disperse into the wider area. Although measuring the success of any raising awareness programme is often difficult, there are examples that considerable progress has been made as can be seen by the work of the Year

Three pupils at Bainbridge, Askrigg and West Burton School Federation, a village on the edge of the project boundary. During Covid-19 lockdown restrictions they undertook a home schooling project to research, and then create a presentation on the Dormice project with one of the excellent examples shown in Plate 5.

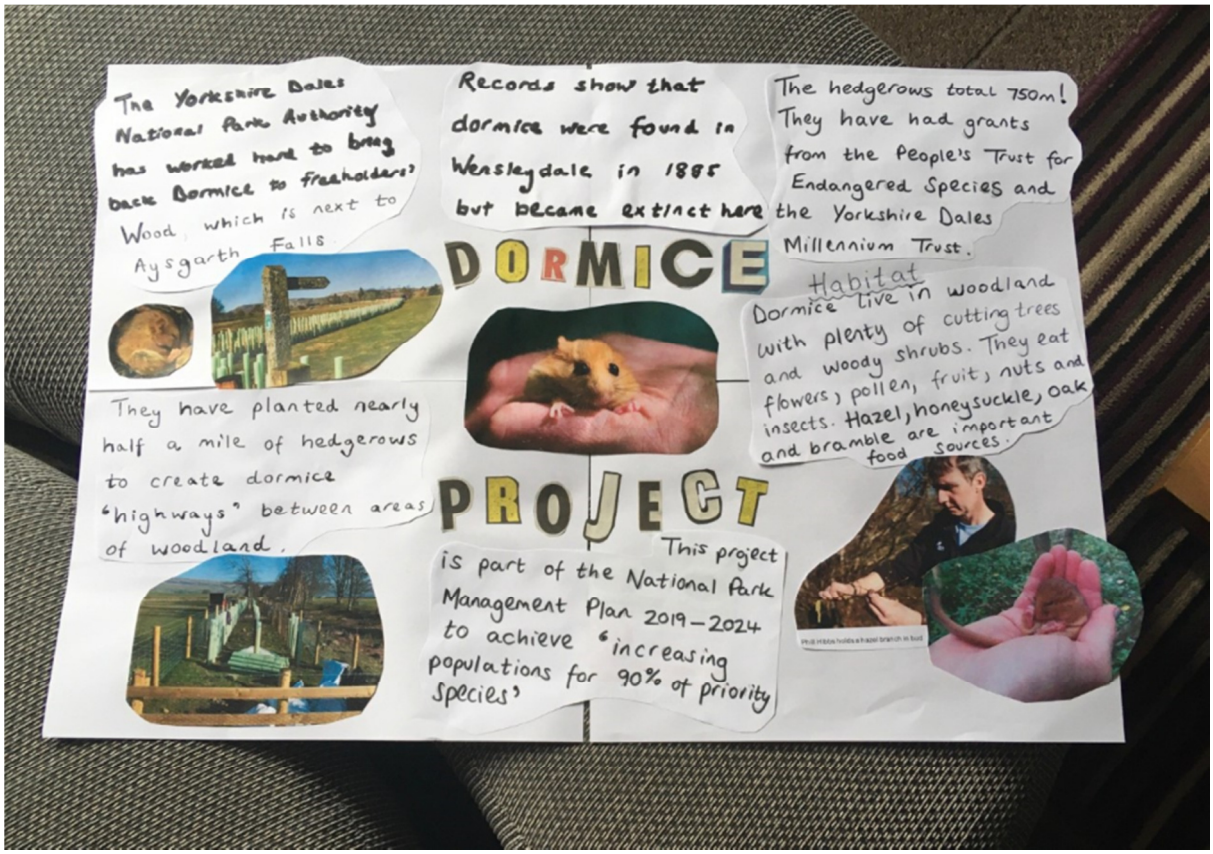


Plate 5. *An Example of the Dormouse Conservation Project Work undertaken by Year Three pupils at Bainbridge, Askrigg and West Burton School Federation Project work created by Dec Peacock.*

OVERVIEW OF THE WENSLEYDALE DORMOUSE PROJECT

ISSUES AFFECTING PROJECT DELIVERY

It needs to be remembered that Dormice are a relatively 'new' species within the YDNP, as the re-introduction was only undertaken in 2008. This took place into a woodland owned by the National Park Authority and so at the start of the project, other landowners and managers in the area were, unsurprisingly, not aware of the issues relating to Dormouse conservation and the habitat management work that was required. This is in contrast to most of the other advisory and conservation work undertaken by the Authority and other stakeholders for a range of other priority species, for example breeding waders such as Curlew *Numenius arquata* and Lapwing *Vanellus vanellus* that have had a long-standing presence in the YDNP and the identification, habitat requirements and management are more widely known.

A significant amount of raising awareness and discussion was therefore needed to be undertaken prior to, and at the beginning of the project to highlight the conservation requirements of Dormice. Although this may not be needed in areas of the country where Dormice are regularly found, any project in an area where Dormice have recently, or are about to be re-introduced should not under-estimate the amount of pre-preparatory work that may be required.

Although hedgerows do form part of the boundary features within the YDNP, in many areas including the project area they are predominantly dry stone walls. Although there is a mixture of hedgerows and dry-stone walls in the mid-Wensleydale area, the management of, and new planting of hedgerows is perhaps not as high priority as in other areas of the country where hedgerows are the main boundary features. This has a significant impact on farm business decisions in the YDNP, as maintenance or creation of hedgerows may not be a financial priority.

Dry-stone walls have the potential to act as wildlife corridors (Powell, *et al.,* 2018) by allowing animal movements. Although obviously not as beneficial as a hedgerow, short sections of dry-stone wall are considered to be more likely to allow movement than a fence line, particularly if there is some partial hedgerow cover as shown in Plate 6.



***Plate 6**. A field boundary in the YDNP comprising a dry stone wall and stunted hedgerow.*

PROJECT OVERVIEW

It is hoped that there will be other landscape scale projects for Dormice conservation developed elsewhere in the country. This section of the report aims to review the aspects of the project that worked well, and those that were not so successful, with recommendations that may help in the development and delivery of other similar projects.

SUCCESSFUL ASPECTS OF PROJECT DELIVERY

The project area was primarily determined by the areas of suitable woodland for Dormice and the potential for connectivity. However, the number of different landowners and tenant farmers within the project was also taken into account prior to determination. It was hoped that the number of these key contacts would be at a level that the project officer would have sufficient time to work with, and develop close working relationships. This was particularly important in an area like Wensleydale where the conservation requirements of Dormice are not widely known and creation and management of hedgerows is not necessarily a priority for landowners.

The long standing work of the YDNPA in the area, along with collaborative work undertaken with Natural England staff in delivering agri-environment schemes, meant that in most cases, the landowner of a specific area of land was known. This

information was compliant within existent General Data Protection Regulations and so could be readily utilised. If this is not the case in other areas where a project is being developed, the amount of time to determine ownership details should not be underestimated.

The initial hedgerow and boundary survey was crucial in order to assess and prioritise the work required to create the habitat connectivity. The initial approaches to landowners for permission to carry out survey work proved to be an excellent opportunity to make contact, raise awareness of the conservation requirements of Dormice and to discuss issues relating to their conservation. This initial contact also helped to identify the hedgerows and woodlands that a landowner was keen to improve which, was something that could not be determined as part of the desk based exercise.

The writing of contract specifications, letting of contracts and overseeing contractors does take time, and without specific project officer resource would be difficult to deliver given the existing staff resource.

The project officer was seconded from his previous role of Trees and Woodland Officer at the YDNP, and so having someone with extensive experience of delivering woodland creation schemes was very beneficial. It also meant that there was already an existing working relationship with a number of landowners in the area which helped considerably in developing schemes.

Some potential planting schemes needed to be amended or, in some cases abandoned, due to the damage that would be done to archaeological features and sites. These constraints checks are a standard process undertaken by the YDNPA for all new planting schemes, and amendments to planting proposals are routine. These issues need to be considered as part of any new project, particularly if staff are not familiar with constraints checking. Unlike a stand alone planting scheme, a key outcome for this project was to create hedgerow and woodland connectivity within the project area. It was anticipated that there would be some sites that could not be planted either because landowners did not want a scheme or, there other constraints to take into account. Although the desk based exercise did identify a

primary route for hedgerow connectivity, the likelihood of some constraints preventing planting meant that alternative options for routes were considered at an early stage. This contingency enabled planting schemes to be moved whilst still creating the required connectivity.

It was also beneficial to approach landowners with a broad corridor where the project was looking to complete hedgerow connectivity, rather than identifying specific boundaries that needed to be managed. This enabled the landowners to be fully involved in determining the exact locations of the planting schemes and hedgerows, increasing buy-in to the project.

The prescriptions within many existing funding sources including agri-environment schemes are, understandably, often very rigid and have very specific outputs that need to be delivered in order for payments to be made. In this project it was often the case that a particular section of boundary that had been determined to be a key connectivity route, comprised lengths that needed different management work. This did, for example, include sections of existing hedgerow that just needed to be fenced (either single or double sided), some that needed to be fenced then gapped up, and some sections where a new hedgerow was required. This would have been difficult to complete using existing funding schemes as they are too prescriptive to deliver short sections requiring different habitat management. The problem is also exacerbated if short sections of a single boundary feature require different management.

One of the other main constraints to delivering capital works is the method of payment to the landowner. A requirement of many existing grant schemes is that a landowner has to pay a contractor direct and then claim any costs incurred back from the funding body. This can often deter them from undertaking the work, particularly in cases where the capital works may not have a direct benefit to the farm business. The funding that was made available by YDNPA, YDMT and PTES to be able to pay contractors directly, rather than asking landowners to recoup costs had a positive affect in getting a number of schemes completed. It is likely that if this option was not available, several schemes would not have proceeded.

One of the key components that enabled this project to be delivered was the flexibility of the funding provided by YDNPA, YDMT and PTES. This enabled the project officer to 'mix and match' funding sources to complete contiguous lengths of hedgerow with different management requirements. This was significantly improved by the provision of trees, stakes and guards by the WT. It was concluded that this method was more cost-effective that having to apply specific funding sources to specific sections of a boundary feature. It was also less time consuming to complete one, rather than multiple specifications for capital works, and did not need multiple grant applications.

Consideration was given to letting a single contract for all the capital works rather than a number of separate one during the project development. It transpired that the availability of local contractors during the course of the project meant that one single contract was not feasible. It was concluded that this was beneficial as it resulted in the work was more spread. Most local contractors manage a number of different contracts at anyone time. During the latter two planting seasons poor weather conditions delayed the capital works, and so it proved to be easier for contractors to complete smaller contracts than one single large one. It was also much easier logistically for the different schemes to be staggered so that smaller numbers of trees, shrubs and guards could be supplied by the WT, rather than having one large singe delivery that would have required a storage area with the capacity to be able to 'heal' in the trees. It should also be noted that individual landowners often prefer to work with a specific regular contractor, and so requiring them to use one single contractor may have jeopardised some planting schemes.

Unsurprisingly, an appealing small mammal like the Dormouse proved to be a popular keystone species and helped generate considerable interest in the habitat creation.

LESS SUCCESSFUL ASPECTS OF PROJECT DELIVERY

During the project development the location and condition of hedgerows and boundary features were assessed using the best available information by checking aerial photographs and existing habitat data. When the hedgerow survey was completed, it was found that some of the original assumptions were not correct,

particularly in regard to assessing hedgerow condition. If the hedgerow survey had been completed before the project, costings could have been more accurately assessed. However, without the project funding there would not have been the resources to complete the survey.

The costs of some of the hedgerow creation were more expensive than originally estimated, primarily due to extensive rabbit populations in the area. Even with long standing experience of managing new woodland planting schemes within the YDNP, the damage caused by rabbits to hedgerows that were planted before the start of the project was unexpected. This meant that additional rabbit fencing was required on many sections of fencing, adding a significant extra expenditure to the original estimated cost. The additional costs were partly offset by the savings made by the provision of trees, stakes and guards by the WT.

It was originally intended to try and utilise the NE Hedgerows and Boundaries grant as a source of funding to complement other boundary works. Only landowners who are not in any form of agri-environment scheme are eligible for this, and so it was hoped that this option would be taken up by some who were not in any form of agreement. Unfortunately, the complexity and conditions of the grants discouraged any landowners from applying. It was generally found that any landowner not already in a scheme was more sceptical of entering any agreement, and so trying to change these views was difficult in the short-term.

A considerable amount of time was spent on speaking to landowners by YDNPA and NE staff during the development phase, and by the project officer throughout the duration of the project. Despite the widespread support from stakeholders there were a small number who did not want to engage and some who were supportive of the concept but, were more cautious and uncertain about entering schemes. In these instances it can be difficult to encourage landowners to engage in a short project timescale.

It was originally planned to hold a number of landowner workshops but, given the poor attendance at the first, no more were held. It was found that the best method of

engaging with landowners was face-to-face meetings, initially taking place when access permissions were requested for the hedgerow survey.

RECOMMENDATIONS FOR THE DEVELOPMENT OF FUTURE PROJECTS

1. When determining the extent of the project area, the number of different landowners that will need to be contacted should be carefully considered. Having sufficient time to undertake landowner liaison is a crucial part of the project delivery, and it may be detrimental to the project objectives if there are too many landowners for a project officer to satisfactorily engage with. If a project officer who is new to the area is appointed, the amount of time that it takes to contact and develop working relationships with landowners should also not be underestimated. If the details of landownership are not widely known, these can take a considerable amount of time to determine.

2. In order to raise awareness of any project requirements with landowners, face to face contacts will to help start, or build on existing working relationships. Sufficient time should be built into any project to enable this to happen, and may prove more effective than a workshop based approach.

3. Assessing hedgerow and boundary condition from aerial photographs and old habitat data is problematic, and can lead to differences between the cost of the estimated and the required management work. If possible, detailed information on the condition of boundary features should be collected and assessed during the project development phase.

4. Although a desk based exercise can identify a provisional route, there needs to be some contingency to take into account sites where landowners do not want planting to take place or, where environmental constraints mean that it is not appropriate to undertake planting.

5. It is preferable to approach landowners with a broad corridor where hedgerow planting is required, rather than identifying specific boundaries that need to be planted or managed. This helps to develop engagement with the landowners for them to be fully involved in determining specific routes and increases buy-in to the project objectives.

6. Careful consideration should be given to capital costs based on local variables. Even with extensive knowledge of managing tree planting schemes in the YDNP, the damage caused by rabbits to newly planted hedgerows was unexpected. This added significant extra expenditure to the estimated costs.

7. There needs to be sufficient time for the project officer to write contract specifications then let and supervise contracts included in the work programme. It was concluded that having a number of different contractors delivering the capital works was preferable to letting one single contract. It transpired that if there are any delays to the capital works (most likely to be due to poor weather conditions during the planting season) it is easier for different contractors to complete multiple schemes rather than one large scheme. The preference for landowners to work with one of their preferred contractors should also be a key consideration.

8. It is preferable to try to ensure that the costs of capital works can, where possible, be paid directly to contactors so that a landowner does not have to make the payment and then claim it back from the project.

9. Creating hedgerow connectivity will be a crucial component of any Dormouse conservation project. In order to achieve this it is likely that a single length of boundary feature will require a combination of fencing (either single or double), gapping or new planting. These are difficult to fund through prescriptive grant schemes, particularly if short sections of any boundary require different management work. Wherever possible, new funding sources should be flexible enough to allow different habitat management work to be included in a single specification and contract.

10. Landowners were reluctant to enter the Hedgerow and Boundaries agri-environment scheme, and so it should not be assumed in any project development or costing process that there will be widespread uptake.

11. It needs to be taken into account that it can be difficult to persuade all landowners and stakeholders to engage and become involved in the project in a short-term project over three years.

12. Dormice proved to be successful flagship species for delivering habitat management, creation and connectivity in the wider landscape that might otherwise not have been achievable.

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