Guidelines for adapting the IUCN Green Status of Species to assess the impact of species recovery programmes.

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1 Introduction

This document outlines the adaptation to the IUCN Green Status of species framework for use at the programme level, and provides guidance on applying the adapted framework. The purpose of the programme level adaptation to the IUCN Green Status of Species is to provide a standardised and cost-effective method to evaluate the contribution of conservation programmes towards global species recovery. The framework provides a clear metric to communicate both the past and potential future impacts of a conservation programme. This document should be used in conjunction with available IUCN Green Status of species resources, including the IUCN Green Status of Species Standard (available for download in English, French andSpanish), Background and Guidelines for the IUCN Green Status of Species (available in English, French, and Spanish), and Step by Step Instructions (ver. 2.0 available in English, and ver. 1.0 available in French and Spanish), as well as the Guidelines for using the IUCN Red List Categories and Criteria.

The IUCN Green Status of Species assesses the recovery of species and quantifies the past and expected future impacts of conservation action, and is described in more detail in the section below. One of the priorities of the IUCN Green Status of Species is to help organisations, programmes, sites, and projects to measure and communicate their past and future species conservation impacts. However, this required considerable adaptation of the existing Green Status of Species criteria, which were designed to assess species conservation impact at the global level. With the support of an advisory panel of representatives from several partner organisation, including six members of the Green Status of Species-SSC Integration Task Force, who were instrumental in developing the IUCN Green Status of Species, the framework has been adapted for use at the programme level. The Programme Green Status of Species is designed to be a universal method for programme assessment which will allow practitioners to identify the effectiveness of different programmes in contributing to global species recovery. The results of a Programme Green Status assessment estimate the contribution of a specific programme to the global recovery of the focal species, assessing the past and potential future impact of the programme. The adaptations made, and how these should be applied when assessing the impact of a programme are detailed in this document.

2 Preamble

2.1 Application of the programme guidelines

Any programme using the Programme Green Status of Species framework for assessing the contribution of their programme to the global recovery of species must first complete an IUCN Green Status of Species assessment for the focal species, following the Background and Guidelines for the IUCN Green Status of Species Version 1.0 document (hereafter, Background and Guidelines). Any assessment using the IUCN Green Status of Species framework must follow these guidelines without deviation or modification.

2.2 The programme concept

This sub-global adaptation of the Green Status of Species is at the level of species recovery programmes, and is intended to assess the contribution of a programme to the global recovery of a species. Organisations involved, geographical scope and conservation actions delivered are all important considerations in defining the programme, and full guidance on defining the programme is included herein. This framework is not designed to assess the impact of a single organisation.

2.3 IUCN Green Status of Species guidelines versus Programme Green Status of Species guidelines

The rules and definitions in the Background and Guidelines document apply at the programme level, unless otherwise specified here. Consequently, it is highly recommended that assessors carefully review these documents prior to completing a Programme Green Status of Species assessment, and these documents should be referred to throughout the assessment process.

2.4 Combining programme assessments

Whilst there may be multiple programmes acting on a single target species, the results of these assessments are not necessarily additive, thus it is not appropriate to aggregate the scores of multiple programme assessments to give regional or global results. For results to be additive, all conservation actions would have to be independent, whereas in reality, conservation actions are synergistic, with several actions, both within and outside of programs, being interlinked.

2.5 Dissemination and use of programme GSS assessments

Unlike IUCN Green Status of Species assessments, which undergo an independent peer review process prior to publication on the IUCN Red List website and must conform with strict supporting documentation requirements, Programme Green Status of Species assessments will be for internal use of the individual or organisation conducting the assessment and not published on the IUCN Red List website. Therefore, the onus will fall heavily on programme assessors to institute and ensure and document the necessary level of internal review. Many aspects of the assessment remain consistent between the full global and programme-level Green Status of Species assessments. For this reason, assessors are strongly discouraged from attempting a Programme Green Status of Species assessment until a full IUCN Green Status of Species assessment for the species has been published, or at least undergone the peer-review process, as this will mean that key elements of the assessment have been reviewed to ensure that they conform with the IUCN Green Status of Species Standard. In instances where global assessments

have not been reviewed, it should be made clear that Programme assessment is based on a preliminary assessment.

3 The IUCN Green Status of Species

The IUCN Green Status of Species is a part of the IUCN Red List of Threatened Species (hereafter Red List), and complements the information on species extinction risk provided by the Red List in order to give a fuller picture of the status of species in the wild, and the impact of conservation. Whilst the Red List is a valuable resource and identifying genuine improvements in Red List categories over time is a commonly used method for quantifying conservation success, the purpose of the Green Status of Species is to fulfil the need to document all dimensions of species conservation success, and to incentivize conservation action towards a species' recovery and prevent future declines. The Green Status of Species was launched in 2021, following a series of consultations, workshops and wide-scale testing, and works on a definition of fully recovered based on viability, functionality and representation. The IUCN Green Status of Species has five main objectives:

i. To provide a standardised framework for measuring species recovery;
ii. To recognize conservation achievements;
iii. To highlight species whose current conservation status is dependent on continued conservation actions;
iv. To forecast the expected conservation impact of planned conservation action; and
v. To elevate levels of ambition for long-term species recovery.

The objectives laid out above are represented by a set of outputs generated by a Green Status of Species assessment: a Species Recovery Score, and four conservation impact metrics (Conservation Legacy, Conservation Gain, Conservation Dependence and Recovery Potential). A full definition of the metrics and description of how they are calculated can be found in the IUCN Green Status of Species Standard and the Background and Guidelines. In short, these metrics are calculated by comparing the Current state of the species to the expected state of the species under a number of hypothetical scenarios: Counterfactual Current, Future with Conservation (10 years), Future without Conservation (10 year) and Long-term Aspiration (100 years).

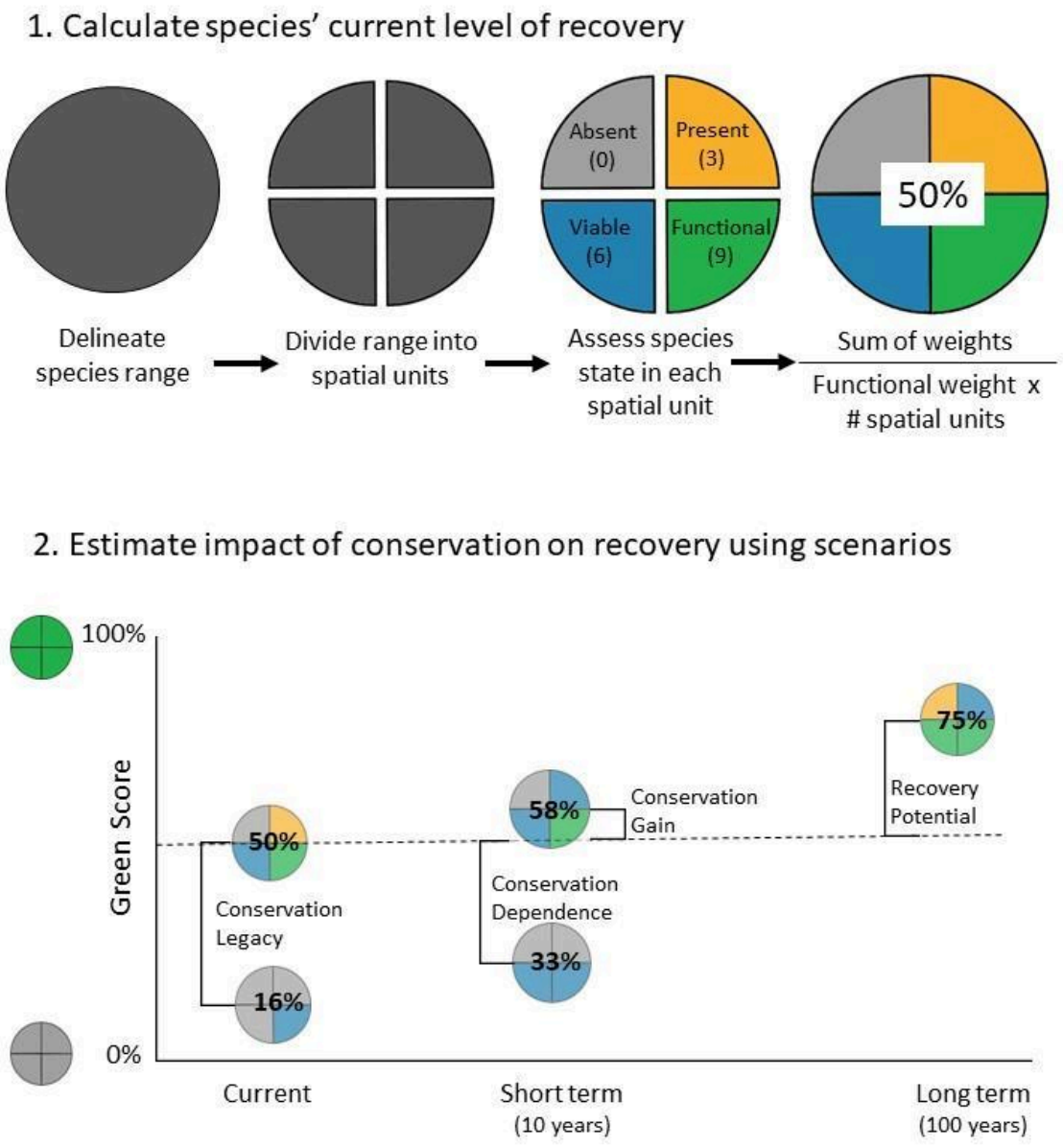

Figure 1: Summary of the assessment process and outputs for the IUCN Green Status of Species, based on Figure 1 in Grace et al. (2021c) (reproduced with permission from authors). This summary uses a hypothetical species. This is a simplified example that does not consider all possible cases; for a full account, see Background and Guidelines. When assessing the status of a species in each spatial unit, each state (absent, present, viable, functional) has a different weighting, as indicated in parentheses.

3.1 Programme Green Status of Species

The Programme Green Status of Species has been developed by adapting the global framework to assess a programme's contribution to the global recovery of a species. Throughout the development of the Programme Green Status of Species, we have sought to maintain as much consistency with the IUCN Green Status of Species as possible, in

terms of language and methodology. Therefore, it is necessary that assessors are familiar with the IUCN Green Status of Species framework. There are several documents associated with the application of the IUCN Green Status of Species framework to assess the recovery of species, which will be referred to throughout this document, and should be followed to complete an IUCN Green Status of Species assessment. The proposed changes have been trialled on 17 species recovery programmes from within the partner organisation, covering a range of taxonomic groups and species generation lengths, and programmes with different intervention types, geographical scopes and number of years since establishment.

It is essential that an IUCN Green Status of Species assessment has been completed for the focal species at the global level before a Programme Green Status of Species assessment is attempted. It is strongly recommended that the global assessment is published, or has at least undergone the IUCN peer-review process. This will ensure the IUCN Green Status of Species framework has been correctly applied to the global assessment, which will form the basis of the Programme Green Status of Species assessment. Many aspects are the same across both assessments, with assessors only needing to estimate two new scenarios for a Programme Green Status of Species assessment.

4 Purpose of the Programme Green Status of Species

The Programme Green Status is designed to be a universal method for programme assessment which will allow practitioners to identify the effectiveness of different programmes in contributing to global species recovery. There are two main objectives of the Programme Green Status, based on those of the IUCN Green Status of Species. These are:

i) To measure the conservation achievements of the focal programme;
ii) To forecast the expected future impact of a programme.

These objectives are represented through two programme specific impact metrics, the Programme Legacy and Projected Programme Impact. Just as in an IUCN Green Status of Species assessment, these are quantified as the difference between the degree of recovery (measured as the green scores, as defined in the Background and Guidelines) under different hypothetical scenarios. These metrics are calculated by comparing the current state of the species (as in the IUCN Green Status of Speices) to two new scenarios: “Programme Counterfactual Current” and “Future without Programme” (10 years).

Programme Legacy measures the impact of conservation actions that have been delivered as part of the programme to date. It is the difference between the Current green score (as calculated in the global assessment) and the “Programme Counterfactual Current” green score (estimated for the programme assessment), which is the estimated state of the species today if the focal programme had not occurred. It is important in this scenario that that the conservation delivered as part of the focal programme, and the ‘background’ conservation actions which are delivered independently are separated,

and only the programme actions excluded in the "Programme counterfactual current" (see section 6.3 Programme Legacy).

Projected Programme Impact measures the expected impact of ongoing actions of the programme in the short-term (10 years). This metric is the equivalent of combining the two short-term impact metrics produced by an IUCN Green Status of Species assessment (Conservation Dependence and Conservation Gain) into a single impact metric. It is the difference between the "Future with Conservation" (as estimated in the global assessment) and the "Future without Programme" (estimated for the programme assessment). Again, the ongoing and planned conservation actions within the focal programme must be differentiated from 'background' conservation actions. Both future scenarios assume the continuation of all non-programme activities, and only the planned and ongoing actions of the focal programme are excluded from the Future without Programme (see section 6.4 Projected Programme Impact).

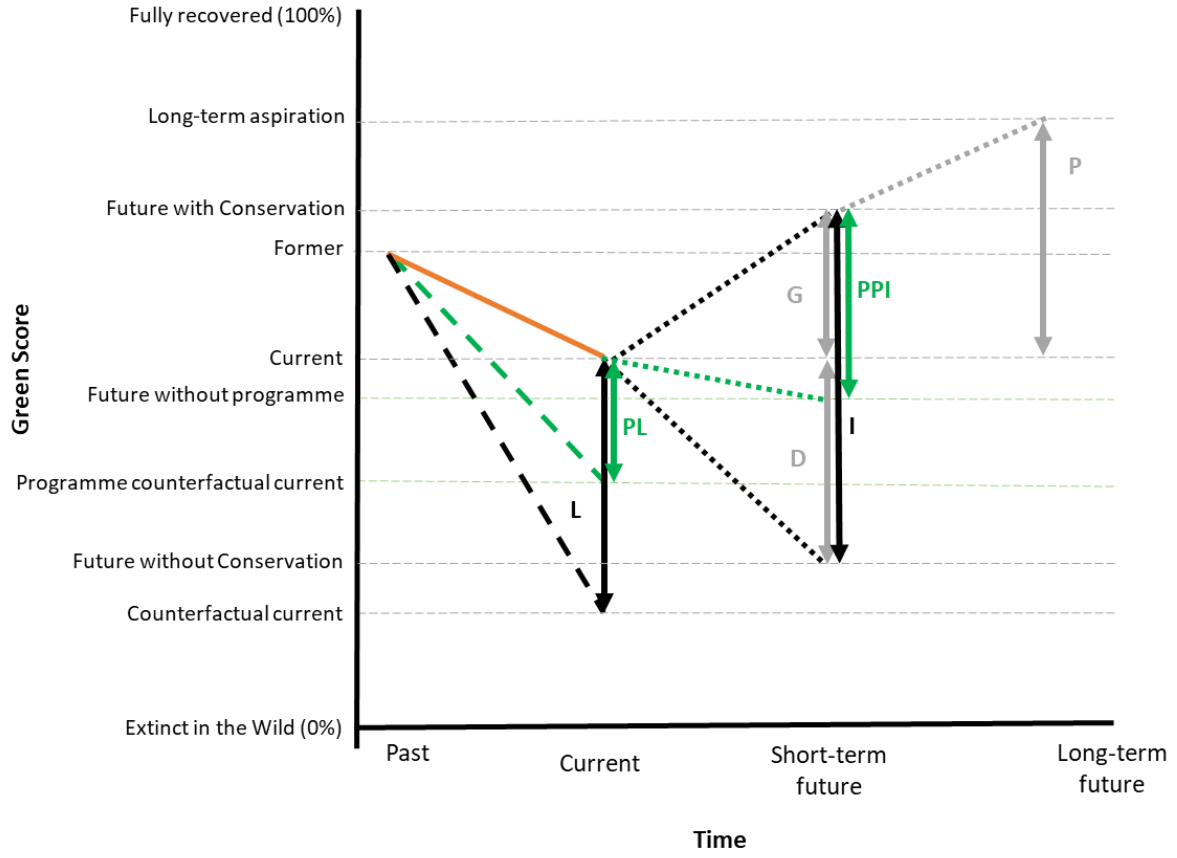

Figure 2: Graphical representation of the global conservation impact metrics and the programme impact metrics as differences in the degree of recovery of the species (percent of Fully Recovered, measured as Green Scores, as calculated in the Background and Guidelines). Vertical arrows represent conservation impact metrics. Black arrows are the outputs from IUCN Green Status of Species assessments to be compared to the outputs for Programme Green Status of Species assessments (green arrows). Grey arrows are calculated in an IUCN Green Status of Species assessment, but have no comparable programme metric.

Solid-orange line: observed change in Green Score of the species.

Dashed-black line: (counterfactual) past change expected in the absence of any conservation actions.

Dashed-green line: (programme counterfactual) past change expected in the absence of only programme conservation actions.

Dotted-black lines: (future with conservation and future without conservation) short-term (10 year) future scenarios of expected change with and without all conservation efforts.

Dotted-green line: (future without programme) short-term (10 year) future scenario expected in the absence of programme conservation actions, but with the continuation of all other conservation.

Dotted-grey line: (long-term aspiration) maximum plausible level of recovery ver the long-term (100 years) as calculated in an IUCN Green Status of Species assessment, this is not calculated at the programme level.

Vertical arrows represent the global conservation impact metrics (black/grey) and equivalent programme impact metrics (green):

***L – Conservation Legacy**: benefits of current and past conservation actions (Current – Counterfactual Current).*

***PL – Programme Legacy**: benefits of current and past conservation actions of the focal programme (Current – Programme Counterfactual Current).*

***D - Conservation Dependence**: expected change in the short-term future in the absence of ongoing conservation (Current – Future without Conservation).*

***G – Conservation Gain**: expected improvement in the short-term future with ongoing and planned conservation (Future with Conservation – Current).*

***I - Conservation Impact**: the metric when Conservation Dependence and Conservation Gain are combined, giving the overall expected change in the short-term future (Future with Conservation – Future without Conservation).*

***PPI – Projected Programme Impact**: the expected change in the short-term future in the absence of the ongoing and planned conservation actions of the focal programme (Future with conservation – Future without Programme).*

***P – Recovery Potential**: possible improvement with long-term conservation (Long-term potential – Current). No programme equivalent in the 100-year scenario.*

The programme level metrics can be compared to the global conservation impact metrics to present the impact of species recovery programmes in the context of the global recovery of a species.

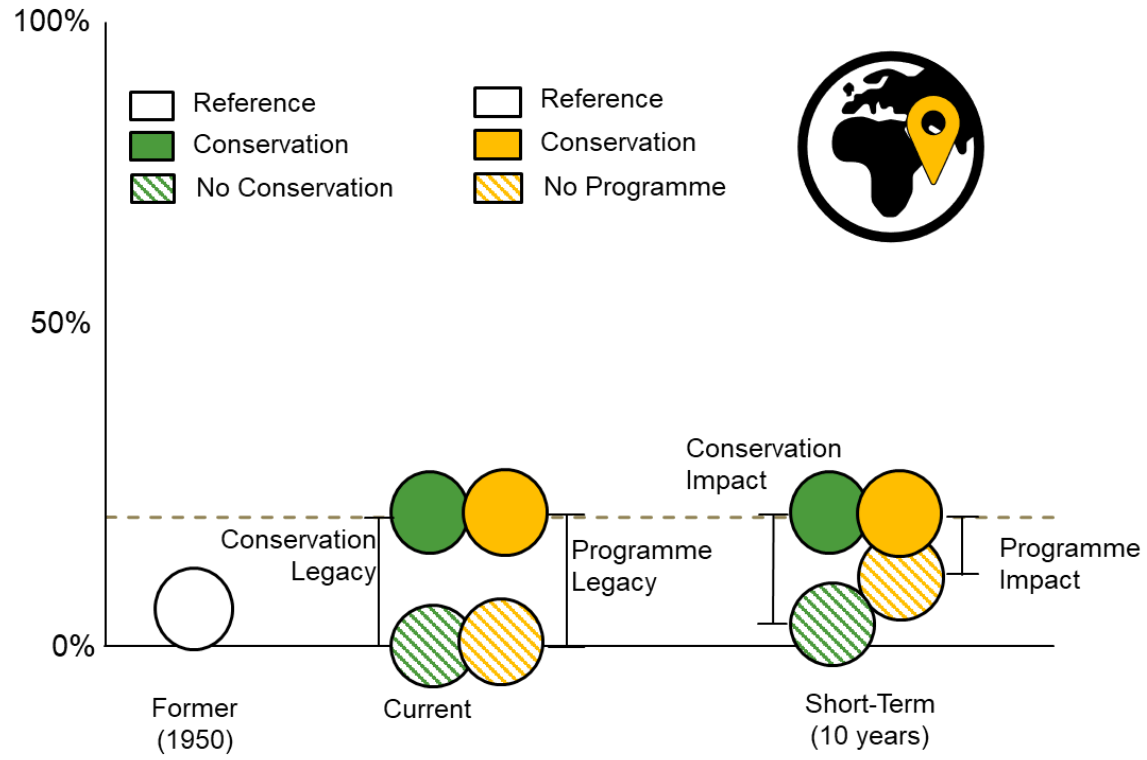

Figure 3: Comparison of the impact metrics from the IUCN Green Status of Species, assessing global species recovery (green) and Programme Green Status of Species, assessing the contribution of a species recovery programme towards the global recovery (yellow).

5 Programme Green Status assessment

In order to conduct a Programme Green Status of Species assessment, an assessment must first have been completed at the global level. This assessment forms the basis of the Programme assessment. In order to complete a Programme Green Status of Species assessment, assessors will need to know details of the focal programme, including all partner organisations involved in the focal programme, the geographical scope of the programme, and the actions implemented as part of the focal programme, including past, ongoing and planned actions. They will also need access to the IUCN Green Status of Species assessment conducted at the global scale.

5.1 Defining the "fully recovered state"

Throughout the assessment, the state of the species is compared to its "fully recovered" state, based on the definition of a species being "fully recovered" if it is viable and ecologically functional in each part of its range. The components of recovery used to define a species' fully recovered state are the species' range, the parts of the range (called spatial units) and the threshold above which a species is considered ecologically functional. The fully recovered state used in a Programme Green Status of Species

assessment is defined as in the IUCN Green Status of Species assessment, **therefore does not have to be calculated as part of a Programme Green Status of Species assessment**. The components of recovery and guidance on estimating these are summarised in Appendix 1, and full descriptions can be found in the global Background and Guidance (4. Components of Recovery).

5.2 Defining the programme

The first step in conducting a Programme Green Status of Species assessment is defining the programme. For the purpose of this assessment, a species recovery programme is defined as a well-defined set of conservation actions, planned over the long-term and delivered in a specified geographic scope, by either one or multiple organization/s, to drive the recovery of a species. A programme typically follows a common vision and goals.

There are several factors which must be considered when defining a programme to ensure that its contribution to global species recovery is accurately represented. Assessors must consider the purpose, geographical scope and time scale of the programme, the partners contributing and the actions delivered. Below we provide guidance on defining these aspects. Whilst guidance is provided, the nuances of the decisions in defining the programme will be driven by the impact evaluation goals of the assessor.

It is important to note that a Programme Green Status of Species assessment is completed at the species level, therefore if one wants to assess the impact of a single programme on a number of target species, a separate Programme assessment would have to be carried out for each species.

5.2.1 Purpose of the programme

The first stage in defining the programme is to establish the purpose of the programme being assessed, as this will help assessors when determining other aspects such as the actions and partners involved. The scale at which a programme is defined (e.g. site level, state level, management level) will be driven by the impact evaluation goals of the assessors.

Programme Green Status of Species assessments specifically assess the contribution of programmes towards species recovery, therefore an individual assessment must be carried out for a focal species. If assessors wish to measure the impact of a single programme on multiple species, a Programme Green Status of Species assessment must be carried out for each species individually. For example, if a programme has a place-based scope with actions working at the ecosystem level, this may impact several species inhabiting the region. A Programme Green Status of Species assessment could be carried out for multiple species within the region in order to get a fuller picture of the contribution of the programme to species recovery in the region. Alternatively, programmes may be target-based, focusing on a single species, for example the captive breeding and translocation of a species, therefore only requiring the assessment of the recovery of one species.

As well as understanding the past and expected future impact of ongoing species recovery programmes, the Programme Green Status of Species can be used to support practitioners in decision making. Having an estimation of the expected impact of programmes can be valuable in deciding how to allocate limited resources. If programme assessments are used in this way for new programmes, it is essential that the purpose of the programme is clearly defined in order to obtain meaningful results.

5.2.2 Geographical scope of programme

As part of the IUCN Green Status of Species assessment, the species range is determined and is divided into parts, called spatial units. Spatial unit delineation is discussed in detail in the global Background and Guidelines and summarised in Appendix 1 (1.1.2 Parts of the range). It is imperative that Programme Green Status of Species assessments use the same spatial units as the IUCN Green Status of Species assessment for the focal species to allow for consistent comparisons. The requirement of consistent spatial units makes the geographical scope of the programme, and how it aligns with the pre-defined spatial units, an important consideration in a Programme Green Status of Species assessment.

Programmes will commonly work at a small scale when compared to the global range of a species, so it may seem appropriate to divide the spatial units differently when assessing in the context of a species recovery programme. However, if different spatial units are assessed at the programme level, it will be impossible to compare the results with those obtained from the global assessment. The purpose of the Programme Green Status of Species is to understand the extent to which programmes are contributing to the global recovery of a species, therefore the spatial scale at which conservation activities are assessed must be comparable. Furthermore, the use of different spatial units may artificially inflate the programme impact results. As assessors are strongly discouraged from attempting Programme Green Status of Species assessment until a full IUCN assessment for the species has been published, or at least undergone the peer-review process, using spatial units which have been determined in the global assessment mitigates the risk of assessors selecting inappropriate spatial units because of a lack of familiarity with methods or intentional manipulation of the system to increase programme impact.

A focal programme may act in one or multiple spatial units, and may act upon the whole, or just part of a spatial unit. The way the focal programme is geographically distributed across the spatial units will determine whether or not the estimated states in the scenarios with and without the focal programme will be influenced. For example, if one or more spatial units are entirely independent of the focal programme, the state in these spatial units would not change regardless of the absence or presence of the focal programme. This independence of conservation actions is an important consideration, as there will be instances where the actions in one spatial unit are reliant on those enacted in another spatial unit, even if at first look they may seem unrelated.

Based on these considerations, there are four ways that a programme may be spatially distributed across spatial units, described below, going from least to most complex:

1. Geographical scope defined for individual programme is located within an individual spatial unit and encompasses the whole spatial unit, and programme actions and outcomes are independent of those in other spatial units (Figure 4b).
2. Geographical scope defined for individual programme is located within an individual spatial unit and encompasses the whole spatial unit, and programme actions and outcomes interact with at least one other spatial unit (Figure 4c).
3. Geographical scope defined for individual programme is located part of one, or multiple spatial units, and programme actions and outcomes are independent of other spatial units (Figure 4d).
4. Geographical scope defined for individual programme is located part of one, or multiple spatial units, and programme actions and outcomes in a spatial unit interact with at least one other spatial unit (Figure 4e).

The ways that a programme may be spatially distributed across spatial units described above are illustrated below using an example with three spatial units mapped for the focal species, based on islands.

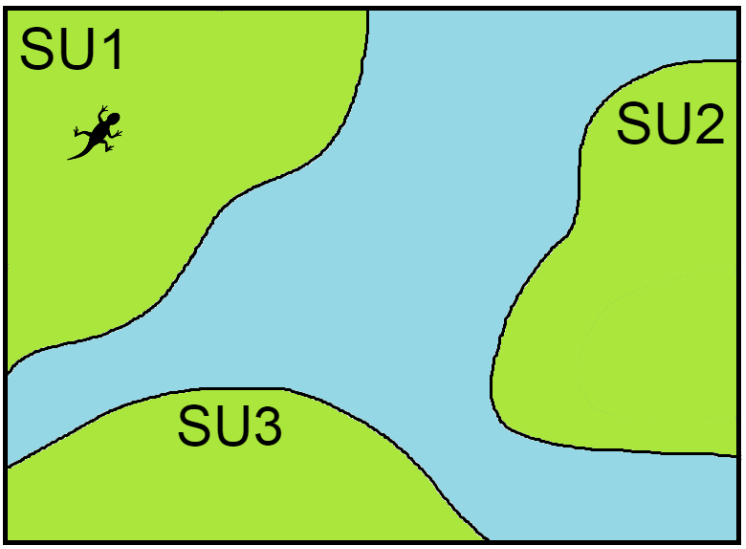

Figure 4a: Hypothetical species indigenous range divided into three spatial units.

In this hypothetical example, the target species is a native lizard endemic to all three island spatial units. Actions in the example programme are focussed on habitat restoration to increase native lizard populations, and include invasive species removal and native flora replanting. Translocation actions occurring outside the focal programme are used to demonstrate potential interaction between spatial units. Areas where the programme is acting are highlighted in purple. The lizard symbol indicates where there are populations of the focal species.

1. Focal programme works across spatial unit 1, and all actions and outcomes are independent of other spatial units. Only spatial unit 1 needs to be considered when assessing programme impact.

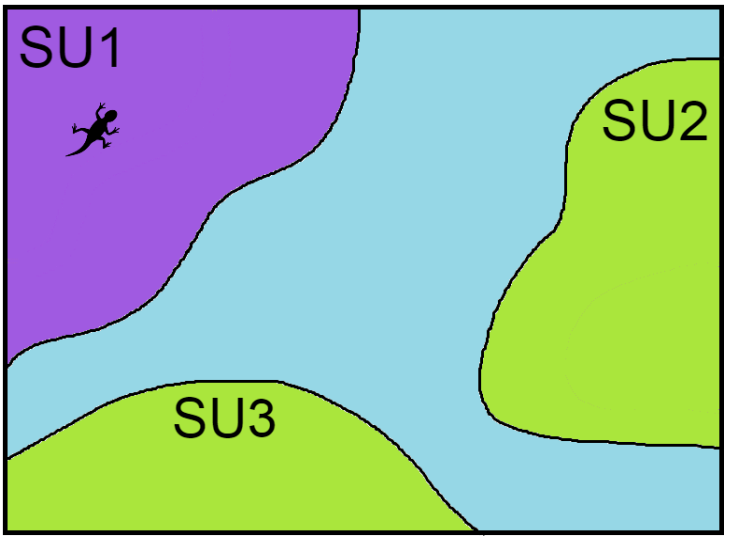

Figure 4b: Example 1 of how programme may be spatially distributed across spatial units

2. Focal programme works across spatial unit 1. Conservation actions in spatial unit 1 have increased the population of the focal species sufficiently that it can be used as a source population for reintroduction translocations into spatial unit 2 and spatial unit 3, managed by other programmes, to establish additional populations in these spatial units. Spatial units 1, 2 and 3 need to be considered in the past impact of the programme because even though the focal programme does not deliver actions in spatial unit 2 or 3, without the programme work in spatial unit 1, there may have been no individuals to translocate into spatial unit 2 and 3. Spatial unit 2 and spatial unit 3 may need to be considered in the future impact of the programme if translocations are ongoing. If this is the case, need to consider if the source population could support continued translocations without the programme. If translocations are no longer needed, the populations in spatial unit 2 and 3 will be independent of the programme in spatial unit 1 in the future, thus spatial unit 2 and 3 will not be affected by the future of the programme.

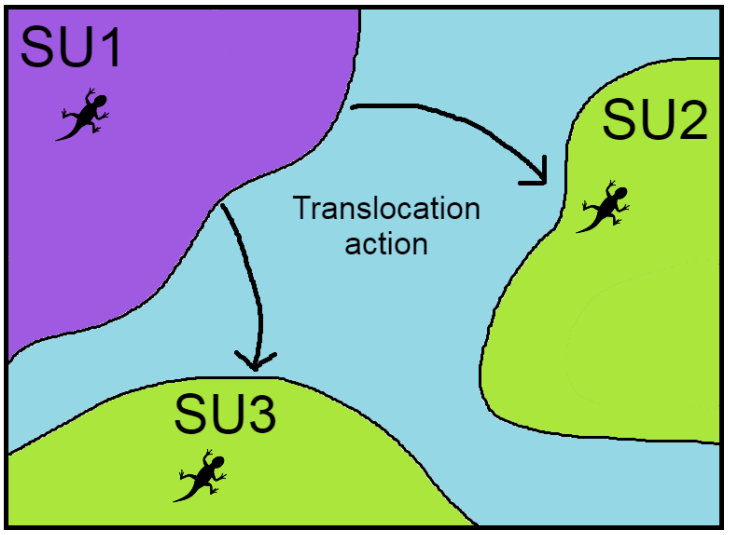

Figure 4c: Example 2 of how programme may be spatially distributed across spatial units

3. Focal programme works only in the highland forest area of spatial unit 1 and spatial unit 2. Spatial units 1 and 2 must be considered when assessing programme impact, but only actions delivered in the highland forest would be removed from the past and future without programme. Conservation actions specific to the coastal region and not the highland forest are not included in the programme, and are classed as 'other' (non-programme) conservation actions, thus assumed to continue when assessing scenarios without the programme.

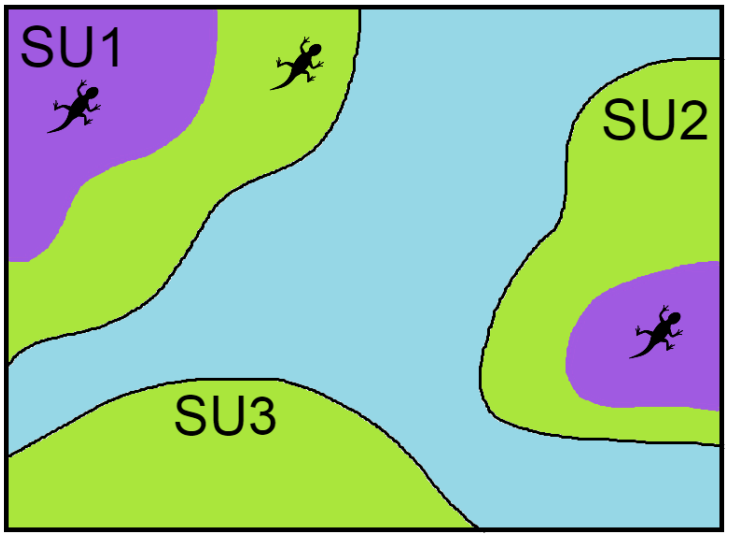

Figure 4d: Example 3 of how programme may be spatially distributed across spatial units

4. Focal programme works only in the highland forest area of spatial unit 1 and spatial unit 2. Spatial units 1 and 2 must be considered when assessing programme impact, but only actions delivered in the highland forest would be removed from the past and future without programme. Conservation actions specific to the coastal region and not the highland forest are not included in the programme, as in example 3. Spatial unit 3 also needs to be considered in the past impact of the programme because even though the focal programme does not deliver actions in spatial unit 3, without the programme work in spatial unit 1, there may have been no individuals to translocate into spatial unit 3. Spatial unit 3 may need to be considered in the future impact of the programme if translocations are ongoing. If this is the case, need to consider if the source population could support continued translocations without the programme. If translocations are no longer needed, the population in spatial unit 3 will be independent of the programme in spatial unit 1 in the future, thus spatial unit 3 will not be affected by the future of the programme.

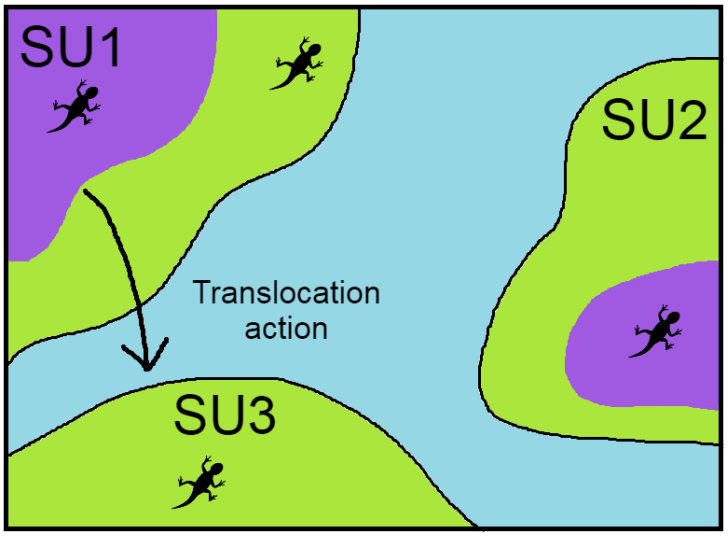

Figure 4e: Example 4 of how programme may be spatially distributed across spatial units

When completing the Programme Green Status of Species assessment, assessors may disagree with the spatial units used at the global assessment level. Even if this is the case, assessors must not deviate from the pre-defined spatial units. If there is a strong argument for why an alternative method for delineating spatial units is more optimal, for example new genetic evidence on subpopulations has become available since the initial assessment, this should be addressed with the IUCN Green Status of Species working group who will determine if the global assessment should be re-assessed with the proposed alternative spatial units.

5.2.3 Start date of the programme

In order to understand the past contribution of a programme to the global recovery of a species it is important to define the starting year of the programme. Any actions carried out prior to this date will not be considered part of the focal programme. In some instances it will be very straightforward to define when a programme began, for example, the year that a partnership was formed to collectively work on one focal

species in a specific part of its range. In other instances, it may be more complicated to define the start date of a programme, for example if practitioners have worked on a species on and off for several years, or if project archives are poorly maintained .

What the assessors want to understand is an important consideration when determining the start date. The following conditions should be considered in order to make defining the start date clear and consistent:

1. A programme should be a continuous or near continuous body of work, without interruption, except in extenuating circumstances, as discussed in point 2. Several short projects with time periods of inaction in between would not be considered a programme.
2. Any unforeseen pauses in project activity (for example, but not limited to, a natural disaster, a pandemic, civil unrest, or a gap in funding) must be inadequate to undo the progress made in the previous phase. Any gap should be noted and an explanation given as to why it is felt it did not significantly disrupt delivery. In some cases, unforeseen circumstances, such as civil unrest, may result in the need for actions to be re-planned. These need not be considered a new programme rather the evolution of the current programme, but should be explained when defining the programme.
3. If a programme of work ends as a result of planned termination of the work, then is resumed at a later date it would be considered a new programme at the date of the work re-commencing as this reflects an intent to end the programme of work, as opposed to unforeseen pauses described above.
4. The start of the programme cannot pre-date the benchmark year defined in the Global Green status of Species assessment.

5.2.4 Programme partners

Due to the highly collaborative nature of conservation, it is rare for one conservation organisation to work in isolation; rather, different organisations often work as partners. Disentangling the impact of a single organisation from those of their partners is often not possible, and risks causing conflicts within partnerships, therefore, a Programme Green Status of Species assessment for evaluating the impact of specific conservation actions should not focus on evaluating the impact of an organisation, but rather the impact of a programme, acknowledging the contributions made by all active partners.

Partnerships are often diverse, and include (but are not restricted to) contributors such as international organisations, NGOs and other civil society organisations, local communities, local and national government agencies, companies and research institutes. It is important that all partners involved in a programme are acknowledged in a Programme Green Status of Species assessment, and ideally the team of assessors would include contributors from multiple organisations involved. If assessors choose to,

they can include further details on the contributions of partner organisations (e.g. technical support, financial support, training), but this is not mandatory.

Just as high level conservation actions, such as national legislation must be considered when assessing a focal programme, there may be instances where the impact of the focal programme is influenced by other conservation programmes acting on the same species, or in the same spatial unit. These conservation actions being conducted outside the partnership of the focal programme would be considered as 'background' conservation actions. The impact of these external conservation actions should still be considered in the assessment, but they are considered outside the focal programme. Below are some examples of how separate programmes may influence each other.

Thematic segregation: one anti-poaching programme may work to minimise the impact of snaring on several species in a forest landscape through public engagement, capacity building, patrolling. This work could in turn enable another, independent programme to carry out successful translocations to increase population numbers of a focal species in the area. The work of the anti-poaching programme should be acknowledged when justifying the impacts of the programme, along with other important actions outside the focal programme, such as protected areas and legal protection.

Spatial segregation: multiple programmes, each made up of their own partnerships and not working together, may be working on a species within one country or large protected area. As the purpose of a Programme Green Status of Species assessment is to understand the past/future impacts of a programme, the work of multiple organisations shouldn't be grouped together based just on proximity. Animals may be able to move freely between the geographical range of the neighbouring programmes, meaning they would influence each other. It would therefore be important to consider and acknowledge the impact of neighbouring programmes on the outcomes of the focal programme. Results may highlight situations where it could be beneficial for programmes to work together to have a greater impact.

The situations outlined above assume that there will be some knowledge of what actions are being implemented by other programmes within the spatial unit. This is not always the case, and one of the approaches for assessing the scenarios without the programme (Section 4.4.1 Planned versus ongoing actions) addresses this.

5.2.5 Conservation interventions under the programme

As in a global assessment, past, ongoing and planned conservation actions are considered in a Programme Green Status of Species assessment. How these conservation actions should be determined is outlined in the Background and Guidelines, and in general, any actions that could be categorized according to the IUCN classification of conservation actions should be considered (Salafsky *et al.* 2008; IUCN Red List of Threatened Species). As a Programme Green Status of Species assessment focuses on the actions of a single species recovery programme, there will most likely be additional actions occurring outside the focal programme, either under another programme, or at a higher level, for example international legislation. It is important

that when defining the programme, assessors identify the conservation actions that are carried out as part of the focal programme, as this will allow them to recognise which actions should be included and excluded from scenarios (section 4.3 Programme Legacy; section 4.4 Projected Programme Impact).

Some programmes may include research related actions, focused on establishing an evidence base for effective species conservation. These monitoring, evaluations and learning elements of a programme provide data which are an essential element of successful conservation, as a better understanding of species' ecology, distribution and the relationship with threats can help drive more effective conservation action planning. Actions surrounding research (including data collection, analysis and use) should therefore be included when defining the actions within a conservation programme.

5.3 Programme Legacy

As defined in the Background and Guidelines, the Conservation Legacy evaluates the difference past conservation has made. In order to evaluate this, it is necessary to infer what state the species would be in today in the absence of any past conservation interventions. The Conservation Legacy metric compares the Current status of the species under assessment with the (counterfactual) status that would have been observed had no conservation actions been taken since some predetermined point in the past. The difference between these two (if any) is a measure of the success or impact of past conservation.

The same is true when evaluating the impact of past actions of a species recovery programme, therefore a counterfactual approach is again used to measure the difference the past actions of a programme have had. To calculate the Programme Legacy, a new scenario specific to the Programme Green Status of Species is estimated. The Programme Counterfactual scenario is used to estimate the state of the species within a spatial unit in the absence of the focal programme's past conservation actions, but including all other conservation actions (Figure 5). It is crucial therefore that assessors carefully define actions which are conducted as part of the focal programme, and can differentiate these from 'background' activities, which would have been implemented with or without the focal programme. Only the effects on the species of activities implemented as part of the focal programme are excluded in the programme counterfactual.

The resulting Programme Legacy metric estimates the extent to which the focal programme has contributed to the global Conservation Legacy. The Programme Legacy will usually be smaller than the Conservation Legacy where there is more than one programme contributing to the conservation of the species; however, in cases where the programme is responsible for all legacy actions delivered, the values may be the same (e.g., in the case of an endemic species where a single, long-standing conservation programme works across its entire range and there are no other conservation actions).

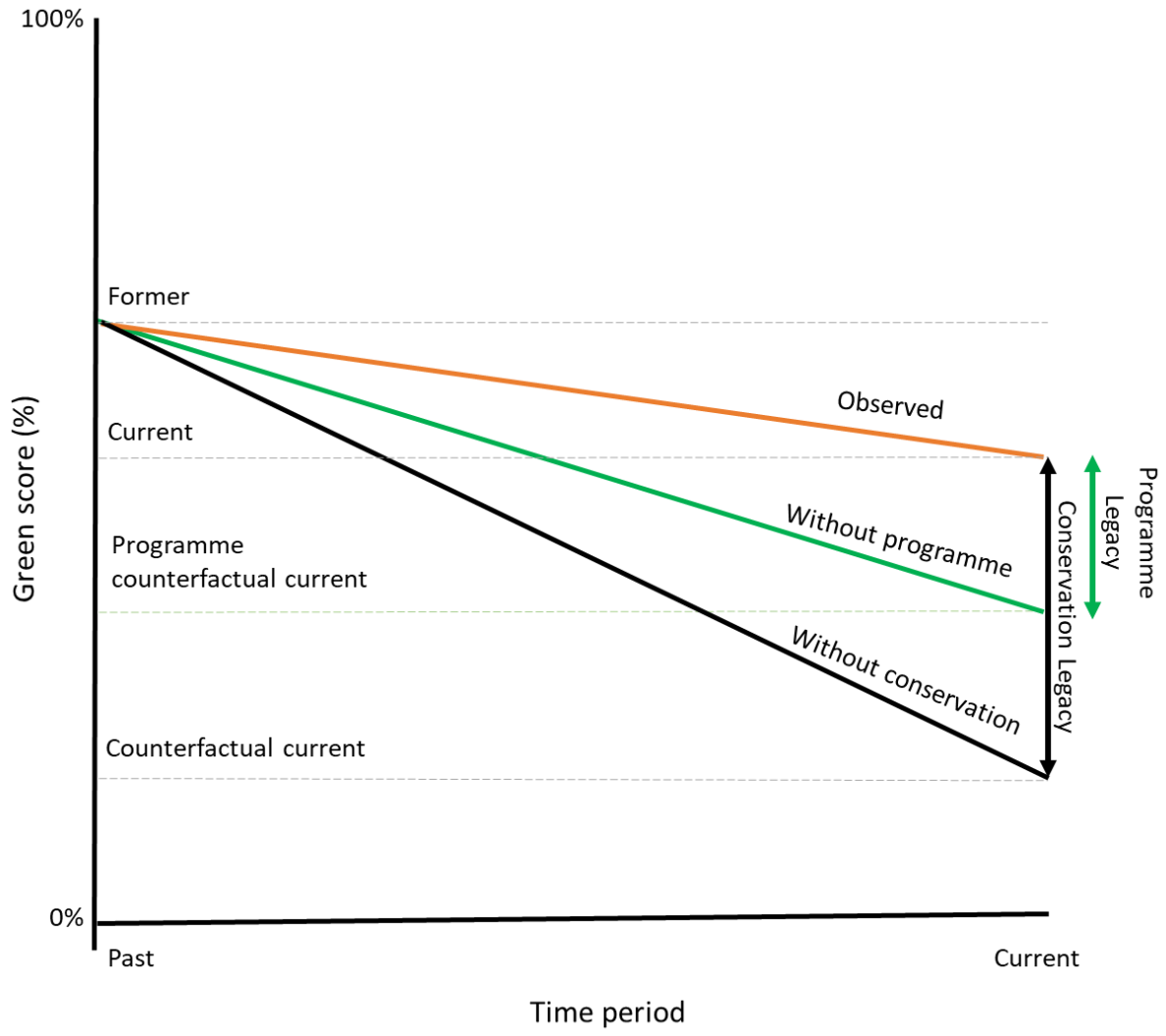

Figure 5: Counterfactual scenarios are used to determine the Conservation Legacy (black) and the Programme Legacy (green). The counterfactual current is a hypothetical scenario with no conservation action taken to date. The programme counterfactual current is a hypothetical scenario in which there have been no conservation actions from the focal program to date, but all other conservation actions have continued.

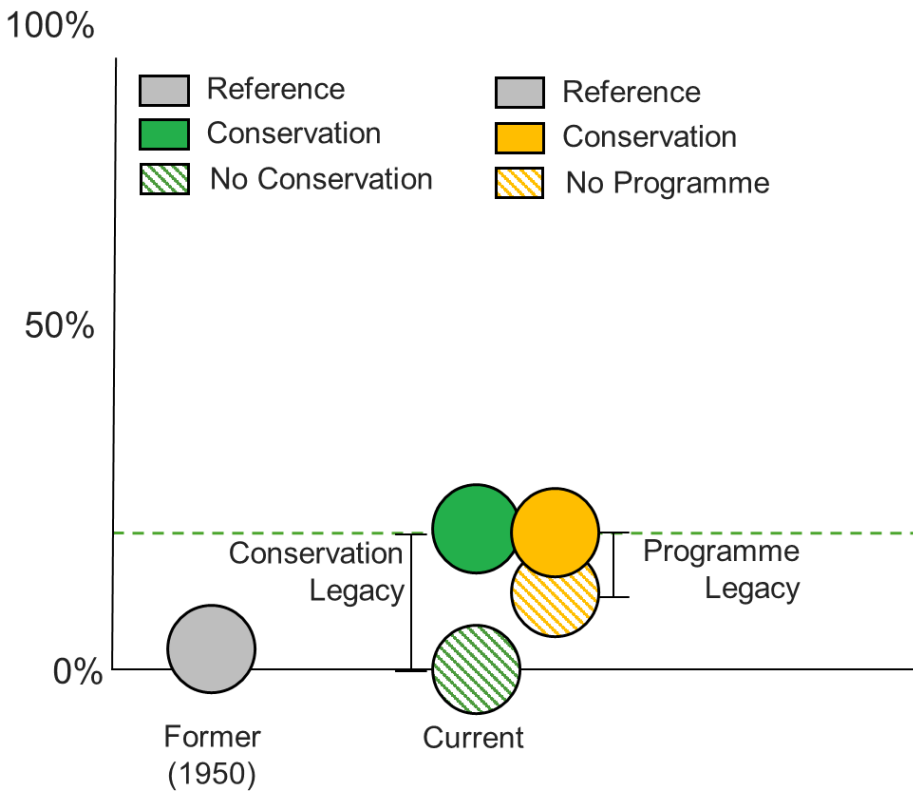

Figure 6: Comparison of the Conservation Legacy and Programme Legacy metrics to visually represent the contribution of a species recovery programme to the global recovery of a species.

The Background and Guidelines provide more detailed information on how to estimate the Counterfactual Current state, including the following four main considerations:

1. What counts as conservation action; i.e., which activities that may have impacted the species should be considered when estimating the Counterfactual Current state in each spatial unit?

2. Temporally, which conservation actions are considered relevant when estimating the counterfactual; i.e., from what starting date are conservation actions counted?

3. What are the acceptable methods for determining the counterfactual state of the species in each spatial unit?

4. When there is uncertainty associated with the counterfactual, how can this transparently be communicated?

In the programme adaptation, considerations 3 and 4 are unchanged, and the information provided in the Background and Guidelines should be applied in a Programme Green Status of Species assessment with regards evaluating the counterfactual status and dealing with uncertainty. However, there are some additional important distinctions that must be made when conducting a Programme Green Status of Species assessment in terms of considerations 1 and 2.

5.3.1 Defining conservation actions

The global assessment considers the impact of all conservation actions on a species' recovery. Assessing the species' status under the counterfactual scenario of no

conservation requires determining what type of conservation actions should be excluded in the counterfactual scenario (see Background and Guidelines for details of defining actions). At the programme level, there is an additional and very important distinction that must be made: of all of the conservation actions having an impact on the species, which are delivered as part of the focal programme. This is important because the Programme Green Status of Species is designed to assess how the focal programme contributes to the global results, while accounting for effects of non-focal programmes and conservation actions performed at a larger scale than any programme, for example legislation or establishment of protected areas (though in some cases these actions could be part of a program). All actions determined to be part of the focal programme should be excluded from the programme counterfactual, whilst the effects of any external conservation interventions delivered outside the focal programme are not excluded.

5.3.2 Determining the start date

In a global assessment, when estimating the Counterfactual Current state, all conservation actions that have been in place since 1950 should be considered. However, in a programme assessment, the temporal scale of conservation interventions which should be considered in the programme counterfactual are informed by the start date of the programme. For instance, if a programme commenced in 2010, any actions which occurred before this date could not have been implemented as part of the focal programme being assessed, thus their effects should not be excluded when considering the Programme Counterfactual Current. Defining the start date of a programme is discussed in more detail in section 4.2.3 Start date of the programme.

5.4 Projected Programme Impact

Calculating future programme impact is more complex than calculating past programme impact. As defined in the Background and Guidelines, the IUCN Green Status of Species provides two metrics for quantifying the expected short-term future impacts of conservation on species recovery (over the next 10 years): Conservation Dependence and Conservation Gain. These represent the expected cost to the species of discontinuing conservation action, and the expected benefits to a species of continuing ongoing and planned conservation actions, respectively. The two metrics can also be summed to produce one single metric of Conservation Impact. This combined approach is used to evaluate the expected effects of the programme over the next 10 years, producing a single metric of Projected Programme Impact. This is because separating gain and dependence requires comparing expected future outcomes to a baseline, for which the Current Green Score is the default in the case of global GSS assessments, as per the Background and Guidelines. This separation of Gain and Dependence is complicated when considering a programme level assessment, as the effects of non-programme conservation actions must also be considered. The use of the default current baseline can lead to inaccurate results of zero or negative programme Gain or Dependence, as changes resulting from interventions outside the focal programme are not correctly accounted for.

In the IUCN Green Status of Species, the Conservation Gain and Conservation Dependence are calculated by comparing the Current Green Score to a Future with Conservation and a Future without Conservation scenario, respectively, over a 10 year

period. The combined Conservation Impact metric is the difference between the Future with Conservation and the Future without Conservation scenarios. At the programme level, the Projected Programme Impact is the difference between a future scenario with the programme and one without the programme. As in the Programme Counterfactual scenario, non-programme activities must be considered and accounted for, and a new scenario specific to the Programme Green Status of Species is estimated. A Future without Programme scenario assumes all focal programme activities cease immediately, while all other conservation continues as planned. This is then compared to a scenario of the future with the programme, in which all focal programme activities, and other conservation continue as planned. This is equivalent to the Future with Conservation scenario from the global assessment. The Projected Programme Impact is therefore calculated by subtracting the Green Score from the Future without Programme from the Future with Conservation (from the global assessment) to estimate the impact of just the actions of the focal programme (Figure 7).

5.4.1 Planned versus ongoing actions

The default approach when estimating the future status in a spatial unit, assessors should consider all ongoing conservation actions, and actions that are planned and ready to be implemented in the very near future (i.e. planning and funding is in place) for both the focal programme and in other non-programme conservation activities (Figure 8). Conservation actions that are possible, but not planned, or those which are unlikely to be implemented within the next 5 years should not be included (see *Background and Guidance* 7. Conservation Gain).

Assessors might not always be aware of planned actions outside of their programmes so may not feel confident estimating the impact of planned actions external to the programme (Figure 8). To address this situation, there is an option to use an alternative approach, where the effects of planned non-programme conservation actions are not considered (but active non-programme actions are). In summary, this method estimates what would happen if all focal ongoing programme activities were stopped today, and all other non-programme conservation continued as is, but no additional planned actions outside the programme started. If this approach is followed, both ongoing and planned programme actions would be considered in the “Future with Conservation” scenario, but only ongoing (not planned) background conservation actions occurring outside the focal programme would be included. Similarly, in the “Future without Programme” only ongoing (not planned) background conservation actions occurring outside the focal programme would be included.

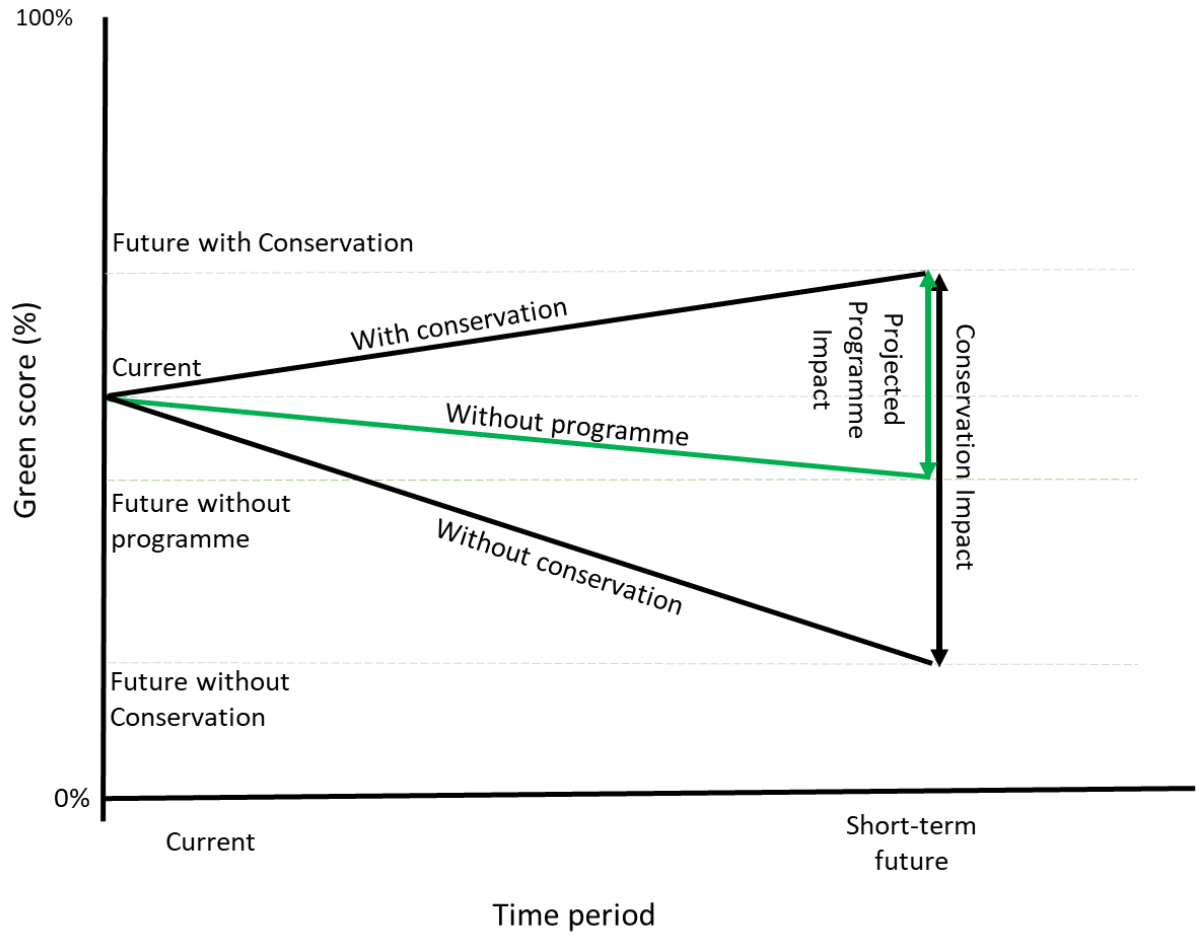

Figure 7: Future scenarios are used to determine the Conservation Impact (black) and Projected Program Impact (green) in the short-term future (10 years). Conservation Impact is the sum of the Conservation Dependence and Conservation Gain metrics calculated in a global Green Status assessment. Projected Program Impact is the difference between a future scenario with the programme, and a future without the programme. For Programme Green Status of Species assessments, restricting the estimation of future impact of the program to the short-term future scenario (10 years) is recommend.

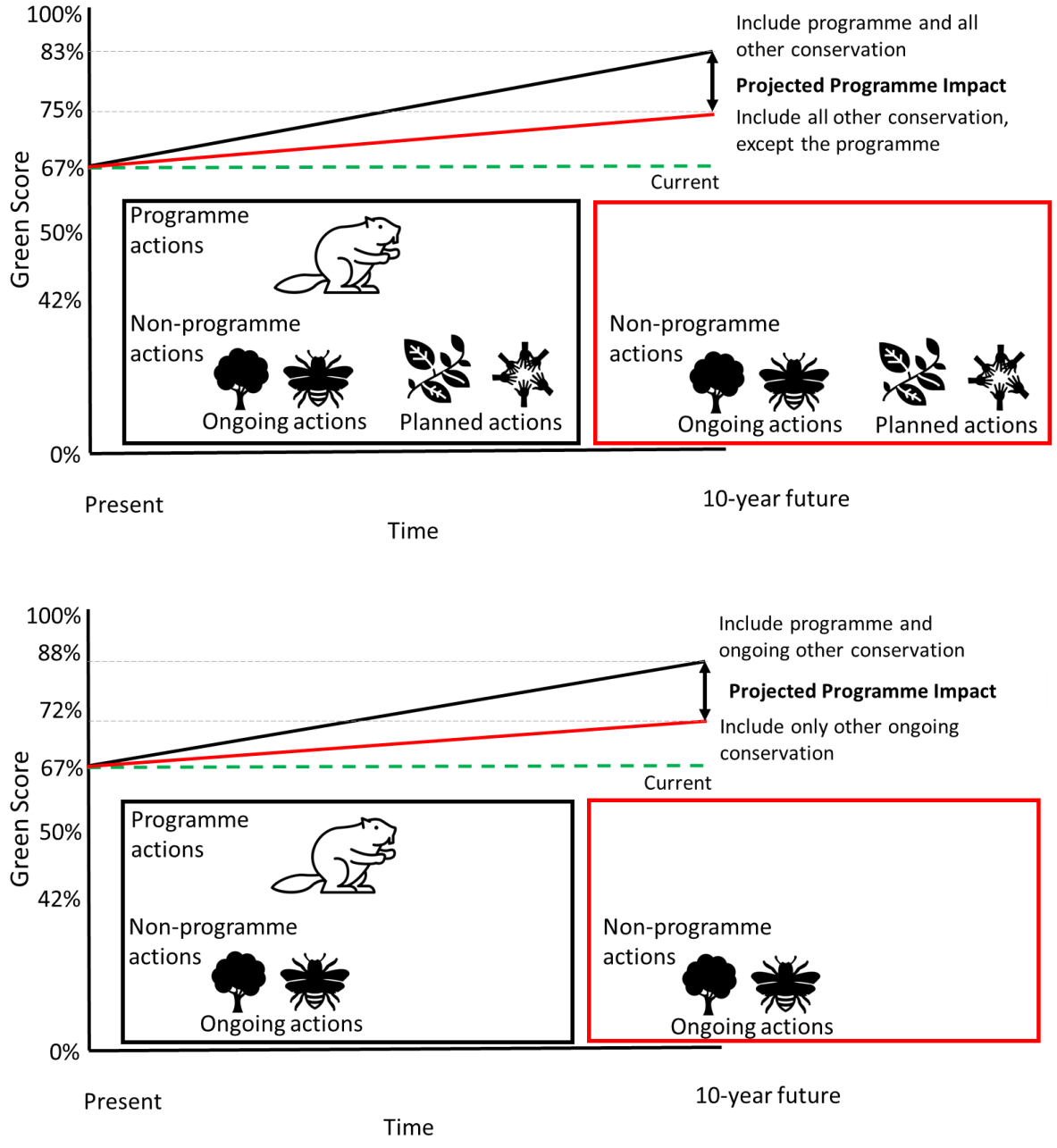

Figure 8: Visual representation of the approach for calculating Projected Programme Impact. Icons represent the focal programme conservation actions (beaver reintroduction), ongoing non-programme conservation actions (protected areas, planting for pollinators) and planned non-programme conservation actions (invasive species removal and community engagement). Top figure is the default approach to include all non-programme conservation actions, both planned and ongoing, in both short-term future scenarios. The bottom figure is the alternative approach to include only ongoing activities outside the focal programme.

5.5 Long-term impact

The purpose of the Recovery Potential metric in the global assessment is to estimate the maximum plausible improvement achievable for a species, setting an aspirational vision for recovery (Akçakaya *et al.* 2018). This is achieved by considering the impacts of all possible conservation actions over that timeframe, unconstrained by finances (but considering factors such as the species' reproductive rate, climate change, and expected socioeconomic developments). During development, it was considered highly unlikely that programmes would (1) have actions planned over a 100-year time frame, and (2) be planned without considering financial constraints. Therefore, when considering the contribution of a programme to global impact metrics, there is no equivalent programme Recovery Potential that could be compared to global Recovery Potential. For this reason, for most Programme Green Status of Species assessments it is not recommended to estimate the impacts of the focal programme over a 100-year timeframe, rather only the 10-year future scenario should be assessed in a Programme Green Status of Species assessment, to assess the short-term impacts of the programme.

It is, however, recognized that a 10-year horizon is often insufficient to detect the effects of conservation, as species recovery commonly takes decades, rather than years. During initial testing, over half of the case studies assessed did not have any detectable impact 10 years into the future. Several potential reasons may explain the absence of a demonstrable effect on the species with a 10-year time span, including the long generation length of the assessed species; interventions not delivering immediate conservation impact but focusing on building towards future conservation (e.g. capacity building and research); the time taken for reintroduced species to be considered wild (based on the IUCN Red List definition); or programmes and interventions being in relatively early stage, requiring time to develop and show change. As it is becoming increasingly common for programmes and governments to consider long-term visions for species recovery, it may be beneficial to look at an additional time frame between the 10-year and 100-year points, to enable looking at the longer term impacts of programmes. This is expected to make this tool more applicable to more recently established programmes, but this requires further testing to develop appropriate guidance.

Through ongoing testing of programmes with varying intervention types, time since the start of the programme, species generation lengths, and geographical scope, we will collect data and feedback on when impact is detected, and if it is not, the expected reasons for this. Through this ongoing work, the optimal time frame for assessing programme impact will be empirically tested, and different time scales can be assessed.

5.6 Categories

The Conservation Impact metrics generated in an IUCN Green Status of Species assessment are categorised (Zero, Low, Medium, Hig, Indeterminate) to aid the communication of these impact metrics. These categorisations are scaled in relation to the Species Recovery Score (see background and guidance for descriptions).

Such categories would also help communicate the impact of a programme, and will be determined following the collection of sufficient data to determine appropriate thresholds for each category.

6 References

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IUCN Standards and Petitions Subcommittee. (2022). *Guidelines for Using the IUCN Red List Categories and Criteria.* Version 15.1. Gland and Cambridge: IUCN.

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1 Appendix 1

1.1 Components of recovery

Here we summarise the main components used to assess species recovery. These components are used to assess the recovery of a species based on the definitions of as species being "fully recovered" if it is viable and ecologically functional in each part of its range. For full description of the components of recovery and guidance on calculating these, refer to the Background and Guidelines. Users should ensure they are fully familiar with the global Green Status prior to attempting a programme Green Status assessment. The concepts discussed in this section are unchanged in the programme Green Status from the global Green Status, thus in a programme assessment, **the indigenous range, spatial units and functionality threshold used must be those defined in the global Green Status assessment for the focal species.**

1.1.1 Range

For the purpose of a Green Status assessment, the range of the species is the total extent of the ***indigenous range*** and any ***expected additional range***. Note that, as defined in the Background and Guidelines, range is conceptually slightly different to the way it is defined in IUCN (2016), as "expected additional range" is a novel component in the Green Status assessment process. The range defined in the focal species' global Green Status assessment *must* be used for the programme Green Status assessment.

The ***indigenous range*** encompasses all known, inferred and spatially projected sites of occurrence, both current and historical. The indigenous range of a species should be assessed at a date far enough back to avoid shifting baselines and recognize range contractions due to human impact. The spirit of this 905 is captured in Sanderson's (2019) suggestion that the date should be "a time before 906 human beings were the most important element limiting species' distributions". The benchmark year against which the indigenous range is determined will vary between assessments, depending when human impact became a driving factor in species decline, but the date must fall between 1500 and 1950.

Ranges of species are shifting, or expected to shift, as a result of environmental changes and some specific conservation interventions. Such shifts are reflected in the ***expected additional range***, which encompasses any areas *outside of the indigenous range* which are *expected to become suitable and occupied in the next 100 years* (e.g. due to climate change), or are being considered for conservation translocations.

1.1.2 Parts of the range

A fully recovered species occurs in a representative set of ecosystems and communities across its range. To assess if this is the case, the Green Status is a spatial explicit framework, whereby the species range is divided into 'spatial units', which are assessed separately. It is not mandatory to subdivide a species' range into spatial units, but the fundamental reason for this division of the range is to capture variation and to incentivise conservation across all parts of the range. Delineation of these spatial units is therefore an important aspect of a Green Status assessment, and can be done in a number of different ways. Briefly, the methods of division from most to least recommended are subpopulations or other species-specific biological divisions,

ecological features (e.g. habitat types as defined by the IUCN Red List Habitats Classification Scheme, marine ecoregions), geological features (e.g. watersheds, islands), locations (e.g. countries) or grid cells. Detailed description of these methods of delineating spatial units and guiding principals in spatial unit delineation can be found in the Background and Guidelines.

In order to understand the contribution of a species recovery programme to global species recovery, it is essential that when a species is being assessed using the Green Status at the programme level, the spatial units used are consistent with those defined in the global Green Status assessment for that species.

1.1.3 State in each spatial unit

The population in each spatial unit must be assessed as one of four ordinal states: Absent, Present, Viable, and Functional. These states are defined and discussed in the Standard.

To summarise, the sates are based on Regional Red List categories within a spatial unit. If the Red List category is EX, EW, CR(PE) or CR(PEW), the state is Absent. If the Red List category is CR, EN, VU or NT and the population is declining, the state is Present. If the Red List category is LC or NT and the population is not continually declining, the state is Viable. If a spatial unit is classified as Viable, it may also be classified as Functional (section 5.3.1 Functionality). Each state is assigned a weighting, and sum of the states in all of the spatial units is compared to the best possible scenario (Functional in all spatial units) to give a Green Score, as defined fully in the Background and Guidelines.

1.1.3.1 Functionality

Part of the definition of a fully recovered species is that it should be ecologically functional. Within the Green Status, this pertains to restoring species to higher than what is required for its own viability. Rather it is recovered to sufficient level, in terms of the abundance or density, and the appropriate demographic structure, that allow all its ecological interactions, roles, and functions to take place. Within a Green Status assessment, the a 'Functionality threshold' must be defined. This is a measure that can be used to indicate when species has gone beyond the state of Viable and reached a point where their ecological functions are being delivered to be classified as Functional. This functionality threshold can be determined in a number of ways, as described in full in the Background and Guidelines. The programme Green Status assessment must use the same functionality threshold as the global Green Status assessment.