Biodiversity Stewardship Tokens

Protocol for Ideation, Implementation & Monitoring

ERA CARBON SERVIÇOS AMBIENTAIS LTDA.

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This document is intended to be used in combination with:

- Regen Registry Program Guide

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1. METHODOLOGY OVERVIEW

The Biodiversity Stewardship Tokens (henceforth called the "Methodology") provides a holistic assessment of ecological state indicators as well as practice-based indicators to incentivize the maintenance of conservation areas, crucial for the perennity and resilience of wildlife and biodiversity.

This Methodology sets the basis for the continuous monitoring of Umbrella Species on a specific Project Time Frame, which, coupled with Environmental Stewardship indicators, creates a favorable net outcome for the chosen Umbrella Species (US) and the whole ecosystem under management.

To apply this Methodology to a specific biodiversity conservation project, it is necessary to produce and submit evidence of the presence of the chosen Umbrella Species (see section 1.5) in the Property Area. This is the main requirement of this methodology. Nevertheless, throughout this document other mandatory parameters and frameworks will be introduced that must be carefully followed.

Once the project is validated, data and evidence must be collected and exhibited in the Monitoring Reports to prove the Umbrella Species (US) has been identified. These Monitoring Reports will be verified by external auditors to ensure all guidelines have been followed in accordance with this methodology.

This methodology is not applicable to aquatic ecosystems.

This first chapter provides a general overview of the methodology and its accessory documents, including: (i) definitions & acronyms; (ii) introduction, scope, and structure of the methodology; (iii) definition of an Umbrella Species; and (iv) a general guideline for the development and implementation of this Methodology.

1.1 DEFINITIONS

- Adoption Date – Date of the first evidence-backed implementation of Project Activities.
- Baseline Scenario - Hypothetical description of what would have occurred in the absence of the Project Activity.
- Biodiversity Claim – Biodiversity Claims are affirmations by end-use buyers claiming that the acquisition of biodiversity Tokens: (i) finance Project Activities that represent investments of the company or person in SDG 13 or 15, "climate action" or "life on land", respectively; (ii) finance Project Activities as investments of the company or person in biodiversity, nature or ecological investments, with this information disclosed before any agency or organization, public or private, ex: B-Corp Impact Assessment or Taskforce on Nature-Related Financial Disclosures; (iii) finances Project Activities as investments of the company or person in biodiversity, nature or ecological investments, with this information disclosed on the company´s sustainability report.
- Buyers – Buyers of the biodiversity Tokens. Can be end-users making Biodiversity Claims, or not.
- Consolidated Area – Anthropic area, infrastructure area, plantation and/or pasture.
- Ecosystem Health (EH) – The framework provided in Chapter 5 for US conservation projects to maintain monitoring practices of the EH throughout the Project Timeline, creating continuous production of scientific knowledge, enhancing data about the EH, and offering important inputs for conservation strategies across diverse bioregions.
- Environmental Stewardship Indicator (ESI) – As defined in Section 6.1.3., the three following indicators: (i) Property Management; (ii) Social Engagement; and (iii) Financial Strategy. The ESI are evaluated at the US Guideline only and chosen based on their possibility of providing a practice-based, systems-thinking, and integrated approach to US stewardship.
- Habitat Area – Defined in this methodology as natural areas without anthropic intervention, plantations of regenerative systems and areas in regeneration.
- Host Country – Country where the Project Activities are implemented.
- Land Steward – Person or entity involved in the caretaking and maintenance (stewardship) of a Property Area. This can ultimately be the Project Developer or the Landowner.

- Landowner – The individual or organization that holds title to the Property Area. This can be the Land Steward or a third party that rents the land to the Land Steward.
- Monitoring Period – Annual or biannual timeframe in which the monitoring of Project Activities occurs.
- Monitoring Plan – Document with the proposed monitoring, reporting and verification (MRV) for the next Monitoring Periods, including the Project Activities to be implemented in the next Monitoring Period.
- Monitoring Report – Report which contains all data and information related to Project Activities during the proposed Monitoring Period.
- Project Activity - The applied management or conservation practice that is protecting an Umbrella Species and/or producing monitoring data for scientific purposes.
- Project Developer – Third party involved in the implementation of Project Activities and/or monitoring and reporting.
- Project Entity – On-chain digital representation of the Project Proponent before the Regen Registry.
- Project Plan – Project Design Document with general overview of proposed Project Activities and impact matrix.
- Project Proponent – The Project Developer or Land Steward that is applying to register a project on the registry.
- Project Registration Date – The date the project is registered on-chain.
- Project Start Date – The date of the first proof of existence of the US within the Project Area, which might coincide with Adoption Date.
- Project Time Frame – The period during which the Project Proponent will undertake the Proposed Activities.
- Property Area – The entire area of the property including Consolidated Area and Habitat Area.
- Regen Network Scientific Community – Decentralized scientific community providing feedback to projects and methodologies registered in the Regen Registry.
- Regen Registry – Blockchain registry operated by the Regen Network Inc.
- Stakeholder – Party of interest involved and/or affected by Project Activities.
- Tokens – On-chain digital unit representing the US Stewardship Project Activities and

ecological conservation.

- Umbrella Species (US) – Defined in Section 1.5 as organisms that have great and sensitive habitat needs or other requirements whose protection results in the conservation of many other species at the level of the ecosystem or landscape.
- Umbrella Species Guideline (USG) – A document tailored for the reality and particularities of each US, ecosystem, and habitat, including specific ESI.
- Umbrella Species Health (USH) – The framework defined in Chapter 4 for US conservation projects to maintain monitoring practices throughout the Project Timeline, creating continuous production of scientific knowledge, enhancing data about specific US, and offering important inputs for conservation strategies across diverse bioregions.
- Validation – The systematic, independent, and documented process for the evaluation of the Project Plan against the criteria of the Methodology.
- Verification - The systematic, independent, and documented process for the evaluation of the Monitoring Report of the Project Activities and the observance of the validated Project Plan and Monitoring Plan against the criteria of the Methodology.
- Verifier – Responsible Third-Party auditor that will perform Validation and Verification process. Verifier will validate and verify the Project Plan, Monitoring Plan, Monitoring Reports, and evidence of Project Activities.

1.2 ACRONYMS

- AFOLU - Agriculture, Forestry and Other Land Use.
- CBD - United Nation´s Convention on Biological Diversity.
- CICES - Common International Classification of Ecosystem Services.
- GBF - Global Biodiversity Framework.
- IPCC - Intergovernmental Panel on Climate Change (IPCC).
- KPI – Key Performance Indicator.
- RND - Regen Network Development.
- SDG - The United Nation´s Sustainable Development Goals.
- MRV – Monitoring, Reporting, and Verification activities.
- PES – Payments for Ecosystem Services.

1.3 INTRODUCTION

Nature is composed of ecosystems that harbor high diversity of biotic and abiotic elements. According to the Convention on Biological Diversity ("CBD"), biodiversity can be explained as the variability of living organisms of all origins. The interactions between these elements of an ecosystem are called ecosystem functions and these functions generate ecosystem services.

Ecosystems services are the benefits that nature provides for humanity. These services are of great importance for human well-being and economic activities. According to the Common International Classification of Ecosystem Services (CICES), three categories are considered: (ii) provision; (ii) regulation; and (iii) cultural. Human actions that favor and enhance the conservation or improvement of ecosystems and maintenance of ecosystem services are known as environmental services.

The Payment for Environmental Services ("PES") is a crucial concept and mechanism that is in the dawn of its wide-scale implementation. To truly usher an ecological economy, providers of environmental services must be duly acknowledged and incentivized for their conservation practices and stewardship of habitats.

Nevertheless, biodiversity stewardship is seldom recognized or compensated, in fact, in our carbon-centric PES global agenda, it is usually relegated to the background as a preferable outcome for nature-based solutions, but rarely as the main goal of projects.

The planet stands on the brink of a sixth mass extinction event, despite the attempts to create a world-wide consensus on the theme. Notwithstanding, considering the CBD and the failure to achieve the Strategic Plan for Biodiversity 2011-2020 (including the so-called Aichi Targets), the global multilateral organizations have generally reached a stalemate on biodiversity. The CBD now prepares the Post-2020 Global Biodiversity Framework ("GBF"), with the following stated theory of change:

"The framework is built around a theory of change (see figure 1) which recognizes that urgent policy action globally, regionally and nationally is required to transform economic, social and financial models so that the trends that have exacerbated biodiversity loss will stabilize in the next 10 years (by 2030) and allow for the recovery of natural ecosystems in the following 20 years, with net improvements by 2050 to achieve the Convention's vision of "living in harmony with nature by 2050". It also assumes that a whole-of-government and society approach is necessary to make the changes needed over the next 10 years as a steppingstone towards the achievement of the 2050 Vision. As such, Governments and societies need to determine priorities and allocate financial and other resources, internalize the value of nature, and recognize the cost of inaction."[1]

[1] Accessed at: First draft of the post-2020 global biodiversity framework (cbd.int)

Figure 1 *Extracted Theory of Change figure from the first draft of the Post-2020 Global Biodiversity Framework.*

The above citation showcases the urgency for reliable and actionable tools to promote the allocation of resources for biodiversity protection and regeneration. Biodiversity loss needs to be stabilized by 2030, an ambitious yet crucial measure for avoiding ecological collapse in this century.

Considering these premises, the development of a PES framework specifically dedicated to solving this conundrum is urgently needed. Therefore, this methodology is intended to contribute Milestones A.1 and A.2 of Goal A and D.1, D.2 and D.3 of Goal D of the GBF, as stated, in order:

(a.1) Net gain in the area, connectivity, and integrity of natural systems of at least 5 per cent.

(a.2) The increase in the extinction rate is halted or reversed, and the extinction risk is reduced by at least 10 per cent, with a decrease in the proportion of species that are threatened, and the abundance and distribution of populations of species is enhanced or at least maintained.

(d.1) Adequate financial resources to implement the framework are available and deployed, progressively closing the financing gap up to at least US $700 billion per year by 2030.

(d.2) Adequate other means, including capacity-building and development, technical and scientific cooperation, and technology transfer to implement the framework to 2030 are available and deployed.

(d.3) Adequate financial and other resources for the period 2030 to 2040 are planned or committed by 2030.

The intent of this Methodology is to create a mechanism that will significantly increase the number of protected hectares of habitat for a given Umbrella Species ("US"), providing a general framework to incentivize the monitoring and assessment of Umbrella Species Health ("USH") and Ecosystem Health ("EH") in various biomes, so that Land Stewards can receive PES for becoming stewards of a chosen US occurring in the Project Area. USH and EH monitoring will be coupled with Environmental Stewardship Indicators ("ESI") that can provide improvements to the USH and the EH of the Project Area, besides building and improving interactions between humans, communities, and US.

1.4 SCOPE

Ecosystem management includes a wide variety of measures for the protection of living beings and their natural environments, including the conservation of animal and plant species. All species of fauna and flora of an ecosystem maintain direct or indirect relationships with each other and are important for the existence and balance of a given environment. However, during this network of relationships there are some specific species that directly or indirectly establish fundamental connections with others and become a cornerstone for the balance and maintenance of the ecosystem. These species are known as Umbrella Species and play a vital role in the structure, function, and productivity of the ecosystem.

By the standards of scientific literature, US are species that require a large habitat area whose ecological protection and stewardship results in the conservation of many other species at the level of the ecosystem. The US can be used to help select potential reserve locations, find the minimum size of these conservation areas or reserves, and determine the composition, structure, and process of the ecosystems. Therefore, US conservation and management projects are known to be successful in balancing and restoring biodiversity, since these species significantly influence other species of flora and fauna that make up the ecosystem, ensuring that ecosystem services are maintained.

Most of the US are included on the Red List of the International Union for Conservation of Nature (IUCN) with status of endangered or critically endangered. Therefore, their protection includes the conservation of their habitats.

Projects that assess ecosystem health with a focus on species that are good indicators for environmental quality have the advantage of numerous indirect benefits. However, the bottleneck of conservation projects is the sustainability of long-term actions that ensure stable, positive changes in the environment, thus guaranteeing the occurrence of a multitude of species along with the ecosystem services they provide.

This Methodology is intended to be a practice-based methodology (one which will be referred to as "Environmental Stewardship"), understanding that biodiversity stewardship is a complex and holistic endeavor, which can be deployed and fulfilled through a mix of indicators that make use of quantitative and qualitative data, using a holistically assessed and technology driven monitoring approach.

This Methodology is intended to provide a general framework for the monitoring of USH and EH, as well as the assessment of ESI, so that *Land Stewards* can receive PES for becoming stewards of a chosen Umbrella Species occurring in the Property Area.

The Umbrella Species Health (USH) indicator detailed in Chapter 4 has the following mandatory and optional parameters:

- Ecosystem Distribution (hereby called the "Habitat Area")
- Species Traits

The Ecosystem Health (EH) indicator detailed in Chapter 5 has the following mandatory and optional parameters:

- Community composition
- Ecosystem structure

Each US will have a specific Umbrella Species Guideline document ("US Guideline"), tailored for the reality and particularities of each US, ecosystem, and habitat. Any Project Proponent can draft a US Guideline, provided the document is based on best practices, peer-reviewed literature, and/or government or environmental agencies public guidelines, for public policy purposes (for more information, refer to Chapter 7).

The USH and EH are evaluated only in the general methodology. In the US Guideline, additional factors that are evaluated simultaneously are defined by the ESI, providing a system of continuous improvements to the USH and EH of the Project Area, besides building and improving interactions between humans and animal communities, especially considering the US. Three ESI were defined: (i) Property Management; (ii) Social Engagement; and (iii) Financial Strategy, chosen based on their possibility of providing a practice-based, systems-thinking, and integrated approach to US stewardship. The ESI are evaluated at the US Guideline only.

Figure 2 illustrates the structure of the methodology, showcasing the two main documents that must be followed: (i) this main methodology document herein, with the Umbrella Species Health and Ecosystem Health indicators; and (ii) in the US Guideline, with the Environmental Steward Indicators, as described above.

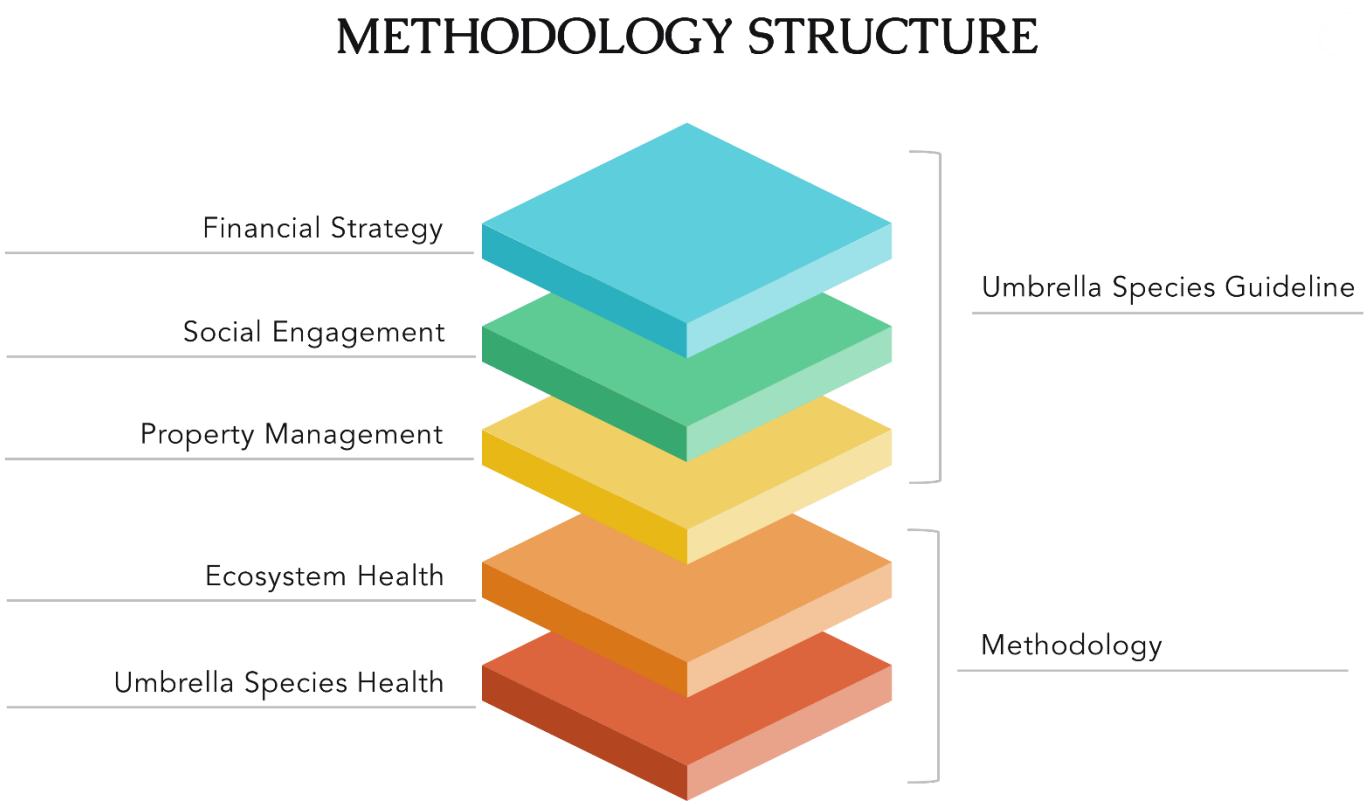


Figure 2 *Illustrative representation of the structure of the Biodiversity Methodology for Umbrella Species Stewardship.*

This general guidance of the Methodology is intended to assist *Project Proponents* in applying scientifically rigorous and technology driven MRV focused on maximizing data and estimates on USH and presence in a Property Area, while minimizing MRV efforts and increases the credibility of results.

Field monitoring activities will be coupled between ongoing remote sensing data and innovative technology such as camera traps and GPS collars. When necessary, field samples and observation methods such as recordings of sightings and vocalizations, feces collecting, fur-traps, footprints, birth dens and nests, will also be used to assess USH while remote MRV data and peer reviewed literature will provide an assessment for species health.

1.5 UMBRELLA SPECIES DEFINITION

The concept of umbrella species was first used in 1981 by Frankel and Soule. The term is used to represent species that need large areas for their conservation, so that, by protecting these areas, it is also possible to conserve the other species that inhabit them. They are species that have high life expectancy, are sensitive to changes in the environment and are of great importance for their ecosystem.

An Umbrella Species is defined in this methodology as an organism that helps define an entire ecosystem. Therefore, US promote a functional diversity of the ecosystem and improve the

ecosystem service diversity of the whole fauna.

US species focus of this methodology – Mammals and Birds listed on the IUCN Red List of Species threats with the following conservation status:

- Critically endangered (CR).
- Endangered (EN).
- Vulnerable (VU).

Other species (mammals or birds) may additionally be covered by this methodology, provided they meet at least one of the following criteria:

- Near-threatened species (NT), if the need for preventive action is justified to prevent them from being categorized as threatened.
- Species that are threatened on official state lists (according to the legislation of each country) and that are not listed on the IUCN Red List of Threatened Species but that present unique situations with risk of local extinction and global impact on the species.

There are no international criteria for the selection of animals to serve as umbrella species, but in general they are large mammals or birds, since these tend to have the widest variety of environments and generally have a great impact on their ecosystem.

1.6 GENERAL FRAMEWORK AND METHODOLOGY STEPS

A general framework for the Methodology is presented in Figure 3. The initial Project Activities, Monitoring Plan and its associated technology is deployed to the field, in a scenario where no activities exist (i.e., the "Baseline"). The Project Proponent creates a basis of continuous improvement of monitoring of USH/EH and development of the activities associated with the ESI, following the minimum requirements of this Methodology. This approach allows for a significant reduction in the level of technology and commitment of Project Activities that's needed to be applied in the Baseline year, permitting exponential continuous improvement in the following years, with the reinvestment of biodiversity tokens' revenue in monitoring and ESI improvement.

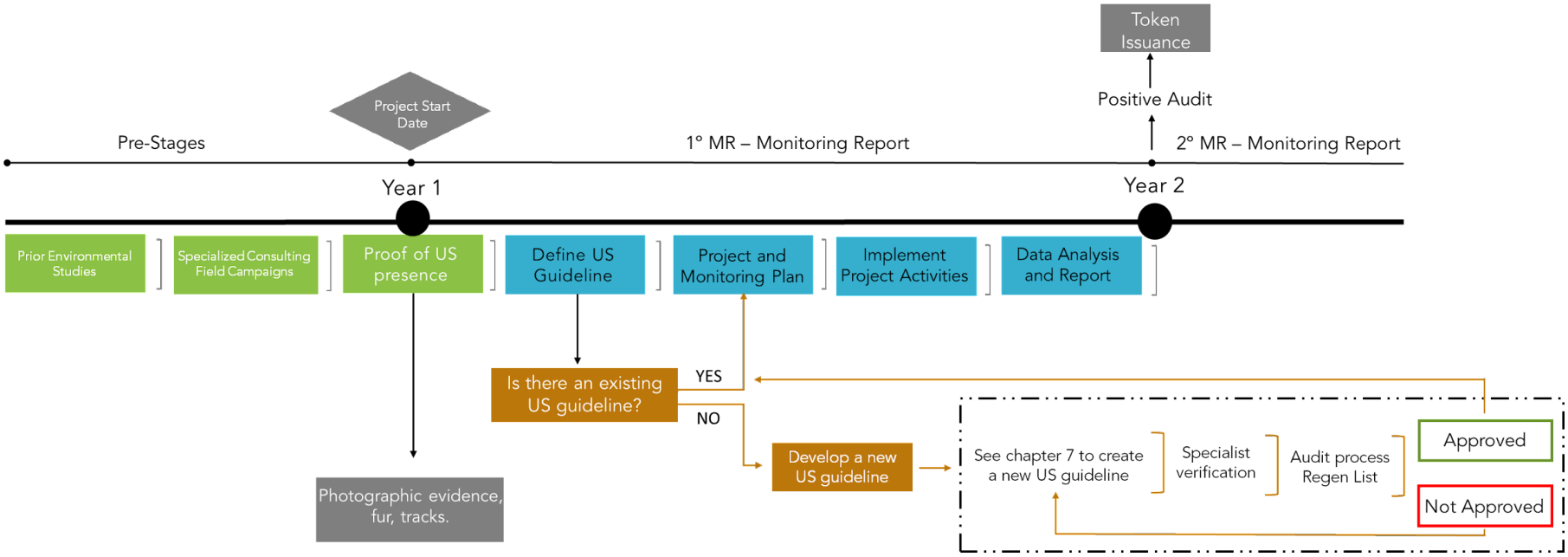


Figure 3 *Illustrative representation of the methodology framework.*

To implement the Methodology in the Property Area, the following steps are required:

1. Carry out a prior biodiversity campaign to assess the Property Area (optional pre stages above).
2. Choose US and prove presence in Property Area.
3. Define the US Guideline, if available.
4. If a US Guideline is not readily available, the Project Proponent has the option of drafting one according to Chapter 7.
5. Develop the Project Plan and Monitoring Plan.
6. Implement the Project Plan and Monitoring Plan, by deploying monitoring technology and implementing Project Activities for the Property Area according to Chapter 4 to 7.
7. Data Analysis and Report.
8. Validation and verification of data and evidence of the Monitoring Report by an approved Verifier for token issuance.

2. PROJECT ELIGIBILITY

Project proponents must describe in the Project Plan how each of the following eligibility criteria are met, with evidence to support the claims.

2.1. ECOSYSTEM TYPE CLASSIFICATION

Application: This Methodology can be developed in any biome in the world.

Definition: Biome is a biological unit or geographic space whose specific characteristics are designated by macroclimate, vegetation class, soil, and altitude, as well as other criteria. They can be defined as types of ecosystems, habitats, or biological communities within a certain level of homogeneity.

2.2. LAND OWNERSHIP TYPE

This Methodology accepts projects with all land ownership types, including private, public, and tribal, provided the Project Proponent demonstrates adequate documentation for proof of ownership and/or approval by landowners.

2.3. PROOF OF OWNERSHIP

Landowners and/or Project Proponents will prove land ownership or title with the available legal documents as per the host country´s legislation. Landholders and/or Project Proponents will need to prove at least basic and documented land tenure rights, in order to avoid double-counting, double-claiming, and improve permanence aspects of the Project Activities.

2.4. PERMANENCE OF PROJECT ACTIVITIES

Project proponents and Land Stewards must prove the minimum project Timeframe is sustained by an irrevocable and legally enforceable agreement between the Project Proponent, Land Steward and/or any other relevant parties that ensures that the Project Activities will be undertaken, or any other legal or regulatory remedy, public or private in nature, that entails this specified outcome.

2.5. PROJECT START DATE AND ADOPTION DATE

Project Start Date: The date of the first proof of existence of the US within the Project Area, may coincide with Adoption Date.

Adoption Date: This Methodology will accept an Adoption Date that goes back up to 5 years prior to the Project Registration Date. To claim an Adoption Date before the Project Start Date and the Project Registration Date, the Project Proponent must have maintained clear historical records to prove US existence during all years and monitoring efforts of USH and EH, implementation of the US Guideline and overall eligibility to this Methodology.

2.6. CREDITING TERM

The Crediting Term for this Methodology for the issuance of tokens is 5 years, from the moment of Project Registration Date, this does not include issuances that are claimed prior to this date. Each renewal period will be 5 years and there is no limit to the number of renewals.

3. PROPERTY AREA BOUNDARY

This chapter presents the definitions of spatial boundaries and temporal boundaries of the defined Property Area.

3.1. SPATIAL BOUNDARIES

Property Area: It comprises the entire area of the property bounded by spatial boundaries, including Consolidated Area and Habitat Area.

Consolidated Area: The Consolidated Area spatial boundary encompasses all the Landowner´s land anthropized in which the Project Proponent will undertake the MRV and Project Activities. For example: Infrastructure area, agricultural cultivation area and area of human occupation.

Habitat Area: Habitat Area spatial boundaries are defined as the forest cover or vegetation used as a functional ecosystem by US. Habitat Area may include agroforestry plots, forest and native vegetation that are legally protected and/or surplus forest that could be legally converted to multiple uses (e.g., agriculture, pasture, infrastructure). Furthermore, it's the main datapoint for the calculus of the USH indicator, as per chapter 4.

É possível incluir mais de uma propriedade no projeto, desde que todas as estratégias ESI sejam implementadas em todas as áreas e que estejam distantes no máximo 200km.

3.2. TEMPORAL BOUNDARIES

The Project Timeframe is the period during which the Project Proponent will undertake the Proposed Activity.

Current available data from scientific literature on permanence aspects of biodiversity projects are scarce. Although there are mathematical models for predicting the potential for restoration and conservation of biodiversity few projects have sufficient longevity and permanence to change the pattern of biodiversity distribution, or the structuring of ecosystems. This way, it is very important to understand what the feasible temporal window is to identify changes in the community and effects on the conservation status of the species.

Many projects have the challenge of raising funds for the maintenance of conservation activities. Therefore, the proposal to submit monitoring reports in short periods of time (annual or biannual) allows the validation and verification of Project Activities, which may result in the increase of the score, and consequently, the generation of tokens based on the fulfillment of the criteria described in the US guidelines.

Therefore, the Monitoring Period and frequency defining the temporal boundaries should adhere to the following guidelines:

- The minimum Project Timeframe must be 5 years.

- Monitoring Periods and Verifications must be annual or biannual.

4. EVALUATING UMBRELLA SPECIES HEALTH AND DEVELOPING A MONITORING PLAN

This chapter presents the mandatory parameters of the USH indicator, as well as the suggested *best practices* for the use of technologies in monitoring and conservation of biodiversity. Considering the concept of individuals in ecology, individuals are beings of the same species. Therefore, this chapter will address parameters of identification, monitoring and conservation of US individuals. The overall scoring method is provided at the end of this section.

This Methodology provides the framework for US conservation projects to maintain monitoring practices throughout the Project Time Frame, creating continuous production of scientific knowledge, enhancing data about specific USH, and offering important inputs for conservation strategies across diverse bioregions. All the data produced, considering USH, shall be reported annually or biannually in the Monitoring Reports.

The Monitoring Plan should include the following objectives:

- Describe how changes in a chosen population of US will be monitored, as well as other species of communities, which could serve as an indicator of habitat quality and disturbance.
- Describe the methods that will be used to monitor US health. The methods should be repeatable, minimally susceptible to observer bias, and achievable with minimal training and equipment.

4.1. BASELINE MONITORING PARAMETERS

There are mandatory USH parameters that must be measured in the field to compose the baseline calculation for the number of tokens that will be issued.

The parameters used by this methodology are based on the Essential Biodiversity Variables ("EBV"), which assess biodiversity change over time in different dimensions and across multiple scales. It can be used to monitor progress with respect to the sustainable development goals, or determine adherence to biodiversity policy, and to track biodiversity responses to disturbances and management interventions[2]. The EBVs summarize a minimum set of essential measurements to capture the main dimensions of the change in biodiversity, complementary to other initiatives to observe the change in the environment.

[2] Pereira, H.M., Ferrier, S., Walters, M., Geller, G.N., Jongman, R.H.G., Scholes, R.J., Bruford, M.W., Brummitt, N., Butchart, S.H.M., Cardoso, A.C., Coops, N.C., Dulloo, E., Faith, D.P., Freyhof, J., Gregory, R.D., Heip, C., Höft, R., Hurtt, G., Jetz, W., Karp, D.S., McGeoch, M.A., Obura, D., Onoda, Y., Pettorelli, N., Reyers, B., Sayre, R., Scharlemann, J.P.W., Stuart, S.N., Turak, E., Walpole, M., Wegmann, M., 2013. Essential biodiversity variables. Science 339, 277–278. Accessed at: https://doi.org/10.1126/ science.1229931.

The GEO BON (part of GEO, The Group on Earth Observations) indicates six EBV Classes[3]:

- Genetic composition
- Species populations
- Species traits
- Community composition
- Ecosystem structure
- Ecosystem function

From these classes, specific EBVs were chosen to allow for ease of use, providing the Methodology with an accessible framework for monitoring.

- Ecosystem structure
  - Ecosystem Distribution
- Species traits
  - Phenology
  - Size of the population
  - Movement

4.1.1. ECOSYSTEM STRUCTURE

4.1.1.1 ECOSYSTEM DISTRIBUTION

Habitat Area – It's defined in ecology as the place where an organism lives and develops, represented by the set of biotic and abiotic factors. Generally, the habitat is characterized by a predominant plant formation or physical characteristic. Within their natural habitat, organisms find the necessary conditions for their survival such as shelter, food and breeding partners.

This methodology considers Habitat Area:

- Native vegetation.
- Water resources.
- Regenerative systems (such as agroforestry plots).
- Degraded areas in a state regeneration (minimum 5 years).
- Ecological corridors.

The characterization of the areas must be presented through remote sensing by satellite images, identifying the different areas and classifying them according to the vegetation and hydrographic bases. Spatial boundaries defining the Property Area should be provided by the Project Proponent with any parcels or stratification schemes defined. Data formats may include polygon shapefiles, KML/KMZ files, or other GIS vector files.

[3] Accessed at: https://geobon.org/ebvs/what-are-ebvs/

The objective of this step is to collect and analyze spatial data to identify the current conditions of the Habitat Area of the property. The date of the images should be as close as possible to the project start date (≤ 6 months) and high resolution.

Data can be inserted into a table, for example:

Habitat Area	Hectares
Native Vegetation	
Water Resources	
Regenerative Systems	
Degraded areas in a State Regeneration	
Ecological Corridors	
Total	

For the scoring method of this section, the total size of the areas in hectares will be considered.

Consolidated areas - is related to the areas of interaction of the species and will be considered the entire anthropic intervention area of the property such as:

- Plantations (monoculture or otherwise) and/or pasture.
- Infrastructure areas.

Remote sensing with current satellite images and with good spatial resolution should be used to identify the areas. Spatial boundaries defining the Consolidated Area should be provided by the Project Proponent with any parcels or stratification schemes defined. Data formats may include polygon shapefiles, KML/KMZ files, or other GIS vector files.

The purpose of this step is to collect and analyze spatial data to identify current land use conditions within the Property Area. The date of the images should be as close as possible to the Project Start Date (≤ 6 months) and high resolution.

Data can be inserted into a table, for example:

Consolidated Area	Hectares
Monoculture and/or pasture	
Infrastructure areas	
Total	

For the scoring method of this section, the total area's size in hectares will be considered.

4.1.2. SPECIES TRAITS

4.1.2.1 PHENOLOGY

Phenology will be used as a binary measurement which indicates the presence or absence of the chosen US. This parameter is understood as the basic and obligatory datapoint that confirms if US is present or not in the Property Area.

Confirmation of the US presence may be obtained via many types of accessible methods such as camera-traps, drones, radio/GPS collars, bioacoustics and/or field samples such as feces collection, fur-traps, identification of footprints and birth dens/nests.

Expert advisory reports or GPS-located evidence presented by the Project Proponent will be accepted as proof of the presence of the US in the area. Regardless of the size of the Property Area, the presence of a single individual of US will be valid for access to the Methodology and eventual issuance of Tokens.

It is mandatory to record the presence of the US in the Property Area in the first Monitoring Report. After this period, it is permitted by the Methodology that the US is not registered in the area for up to 1 year, still being eligible for the Methodology in this time frame. However, it is mandatory for the Project Proponent to implement a system of continuous improvement in the application of the ESI (as described further in Chapter 7), where the Project Proponent must be implementing new strategies and Project Activities in each Monitoring Report as defined in this Methodology and the US Guideline.

In case the host country has a national action plan aimed at the conservation of the US, the occurrence of the individual's presence in the project area must be reported to the national database.

4.1.2.2 SIZE OF THE POPULATION

This parameter will analyze the size of the US population in the Property Area. The Project will yield a higher overall score if the Land Steward chooses to engage in the application of this analysis.

Size of population is understood as the total number of individuals of the same species living in a given area. The larger the population, the greater its genetic variation and, therefore, its potential for long-term survival. The increase in population can, however, lead to other problems, such as excessive use of resources, causing a population to collapse.

For moving individuals, such as mammals and birds, a technique called the "marking and recapture method" is often used to determine the population size of a given species. In the first capture, the individual is marked (the capture and marking can only be performed by a specialized and authorized technical team, with legal permission from environmental authorities to do so) and released. In the second capture, the individuals captured with marking are not counted as new individuals, and new individuals are marked.

To calculate the size of the population it is suggested to use the following equation:

$$N = \frac{nM}{x}$$

Where:
N= population size
n= total number of individuals caught in the second capture
M= number of individuals tagged in the first capture
x= number of new individuals tagged in the second capture

Other alternative methods for determining population size include use of technologies such as Drone, Camera Traps and Telemetry.

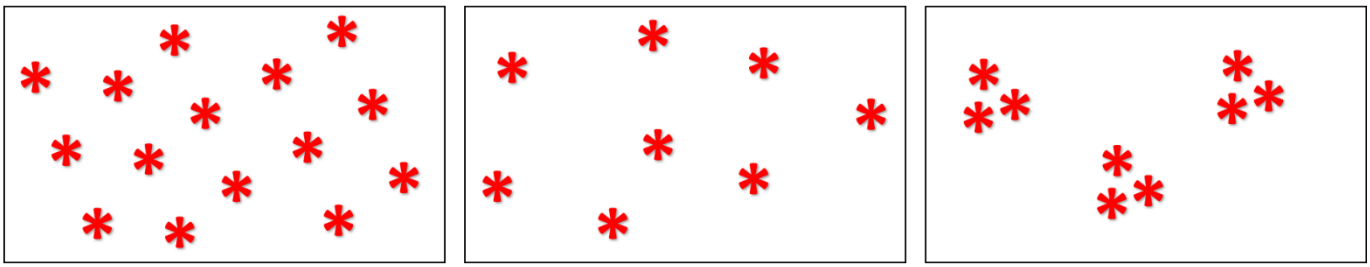
Expert consultants and biologists should be used to quantify this parameter and should be filed in a specialized monitoring report.

Each individual of the same US registered in the area will count as 1 point in the equation.

4.1.2.3 MOVEMENT

Scatter patterns or distribution patterns refer to how individuals in a population are distributed in space at a given time.

The individual organisms that make up a population may be evenly spaced, dispersed randomly with no predictable pattern, or clustered in groups. These patterns are known as uniform, random, and cluster patterns, respectively.



Uniform dispersion | Random scatter | Clustered scattering

Movement is an elementary process in the life of living beings, as it occurs daily in the conquest of territories, search for food, escape from predators, search for partners for reproduction and even search for more promising environments.

With technological advances, it is possible to obtain various data on the behavior of monitored individuals, such as daily movement, size of the area they circulate and what their natural habitats are. The analysis of this information makes it possible, for example, to determine the impact of human development, or even help in understanding whether an area has a sufficient number of individuals of a species to allow its survival.

The application of any method that involves the capture and handling of individuals must be carried out by authorized and competent institutions.

A technique that can be used is the predictive modeling of species distribution (also called ecological niche modeling), it is a modern technique that uses data from different areas of knowledge to obtain models that explain the probabilistic distribution of a species in the environment.

Statistical distribution models are built through computer programs that relate data from variables such as climate, relief, soil composition, vegetation cover, among others, to predict the possible occurrence of a species in a given space. Ecological niche modeling has several applications today, such as the conservation of rare species, reintroduction of species into the environment and prediction of impacts caused by invasive species.

Species distribution modeling can be used to define potential areas of occurrence, but evidence of the presence of individuals in the area is required through camera trap records or other resources.

Compliance with this parameter is mandatory from the third year of monitoring.

The analysis of this parameter will count 1 point per individual in the equation.

4.1.3. CONTINUOUS IMPROVEMENT THROUGH THE PROJECT LIFETIME

The following subsequent mandatory parameters should be implemented throughout the Project Time Frame, in a manner that until the end of the Project, all parameters have been applied to monitor USH.

The Monitoring Plan must address how the Project Proponent will implement the monitoring strategies so that at each MR there is an increment of new strategies considering that by the end of the Project Period, all strategies must have been implemented.

4.2. TECHNOLOGY GUIDELINES

4.2.1. CAMERA TRAPS

The use of camera traps in conservation projects has grown in recent times. As it is a less invasive technique, it allows the survey, inventory and behavioral analysis of animals in their natural environment. Strategies of this methodology and US Guidelines include the use of camera traps for monitoring US and other species. Notwithstanding, this technology can offer additional benefits to Project Activities such as:

- The captivating images and videos of US are effective for public engagement and environmental awareness, contributing to Project Activities in US Guidelines.

- The camera traps can be used as surveillance tools in the Habitat Area, addressing item 4.2, especially to combat illegal hunting and deforestation, as per each individual US Guideline.

The benefits of using camera traps are:

- Monitors and records for long periods of time.
- Relatively non-invasive.
- Records undisturbed behavior (in theory).
- Produces verifiable data.
- Offers a highly repeatable method of data collection.

Camera traps vary a lot in their specifications, and this can have important consequences for how well they perform for a given research objective or on a given type of animal, depending on the context. The best approach to identifying what camera trap to choose is to identify the broad type of camera that you require, and then the specific features required to achieve your study's specific aims. Below are some suggestions:

- Most research and monitoring purposes call for a mid- to high-end camera trap, equipped with an infrared flash, large detection zone and fast trigger speed. Important exceptions to this broad recommendation include: a white flash (in most cases) for capture-recapture studies, and a video or "near-video" mode for studies intending to use random encounter modeling.
- For mammals or small birds, a high-end camera trap with a good infrared sensor and fast trigger speed is required; white flash should be considered to aid species identifications.
- For arboreal camera-trapping, required camera trap features include a large detection zone, fast trigger and recovery speeds, and wide field of view.
- Ectothermic species remain a challenge for most commercial camera traps and must be combined with specific methods (e.g., deployment at certain times of day, or using time-lapse) to help overcome this; a setup with a direct trigger (e.g., active infrared sensor or pressure pad) may be more effective.
- Environments with high rainfall, snowfall or humidity will be problematic for most commercial camera traps; a high-end camera trap with good protection against the elements is recommended (e.g., a fully sealed casing and conformal coating on the circuit board).
- In hot environments, passive infrared sensors may fail to detect a difference between the surface temperature of target animals and the background; a camera setup with a direct trigger may be more effective.
- In open environments, and when camera-trapping in trees, a high-end camera trap which is less prone to misfires from moving vegetation will be beneficial (although all camera traps are susceptible to this problem); it may also be helpful to use cameras which allow the sensitivity of the infrared sensor to be reduced.
- For camera-trapping in areas which come with a high risk of theft, consider the security options that are compatible with a given camera trap model (e.g., cable locks and security cases).
- The recommendation is to set as many camera traps as you can, but certainly at least as many as your study demands in order to be robust and useful; you can estimate the

minimum number of cameras you'll need based on your sampling design and information about how long it will take to install, move, and collect cameras in the field.
- Published studies comparing camera trap models often become quickly out-of-date; a better option is to reach out to the camera-trapping community to gauge opinions about a specific camera trap model for a given task.

This Methodology entails that camera-trap-based monitoring will provide a foundation for long-term research of numerical trends and demographic patterns.

For more information, this Methodology suggests utilizing the document "Camera-Trapping for Conservation – a guide to best-practices"[4], by the World Wide Fund for Nature (WWF).

4.2.2. TELEMETRY

Telemetry can be used to monitor of the parameter mentioned in item 4.1.2.3 of this Methodology. Wildlife tracking technologies have been used to estimate home-range size, daily and dispersal movement distances, and habitat associations. Some large animals have relatively large home ranges which are highly variable and vary with topography, prey availability, and population dynamics, e.g., jaguars and lowland tapirs.

Radiotelemetry, including very-high frequency (VHF) and Global Positioning Systems (GPS), provides the opportunity to monitor and map detailed movements of the most highly mobile and cryptic animals. These data provide the opportunity to answer behavioral and ecological questions and to promote quantitative and mechanistic analyses. Also, tracking technologies have often been used to monitor ecological and population parameters. Telemetry provides the ability to remotely monitor elusive, wide-ranging species while they conduct their normal movements and activities, and, through active, near-continuous tracking, can reveal details that spatially stationary camera-trap stations will not.

The installation of biotelemetry sensors must be preceded by authorization of public environmental authorities and wildlife management and the data collected with the sensors must be included in wildlife management reports submitted to the responsible environmental agencies.

Many capture methods can be used, and these differ according to the characteristics of the environment where the animals are. It is important to emphasize the need for a prior survey of information about the best places to install capture traps and which containment techniques are appropriate for the environment. To use this method, wild animals are captured, manipulated, and carry the transmitter over an extended period. Hence, it is impossible to exclude short- or long-term negative effects of radio collars[5].

It is strongly recommended that all studies involving radiotelemetry of wildlife be subjected to peer and veterinary review before commencement, this review should include consideration of

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[4] Oliver R. Wearn & Paul Glover-Kapfer. 2017. WWF Conservation Technology Series 1(1). WWF-UK, Working, United Kingdom. Accessed at: CameraTraps-WWF-guidelines.pdf

[5] Gutema, T.M., 2015. Wildlife radio telemetry: use, effect and ethical consideration with emphasis on birds and mammals. Int J Sci Basic Appl Res, 24(2), pp.306-313.

research objectives and methods, assessment of expected ecological effects, approvals and authorization from public environmental authorities, as well as relevant organizations for wildlife management, consulting experienced researchers about transmitter weight, method of attachment and capture protocol. Radiotelemetry use should assure that the animals are affected as little as possible by the transmitter and are handled humanely and efficiently during the transmitter attachment procedures.

Telemetry can be used to monitor of the parameters mentioned in item 4.1.2 of this Methodology.

4.2.3. DRONES

Currently drones have been used as an important technological tool in biodiversity and conservation studies, the use of this technology has reduced monitoring costs and has several possibilities for application. Below are some precautionary principles listed to guide the application of the use of drones in the development of this methodology.

- Increased care is required in cases involving threatened animals or sensitive habitats.
- Choose a sensor that allows sufficient data collection from a safe distance.
- Choose the right drone to reduce sound and visual stimuli to a minimum for both target and non-target organisms. Consider modifying the drone if necessary to reduce noise and interference.
- Characterize the noise profile of the drone of your interest while also considering the auditory extension of the species surveyed.
- Test and evaluate the response of the species to the drone and minimize behavioral changes of the animal in response to the drone.
- Determine the take-off and landing locations in advance and make sure they are away from the animals (out of sight if possible).
- Avoid threatening approach trajectories and develop protocols that minimize interference with your target species and those who live nearby.

Even though it is a promising technology that promotes cost reduction in a significant way and improves the delivery of results, it is still necessary that legal, regulatory, and ethical issues of use of this technology be considered, such as:

- Drone use must be in accordance with approved regulatory and institutional licenses.
- Observe local restrictions and national laws.
- Keep records of maintenance and flights.
- Seek flight approval with indigenous or local communities when appropriate.

For more information, this Methodology suggests utilizing the document "Drones for Conservation – a guide to best-practices"[6], by the World Wide Fund for Nature (WWF).

4.3. UMBRELLA SPECIES HEALTH SCORING METHOD

[6] James Duffy1 , Karen Anderson1 , Aurélie Shapiro2 , Felipe Spina Avino3 , Leon DeBell1 , Paul Glover-Kapfer4 . 2020. WWF Conservation Technology Series 1(5). Acessed at: WWF_CT_Drones_2020_web.pdf

The tables below are a general overview of the scoring system.

Ecosystem Structure section 4.1.1	Acronym	Score
Habitat Area	HA	Number of hectares.
Consolidated areas	CA	Number of hectares.

Species Traits section 4.1.2	Acronym	Score
Phenology	PH	2 points when present.
Size of the population	SP	1 point per individual in the area.
Movement	MO	1 point per individual monitored in the area.

The formula below considers the score obtained in each of the parameters arranged in this chapter in sections 4.1.1 and 4.1.2.

The USH scoring shall be applied within the following equation:

$$USH = (HA\ x\ PH) + (CA\ x\ (SP + MO))$$

USH = Umbrella Species Health indicator.
CA = Consolidated Area.
HA = Habitat Area.
SP = Size of the population.
PH = Phenology.
MO = Movement.

If USH overall score is zero then the Project will not be eligible to continue in the validation and verification process of this Methodology. This can happen due to the absence of evidence of the presence of the US in the Property Area, according to the Species Traits - Phenology (PH) parameter above.

5. EVALUATING ECOSYSTEM HEALTH AND DEVELOPMENT OF THE MONITORING PLAN

An ecosystem is considered healthy if it is stable (respectively resilient) and sustainable in providing goods and services used by human society (ecosystem services). Having the ability to maintain its structure (organization) and function (vigor) over time under external stress (resilience). Ecosystem health represents the sustainability of an ecosystem as a whole that needs minimal external support through management measures.

Ecosystems are an integral part of biological diversity, being composed of one or more communities of living organisms that interact with their physical and chemical environments, which include water, air, temperature, sunlight and nutrients.

According to the Convention on Biological Diversity - CBD, biological diversity corresponds to the variability of living organisms from all sources, including, among others, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part, including diversity of species and ecosystems.

As ecosystem health cannot be measured or observed directly, surrogate measures (indicators) must be applied to assess it. These indicators must be supported by ecological principles and systems theory and must be suitable for applications at varied temporal and spatial scales.

The parameters used by this methodology to assess ecosystem health are based on the Essential Biodiversity Variables ("EBV"). As well as the parameters used for the evaluation and monitoring of the (chapter 4).

Two classes of EBV will be considered:

- Community composition
- Ecosystem functioning

From these classes, specific EBVs were chosen to allow for ease of use, providing the Methodology with an accessible framework for monitoring:

- Community composition
  - Community abundance
- Ecosystem functioning
  - Ecosystem disturbances

This chapter presents parameters of the EH indicator and scoring method in this section. This Methodology provides the framework for US conservation projects to maintain monitoring practices of the EH throughout the Project Timeline, creating continuous production of scientific knowledge, enhancing data about the EH, and offering important inputs for conservation strategies across diverse bioregions and landscapes. All the data produced considering EH shall be reported annually or biannually in the Monitoring Reports.

5.1. COMMUNITY COMPOSITION

5.1.2 COMMUNITY ABUNDANCE

The term community means a set of plant and/or animal species that occur in the same place and that can interact strongly as consumers and resources or as competitors. Understanding how communities vary from place to place is the first step in understanding the processes that influence the structure and functioning of ecological systems. One of the revealing measures of the structure of a community is the number of species it includes.

The survey of species richness makes it possible to understand how diverse the local ecosystem is, to define the food structure and to know the consumer/predator relationship. Species' richness and feeding relationships are considered two important attributes of the community.

Knowing the biodiversity in the Property Area helps to understand which species are being influenced by the presence of the US.

Species dynamics vary greatly in relation to seasonal changes in each place. The fauna survey should be carried out at different seasons, for example. Some places have well-defined seasons such as dry season and rainy season, therefore sampling should be carried out in the dry season and in the rainy season.

Understanding the dynamics of species as a function of temporal dynamics is to know the factors that influence the occurrence of species in each area. These factors can be, availability of water, food, breeding sites, etc.

The fauna survey should be carried out using appropriate techniques for sampling the species that inhabit the area and can address the different groups of animals: Ichthyofauna (fish), Herpetofauna (reptiles and amphibians), Avifauna (birds) and Mastofauna (mammals). These fauna studies are carried out by researchers or specialist professionals and are based on diagnosing the richness and composition of species in a place.

It is understood that each species of fauna and flora has great importance to biodiversity, however, this methodology considers the survey of the Mastofauna group (mammals) as mandatory. Other groups can be sampled, and the results can be included in monitoring reports.

There are several methodologies to contemplate each group and they are based on specific literature. The minimum sampling effort must be 5 days and the report must contain the methodology used for the survey. Techniques include observations such as direct evidence, in which the researcher/professional sees or hears the animal, and indirect evidence, in which there are traces such as feces, fur, feathers, nests, footprints, etc.

Methodologies used for Mastofauna:
- Visual search and active search;
- Camera traps;

• Plots of sand.

There are also some traps for the study of small mammals such as Pitfall, Tomahawk and Sherman, which are widely used and do not harm the animal.

Another important factor to be considered in the survey of species is the degree of vulnerability (local and global) and the occurrence of endemic species. These data are of great relevance for the creation of protection and conservation areas.

This Methodology considers as a mandatory parameter the survey of the fauna in the area of the property. Compliance with this parameter scores 0.25 points (per season) in the equation.

5.2. ECOSYSTEM FUNCTIONING

5.2.1. ECOSYSTEM DISTURBANCES

Species coexist in space and time through interactions with each other and with abiotic factors. One of the ways in which these networks of interactions undergo modifications is through disturbances that can affect the entire biological organization, causing changes in ecosystems.

These disturbances can be defined as an abrupt event that causes changes in the physical structure of the environment such as vegetation and soil surface, which can cause a reallocation of the resources of a system. To be characterized as a disturbance, the event needs to be abrupt or sudden, since there are gradual changes such as seasonality in temperate regions.

Disturbances can be caused by natural and/or human causes. Natural disturbances have natural causes such as climate, geological forces or biological changes. Fires (lightning strikes) and floods are examples of natural disturbances that force changes in an ecosystem. They are also caused by diseases, severe storms, insects, volcanic activity, earthquakes, droughts and long-term freezing.

However, not all changes in an ecosystem are caused by natural forces. Ecosystems are also affected by humans and among the examples can be cited, pollution, urbanization, deforestation, mining, pollution and etc.

The occurrence of a disturbance can harm or benefit species. Thus, some groups will suffer reduction and others will increase their population, benefiting from the new conditions.

This Methodology considers, as an important factor, the environmental characterization after the occurrence of a disturbance within the property area and/or of direct influence on the habitat areas of the umbrella species in order to understand which impacts can directly affect the permanence of the species in the area and ecosystem response. Also, mitigation strategies should be implement to minimize disturbance.

The environmental characterization of the disturbance should contain a brief description of the disturbance and possible environmental impacts and corrective mitigation measures.

The environmental characterization of the area after the occurrence of a disturbance will count as 0.25 points in the equation.

5.3. ECOSYSTEM HEALTH SCORING METHOD

The formula for EH considers the score obtained in each of the parameters arranged in Chapter 5. The table below is a general overview of the scoring system.

Community Composition section 5.1	Acronym	Score
Community abundance	ca	0,25 points for seasonality

Ecosystem Functioning section 5.2	Acronym	Score
Ecosystem disturbance	ED	0,25 points (occurence of disturbances)

The equation for EH considers the score obtained in each of the parameters arranged in this chapter:

$$EH = USH\ x\ (ca + ED)$$

Being,

EH = Ecosystem Health

USH = Umbrella Species Health calculated in Chapter 4

ca = Community abundance – section 5.1

ED = Ecosystem disturbances – section 5.2

6. UMBRELLA SPECIES GUIDELINES ASSESSMENT AND APPLICATION

For the implementation and development of this Methodology, in addition to the score and requirements set out in this main overarching document, as per the requirements addressed in Chapters 4 and 5, for USH and EH, there is the application of specific guidelines for each US, addressing the complexity and specificity of the challenges that each US entails.

This chapter presents:

- Structure of the US Guidelines, including its indicators.
- Process of drawing up a US Guideline.
- Scoring method for this chapter.

6.1. IDENTIFYING THREATS TO UMBRELLA SPECIES

This section presents the framework for the Project Proponent to identify threats, agents, and causes of habitat destruction or degradation as well as create a plan to address these threats through the implementation of Project Activities in the Property Area.

This Methodology identifies three main systemic causes of direct threats to US, being: (i) Deforestation and Forest Degradation; (ii) Fires; and (iii) Illegal Hunting. Addressing these causes with assertive and strategic actions will ensure the long-term success of US conservation projects. Project Proponent is free to list more than one of the causes, as deemed fit in accordance with Project´s circumstances.

These three aforementioned items will always be tackled by prescribed actions or conducts in the chosen US Guideline, with context-specific scoring methods based on the US and may be included in any of the following items described ahead, as a USH, EH or ESI. The Project Proponent must create an Impact Strategy Outline ("ISO"), as defined by the template below:

Agent or Cause of Threat to US	Describe agent or cause of threat (ex: logging or mining companies, agricultural activities, wildfires, man-made fires, poachers for exotic wildlife trade).
Negative Impacts Attributed	Describe system's short, medium, and long-term negative impacts of agents or causes.
Type of Strategies that Address the Negative Impacts	Describe the Project Activities that address the negative impacts.
Impacted Stakeholders	Describe stakeholders impacted by the Project Activities that address the negative impacts (ex: local communities involved in ecotourism).
Benefits Provided	Describe the positive impacts of Project Activities.
Impact Timeframe	Describe if the Project Activities have short, medium, or long-term positive impacts.

Table 1 – *Impact Strategy Outline.*

The ISO above will be duly described and developed in the Project Plan, as per the available template. The ISO will list all necessary Project Activities that address the US Guideline prescribed actions or conducts for tackling agents and causes of deforestation, degradation, poaching and fires.

Project Activities that are prescribed in the US Guidelines that address the threats to US described in this chapter will be mandatory as per the 2nd Monitoring Period of the Project.

Below are some exemplifications of strategies that might be addressed in the US Guidelines, pertaining to the specificities of the US and bioregional aspects of such threats under analysis.

(i) Deforestation and Forest Degradation

- Security patrols and surveillance inside the Project Area.
- Use of remote sensing tools to identify deforestation and forest degradation.
- Use deforestation detection technologies such as bioacoustics to identify agents, including machinery sounds, such as tractors or chainsaws.

(ii) Fires

- Water truck availability.
- Creation of fire breaks and constant maintenance.
- Trained local fire brigade with equipment available for use.
- Observation towers to detect fire outbreaks.
- Sensors with alerts to detect fire prone conditions.
- Use of technologies such as drones for fire detection or data from a host country's national

fire monitoring database.

(iii) Illegal Hunting

- Security patrols and surveillance inside the Property Area.
- Environmental education strategies raising community awareness.
- Insertion of information panels at strategic points of the Project Area showcasing poaching and fauna interference prohibition.
- Use deforestation detection technologies such as bioacoustics to identify gunshots and other associated sounds.

6.2. UMBRELLA SPECIES GUIDELINE STRUCTURE

The US Guidelines will be developed based on the ESI strategies, as mentioned: (i) Property Management; (ii) Social Engagement and (iii) Financial Strategy.

Every Project Plan shall describe a specific Impact Strategy Outline for each Project Activity suggested by the US Guideline and implemented by the Project Proponent, as shown below. These are duly inserted for guidance in the Project Plan template.

US Guideline Project Activity	Describe the Project Activities.
Impacted Stakeholders	Describe stakeholders impacted by the Project Activities (ex: local communities involved in ecotourism).
Benefits Provided	Describe the positive impacts of Project Activities.
Impact Timeframe	Describe if the Project Activities have short, medium, or long-term positive impacts.

Table 2 – *US Guideline Impact Strategy Outline*

The following sections describe in general the rationale of the strategies and their importance.

6.2.1. ENVIRONMENTAL STEWARD INDICATORS

6.2.1.1. PROPERTY MANAGEMENT

Property management is evaluated through a system of continuous improvement of property management that prescribes yearly goals, through general objectives that can be achieved through various practices in the Property Area.

Landowners and Project Proponents can implement specifically prescribed actions to reduce or control conflicts, using best practices and techniques that ensure harmony between production, conservation, and land stewardship therefore humans, communities, and US.

6.2.1.2. SOCIAL ENGAGEMENT

Community involvement develops the concept of "citizen science" that emerged in the 1990s to designate different aspects of public involvement with science. Since the 2000s citizen science initiatives have grown considerably and incorporated more perspectives of interaction with society by increasing engagement in the challenges of biodiversity conservation and ecosystems.

Social Engagement is evaluated through a system of continuous improvement of stakeholder engagement that prescribes yearly goals, through general objectives that can be achieved through various practices in the Property Area and surroundings.

One of the main goals for conservation projects must be to influence local productive economic activity, such as mining, infrastructure, agroindustry, cattle ranching, logging, and their financial agents and communities that are involved in such activities, to adopt social and environmental safeguards that include biodiversity conservation requirements. Therefore, developing social engagement activities is essential to raise awareness amongst diverse audiences and ensure the conservation of the species.

Also, involving local community stakeholders (indigenous and traditional communities, as well as smallholder farmers) is key to addressing long term goals of conservation and US stewardship practices, for these agents act as the best spokespersons and perpetrators of good and effective local wildlife management.

6.2.1.3. FINANCIAL STRATEGY

Financial Strategy is evaluated through a series of financial indicators that are connected to project objectives. The strategies of this and the organization evaluate whether the project has a reserve of funds for the continuity of actions, and the elaboration and implementation of a communication program that mobilizes new funds for the design, development, and implementation of a business plan for ecotourism focused on biodiversity on the property.

6.3. DEVELOPMENT OF NEW UMBRELLA SPECIES GUIDELINES

The first step in developing a new US Guideline is to check if there is a preexistent US Guideline uploaded to the Regen Registry. In case there is no US guideline developed, the step-by-step below should be followed for the development of a new guideline.

Note: It is important to carefully read Section 1.5 of this document to verify that the chosen species represents a US, according to the requirements of this Methodology.

All new US Guidelines should be elaborated in a participatory process with professionals specialized in US, ecology, and biodiversity.

For the preparation of new US Guidelines, it is suggested and necessary to:

(i) examine existing US Guidelines, because some strategies are applicable or adaptable for various US.

(ii) perform extensive research and understanding of the chosen US, to develop the strategies necessary to ensure the conservation of US in the Property Area.

(iii) develop an impact matrix for the US Guideline, including an evaluation of all strategies elaborated in relation to the cost and difficulty of implementation and result in the conservation of the species, thus rewarding strategies that have the greatest impact on each US specific context. The impact matrix below in Section 7.2.1 is a suggest template for such needs.

6.3.1. SUGGESTED IMPACT MATRIX TEMPLATE

Every new US Guideline should contain ESI strategies and adopt the principle of continuous improvement in the development of these strategies over the Project Lifetime. See example below.

It is suggested that the matrix should use at least three parameters for impact assessment, for example cost, difficulty and results that will ground the analyses. These parameters could be scored as 1 to low and 3 to high score.

			Impact Assessment					
Indicator	**Criteria**	**Metric**	**Cost**	**Diffic.**	**Resul.**		**Aver.**	**Score**
1. Property Management Indicator	1.1 Improving property management techniques to reduce conflict.							
	1.2. Fire management: prevention and combat.							
2. Social Engagement Indicator	2.1 Develop and implement an education and communication program.							
	2.2 Implement a stakeholder relations program with rural assistance and extension agencies.							
	2.3. Establish a partnership with inspection agencies.							
3. Financial Strategy Indicator	3.1 Develop an adaptive management plan.							
	3.2 Demonstrate funding for the project budget.							
	3.3. Implement a communication program to mobilize and increase financial resources.							
	3.4. Implement an Ecotourism Program at the project area.							
							Total	**50**

The score of the US Guideline should adhere to the following rules:

- The guideline should count strategies for the ESI defined in this Methodology (Property management, Social Engagement and Financial Strategy).
- Each strategy can be worth a maximum of 5 points.
- The sum of points must have a minimum score of 50 points and a maximum of 100 points.

After the development of a new US Guideline, such guideline must go through an audit and verification process by the Regen Network Scientific Community and be submitted to the Regen Network approval process[7].

6.4. US GUIDELINE SCORING METHOD

[7] Accessed at: https://registry.regen.network/methodology-review-process/

The scoring method will be obtained through the sum of points obtained with the implementation of US Guideline strategies.

$$USG = PO\ x\ 1000$$

Where:
PO= Points obtained

In the first Monitoring Report the minimum mandatory score will be 20% of the total points.

7. BIODIVERSITY TOKENS ISSUANCE

7.1. OVERALL SCORING METHOD

The biodiversity token emission will be calculated using the formula below:

Final Number of Tokens Issued = USH Score + EH Score + US Guideline Score

It is important to remember that:

- USH Score was calculated at section 4.4.
- EH Score was calculated at section 5.3.
- US Guideline was calculated at section 6.3.

The figure below has a scheme of the total biodiversity tokens that is possible to emit.

Figure 5 *Biodiversity token calculation summary*.

7.2. TOKEN ISSUANCE NAME TAGGING

Each token batch, as issued annually or biannually, will be tagged with the specific US name, and registered on the Regen Registry. Project Proponents may choose any regional or commonly used name for the specific species, for example: jaguar token (in English), or *onça pintada* token (in Portuguese). The different names that are applicable to the US need to be specified in the US Guideline.

8. VALIDATION AND VERIFICATION

This chapter presents the general guidelines for the validation and verification process.

The application of this Methodology requires that independent Verifiers determine conformance with the Methodology at two stages: validation and verification.

• Validation is understood as the systematic, independent, and documented process for the evaluation of the Project Plan against the criteria of the Methodology, happening once in the beginning of the project.

• Verification is understood as the systematic, independent, and documented process for the evaluation of the Monitoring Report of the Project Activities and the observance of the validated Project Plan and Monitoring Plan against the criteria of the Methodology.

Verification must be performed at least every two years.

Both validation and verification may be jointly assessed in the first annual or biannual audit, as chosen by the Project Proponent.

8.1. DATA SUBMISSION PROCESS

Data collection, for both validation and verification, ~~handled~~ stored by the Regen Registry.

a) Data may be collected in the field using any qualified procedure specified in Methodology, including on written report or forms when applicable, web/mobile apps, or directly via autonomous Internet of Things ("IoT") devices.
b) Data will not be considered as submitted until it has been received electronically by the Regen Registry.

8.2. VALIDATION OF PROJECT PLAN

The Verifier will address and analyze the Project Plan as per the submission to the Regen Registry.

8.3. VERIFICATION OF MONITORING REPORT

After each Monitoring Period, a Monitoring Report must be submitted to the Verifier through the Regen Registry. The reported results for each section of this Methodology must be accompanied by all the information that supports them. In the case of GIS or remote sensing data, it is required that the maps are included as images within the report for illustrative purposes. The original vector and raster files must be kept by the Project Proponent.

8.3.1. DATA VERIFICATION

For each data sample selected, the *Verifier* should verify the veracity of the data based on the type of data submission (ex: cross-referencing camera trap photographic evidence with GPS location). The Verifier will sign the data sample indicating that it meets the requirements in one of the following types of data indicators:

8.3.1.1. UMBRELLA SPECIES HEALTH

Refer to this Methodology and the US Guideline to assess USH as per the Monitoring Report.

8.3.1.2. ECOSYSTEM HEALTH

Refer to this Methodology and the US Guideline to assess EH as per the Monitoring Report.

8.3.1.3. ENVIRONMENTAL STEWARDSHIP INDICATORS

- Property Management

  Review property management scores in the US Guideline and analyze evidence provided to ensure the requirements were met.

- Social Engagement

  Review social engagement scores in the US Guideline and analyze evidence to ensure the requirements were met.

- Financial Strategy

  Review financial strategy score in the US Guideline and analyze evidence provided to ensure requirements were met.

9. BIODIVERSITY CLAIMS AND TOKEN RETIREMENT RULES

This chapter describes the general rationale behind how the biodiversity tokens are retired and their nature as digital assets representative of specific attributes of biodiversity conservation, more specifically, US stewardship activities.

9.1. NATURE OF THE TOKENS

Biodiversity tokens, as per the guidelines of this Methodology, are not credits, therefore, cannot be used as "compensation" for environmental impacts, for legal/regulatory purposes or not. They do not, in any form, represent a biodiversity net gain in the Property Area or any kind of surplus.

The biodiversity tokens herein described are representative of environmental stewardship, more specifically, US stewardship activities, meaning they showcase the virtues of specific Project Activities that have a net positive impact on a US of a given ecosystem.

9.2. TOKEN RETIREMENT RULES

Despite some of the aforementioned points regarding the nature of the tokens, they are still subjectable to retirement. Tokens might be held by end-users or not. A party might choose to hold the tokens in the Regen Registry in order to sell them at a later period.

Nevertheless, any end-user buyer that is making a Biodiversity Claim, with regards to the acquisition of the tokens, will need to necessarily retire them and Project Proponent or Seller shall burn them on the Regen Registry.

Biodiversity Claims shall be deemed effective on one or more of the following scenarios:

a Claiming the acquisition of the tokens and the financing of Project Activities represent investments of the company in SDG 13 or 15, "climate action" or "life on land", respectively.
b Claiming the acquisition of the tokens and the Project Activities on any biodiversity, nature or ecological disclosure agency or organization, public or private, ex: B-Corp Impact Assessment or Taskforce on Nature-Related Financial Disclosures.
c Claiming the acquisition of the tokens and the financing of Project Activities on the company´s sustainability report.

The Project Proponent, when selling the Project´s biodiversity tokens, shall mandatorily inquire buyers if a Biodiversity Claim is being made or shall be in a predictable future. If the tokens are not to be immediately retired by Project Proponent upon an event of a sale, Project Proponent shall sign a legally enforceable instrument with the buyer in which ty declares they are just a trader or intermediary and retirement shall be done in the future on behalf of a third party. This responsibility shall be deemed in force and applicable to the new owner the moment the token´s ownership is changed in the Regen Registry.