



Measures of Success for Species Recovery

Discussion Paper February 2022

Introduction

[Back from the Brink](#) (BftB) was a joint species recovery programme for England that brought together nearly 100 organisations, led by Natural England and the seven NGOs¹ that comprise Rethink Nature. The programme ran from April 2017 to February 2022. As well as aiming to secure improved conservation status for over 200 target species, the intention has been to leave a legacy of more effective collaboration across the conservation sector and beyond.

To help drive the sustained recovery of our species, and support policy and legislative opportunities such as – for England - the Environment Act and new Environmental Land Management Schemes, the Back from the Brink partner organisations have developed a framework for collaboration which sets out a series of shared principles which Back from the Brink has worked to, and develops these under five headings: **Priority-setting**, **Measuring Success** (the subject of this paper), **Delivery Mechanisms**, **Data Management** and **Widening Participation**.

As BftB was carried out in England (during which time equivalent programmes were under development in Wales and Scotland), this paper is based on the working experience and the legal and policy frameworks as applied to England. However, the underlying principles are, we believe, fully applicable across the UK.

Defining the problem: The State of Nature

Whether seeking to restore nature for its instrumental value or for its own sake, the abundance and diversity of life is a fundamental measure of both. In other words,

“...there is no surrogate metric that can reliably assess conservation success or failure without knowing what is happening to populations of plants and animals in the landscape.”²

In England many of the rarest and most threatened species are listed under Section 41 (S41) of the 2006 Natural Environment and Rural Communities (NERC) Act, which was accordingly the starting point for selecting BftB's priority species for intervention.

However, the populations and trends of the overwhelming majority of species are poorly known. For those that are better-studied, systematic assessments help determine priorities for intervention, while for others, our understanding may be based on a combination of limited hard data and accumulated expert opinion. Where reliable data are available, including from citizen science survey schemes and rigorous analysis of the resulting data, a very clear overall picture has emerged. Building on a strong tradition of data-gathering for birds and

¹ Amphibian and Reptile Conservation, Bat Conservation Trust, Buglife, Bumblebee Conservation Trust, Butterfly Conservation, Plantlife and RSPB. Back from the Brink is funded by National Lottery, People's Postcode Lottery, Esmée Fairburn Foundation and several other trusts as well as the partners themselves.

² Lawton, J. (2010) *Making Space for Nature*. Report to DEFRA

other popular groups like butterflies, the [State of Nature](#)³ has, every 3 years since 2013, established an overwhelmingly net negative picture across nature in the UK. Furthermore, analysing subsets of species data shows clearly that identifiable systemic challenges lie at the heart of much of the decline, including loss and transformation of farmland habitats in the 1980s, and their continuing decline since, changes in woodland management, recreational pressures on coastal habitats, freshwater pollution and over-exploitation of fisheries and marine resources. Climate change is exacerbating many of these effects and has a direct impact in its own right.

The problem of defining success

The conservation sector has traditionally been inhibited in setting values for a desired end-state for nature's recovery, and even individual species targets are only rarely adopted. This is perhaps to the sector's disadvantage when interacting with other sectors (housing for example) whose routine use of targets is one of the continuing drivers of biodiversity loss.

Factors inhibiting the definition of end goals include:

- The validity and usefulness of past reference points. If, as is often the case, a species or group of species has been steadily declining for decades, how far back is it feasible or reasonable to reverse the trend? This issue can give rise to conundrums such as that of the curlew: a self-evidently successful species recovery programme but still the species is assessed as of 'Red' level conservation concern.⁴
- In any case, recovery scenarios do not need to be directly mapped onto a simple reversal of past trends, since some options, such as rewilding and reintroductions, may help restore the losses of past centuries, not just recent decades.
- A short/medium term focus on what a desirable end-state would be given current mechanisms, political support and resources, rather than how a bigger ambition could drive more radical reform.
- A focus on slowing and arresting decline, which, given that this is difficult enough, is in practice the limit of ambition in many cases.

Statutory targets

The Environment Act 2021 includes a legally binding duty to reverse the decline in species abundance by the end of 2030. The precise formulation of a target or targets to drive this is yet to be finalised, but DEFRA's current proposals are:

- A target on species' **conservation status** based on an indicator that will track changes in the conservation status of terrestrial, freshwater and marine species using IUCN Red List categories and criteria, i.e. an **extinction risk** target.

³ <https://nbn.org.uk/wp-content/uploads/2019/09/State-of-Nature-2019-UK-full-report.pdf>

⁴ The curlew *Emberiza cirrus* has Red status in Birds of Conservation Concern 5 (2021) because, despite enjoying a sustainable 10-fold increase in population since its low point of 118 pairs in 1989, its present breeding range extends over less than 50% of its historic range, using the 1968-71 bird atlas as the historic reference.

- A target on **species abundance** based on an indicator that will track changes in relative abundance of species which are widespread and characteristic of different broad habitats in England.

Targets for reducing extinction risk set a minimum standard for species conservation but not an upward ambition and cannot be seen as a measure of real success unless they are accompanied by targets for wider nature recovery. The IUCN Red List of Threatened Species was established to assess the global risk of extinction of a species and is not designed to be a short-term monitoring tool. It has been further developed to include classifiers of conservation success with a new set of metrics – **Green Status**. This considers the extent to which a species is present, viable and performing its ecological function in all parts of the range, and is therefore more focussed on measuring and supporting species recovery.

First things first: improving conservation prospects

Species recovery may take a very long time and it may be impossible to measure a change over short-term project timescales. Reaching a key step towards a longer-term target may represent very significant and hard-won progress, but may not excite funders and policy-makers; and then funding a new phase of progress from there becomes really difficult.

BftB has had some success in gaining recognition for the continuing goal of *improving the conservation prospects* of a species. Examples include increasing our understanding of its ecology, or increasing the number of sites occupied by the species (intrinsic factors); or increasing awareness, enhancing habitat, or securing policy change (extrinsic factors).

The two main types of approach in use at present are those that measure progress along a recovery process (especially the Species Recovery Curve (SRC) approach⁵) and those that measure actual conservation status based on ecological and demographic data. Back from the Brink commissioned BftB partner Amphibian and Reptile Conservation to convene a series of practitioners' workshops and studies aimed at better relating recovery progress to conservation status: see [Measuring Success: What Does Species Recovery Look Like?](#)⁶ and Appendix 1 for a framework to guide selection of species recovery measures and approaches.

A recommendation coming out of Back from the Brink is that combining an assessment of **recovery prospects** using Species Recovery Curves with an appropriate **outcome** measure is needed to determine range-level recovery progress and ultimate success. Linking the two could be achieved through project-scale target-setting that allowed a reasonable projection of the outcome. Of 112 BftB target species, the programme reported progress along the recovery curve for 96 species by the end of the five-year programme. Projects also gave informed estimates to project forward the likely position a further five years hence, suggesting that 33 species will see further progress.

⁵ Species Recovery Curves were developed by the RSPB and adopted in a modified form by Natural England. Both use notional or actual scales such as population size at the Y-axis and time at the X-axis, with a curve tracing past (actual) population and future idealised/projected population. Points along the curve mark activity milestones such as initial status assessment, autecological understanding, solution testing and roll-out, sustainable management and 'recovery'.

⁶ Pheasey, H & Foster, J (2021). *Measuring Success: What Does Species Recovery Look Like?* Unpublished report to the Back From The Brink programme. Amphibian and Reptile Conservation Trust, Bournemouth.

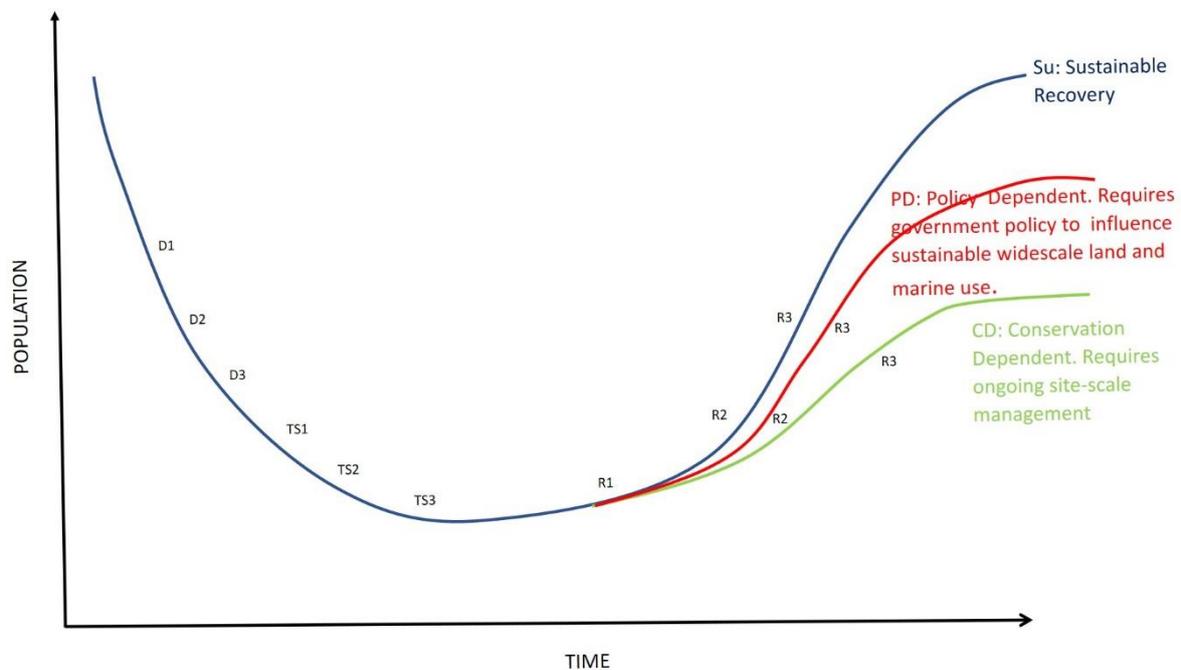


Figure 1: RSPB Species Recovery Curve with three 'tails' indicating three foreseeably achievable recovery states. Stages along the curve are divided into Diagnosis, Trial Management and Recovery, each with defined subdivisions.

A second study, [Measuring Success - a trial of different approaches to species recovery](#)⁷ was carried out by Footprint Ecology, and assessed the utility of three approaches based on Species Recovery Curves⁸ (as well as IUCN Green Listing and Conservation Status Assessment – see next section) as applied retrospectively to a small set of Back from the Brink species: Black-tailed Godwit, Natterjack Toad, Shrill Carder Bee, Yellow Centaury, Adder, Grey Long-eared Bat, Necklace Ground Beetle and Cornish Path Moss.

This concluded that Species Recovery Curves are a useful conceptual framework that provide reasonably intuitive, standardised measures of success and can be used to measure conservation progress before results are seen at range and population level. They are therefore useful for short-term projects as well as longer-term recovery work. As they set out the steps required for species recovery, they can also be used as planning tools.

The implied sequential nature of the **RSPB** and **NE** versions make them harder – at first sight – to apply in “real life” situations, where progress is not necessarily strictly from one step to the next. The **NE** version is a little less flexible in that it is the most closely tied to satisfying procedural criteria, however the step definitions for use at a local level are useful. The **RSPB** version has the advantage of different endpoints depending on a species’ ongoing reliance on intervention (see Figure 1). The ‘version’ used in BftB (actually a reporting approach applied

⁷ Lake, S., Saunders, P. & Liley, D. (2021). *Measures of success: a trial of different approaches to measure species recovery using Back from the Brink case studies*. Unpublished report by Footprint Ecology for the Back from the Brink partnership.

⁸ Two versions of the SRC were considered. The original SRC was devised by the RSPB and adopted in a modified form by Natural England (which was the version used for reporting BftB project results); RSPB subsequently modified its original SRC (see Fig. 1). The study compared the NE version and the new RSPB version. A third approach is the BftB ‘version’, which is in fact an approach to reporting against an SRC (assessing degrees of achievement of each ‘step’, rather than strictly treating steps as progressions along a sequential process) rather than a new SRC per se. For full details see Lake, Saunders and Liley (2021) *op. cit.*

to the NE version rather than a third method *per se*), displays the degree that *each* step has been achieved at the time of reporting, rather than reporting a single point reached along the curve, making it the most useful for short-term projects and for species with complex life-cycles and/or where there are significant knowledge gaps but for which it is still possible to progress recovery. For all three, a supporting narrative is essential and an *assessment of confidence in the scoring* (particularly where it is not based on quantitative population data) would be a useful addition.

A **recommendation** from this work is that the sector should seek to reunify the Species Recovery Curves based on the following improvements:

- The multiple-outcome (3-tail) approach based on species' on-going reliance on intervention (i.e. self-sustaining recovery without specific intervention; recovery subject to conservation measures being in place, such as an adequate nature reserves network; recovery subject to a land/sea-use regime or other policy-led mechanism).
- Scope for non-sequential reporting of stages reached within an essentially linear progression towards recovery (the BftB approach)
- Guidelines for applying the SRC at different spatial scales
- Quality Assurance of claimed SRC progress
- Further work on systematising the concept of 'improved prospects' and the use of the SRC to make assessments.
- Further development of predictive approaches, projecting future improvements in prospects.
- Linking the stages defined in the species recovery curve to a recovery outcome (see next section) including introducing targets at the latter stages of the curve that would indicate progress towards the defined outcome.

Assessing conservation status

The Footprint Ecology study also assessed the utility of IUCN Green Listing and Conservation Status Assessment as applied retrospectively to the same set of Back from the Brink species. It concluded that:

- **Green Status** is a robust, evidence-based measure of success that is potentially scalable. However, there are significant data needs and the scoring is less intuitive than other measures. For short-term species recovery projects, obtaining suitable data is likely to be a challenge and more detailed use (e.g. to define conservation gain, legacy etc.) is likely to be constrained by this.
- Defining **Favourable Conservation Status** is demanding, requiring a significant effort, knowledge and data, but applying the process is in itself very instructive while the definition can be used to inform the targets set for other measures of success (it is not in itself a measure of success). Where necessary, a reliance on expert opinion, rather than quantitative data, increases its flexibility. A modified version could be used at local/landscape scales in many cases.

Conclusions and Recommendations

1. The sector needs to get better (bolder) at defining its ambition, including overcoming fear of failure. Whether measured at the individual species level, or some composite such as farmland wildlife or nature as a whole, there are three stages of progress towards ultimate success, however this is defined: slowing and arresting decline, reversing decline, and securing the conditions that prevent decline from recurring. Each requires its own focus, targets and objectives.
2. For a single species, these are three relatively straightforward (to understand, if not achieve) outcomes. Combining species into cohorts would enable equivalent outcomes to be defined in relation to systemic change such as recovering species abundance and diversity in the farmed landscape.
3. The ideal goal is for a species to not only recover to a target level, but for its range and population to be self-sustaining from that point into the future, as appears to have been achieved for the Red Kite for example.
4. However, many species can only foreseeably recover to a point where their ability to sustain their populations depends on a supportive and stable land-use regime, which is itself dependent on a conducive policy and funding framework. The fact that there are currently few land-use affected species that have reached a satisfactory status to provide examples attests to the vulnerability of a large number of species to such systemic threats.
5. Many more species may reach the point where they have recovered, subject to continued, perpetual targeted conservation intervention, such as management of particular habitat mosaics in nature reserves. The Bittern appears to reaching such a point, for example.
6. A framework for defining the desired end-state in such a way that defines 'recovery' in these different circumstances is key to planning recovery programmes that engage all stakeholders. The many different people with a concern for species recovery at all levels: programme and project managers and national, landscape or local level, policy-makers, funders, fund-raisers and fund-users (projects) all have slightly different viewpoints.
7. The sector, inside and outside government, should work together to devise tools and guidelines for addressing issues such as project target-setting, national recovery goal-setting, which measures are best used in which circumstances. This should be suitable for application at UK level while allowing for national and area targets and priorities.
8. An assessment of **recovery prospects** using Species Recovery Curves combined with an appropriate **outcome** measure is needed to determine range-level recovery progress and ultimate success. Linking the two would be achieved through project-scale target-setting that both indicates and projects a success outcome. See the box above for detailed recommendations on the future development and use of the Species Recovery Curve.
9. Green Listing or Conservation Status Assessment are not currently suitable as an outcome measure for short-term, local project use but the sector should adopt and standardise their use for national or whole-range assessment.
10. The sector should carry out further work on applying them at sub-national/part-range scales as well as establishing simpler approaches to derive workable scores.

Appendix 1

The diagram below sets out a framework to help guide the selection of species recovery measures and approaches as suggested during the workshops. Source: Pheasey & Foster (2021).⁹

