Written evidence submitted by Natural England (SR0027)

Natural England: Written evidence submission to the Environment, Food and Rural Affairs Select Committee – Species re-introduction

Introduction

Natural England is the Government's statutory adviser on the natural environment, established under the Natural Environment and Rural Communities Act 2006. Natural England's purpose is to ensure that the natural environment is conserved, enhanced and managed for the benefit of present and future generations thereby contributing to sustainable development.

Natural England's roles in relation to species reintroduction are as follows:

- Providing science and evidence-based advice to government in relation to activities in England – this currently includes the secretariat function to the England Species Reintroductions Task Force.
- Acting as an instigator and convenor of partnerships for reintroduction programmes in England including funding provision for some programmes.
- Providing a 'licensing authority' function for reintroductions and translocations of species in terrestrial and freshwater environments in England.

In approaching our responses to the questions posed by the Committee we have interpreted the phrase 'species reintroduction' to encompass a range of species recovery actions collectively referred to as 'conservation translocations' by the International Union for Conservation of Nature (IUCN)[1]. A conservation translocation is defined as *the intentional movement and release of living organism where the primary objective is a conservation benefit*. There are four types: reinforcement, reintroduction, assisted colonisation and ecological replacement. These terms are explained in Appendix 1.

Overview

- The 2022 Kunming-Montreal Global Biodiversity Framework has established ambitious targets[2] to put a stop to the destruction of the natural world on which we all depend. Conservation translocations can play a key role in restoring biodiversity and in building the resilience of

[1] IUCN/SSC (2013). Guidelines for Reintroductions and Other Conservation Translocations. Version 1.0. Gland. Switzerland: IUCN Species Survival Commission. https://portals.iucn.org/library/node/10386

[2] COP15: Nations Adopt Four Goals, 23 Targets for 2030 In Landmark UN Biodiversity Agreement | Convention on Biological Diversity (cbd.int)

ecosystems to climate change and other human pressures. Importantly, no other response to the biodiversity crisis excites and engages people more than returning long-lost (native) species or bringing about the recovery of those on the brink of extinction. Conservation translocations however are just one approach to restore nature. In most scenarios, habitat restoration will be effective at recovering species and ecosystems and, in many cases, this will be an essential prerequisite for a successful translocation.

- As 70% of land in England is agricultural land, the new Environmental Land Management Schemes (ELM) will be key in supporting and under-pinning species conservation translocations across England, playing a central role in delivering the right combination of habitats (and management) at scale to deliver the year-round life cycle needs for target species. In Local Nature Recovery Strategies, species can be a catalyst to target actions on wider environmental benefits such as air and water quality where species have a key role to play as keystone indicators of environmental health.

- Natural England is planning for its role as secretariat to the Task Force, which will provide independent leadership and promote a collective evidence-led view, advice and guidance on existing and potential conservation translocations and reintroductions of species in England. This will include consideration of the risks associated with conservation translocation and the work Natural England, Defra, the IUCN and Zoological Society of London (ZSL) undertake to better understand and reduce these risks.

- Defra commissioned Natural England to produce 'Reintroductions and other conservation translocations: code and guidance for England'[3]('England code and guidance') which was published in May 2021. The code and guidance sets the standard for translocations and through alignment with the Scottish code[4] and IUCN guidelines[5] encourages consistency across the United Kingdom and with international best practice.

- Early engagement is key to securing and maintaining the support of communities and stakeholders and reducing the risk of conflict. Experience from the Eurasian beaver *Castor fiber* reintroduction shows that this helps build and maintain local support for translocations. It also demonstrated the importance of acting quickly to resolve conflicts. For protected species, this means allowing management of species in scenarios where such action would not normally be authorised because of their conservation status.

- There are many success stories and translocations are being used effectively to aid nature recovery. However, there remains scope for improvement, particularly in securing greater compliance with the good practice promoted in the England code and guidance and, especially, engagement with communities and stakeholders. Additionally, conservation translocation would benefit from a policy

[3] www.gov.uk/government/publications/reintroductions-and-conservation-translocations-in-england-code-guidance-and-forms

[4] Scottish Code for Conservation Translocations Best Practice Guidelines: https://www.nature.scot/professional-advice/protected-areas-and-species/protected-species/reintroducing-native-species/scottish-code-conservation-translocations

[5] IUCN. 2013. Guidelines for reintroductions and other conservation translocations (version 1.0): https://portals.iucn.org/library/node/10386

promoting greater join-up/ integration with other nature recovery schemes as translocations are too often isolated endeavours.

- Only a limited number of species translocations are currently regulated. Further improvements in translocation practice will require greater control over translocations, particularly where species are moved outside their current geographical range. Licensing translocations ensures good practice is followed and the wider public interest in nature recovery is considered. Effective enforcement and messaging about the risks associated with poorly executed translocations are also needed to improve translocation practice.
- We are pleased to have an opportunity to submit written evidence to the Committee's important and timely inquiry and have provided specific responses to the questions set out below. Furthermore, we would be happy to expand and build upon these points at any sequent oral evidence sessions should the Committee find that useful during the course of the inquiry.

Q1. What role should species reintroductions play in the delivery of the government biodiversity and nature recovery goals? Should specific objectives/ targets be set for species reintroduction?

1.1 Our native wildlife has undergone significant declines. Between 1970 and 2018, average species abundance in England fell by 52% according to an analysis by UK Centre for Ecology and Hydrology (UKCEH) and RSBP (based on 670 terrestrial animal species)[6]. In addition, 12% of assessed native species are currently threatened with extinction from England (data from GB Red Lists)[7].

1.2 In response to this crisis, the Government has set a legally binding target to halt declines in species abundance by 2030 as well as longer term targets to increase species abundance and reduce the extinction risk of native species by 2042[8]. Similarly ambitious targets have also been set by the international community for species recovery in the Kunming-Montreal Global Biodiversity Framework by the Convention on Biological Diversity[9].

1.3 To restore biodiversity and meet these targets[10] we need to provide sufficient space and suitable habitat for species to thrive through developing a climate resilient Nature Recovery Network and reducing pressures on species in the network and wider environment from pollution, disturbance and invasive non-native species. However, even if an effective Nature Recovery Network is established,

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[6] Defra.2022. Biodiversity Terrestrial and Freshwater Targets-Detailed Evidence report. Published 28th April 2022. http://randd.defra.gov.uk/

[7] Wilkins et al. 2022. Outcome Indicator Framework for England's 25 Year Environment Plan: D5 Conservation status of our native species – Technical Document 2022. NERR124. Natural England, York, UK. Available at: Outcome Indicator Framework for England's 25 Year Environment Plan: D5 Conservation status of our native species, 2022 - NERR124 (naturalengland.org.uk)

[8] Environment Act targets: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1125278/Environmental_targets_consultation_summary_of_responses_and_government_response.pdf

[9] COP15: Nations Adopt Four Goals, 23 Targets for 2030 In Landmark UN Biodiversity Agreement | Convention on Biological Diversity (cbd.int)

[10] In particular, reintroduction is the only means available to address 'Regionally Extinct' species (these species are included in the target indicator: 'Conservation of our native species' D5).

there are likely to be instances where species will not naturally recolonise areas, where a population may require reinforcement or where an ecosystem is missing a key species, or 'engineer', to restore its natural functioning. Some species may also struggle to relocate to suitable environments in the face of climate change.

1.4 In these scenarios, conservation translocations provide a unique and targeted way of addressing biodiversity loss, building genetic resilience and restoring ecosystem function. Additionally, returning lost native species particularly excites and engages people. Species capture the public imagination and can help to build support to deliver nature recovery.

1.5 Natural England (and its predecessors) have a long track record of successful conservation translocation projects, such as red kites *Milvus milvus* and large blue butterfly *Phengaris arion*. We are committed to supporting, delivering and championing conservation translocations where they are required and appropriate, and where benefits to the environment, the economy and people are clear. However, it is important that conservation translocations are recognised as just one of the many species recovery tools. They are applicable to a minority of species needing recovery action and, typically, their success depends on other conservation interventions including habitat restoration or mitigation of human pressures, before they succeed. The use of conservation translocations should be prioritised where:

- The species creates or restores habitats and generates conditions that serve many other species as well as ecosystem functions (eg beaver). Whilst part of the motivation for a conservation translocation may be to improve conservation status of the targeted species, a successful translocation can benefit other species if habitats and natural ecological processes are restored. Projects that benefit multiple species and/or ecosystem function should be the highest priority.
- The species is threatened nationally or globally (eg large blue butterfly)
- Extending the geographical distribution of a species population to support the health of metapopulation systems and/or guard against the risk of population extinction (eg assisted colonisation to help species adapt to climate change – see Appendix 3).
- The species is iconic and engages support and understanding from the public and stakeholders in support of a package of wider objectives (eg red-backed shrike *Lanius collurio*[11]).

1.6 Conservation translocations must be appropriately planned and integrated into the wider ambition for nature recovery (especially in the context of the proposed Environment Act targets). Species translocation will deliver the greatest benefit where it is integrated alongside the range of initiatives that will contribute to nature recovery. Examples of those initiatives include the ELM (see Q3) to underpin an England-wide Nature Recovery Network, expanding woodland cover and peat restoration through the Nature for Climate Fund, mandatory Biodiversity Net Gain, and the development of Local Nature Recovery Strategies, Protected Sites Strategies and Species Conservation Strategies.

[11] The prospect of red-backed shrikes being reintroduced to the South Downs has elicited generous offers from private landowners, willing to support by creating the mixed scrubby grassland habitat preferred, not just by shrikes, but also by nightingales *Luscinia megarhyncos*, turtle doves *Streptopelia turtur*, wart-biters *Decticus verrucivorus* and a range of other bird and invertebrate species. In doing so, the reintroduction of flagship species can help recover whole ecosystems.

1.7 Over the past 30 years Natural England's flagship Species Recovery Programme (SRP) has helped many of England's most threatened species. Working in close partnership with a wide range of partner organisations, projects funded under the programme have helped many populations of England's rarest and most threatened species to recover and thrive. The SRP plays an important role in helping to gather the evidence to diagnose the causes for species declines and to test and develop workable solutions to aid species recovery, which can then be rolled out in other mechanisms such as ELM, as well as undertake some of the very technical and bespoke translocation work.

Targets for translocations

1.8 We are seeing translocations implemented in isolation of other recovery actions and a translocation target could exacerbate this tendency. In addition, given our current level of understanding of the biology and ecology of our native species, we cannot say with confidence how many species may need translocation as part of that recovery though, as the majority have extant populations, the proportion is likely to be relatively small. For these reasons, we advise against setting targets for translocation and recommend that targets are outcome orientated. Individual translocation projects should however set their own objectives.

Q2. How can the government maximise the potential benefits from species reintroduction, and ensure the correct species are reintroduced in the correct places?

2.1 To maximise potential benefits and ensure species are released in the right places the Government is building on the framework it provided in the England code and guidance by setting up the England Species Reintroductions Task Force. The Task Force, supported by a stakeholder forum, plans to develop a more detailed framework to assess the suitability of candidate species for future translocations that considers their environmental and socio-economic benefits.

2.2 The Task Force will also have a significant role in promoting the wider adoption of the England code and guidance (see Q4) and the IUCN guidelines. Collectively, these guidelines provide advice that, if followed, helps projects succeed, maximise potential benefits and minimise the risk of failure or harm.

2.3 There is, however, no legal obligation on projects to follow the code and guidance, or the advice of the Task Force. Only where the taking or releasing of a species are controlled by licensing can a project currently be required to do so. A paradigm shift in our approach to species translocations may be required to improve outcomes, moving away from a largely permissive approach to one that expects benefits to be maximised and local communities and wider society to have a say in which species are translocated, and how and where this happens.

2.4 While the England code and guidance sets the appropriate expectations, significant translocation proposals[12] should proceed only if approved by a public authority able to consider the wider biodiversity and public interest, and the long-term consequences of the translocation. This is normal practice in Scotland and internationally[13] but is only partially true in England.

[12] Examples include restoring former native species; extending a species' range to new areas; movements of species that have the potential to cause conflicts, and in all cases of assisted colonisation.

[13] The IUCN Conservation translocation Specialist Group: a plan for profound global benefits to species, ecosystems and people by 2030: https://iucn-ctsg.org/wp-content/uploads/2022/04/IUCN-CTSG-Plan-to-2030.pdf

2.5 The release of (most) native species, even outside their current or historic geographical range is currently unregulated. Such translocations have the potential to cause conflicts with local communities and to interact negatively with native species by new competition, predation or the spread of disease[14]. While the release of extinct native species is controlled[15], there are loopholes. Species that have been lost in England, but which remain present elsewhere in Britain, can and have been released without official sanction[16]. Controls can also fall away when species escape or are illegally released[17]. The release of 'regular visitors'[18] also escapes controls even if there is little or no evidence that the species ever bred in England or has not done so for hundreds of years[19].

2.6 In theory, we have the means to control the release of native species by listing them on Schedule 9 of the Wildlife and Countryside Act 1981. Only 10, however, have ever been listed[20]. The process of adding species is reactive, difficult and slow, even when the need is recognised. It took 9 years to list the beaver after this was advised by Natural England. Subsequent advice recommending the addition of 7 species in 2012 and 15 species in 2020 has yet to be actioned, with the exception of the beaver. The interests of nature conservation and of the public more generally, are in best served by a default legal position that conservation translocations are controlled.

2.7 England should, as a minimum, adopt a similar legal model to Scotland[21]. This would ensure that all releases of a species outside its currently occupied geographical range would be licensed. Compliance with the England code and guidance could, therefore, be enforced alongside conditions to mitigate the

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[14] eg translocations and releases of amphibians present a serious risk of introducing or spreading pathogens like the chytrid fungus *Batrachochytrium salamandrivorans* which is devasting populations around the world.

[15] By the controls in section 14(1) [animals] and 14(2) [plants] of the Wildlife and Countryside Act 1981: www.legislation.gov.uk/ukpga/1981/69/section/14

[16] eg the translocation and release of polecat *Mustela putorius* and pine marten *Martes martes* to England was lawful because of their presence in Wales and Scotland, respectively. The release of wildcat *Felis silvestris* in England would be uncontrolled because the species is present in Scotland.

[17] eg wild-living populations originating from escapes and illegal releases of wild boar *Sus scrofa* and beaver led to both species becoming 'ordinarily resident' in a wild state (ie well-established). In this situation, the controls in section 14 fall away. This would have made further releases lawful, but for their addition to schedule 9 of the Wildlife and Countryside Act 1981

[18] Controls in section 14 do not apply to animals of a kind that are a 'regular visitor' in a wild state. This potentially applies to many tens of bird species with no history as a British breeding bird, but which visit annually in low numbers as occasional migrants. Potentially, any of these can be introduced without any approval. Only a court can decide if introducing these species is lawful or not.

[19] This 'loophole' allowed white stork *Ciconia ciconia* to be introduced in Norfolk and West Sussex without a licence despite limited evidence that it ever bred in England and the last breeding record for Britain was in Scotland in the 15th century (GOW et al. 2017. Feasibility Report for the Reintroduction of the White Stork *Ciconia ciconia* to England)

[20] Native animal species currently listed on schedule 9 are: barn owl *Tyto alba*, capercaillie *Tetrao urogallus*, chough *Pyrrhocorax pyrrhocorax*, corncrake *Crex crex*, common crane *Grus grus*, Eurasian beaver, northern goshawk *Accipiter gentilis*, red kite, white-tailed eagle *Haliaetus albicilla* and wild boar: www.legislation.gov.uk/ukpga/1981/69/schedule/9

[21] Section 14 of the Wildlife and Countryside Act 1981 (www.legislation.gov.uk/ukpga/1981/69/section/14) is amended in Scotland to control the release (or planting) of any species of animal or plant 'outwith its native range'. In essence, this means outside the currently occupied geographical range of the species. The concept and its application are explained on pages 15 and 27 of the Scottish Code for Conservation Translocations Best Practice Guidelines (https://digital.nls.uk/pubs/e-monographs/2020/216528031.23.pdf)

risk of harm, such as requiring disease screening, and to maximise benefits, such as requiring cooperation and coordination with other species recovery projects.

2.8 We are confident that extending controls would have a positive overall outcome through improved project design and planning and, in particular, improved public and stakeholder confidence in the oversight of translocations as a method to restore nature. Basing such controls around the code and guidance, which is already in place, means that these controls need not be overly burdensome for regulators or for projects following good practice.

Q3. What role should the Landscape Recovery and Local Nature Recovery Schemes, under ELMS, have in supporting species reintroduction?

3.1 Land management schemes have played a pivotal role in underpinning species conservation translocations in England over many years, from large blue butterfly in Somerset and Gloucestershire, to cirl bunting *Emberiza cirlus* in Cornwall, dormouse *Muscardinus avellanarius* in Cheshire, Yorkshire Lancashire and Suffolk and the Lady's slipper orchid *Cypripedium calceolus* in northern England (see Appendix 4).

3.2 The aim of translocation projects is typically to establish thriving self-sustaining populations which can spread through natural dispersal. To deliver this, it is crucial that the right combination of habitats is in place before releases commence and that these deliver the critical year-round life cycle needs of the targeted species. These habitats need to be of the right quality and scale, and exist in the right places, with appropriate management secured over the long term. Land management schemes can provide a suitable delivery mechanism to achieve this.

3.3 The ELM schemes offer an excellent way to deliver upon the government's new legally binding environmental targets and the newly proposed Local Nature Recovery Strategies (LNRS) should be a key mechanism to help deliver the ELM schemes as effectively as possible at a local level. LNRS are a new, England-wide system of spatial strategies that will establish priorities and map proposals for specific actions to drive nature's recovery and provide wider environmental benefits. This includes the opportunities, priorities and potential measures for recovering or enhancing species and habitats in a local strategy area. Conservation translocation initiatives for ambassadorial species such as Eurasian curlew *Numenius arquata,* red-backed shrike and large blue butterfly offer the opportunity to help drive wider nature recovery at a local level by inspiring local communities to bring back lost habitats that will help support viable populations of these species.

3.4 The current higher tier component of Countryside Stewardship (CS) includes a comprehensive suite of options, supplements and capital items that have been successfully used to deliver the tailored, targeted habitat/management requirements of threatened species in England, some of which have been, or could in future be, the subject of conservation translocation initiatives. Recent announcements suggest that a modified version of CS will form the middle component of the new ELM Offer. If these modifications include further enhancement of the scheme's ability to deliver, at scale, for threatened, priority species (including an expanded Threatened Species Supplement and funding for appropriate capital items), then there is every prospect that CS will continue to provide the land management underpinning future conservation translocations.

3.5 An expanded CS Threatened Species Supplement should have a species conservation translocation element to support future initiatives. For example, offering incentive payments to landowners to participate in locally geographically targeted conservation translocation projects, linking the incentive payment to adopting packages of CS options that deliver the needs of the target species.

3.6 The Landscape Recovery (LR) pilot scheme, launched in February 2022, represents a new approach to supporting long-term, significant habitat restoration and land-use change delivered at a larger scale, of the sort that will be essential to achieve the Government's wider environmental ambitions. The initial focus of round one of LR was on species recovery and restoring our rivers and streams. Twenty-two projects are now in the development phase with many of these having species recovery central to the project's objectives, including proposed conservation translocation of red squirrel *Sciurus vulgaris*, water vole *Arvicola amphibius*, black grouse *Lyrurus tetrix* and marsh fritillary butterfly *Euphydryas aurinia*.

3.7 To effectively support conservation translocations, it will be important that the Landscape Recovery scheme has scope to fund the mechanics of conservation translocation (eg captive breeding and release facilities, post-release monitoring etc.), in addition to large-scale habitat restoration/creation.

Q4. How effective is current government policy and 2021 guidance in leading and managing species reintroductions? Should any changes be made to its policies and guidance?

4.1 The Government's policy for reintroductions is set out in its 25 Year Environment Plan[22]. In this, the Government recognised that conservation translocation, when carefully planned and managed, can enrich our natural environment and provide wider benefits for people. It made a commitment to provide opportunities for species conservation and the reintroduction of native species (listing candidate species) and to consult on and publish a code and guidance for England to sit alongside existing international guidelines. The purpose of the latter was two-fold: firstly, to ensure translocation provide clear economic or social benefit and are alive to any risk to the public, the environment or to business, and secondly, to provide a policy framework for public authorities assessing translocation funding and consenting decisions.

4.2 '*Reintroductions and other conservation translocations: code and guidance for England'* was published in 2021[23], and translocation projects for several candidate species cited in the 25 Year Environment Plan have taken place (pine marten *Martes*, curlew, white-tailed eagle *Haliaetus albicilla* and beaver) or are being planned (hen harrier *Circus cyaneus*).

4.3 The England code and guidance is based on the guidelines published by the IUCN[24], but tailored to England. The England code and guidance builds on the Scottish experience of adapting the international guidelines for domestic use[25] and were peer reviewed by the IUCN. The result is an approach that takes

[22] 'A Green Future: Our 25 Year Plan to Improve the Environment', sets out what we will do to improve the environment, within a generation: https://www.gov.uk/government/publications/25-year-environment-plan
[23] Reintroductions and other conservation translocations: code and guidance for England: https://www.gov.uk/government/publications/reintroductions-and-conservation-translocations-in-england-code-guidance-and-forms
[24] IUCN. 2013. Guidelines for reintroductions and other conservation translocations (version 1.0): https://portals.iucn.org/library/node/10386
[25] Scottish Code for Conservation Translocations Best Practice Guidelines: https://www.nature.scot/professional-

account of the English environmental, social and economic context, is faithful to international best practice and is consistent with practice elsewhere within the UK. Reintroduced species do not respect borders, so consistency is important.

4.4 The England code and guidance is supplemented by practical guidance on licensing and on planning projects[26]to which we will add a series of case studies to help projects learn from past experience[27]. The overall approach provides a comprehensive but high-level framework which is applied proportionately according to the perceived risks and benefits of a project. If necessary, we can provide additional species-specific guidance. The beaver is a good example. Natural England has produced extensive additional guidance to support its reintroduction, covering conservation objectives[28], implications of its new legal status[29] and how to manage beavers living in the wild[30]. The new ELM includes options relating to beavers, including for capital items to protect trees and crops from damage by beavers[31].

4.5 It is too early to fully evaluate and review the effectiveness of the code and guidance in promoting good practice. Natural England collects feedback and is committed to updating the advice provided so that it remains helpful and relevant. Early feedback has identified gaps in policy and guidance in relation to the reintroduction of large predators and herbivores, disease risks (see Appendix 2) and assisted colonisation to support adaptation to climate change (see Appendix 3). It is recommended that these gaps are addressed in the next iteration of the code and guidance.

4.6 A more pressing issue is the need to increase uptake of the good practice promoted by the code and guidance. Too often, for example, conservation projects jump straight into planning a translocation without first reviewing alternative options[32] to restore a species. Translocation is just one of the 'tools' available and is not always the best or even an appropriate option. Experience leads us to conclude that practice will only significantly improve if translocations are licensed (see Q.2).

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advice/protected-areas-and-species/protected-species/reintroducing-native-species/scottish-code-conservation-translocations

[26] Guidance on licensing and planning projects: https://www.gov.uk/government/publications/reintroductions-and-conservation-translocations-in-england-code-guidance-and-forms

[27] Natural England (in press) Reintroductions and Conservation Translocations: Case studies from the UK. Vol. 1.

[28] Definition of Favourable Conservation Status for Eurasian beaver, Castor fiber: http://publications.naturalengland.org.uk/publication/5400422937526272

[29] Beavers: protection and management: https://www.gov.uk/government/publications/beavers-protection-and-management

[30] Beavers: how to manage them and when you need a licence: https://www.gov.uk/guidance/beavers-how-to-manage-them-and-when-you-need-a-licence

[31] ELMs options: BC4 Tree guard post and wire (www.gov.uk/countryside-stewardship-grants/bc4-tree-guard-post-and-wire) and BC3 Crop protection fencing mesh and wire for permanent crops (www.gov.uk/countryside-stewardship-grants/bc3-crop-protection-fencing-mesh-and-wire-for-permanent-crops)

[32] Principle 2 of the code and guidance expects projects to 'evaluate whether conservation translocation is an appropriate option' and to 'only go ahead with a conservation translocation if the evidence supports its use alone or in combination with other management options'.

Q5. What improvements can be made in how local communities, landowners and other land users are engaged and consulted on reintroduction proposals? What practical steps can be taken to reduce conflicts within this group?

5.1 Engagement, consultation and transparent communication are key principles of the English code and guidance. It recommends openness so local communities, landowners and other land users have an informed view of the project. However, good engagement is much more than simply a means of keeping people informed. Engagement can help make better decisions which are more beneficial and long-lasting for everyone involved and a growing body of social science research has specifically examined the benefits that different types of engagement can bring to reintroduction proposals[33]. A clear plan for engagement should be established early when proposals for reintroductions are discussed. It should remain a pillar throughout the planning, implementation and monitoring phases of the project and should be proportionate to the risks the proposal has identified. For example, the same level of engagement is not expected for a translocation of wart-biter cricket *Decticus verrucivorus* as for beaver or a bird of prey.

5.2 Where projects are licensed, Natural England can influence the scale and approach to engagement. For example, in planning for the reintroduction of beaver, Natural England facilitated online and face to face workshops, technical webinars and training which have been used to collate views, impart knowledge and share work in progress and new frameworks. A public consultation was also undertaken by Defra to gather views on specific questions. Natural England is in the process of establishing a beaver forum to promote collaboration and enable stakeholders to reach collective evidence-based views on reintroduction projects and the management of beavers in England. Additionally, building on some of the latest methodological approaches to engaging stakeholders and understanding and managing potential conflict around species reintroductions[34], Natural England has commissioned research to test and evaluate mental model[35] approaches to better understand and manage areas of potential human-wildlife conflict, including species reintroduction.

5.3 Non-governmental organisation-led steering groups exist for several species and allow stakeholders and experts to discuss and agree approaches for restoring species through use of translocation. For example, Natural England regularly attends the pine marten steering group alongside partner organisations. Set up in 2011 by the Vincent Wildlife Trust to oversee the implementation and development of an England and Wales Strategy, a long-term strategic recovery plan for pine marten in

[33] Auster et al. 2021. Improving engagement in managing reintroduction conflicts: learning from beaver reintroduction. Journal of Environmental Planning and Management, 64(10), pp.1713-1734. Auster et al. 2022. Renewed coexistence: learning from steering group stakeholders on a beaver reintroduction project in England. European journal of wildlife research, 68(1), pp.1-22.

[34] Blewett et al. 2021. Stakeholder mental model analysis supports focused conservation policy and actions for Eurasian beaver (Castor fiber) reintroduction. Journal for Nature Conservation, 64, p.126064. Blewett et al. 2022. Emotionally augmented mental models, connectivity and beaver reintroduction in Southwest England. Ecology and Society, 27(1).

[35] A mental model is a person's internal representation of the external world (or aspects of it). For example, their perception of the need for or impact of a species reintroduction. Mental models are constructed by individuals based on their unique life experiences, perceptions, and understandings of the world and act as a guide to their interaction with the world around them. They therefore influence peoples reasoning and decision making and can act as the basis for their behaviour.

Britain was published in 2021[36]. This is a great example of partnership working to build consensus, facilitate cooperation and avoid conflicts[37]. Although such mechanisms may not always be necessary, in the absence of a mandatory standard for engagement, unofficial multi-stakeholder groups can be effective at building support for projects (as well as encouraging development of strategic plans).

5.4 Local support is important for all translocations but is essential for high profile species such as eagles and beaver. Unanimous support is, however, unlikely for many species. It is difficult to define the appropriate level of support necessary for a project to proceed. Opposition may be based on misconceptions, on uncertainty or known outcomes, or may be an ideological viewpoint irrespective of any species-specific issues. Opposing views need to be engaged, not discounted, and can influence how a project is delivered. Engagement should not seek to achieve consensus but should ensure all have an opportunity to raise their concerns and shape the proposal.

5.5 There is merit in publishing engagement standards setting out the level and tools to be used for engagement according to the anticipated level of controversy or conflict. The IUCN has developed analytical tools to facilitate engagement including the use of expert elicitation. These tools can be used at any time during the planning and implementation of the project but are most efficient in the early planning stages where decision analysis will help to set the objectives, understand the risks and consider alternatives. If translocations are licensed, then it would be possible to require compliance with the engagement standards, improving consistency and giving greater confidence to interested parties that appropriate engagement would take place.

Q6. How could the development of long-term management plans and regulatory regimes for reintroduced species control be improved?

6.1 Only a small subset of the species translocated to restore nature in England will ever need to be controlled. Typically, these are species extirpated in the past due to competition or conflict with people. Only about 5 (2.5%) of the >230 species translocated for conservation purposes in England (listed in Appendix 4) potentially fall in this category.

6.2 The risk that translocations cause conflicts sufficiently severe to warrant control action can be reduced through pre-translocation planning[38] and engagement with local communities[39] (discussed in Q5).

6.3 If control becomes necessary, then management by landowners or occupiers is lawful unless the species is protected. Licences can be issued by Natural England to manage protected species where

[36]MacPherson and Wright (2021). Long-term strategic recovery plan for pine martens in Britain. Vincent Wildlife Trust

[37] Natural England also participates in groups discussing translocations of sturgeon *Acipenser sturio* and Dalmatian pelican *Pelecanus crispus* and is encouraging establishment of a group for chough *Pyrrhocorax pyrrhocorax.*

[38] Natural England provide a 'Conservation translocation project scoping form' to help projects identify potential risks: https://www.gov.uk/government/publications/reintroductions-and-conservation-translocations-in-england-code-guidance-and-forms

[39] This issue is addressed by Principle 7 and Chapter 8 of: Reintroductions and other conservation translocations: code and guidance for England (link above)

there is suitable justification. For example, licensed control of red kites is permitted at several airfields to protect air safety.

6.4 Where conflicts are anticipated, then a bespoke licensing regime can be put in place in advance to enable legitimate management to take place swiftly and effectively. This is Natural England's approach to the Eurasian beaver reintroduction[40].

6.5 To help people and communities adjust to the return of a long absent species it is important that projects provide advice and practical support. Such provisions can, however, only be made a requirement if a translocation is controlled. For example, Natural England can require projects seeking to release beavers to provide advice and support to local communities because the release of this species requires a licence. There are no such controls on releases of certain other species which are perceived by some communities as posing a risk of conflict. Some of these species are being actively translocated (eg pine marten) or are being considered for translocation (eg wildcat *Felis silvestris* and golden eagle *Aquila chrysaetos*).

6.6 To improve the provision of long-term management and the ability to control potential conflict species, two changes are required.

> 6.6.1 English law requires reform so that all movements of a species (both native and non-native) outside its current geographical range are licensed. This will allow the risk of conflict to be assessed before a translocation is permitted. If the project proceeds, the licensing process can ensure steps are taken to reduce conflicts including the provision of an "exit strategy" that can be enforced if a translocation leads to unacceptable levels of conflict.
>
> 6.6.2 Licensing authorities need policy authority to use their discretion in deciding when to allow control of recently translocated protected species, including in circumstances where a species has yet to achieve a favourable conservation status. The ability to allow management interventions in the early stages of a translocation can be vital in fostering a positive attitude amongst local communities to the restoration of a species. This is an important lesson of the River Otter beaver trial[41].

Q7. What can the government do to help prevent unregulated species reintroductions?

7.1 The translocation of most native species is unregulated and is therefore lawful. There are benefits from extending regulatory controls to a wider range of species (as explained above).

7.2 Compliance with legal controls is likely to improve through raising awareness of the risks associated with poorly planned or implemented translocations and the benefits of projects that are well-executed[42]. Raising awareness may also encourage stakeholders and members of the public to report non-

[40] For information on beaver licensing see: https://naturalengland.blog.gov.uk/2022/10/03/beavers-are-now-legally-protected-in-england-the-licensing-regime-explained/

[41] eg Auster et al. 2019. Unravelling perceptions of Eurasian beaver reintroduction in Great Britain. Area, 52(2): 364-375. https://doi.org/10.1111/area.12576

[42] Appendix 2 includes some examples of unintended negative outcomes from translocating species.

compliance, thereby increasing the likelihood of unregulated reintroductions being identified and addressed.

7.3 It is also important that people understand the regulatory process. The licensing, therefore, needs to be accompanied by published guidance, advice services and training opportunities. This will improve compliance and the chances of successful applications.

7.4 While we have already made significant steps (publication of the England code and guidance and setting up of the Task Force) there is more to be done to raise awareness of the benefits and risks of good and poor practice.

7.5 Regulatory controls need to be supported by education, advice and effective policing and enforcement. This discourages non-compliance as well as providing an opportunity to rectify any environmental or economic harm caused as a result of unlawful translocations. It is important to recognise that unauthorised releases make it harder to track changes in species resulting from climate change and habitat loss, thereby undermining our ability to assess the need for conservation action.

7.6 Timely enforcement action is critical so that opportunities to prevent/rectify harm are not lost. To this end, Natural England recommends extending the use of civil penalties with a "balance of probabilities" standard of proof, while retaining criminal penalties for those cases where the social or ecological impact of the offence is significant.

7.7 To further improve the effectiveness of enforcement we advise amendment to the time limit for prosecution and service of penalties. For example, where the relevant enforcement body is not made aware of an unregulated reintroduction until many months after the event occurs (often the case with illegal releases), opportunities to address the incident using enforcement tools might be missed if the underlaying offence is summary only (in these cases a prosecution must commence within six months of the offence).

Q8. What lessons could the UK government and Natural England learn from reintroduction in other jurisdictions, in UK and Europe?

8.1 As an evidence-led organisation, Natural England has and continues to learn from the experiences of administrations, organisations and projects across the UK and Europe. We also work closely with statutory bodies in other countries to support translocations. Red kites were brought from Spain and Sweden to reintroduce the species to England, and we are now sending kites back to Spain to support their species recovery work.

8.2 Close dialogue with NatureScot in the preparation of the England code and guidance not only ensured alignment with the Scottish code but also capitalised on their established best practice approaches for conservation translocations. Ongoing regular meetings between Natural England, NatureScot and Natural Resources Wales have facilitated a mutually beneficial exchange of information on new project proposals, policy development and practices. Recognition of the value of this interchange has been incorporated into the Terms of Reference of the Task Force.

8.3 Staff knowledge of contemporary research and best practice is also key and actively ongoing, exemplified recently by a collaborative training course with the ZSL to help embed and operationalise

the IUCN and England code and guidance across Natural England's work. Natural England also facilitates staff participation in international conferences, symposia and research visits to conservation translocations in Europe. For example, Natural England Senior Specialist for mammals recently undertook a study tour of German and Swiss projects to assess the suitability of lynx and wildcat reintroduction to the UK[43]. In September 2022, Natural England staff presented early perspectives from England on beaver reintroduction at the 9th Beaver International Symposium in Romania[44]. Similarly, Natural England staff involved in reintroduction work benefited from Erasmus-funded visits to Germany to learn about the experiences of communities living with recovering populations of species such as beaver and wolf *Canis lupus*.

8.4 Most conservation translocations[45] around the world are initiated or approved by government agencies. A review of regulatory regimes would allow us to assess the strengths and weaknesses of different regulatory models and help inform future domestic policy to promote successful and sustainable approaches for conservation translocations. We can also learn from case studies. Several recent papers[46&47&48] have measured the relative success or failure of conservation translocations on a global scale, that are generalisable across taxa, types of conservation translocation and countries. Some of these papers draw upon the valuable collection of case studies presented in the IUCN's 'Global conservation translocation perspectives' series[49].

8.5 Natural England will continue to seek the best available evidence and science to inform its approach to conservation translocation.

Appendices

1. **Types of Conservation Translocation**
2. **Disease Risk Assessment in conservation translocation**
3. **Assisted colonisation to tackle climate change**
4. **Species subject to a conservation translocation project**

[43] Assessing the suitability of lynx/wildcat reintroduction to the UK (churchillfellowship.org)
[44] 9th Beaver International Symposium – Brasov, Romania (9internationalbeaversymposium.com)
[45] The IUCN Conservation translocation Specialist Group: a plan for profound global benefits to species, ecosystems and people by 2030: https://iucn-ctsg.org/wp-content/uploads/2022/04/IUCN-CTSG-Plan-to-2030.pdf
[46] Berger-Tal et al. 2020. "Conservation translocations: a review of common difficulties and promising directions." Animal Conservation 23(2): 121-131
[47] Bubac et al. 2019. "Conservation translocations and post-release monitoring: Identifying trends in failures, biases, and challenges from around the world." Biological Conservation 238: 108239
[48] Morris et al. 2021. "Factors affecting success of conservation translocations of terrestrial vertebrates: A global systematic review." Global Ecology and Conservation 28: e01630
[49] Global conservation translocation perspectives: 2021 | IUCN Library System

Appendix 1: Types of Conservation Translocation

Reinforcement: the translocation of an organism into an existing population of the same species

Reintroduction: the translocation of an organism to an area or areas from which it has been lost. It aims to re-establish a viable population of the focal species within its natural range.

Assisted colonisation: the translocation of an organism to benefit its conservation status. It aims to establish populations in locations where the current or future conditions are likely to be more suitable than those within the current natural range (including areas beyond the known historical range of the species). Assisted colonisation can be considered if the species is unlikely to colonise by natural dispersal.

Ecological replacement: the translocation of an organism to perform a specific ecological function that has been lost through extinction of another organism. It usually involves replacing the extinct species with a related subspecies or closely related species that will perform the same or similar ecological function.

In our submission, we refer to all four types of conservation translocation. This is because we consider them all relevant to the Committee's review and because the distinction between categories can depend on perspective or geographical scale. For example, releasing wildcat in the south of England would be a 'reintroduction' for England, but a 'reinforcement' for Britain and, arguably, could be regarded as 'ecological replacement' because we would most likely use a European donor source because the native British subspecies, found only in Scotland, is functionally extinct. With the growing threat to biodiversity posed by climate change we may also wish to consider the future role of 'assisted colonisation', both within Britain and from elsewhere in Europe, for highly threatened species that need assistance to relocate to suitable climatic conditions.

Appendix 2: Disease Risk assessment in conservation translocation

Disease risk assessment

As reintroductions are highly resource-intensive it is important to maximise the chances of success and minimise risks, especially from accidental disease transmission. Infectious disease can have a severe impact on wildlife population numbers and can, in extreme cases, lead directly to species extinctions and ecosystem dysfunction. Translocations involving (i) the assisted movement of animals across geographic barriers to natural dispersal such as oceans or mountain ranges or (ii) animals or their antecedents which have spent time in captivity in close proximity to species they would not normally encounter in the wild, are of particularly high risk as these activities may facilitate the dissemination of pathogens into new host species.

This risk is especially relevant to translocations in Britain. Although donor sites for certain translocation candidate species can be found within the UK, for other species suitable domestic donor sites do not exist. The nearest healthy populations can only be found in continental Europe thus necessitating translocations of species that may have very different pathogen exposure.

There are many examples of infectious diseases that have inadvertently been spread in this way by the movement of animals. For example, *Batrachocytrium dendrobatidis*, a fungal infection of amphibians which has caused mass extinctions of susceptible species worldwide, has been disseminated by legal and illegal international trade in amphibians[50]. Similarly, squirrelpox virus, a cause of severe disease and mortality in red squirrels in Great Britain, is carried by grey squirrels *Sciurus carolinensis* imported from north America in the 19th and 20th centuries[51] . These pathogens may be harmless in their normal host and therefore not a recognised cause of disease but may cause severe disease in new, naïve host species.

Such commensal organisms can also cause disease in normally asymptomatic host species when the animals are subjected to stressful situations which cause transient immunosuppression. Translocation is recognised as a major source of stress to animals[52], for example, due to captivity, handling, competition for territory or food resources at the release site, and stressor-associated disease is therefore a recognised common risk of wildlife translocations. Stress was reported to be a key factor in the failed reintroduction of Vancouver Island marmots *Marmota vancouverensis* in Canada[53].

Translocated animals themselves may also be vulnerable to disease because they lack immunity to certain pathogens, even when being restored to former ranges. For example, eastern woodrats *Neotoma floridana* developed neurological disease when released into a former range in New York following infection with *Bayliascaris procyonis*, a roundworm harboured by raccoon *Procyon lotor*[54] .

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[50] Duffus and Cunningham. 2010. Major disease threats to European amphibians. The Herpetological Journal. 20:117-127.

51 Sainsbury et al. 2008. Poxviral disease in red squirrels (Sciurus vulgaris) in the UK: spatial and temporal trends of an emerging threat. EcoHealth. 5:305-316.

[52] Dickens et al. 2010. Stress: An inevitable component of animal translocation. Biological Conservation.

[53] Bryant et al. 2002. Disease and unsuccessful reintroduction of Vancouver Island marmots (*Marmota vancouverensis*), in Armitage K. and Rumianstev V (eds) *Holarctic Marmots as a Factor of Biodiversity*. ABF Publishing House (Moscow), pp. 101–107.

[54] Davidson and Nettles. 1992. Relocation of wildlife: identifying and evaluating disease risks. Transactions of the North American Wildlife and Natural Resources Conference. 57:466-473.

It is impossible to eliminate the risk of disease in conservation translocations, but the IUCN recommends that disease risk analysis (DRA), a structured, evidence-based process designed to guide decision-making in the face of uncertainty, is performed prior to any translocation for conservation purposes. DRA enables the translocation team to identify disease risks that may be associated with the planned animal movement and to develop appropriate disease risk management plans. Case studies such as the translocation of the cirl bunting in England suggest that systematic DRA can successfully mitigate the likelihood and impact of diseases[55] .

As there is often limited knowledge of infectious and non-infectious diseases in wildlife and their implications for specific wildlife species, ecosystems, domestic animals and people, post-release health surveillance of translocated animals and similar taxonomic groups should also form part of any translocation programme.

Whereas certain stages of conservation translocations can be delivered inexpensively by volunteers, the cost of the professional expertise necessary to undertake DRA and to deliver veterinary measures is inherently higher. Meeting these costs is potentially problematic for projects which have not properly budgeted and who might, instead, seek to rely upon a non-expert assessment of disease risk. Although the risks of doing so are often be perceived as low, the consequences of an unintended introduction of a novel pathogen can have far-reaching consequences for our native wildlife and for public health. Increasing both the knowledge of the disease risk analysis process and the number of trained veterinarians, alongside centrally provided advice and support (something that Natural England already does with a limited budget) could help ensure more translocations adequately address this issue.

[55] McGill et al. 2010. Isospo

Appendix 3: Assisted colonisation to tackle climate change

Climate change and its impact on species, habitats and ecosystems is increasing, and will continue to do so even under the most optimistic emission scenarios. Changes to the climate are driving changes in the broad distribution and abundance of many species as they respond to a warming world. Whilst more local climate driven changes to the environment such as the drying out of wetland and ponds due to hotter drier summers, or the loss of coastal habitat due to sea level rise is leading to the changes in distribution and losses within landscapes.

Some species will be able to track the pace of climate change through changes in their distribution, but many others due to poor mobility, the fragmented nature of their habitat or other barriers to dispersal will be unable to. This failure will increase the risk to those species threatened by climate change and reduce the opportunities for those that could benefit to do so.

Translocation provides one possible option to support adaptation in species unable to track the pace of climate change through the movement of species to new locations within, or outside their current natural range where the climatic conditions are or will become increasingly favourable. Although the former may involve locations where the species has not been previously present, as it is within the wider geographic distribution this is still considered reinforcement or reintroduction. Movement outside the current natural range is termed “assisted colonisation”.

Assisted colonisation represents the more interventionist end of the adaptation response spectrum[56]. In-situ adaptation to build resilience and address climate specific threats in conjunction with wider landscape interventions to facilitate tracking through improving functional connectivity are and will remain the most effective responses for most species. Decision support tools have been developed to help inform the choice of adaptation response, including where assisted colonisation would be appropriate[57].

The approach has been tested experimentally in the UK[58,59]. In both cases individuals were translocated outside of their natural range to locations where the climate has been projected to become more suitable. The translocated populations have persisted, although the timeframes are too short to assess the long-term viability.

The same risk considerations for the recipient populations will apply as for translocation for non-climatic reasons. With regard to the impact on source populations, climate projections should enable the early identification of climate vulnerability to source populations, enabling interventions to be planned and delivered early thus reducing the risk to source populations from the translocation process.

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[56] Natural England & RSPB. 2019. *Climate Change Adaptation Manual-Evidence to support nature conservation in a changing climate.*

[57] Oliver et al. 2012. A decision framework for considering climate change adaptation in biodiversity conservation planning. *Journal of Applied Ecology*, pp.1247-1255.

[58] Willis et al. 2009. Assisted colonization in a changing climate: a test-study using two UK butterflies. Conservation Letters, 2(1), 46-52

[59] Brooker et al. 2018. Tiny niches and translocations: The challenge of identifying suitable recipient sites for small and immobile species. *Journal of Applied Ecology*, *55*(2), pp.621-630.

Appendix 4: Species translocations involving Natural England or predecessors

Explanatory notes about the list of projects:

- The list includes conservation translocation projects that Natural England (NE) has been involved with.
- Some partners may have been missed.
- The list is not exhaustive. We are aware that there have been a number of other conservation translocation projects that have occurred without our involvement. These are not included. These projects include translocations of species such as: black grouse *Tetra tetrix*, white stork *Ciconia*, harvest mouse *Micromys minutus*, oblong woodsia *ilvensis*.

Key to NE role:

Delivery partner – NE is the lead or co-lead, and actively involved in the project

Funder - NE provides financial support to the project

Technical and advisory – NE provides advice to project or is consulted, including support, area team support and national oversight, and agri-environment delivery

Licensing – Issues licences for release, and issues SSSI consent

Steering group member – NE staff participate in a strategic species action group

Key to 'success status':

Highly successful – all goals/aims of the translocation were achieved

Successful – the majority of goals/aims of the translocation were achieved

Partially successful – some goals/aims of the translocation were achieved

Failure – none of the goals/aims were achieved, species extinct at site

Not yet known – project ongoing/outcome uncertain

Species	Year (approx. Start of intervention)	Partners involved	NE Role (or predecessor)	Success status
Amphibians				
Pool frog *Pelophylax lessonae*	2005	Zoological Society of London (ZSL), Amphibian and Reptile Conservation, Sussex University, ARG UK, DICE, Anglian Water	Funder	Successful
Natterjack toad *Epidalea calamita*	1970	ZSL, Amphibian and Reptile Conservation	Delivery partner; Licensing	Successful
Birds				
Corncrake Crex *crex*	2002	ZSL, RSPB, Wildfowl and Wetlands Trust (WWT), Pensthorpe Conservation Trust	Delivery partner	Not yet known

Black-tailed Godwit *Limosa limosa*	2022	RSPB, WWT	Steering group member; Funder	Not yet known
Red kite *Milvus milvus*	1989	ZSL, RSPB, plus numerous other funding and implementation partners	Funder; Delivery partner	Highly Successful
Curlew *Numenius arquata*	2019	ZSL, Wildfowl and Wetlands Trust, Pensthorpe Conservation Trust, MOD	Funder; Delivery Partner; Technical and advisory	Not yet known
Hen Harrier *Circus cyaneus*	2022	ZSL, International Centre for Birds of Prey	Funder; Delivery Partner	Not yet known
White-tailed Eagle *Haliaeetus albicilla*	2019	ZSL, Roy Dennis Foundation	Licensing; Technical and advisory	Not yet known
Cirl Bunting *Emberiza cirlus*	2004	ZSL, RSPB, Paignton Zoo	Funder	Highly successful
Eurasian crane *Grus grus*	2010	ZSL, RSPB, Wildfowl & Wetlands Trust, Pensthorpe Conservation Trust	Technical and advisory	Not yet known
Great Bustard *Otis tarda*	2004	Great Bustard group	Licensing	Not yet known
Osprey *Pandion haliaetus*	1996	Leicestershire & Rutland Wildlife Trust, Anglian Water, Roy Dennis Foundation	Licensing; Technical and advisory	Successful
Fish				
European Sturgeon *Acipenser sturio*	2021	UK Sturgeon Alliance, ZSL	Steering group member; Technical and advisory	Not yet known
Atlantic Sturgeon *Acipenser oxyrinchus oxyrinchus*	2021	UK Sturgeon Alliance, ZSL	Steering group member; Technical and advisory	Not yet known
Burbot *Lota lota*	2015	Environment Agency, Norfolk Rivers Trust	Steering group member; Technical and Advisory; Funder	Not yet known
Vendace *Coregonus albula*	2004	United Utilities, Environment Agency, Nature Scotland	Licensing; Technical and advisory	Partially successful
Arctic Charr *Salvelinus alpinus*	1989	Environment Agency, Northumbrian Water, Yorkshire Water	Delivery partner; Licensing; Technical and advisory	Not yet known
Fungi				

Lion's mane mushroom *Hericieum erinaceus*	2019	Cardiff University, from the Brink, Savernake Estate, Forestry England	Funder; Licensing	Partially successful
Coral tooth fungus *Hericieum corollides*	2018	Cardiff University, Back from the Brink, Savernake Estate, Forestry England, Crown Estate	Funder	Partially successful
Willow gloves *Hypocreopsis lichenoides*	2023	Where the Wild Stuff is	Delivery Partner	Not yet known
Hydnoid spp	2023	Crown Estate	Delivery Partner	Not yet known
Invertebrates				
Fisher's estuarine Moth *Gortyna borelii lunata*	2006	ZSL, Colchester Zoo, Tendring District Council, Writtle College	Delivery Partner; Technical and advisory; Licensing	Successful
Short-haired bumblebee *Bombus subterraneus*	2009	Bumblebee Conservation Trust, RSPB, ZSL, Hymettus, Royal Holloway College (University of London)	Delivery partner; Funder; Technical and advisory; Licensing	Partially successful
Wart-biter cricket *Decticus verrucivorous*	1991	ZSL, Buglife, Sussex Wildlife Trust	Funder; Technical and advisory	Highly successful
Ladybird spider *Eresus sandaliatus*	1995	Dorset Wildlife Trust, RSPB, Specialists Patrick Wisniewski and Ian Hughes, Dudley and Bristol Zoos, Forest Enterprise. Amphibian & Reptile Conservation Trust, National Trust, British Arachnological Society, LifeForms	Funder; Technical and advisory; Licensing	Successful
Chequered skipper *Carterocephalus palaemon*	2018	ZSL, Butterfly Conservation	Funder; Technical and advisory	Not yet known
Field cricket *Gryllus lineaticeps*	1992	ZSL, RSPB, Back from the Brink, South Downs National Park, Sussex Wildlife Trust, Hampshire County Council	Funder; Technical and advisory	Successful
Duke of Burgundy *Hamearis lucina*	2011	Butterfly Conservation, National Trust, ZSL, J&F Clarke Trust, Royal Entomological Society,	Technical and advisory; Licensing	Partially successful

		Prince of Wales Charitable Fund		
Netted carpet moth *Eustroma reticulatum*	2006	National Trust	Technical and advisory; Licensing	Highly successful
Fen raft spider *Dolomedes plantarius*	2010	Helen Smith, British Arachnological Society, Suffolk Wildlife Trust, Ian Hughes, ZSL, British and Irish Association of Zoos and Aquaria Terrestrial Invertebrate Working Group, Broads Authority	Technical and advisory; Licensing; Funder	Successful
Narrow-headed ant *Formica exsecta*	1996	Buglife; Devon Wildlife Trust; Bees, Wasps & Ants Recording Scheme, Back from the Brink	Technical and advisory; Licensing; Funder	Partially successful
Large blue butterfly *Phengaris arion*	1980	National Trust, Butterfly Conservation, Back from the Brink, Royal Entomological Society, Minchinhampton and Rodborough Committees of Commoners	Funder; Technical and advisory; Licensing	Highly successful
Large marsh grasshopper *Stethophyma grossum*	2018	ZSL, Norfolk Wildlife Trust, The Wildlife Trust for Bedfordshire, Cambridgeshire and Northamptonshire, and Wild Ken Hill	Funder; Technical and advisory; Licensing	Not yet known
Red barbed ant *Formica rufibarbis*	1996	ZSL, Surrey Wildlife Trust, Isles of Scilly Wildlife Trust, Hymettus, individual specialists	Technical and advisory; Licensing	Partially successful
Barbary Carpet Moth *Pareulype berberata*	1987	Butterfly Conservation, Paul Waring	Technical and advisory; Licensing	Partially successful
White-clawed crayfish *Austropotamobius pallipes*	1982	Local Rivers Trusts, local Wildlife Trusts, Environment Agency	Technical and advisory; Licensing	Successful
Lichens				
Starry breck lichen *Buellia asterella*	1992	Oliver Gilbert, Joint Nature Conservation Committee (JNCC)	Funder	Failure

Scaly breck-lichen *Squammarina lentigera*	1992	Oliver Gilbert, JNCC	Funder	Failure
Scrambled egg lichen *Fulgensia fulgens*	1992	Oliver Gilbert	Funder	Successful
Lungwort *Lobaria amplissima*	1980	Nature Conservancy Council (NCC), Oliver Gilbert	Delivery Partner	Successful
Tree Lungwort *Lobaria pulmonaria*	1990-92 (six projects)	Oliver Gilbert, consultant lichenologists, National Trust	Funder (of two projects)	Partially successful
Spotted felt lichen *Sticta limbata*	1992	National Trust, consultant lichenologists	Technical and advisory	Highly successful
Giant shield lichen *Cetrelia olivetorum*	1992	National Trust, consultant lichenologists	Technical and advisory	Failure
Golden hair-lichen *Teloschistes flavicans*	1997	JNCC, Oliver Gilbert	Funder	Partially successful
String-of-sausage lichen *Usnea articulata*	1998	Dartmoor National Park Authority (DNPA), Environment Agency, The Duchy of Cornwall, South Devon and Dartmoor Leader	Steering group member; Technical and advisory; Funder	Partially successful
Mammals				
Hazel dormouse *Muscardinus avellanarius*	1993	ZSL, People's Trust for Endangered Species, Paignton Zoo	Funding; Licensing; Technical and advisory	Partially successful
Water vole *Arvicola amphibius*	1994	ZSL	Technical and advisory	Not yet known
Beaver *Castor fiber*	2015	ZSL, Devon Wildlife Trust	Technical and advisory; Licensing	Highly successful
Pine marten *Martes martes*	2019	Vincent Wildlife Trust, Forestry England, Gloucestershire Wildlife Trust	Steering group member	Successful
Molluscs				
Freshwater pearl mussel *Margaritifera margaritifera*	2007	Environment Agency, Freshwater Biological Association, Rivers trust, Devon Wildlife trust, North York Moors NPA,	Funder; Technical and advisory	Successful

		Shropshire hills AONB, Severn Rivers trust		
Little Whirlpool ramshorn snail *Anisus vorticulus*	2017	RSPB, Back from the Brink, Highways Agency	Technical and advisory; Steering group member	Successful
Reptiles				
Smooth snake *Coronella austriaca*	2009	ZSL, Amphibian and Reptile Conservation, RSPB	Licensing	Successful
Sand lizard *Lacerta agilis*	1995	ZSL, Amphibian and Reptile Conservation, Chester Zoo, Marwell Wildlife, Natterjack Ecology	Licensing	Successful
Plants				
Wild Asparagus *Asparagus prostratus*	1997	National Trust, National Museum of Wales, Dorset Environmental Records Centre	Delivery Partner	Successful
Common Juniper (dwarf) *Juniperus communis subsp. hemisphaerica*	2010	Eden project, BSBI	Delivery Partner	Partially successful
Fen Violet *Viola persicifolia*	2012	Oxfordshire Flora Group, RSPB, Kew	Funder; Technical and advisory	Partially successful
Creeping Marshwort *Apium repens*	2010	Oxfordshire Flora Group	Funder; Technical and advisory	Partially successful
Triangular Club-rush *Scirpus triqueter*	2002	Kew	Funder; Delivery partner	Not yet known
Interrupted Brome *Bromus interruptus*	2019	Plantlife, Kew	Funder; Delivery partner	Partially successful
Crested Buckler Fern *Dryopteris cristata*	2018	Plantlife, British Pteridological Society	Funder; Delivery partner	Not yet known
Strapwort *Corrigiola litoralis*	1996	Whitley Wildlife Conservation trust, National Trust	Delivery Partner; Funder	Partially successful
Upright Goosefoot *Chenopodium urbicum*	2019	Species Recovery Trust	Delivery partner	Successful
Darnel *Lolium temulentum*	2019	Species Recovery Trust	Delivery partner	Successful
Fen Orchid *Liparis loeselii*	1991	Plantlife	Delivery partner; Funder	Highly successful
Yellow Early Marsh Orchid *Dactylorhiza incarnata subsp.*	1991	Plantlife	Delivery partner; Funder	Not yet known

ochroleuca				
Fen Ragwort *Senecio paludosus*	1991	Plantlife	Delivery partner; Funder	Partially successful
Ribbon-leaved Water Plantain *Alisma gramineum*	1991	Plantlife	Delivery partner Funder	Partially successful
Lady's Slipper Orchid *Cypripedium calceolus*	1990	Kew, Royal Botanical Gardens	Funder; Delivery partner	Successful
Alpine Catchfly *Silene alpestris*	2000	Plantlife	Funder; Delivery partner	Highly Successful
Starved Wood-sedge *Carex depauperata*	1977	Plantlife, Somerset Wildlife Trust	Funder; Delivery partner	Successful
Starfruit *Damasonium alisma*	1988	Plantlife, Buckinghamshire County Council, Millenium Seed Bank	Delivery partner	Successful
Narrowleaf cottonrose *Filago gallica*	1994	Plantlife	Delivery partner	Partially Successful
Shore dock *Rumex rupestris*	1996	Plantlife	Funder	Failure
Cotswold Penny-cress *Thlaspi perfoliatum*	1999	Plantlife	Funder	Highly Successful
Ground-pine *Ajuga chamaepitys*	1992	Plantlife, Bedfordshire, Cambridgeshire and Northamptonshire Wildlife Trust	Funder	Successful
Hairy Marshmallow *Althaea hirsuta*	1994	Plantlife	Funder	Successful
Tower rockcress *Arabis glabra*	2010	Plantlife, Back from the Brink	Delivery partner	Successful
Gray chickweed *Cerastium brachypetalum*	1998	Union Railways	Technical and advisory	Successful
Deptford Pink *Dianthus armeria*	1999	Vincent Wildlife Trust, Plantlife	Funder; Delivery partner	Partially successful
Red tipped cudweed *Filago lutescens*	1987	Suffolk Wildlife Trust	Funder; Technical and advisory; Delivery partner	Partially successful
Broad-leaved cudweed *Filago pyramidata*	2000	Uni of Cambridge Botanic Gardens, Oxford Flora Group, Plantlife, Surrey Wildlife Trust, Back from the Brink	Funder; Delivery Partner	Partially Successful
Meadow clary *Salvia pratensis*	2005	National Trust, BBONT, CRPG, Bucks County	Funder; Delivery Partner	Partially Successful

		council, ANHSO-RPG		
Plants (cont.)				
See list of species below	2020	RSPB, United Utilities, Alpine Garden Society	Delivery partner	Not yet known
Alpine sawwort *Saussurea alpina*, Bearberry *Arctostaphylos uva-ursi,* Bird's-eye primrose *Primula farinose,* Bitter vetch *Lathyrus linifolius,* Bog bilberry *Vaccinium uliginosum,* Bog myrtle *Myrica gale,* Bog rosemary *Andromeda polifolia,* Burnet saxifrage *Pimpinella saxifrage,* Cloudberry *Rubus chamaemorus,* Common knapweed *Centaurea nigra,* Common valerian *Valeriana officinalis,* Devil's-bit scabious *Succisa pratensis,* Dyer's greenweed *Genista tinctoria,* Foxglove *Digitalis purpurea,* Globeflower *Trollius europaeus,* Grass of parnassus *Parnassia palustris,* Great burnet *Sanguisorba officinalis,* Great wood-rush *Luzula sylvatica,* Hairy stonecrop *Sedum villosum,* Lady's bedstraw *Galium verum,* Lesser meadow-rue *Thalictrum minus,* Meadowsweet *Filipendula ulmaria,* Melancholy thistle *Cirsium heterophyllum,* Mossy saxifrage *Saxifraga hypnoides,* Mountain pansy *Viola lutea,* Mountain sorrel *Oxyria digyna,* Northern bedstraw *Galium boreale,* Petty whin *Genista anglica,* Purple saxifrage *Saxifraga oppositifolia,* Pyramidal bugle *Ajuga pyramidalis,* Red campion *Silene dioica,* Roseroot *Sedum rosea,* Sea campion *Silene uniflora,* Selfheal *Prunella vulgaris,* Sidebells wintergreen *Orthilia secunda,* Slender St John's-wort *Hypericum pulchrum,* Sneezewort *Achillea ptarmica,* Spignel *Meum athamanticum,* Starry saxifrage *Saxifraga stellaris,* Stone bramble *Rubus saxatilis,* Water avens *Geum rivale,* Wild angelica *Angelica sylvestris,* Wood anemone *Anemone nemorosa,* Wood sage *Teucrium scorodonia,* Yellow rattle *Rhinanthus minor,* Yellow saxifrage *Saxifraga aizoides,* Alder *Alnus glutinosa,* Aspen *Populus tremula,* Downy birch *Betula pubescens,* Eared willow *Salix aurita,* Downy willow *Salix lapponum,* Grey willow *Salix cinerea,* Juniper *Juniperus communis,* Rowan *Sorbus aucuparia,* Sessile oak *Quercus petraea,* Tea-leaved willow *Salix phylicifolia,* Holly fern *Polystichum lonchitis,* Forked spleenwort *Asplenium septentrionale*				