

ERA Biodiversity Stewardship Token Review

Expert Review R1

R#1

[06/16/2023]

CONTENT referenced by reviewer's comment <i>e.g. Section number + paste exact text</i>	REVIEWER'S COMMENT <i>Please paste the comment from the reviewer</i>	AUTHOR'S RESPONSE <i>Please describe how the comment was addressed and include new content in quotations</i>	Reviewer's Conclusion [PASSED/ REJECTED WITH COMMENTS]
<i>e.g. 2.1 - "approximately 25%</i>	e.g. Replace with "adequate"	<i>e.g. This was changed to "The majority of the material must have a moisture content of 25% or less, as measured in the field."</i>	PASSED
Section 1 - "crucial for perennity"	Perennity is an obscure word, suggest replacing with something like persistence	Done as suggested.	Passed
General comment	I found it notable that only a few scientific references are provided in this methodology (as footnotes), making it difficult to evaluate the strength of evidence presented and	Scientific references was provided through all the methodology document in the footnotes. Please, see the updated document.	Passed

	arguments made. Perhaps this is standard for this type of methodology (this is my first time reviewing such a document), but in general, the addition of cited peer reviewed literature either in the document or in a supplementary file would strengthen it, and its credibility		
General comment	Several instances throughout document where US should be Usp	US replaced with USp, as suggested.	Passed
Section 1.1 enhancing data about the EH,	Delete the	The sentence has been completely changed - not applicable	Passed
Section 1.1 - areas are in regeneration	Delete are	The sentence has been completely changed - not applicable	Passed
Section 1.1 - PSA	PSA definition repeats what is listed for PES	"PSA" replaced with "PES" (Payments for Environmental Services)".	Passed
Section 1.3 - "nature is composed of ecosystems that harbor high diversity"	High diversity compared to what? Perhaps replace "high diversity" with "a diversity"	Done as suggested.	Passed
Section 1.3 - "the Payment for Environmental Services (PSA)"	Curious about choice of PSA for this acronym - is this based on the Costa Rica program Pago por Servicios Ambientales? Perhaps you can use	"PSA" replaced with "PES" (Payments for Environmental Services)". It is important to note that: "Environmental services are related to the benefits perceived by	Passed

	another acronym that is distinct from PES but more intuitive than PSA?	humans and conditioned to human activities and benefits. On the other hand, ecosystem services are more related “to the processes by which the environment produces resources that we usually perceive as “gifts” from nature, such as clean water, wood, habitat for fish and pollination of native or agricultural plants” - Gomes, G. C., Gomes, J. C. C., Barbieri, R. L., Miura, A. K., & Sousa, L. P. D. (2018). <i>Environmental and ecosystem services, tree diversity and knowledge of family farmers. Floresta e Ambiente</i> , 26	
Section 1.3 - “rewards and encourages those who provide ecosystem services”	Ecosystem services are provided by ecosystems, perhaps you mean environmental services given how you define that term in the paragraph above? Also you might be more precise about what is meant by “those”	Rephrased to: “The Payment for Environmental Services (“PES”) is an economic instrument that, following the “protector-receiver” principle, rewards and encourages individuals and/or entities that promote environmental services, improving the profitability of activities for the protection and sustainable use of natural resources”.	Passed
Section 1.3 - “world wide consensus on the theme”	Recommend more precision - consensus on what, for what purpose?	Rephrased to: “There is evidence that the Sixth Mass Extinction of Biodiversity is occurring (Cowie et al. 2022).”	Passed
Section 1.3 - “notwithstanding...”	I find this sentence construction hard to follow- what is the argument being made?	The paragraph was changed to improve clarity and understanding of the text.	Passed

Section 1.3 - global multilateral organizations have generally reached a stalemate on biodiversity	Unclear what is meant by “stalemate on biodiversity” - who/what are the opposing parties in stalemate? Also recommend replacing “so called Aichi Targets” with “Aichi Biodiversity Targets”	The paragraph was changed to improve clarity and understanding of the text.	Passed
Section 1.3 - Reference to CICES	Category ii is regulation & maintenance	Done as suggested.	Passed
Section 1.3 - Reference to GBF theory of change,	Should be updated with reference to finalized documents, Kunming-Montreal Global Biodiversity Framework, and update the footnote	All topics relating to the GBF and the established targets were updated according to the latest version of the document.	Passed
Section 1.3 - “solving this conundrum”	Does this imply the proposed PES framework would solve the conundrum? Perhaps a different word choice for conundrum would be more appropriate and provide more specificity about need for this methodology specifically	The paragraph was changed to improve clarity and understanding of the text.	Passed
Section 1.3 - GBF milestones and goals	This text should be updated to match the approved goals and targets	All topics relating to the GBF and the established targets were updated according to the latest version of the document.	Passed
Section 1.4 - “during this network”	Suggest replacing during with “within”	Done as suggested.	Passed

Section 1.4 - “most of the USp are included on the Red List”	This is an example of where citations would improve credibility - most USp in this protocol? USp that have been assessed worldwide? Whats the criteria for “most”?	Done as suggested.	Passed
Section 1.4 - “technology driven monitoring approach”	What is the evidence that this is superior to a monitoring approach not driven by technology?	This section – or the Methodology in itself – is not arguing that a technology and innovative monitoring approach will be inherently superior to a more manual or traditional monitoring system. Nevertheless, technology and all the innovative tools it entails does bring cost-effectiveness to a biodiversity MRV system, which can be extremely laborious and expensive at times, often with multiple extremely long site-visits. With this said, it is important to emphasize that true scaling of the biodiversity market will only be achieved by having replicable, technology based MRV systems that brings celerity and automation to some aspects of biodiversity projects.	Passed
Section 1.4 - “US stewardship”	Should this be USp?	Yes, US replaced with USp.	Passed
Section 1.4 - footnote 3	Should be the original Frankel and Soule publication - Frankel, O.H., and M.E. Soule. 1981. Conservation and evolution. Cambridge University Press, Cambridge, United Kingdom.	Done as suggested.	Passed

	Also there is a bit more nuance - the term umbrella was introduced in 1981, but umbrella species was not conceptualized until a few years later.		
Section 1.4 "IUCN Red List of Species threats"	Should be "IUCN Red List of Threatened Species"	Done as suggested.	Passed
Section 1.6 - "if a USp does not yet exist"	Should be "if a USp guideline does not exist"	Done as suggested.	Passed
Section 1.6	Evidence of presence seems loosely defined - can guidance be provided on how much photographic or other evidence is required?	<p>The Methodology development team is unaware of a guideline that addresses the amount of evidence to prove the presence of the animal in a given location.</p> <p>Evidence of presence can be obtained by various methods and must have a linked geographic coordinate and a photo. Evidence must be credible and rigorously documented. This include detailed records, clear photographs, and careful documentation of the conditions and circumstances under which the evidence was collected.</p>	Passed
Section 1.6	More detail on one year of data for verification - what is guideline for frequency of monitoring?	The Project Period (5 years) and Monitoring Report (every 1 or 2 years) were determined according to the EBV framework guidelines (Pereira et al.	Passed

		<p>2013). This guideline recommends that repeated measures for the same taxa at the same locations or regions mainly at short-term intervals (1 to 5 years). The monitoring plan can be adapted to the specific needs of each conservation situation, with one or two years of data for verification.</p>	
Figure 3	I find Figure 3 to be very helpful, but a bit hard to read	Figure 3 was updated.	Passed
Figure 3 – US	<p>All instances of US should be USp.</p> <p>Graphic showing steps for “develop new USp guideline” extends out past year 2, suggest redoing that part of graphic to show that this would occur only in bounds of Year 1 (stack list vertically rather than horizontally?)</p>	<p>All US instances were updated to USp.</p> <p>Figure 3 was updated as recommended.</p>	Passed
Figure 3	In general, if tokens are only issued after 1 year since start date, how will all the work prior to that be funded?	The main funding opportunity for project activities that are yet to be implemented will resemble in a very similar manner how the voluntary carbon markets have structured project finance these last decades - through offtake agreements.	Passed
Section 2.7 - Adoption date	Significance of the adoption date in methodology is not clear	Section 2.7 was updated as recommended.	Passed

Section 2.8 - Registration date	Significance of registration date in methodology is not clear, also should be included in Figure 3 & required steps	Project Registration Date is defined in section 1.1. As the registration date could be 3 years after the first evidence or adoption date, this reference would be confusing in Figure 3.	Passed
Section 3.2 first sentence	Add period end of first sentence	Done as suggested.	Passed
Section 3.2 temporal boundaries	Stands to reason that more frequent reports provides faster pipeline for generation of tokens, but there is a tradeoff in that annual MVR could be a heavy burden that detracts from time to implement project activities unless the MVR is embedded into the activities	Agreed, we have therefore changed the monitoring frequency to annual or every two years.	Passed
Section 4	Will annual monitoring reports be publicly available?	Yes, all monitoring reports will be publicly available on the Regen Registry.	Passed
Section 4 - methods for monitoring	Methods should require minimal training and equipment, however the framing for this methodology is that its driven by technology. Guidance on what kind of monitoring meets criteria would be helpful	More details of monitoring guidelines have been included in section 4.2 "Monitoring Methods".	Passed
Section 4.1 and section 5-EBVs	What criteria were used to choose the specific EBVs chosen for the methodology?	The GEOBON Essential Biodiversity Variables are widely accepted parameters by the scientific community. In this sense,	Passed

		the specific EBVs chosen were aligned with the indicators that were created for the methodology.	
Section 4.1.1.1 - Table	Add of so it reads Degraded areas in a state of regeneration	Done as suggested.	Passed
Section 4.1.1.1 - areas of interaction of the species	Change of to with “interaction with the species”	Done as suggested.	Passed
Section 4.1.2.2 - “the increase in population can...”	Given criteria for USps, this sentence can be removed	Done as suggested.	Passed
Section 4.1.2.3 - first sentence	Suggest you either qualify which living beings you mean, or rephrase as many living beings are not mobile	Rephrased to: "Movement is an elementary process in the life of birds and mammals. Animal movement is motivated by complex interactions of internal and external factors, including food availability, reproduction and risk avoidance, variation in the sex ratio of the population as well as seasonal or annual changes in biotic and climatic features might influence average movement speeds" - Nathan, R., Getz, W. M., Revilla, E., Holyoak, M., Kadmon, R., Saltz, D., et al. (2008). A movement ecology paradigm for unifying organismal movement research. <i>Proc. Natl. Acad. Sci. U. S. A.</i> 105, 19052–19059. doi: 10.1073/pnas.0800375105	Passed

Section 4.1.3 Continuous improvement	Consider another figure similar to figure 3 that makes these specific requirements more visible, for example that for each monitoring period an increment of new strategies must be implemented (what constitutes an increment?)	It is mandatory to record the presence of the USp in the Property Area in the first Monitoring Report. After this period, it is permitted by the Methodology that the USp is not registered in the Property Area for up to 2 years, still being eligible for the Methodology in this time frame. Compliance with the Movement and Distribution parameter is mandatory as of the third year of monitoring. The size of the population is a parameter that the Project Developer and Project Proponent can choose the moment most appropriate to implement.	Passed
Section 4.2.1	If camera traps will also be used for surveillance to address item 4.2, this brings in a regulatory and law enforcement mechanism that is not addressed here	The landholder needs to follow the laws of the host country of the project. Regulatory compliance is addressed in specific sections and throughout the document.	Passed
Section 4.2.2 - install camera traps	Perhaps what is meant is install transmitters?	Deleted phrase - not applicable	Passed
Section 4.2.3 - first sentence	Suggest adding and after comma to make a complete sentence.	Deleted phrase - not applicable	Passed
Section 4.2	Unclear why guidance is given on technological tools to assess species traits - but not other less technologically heavy methods such as	More details of monitoring guidelines have been included in section 4.2 "Monitoring Methods".	Passed

	feces collection. Or even other possible techniques like eDNA.		
Section 4.3	<p>Clarity on the USH score of 0 would be helpful to balance with the text in section 4.1.2.1 that says project can have USp not registered for 2 years after first year as long as continuous improvement in ESI is shown.</p> <p>Also- would be helpful to clarify that the consolidated area does not factor into the score here even though its listed in this section</p>	<p>The score is 0 if the project proponent doesn't have photographic evidence with GPS coordinates of the Umbrella Species (this could be fur, footprint or other evidence). Nevertheless, after the project start date, the project can have a 2-year hiatus without registering new photographic evidence. Section 4.3 was update to clarify this subject.</p> <p>Consolidated area is being excluded from the equations.</p>	Passed
Section 5.1.2	<p>Other community taxa that could be sampled are not included - insects? Suggest keeping broad and flexible.</p> <p>In general, would help to clarify at the outset that to satisfy this criteria, expectation is a fauna survey - specifically mammals, and surveying any other taxa is optional.</p>	<p>This section was reformulated. Please, see the updated document.</p> <p>"The Project Developer and Project Proponent must choose how the fauna inventory will be done in according to the available financial resources and workforce. This Methodology considers mammal species inventory mandatory to determine the taxonomic diversity. Other groups inventories are optional, for</p>	Passed

		example, arthropods, fish, birds, insects, reptiles, amphibians, can be sampled to estimate the taxonomy diversity of the community.”	
Section 5.2	Suggest more detailed guidance on the ecosystem disturbance criteria, especially if project activities are implemented to minimize disturbances. “Environmental characterization” is quite broad	<p>This section was reformulated. Please, see the updated document.</p> <p>“The disturbance monitoring must be done through geospatial analyses. High-resolution satellite images (minimum of 0.30 centimeters, maximum of 15 meters) together with official databases from the monitoring period should be used. Also, for identify conversions of vegetated areas into non-vegetated areas can be consulted official deforestation databases. Official alerts, such as Fire Information for Resource Management System from NASA, must be used to identify occurrences of fire disturbances. Climatic and hydrologic disturbances can be monitored through WorldClim database. This monitoring must be done in each seasonal climatic period.</p>	Passed

		It is necessary to quantify the size of the disturbed area and create a spatial file (shapefile, KML, KMZ, others geospatial extensions) of the corresponding area. Other information must also be recorded, such as date of disturbance, location of disturbance, size of disturbance in the Habitat Area, and size of disturbance in the Property Area. The results of the disturbance monitoring with a brief description of the disturbance, possible environmental impacts and corrective mitigation measures must be recorded."	
Section 5.3	Explain why the formula for score of ecosystem health includes consolidated area as multiplier - which means higher scores for more consolidated area - incentivization more consolidated area vs habitat area.	Consolidated area was excluded from the equation.	Passed
Section 6.1 - Sentence that starts "project activities that are described"	US should be Usp	Done as suggested.	Passed
Section 6.1 - Illegal hunting	Drivers of deforestation and Illegal hunting by local people, and strategies to combat them, are quite complex, would be helpful to indicate this in the methodology	Done as suggested.	Passed

Section 6.2.1.1 Property management	Addition of an example or two would be helpful	Done as suggested.	Passed
Section 6.2.1.2 social engagement	Suggest removing paragraph on citizen science - the literature on participation in natural resource management has progressed, and there is now a robust literature on social dimensions of conservation, and on locally led engagement.	The citation to citizen science has been replaced by more recent studies in human-wildlife interaction.	Passed
Section 6.2.1.3	Is development of a business plan for ecotourism the only outcome of a financial strategy? I recommend removing this and leaving possible outcomes broad.	Done as suggested.	Passed
Section 6.3 - participatory process	I think you mean professional consultation?	Yes, "participatory process" replaced with "professional consultation".	Passed
Section 6.3 - impact matrix section listed as 7.2.1	impact matrix template section listed as 7.2.1 should be 6.3.1.	Done as suggested.	Passed
Section 6.3.1. - table	Remove total of 50, and note the availability in separate document of a worked example with scores on each line Clarity that criteria column are examples listed - should it be strategies instead of criteria?	Section 6.3.1 was updated to clarify this subject.	Passed

	<p>More explanation needed about how to assess scores of 1-3 for each parameter. Also how does that relate to instruction that each strategy can be max of 5 pts? How can you set minimum 50 and max 100 without specifying a range of # of strategies under the 3 indicator categories?</p>		
Section 6.4	<p>Points obtained under the guideline, correct? How to assess total possible points? Again - worked examples on all the score calculations from start to finish would be helpful. The Jaguar example completes the table but its not clear how exactly the average is calculated (that is inferred), and how the score for each line is calculated. The Jaguar example doesnt include the property area - so it was confusing how the formula in the methodology relates to the table in the example.</p> <p>Stipulation about 20% criteria for score on USp guideline for first monitoring report should be made clear earlier in the document</p>	<p>Section 6.4 of the Methodology was updated to clarify this subject. Also, the Jaguar US Guideline was also updated to clarify these items.</p>	Passed
Figure 5	Typo in ecosystem	Done as suggested.	Passed

Section 7.2 Token issuance name tagging	I am not familiar with this process, but I wondered how tokens would be issued to multiple projects with the same specific USp name - adding clarity on this would be helpful		Passed
Section 8	<p>Figure 3 would be more informative for project proponents if it had the validation and verification steps included</p> <p>Also monitoring reports are produced annually, but verification can be biannual? Clarity here and in section 8.5 would be helpful</p>	Monitoring reports need to be verified (audited) annually or every two years.	Passed
Section 9	I assume more information is available about process of acquiring, selling, holding tokens, recommend adding a link to those resources	These resources are available in the Regen Registry official website.	Passed

Expert Peer Review:

Reviewer's Blind Review Comments to Methodology Authors

The review should provide feedback on the validity of the methodology.

Kindly enter your comments based on these questions in the table below. Also, if referencing specific text, please include text excerpt or row/page no. from the methodology for ease of reference by the methodology authors. All reviewer comments will remain anonymous unless you choose to be named.

Is the methodology clearly written with adequate detail for implementation?	Yes, the methodology is clearly written with adequate detail, though there are some sections where more clarity is needed, as indicated in comments in the revision report document.
Is the underlying foundation of the methodology clear?	Yes, though could be bolstered through additional citations of source documents, and explanations of some key decisions - for example, why specific EBVs were chosen to be leveraged for the methodology. Also - Figures 2 and 3 are helpful, I think could be expanded upon with simple graphics that more comprehensively cover specifics of the methodology - when validation/verification happens, reporting frequency beyond year 2, etc.

<p>Is the methodology feasible?</p>	<p>Feasible for who? For project proponents, it could be feasible with sufficient funding - following & implementing the methodology requires high levels of expertise and in many cases relies on technology that may be expensive and requires expertise to operate. Also completing the administrative requirements to earn tokens requires expertise. Is there a concern that potential project proponents will not be able to participate given these barriers? How could these barriers be mitigated to encourage broad participation, especially if tokens aren't awarded until a year after start date, and there may be some uncertainty that a project will ultimately meet the validation/verification thresholds to be awarded tokens.</p>
<p>Will the proposed methods achieve the results defined in the methodology?</p>	<p>This will be case specific of course, and many variables affect the results defined in the methodology that are outside the control of the project.</p> <p>Another concern is the impact of climate change on ecosystems and USps. We know climate will affect and is already affecting how animals use a</p>

	<p>landscape, and move around it. Areas where animals are found now will shift, and its important to be thinking about corridors and climate adaptive strategies that build resilience. Furthermore, people will adapt and be changing their use of landscapes in response to climate change, which will also affect biodiversity & USps. I did not see recognition of this in the methodology.</p>
<p>Are the sampling and measurement protocols robust?</p>	<p>They appear to be robust - it can be a challenge converting qualitative indicators into quantitative measures. I have a general concern in that I am unclear how Indigenous knowledge can be incorporated into the methodology overall, especially sampling and measurement. Many valuable ecosystems are sustainably managed by Indigenous People, and have been for millennia. How can this methodology be flexible to apply in a way that can integrate Indigenous knowledge and Indigenous approaches to natural resource management, but not in a way that interferes with or disrupts the customary management of these lands?</p>

<p>Are there any alternative or additional steps that should be considered?</p>	<p>As noted above - there is a need to think about this methodology in relation to the realities of accelerating climate change, and the uncertainty associated with how climate change impacts social ecological systems, and vice versa. A tight methodology that locks in projects for years and does not allow for adaptation and foster resilience may be counter to goals of the methodology.</p> <p>Another question relates to the definition of USp - since this entire methodology hinges on the USp, how can project proponents ensure that the species of mammal or bird they choose to focus on would meet the criteria, and be able to be validated/verified?</p> <p>I also wonder about the use of area as a multiplier, as this incentivizes large blocks of area, which would quickly lead to large token sums. Does it disincentivize critical smaller patches that may be corridors, especially for animals with large ranges, that migrate, or are being affected by climate change?</p>
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Additional comments	I enjoyed reading this methodology and thinking about its application - I appreciate how much of a challenge it was to create this methodology, and how important it is.
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Reviewers Methodology Ratings

Please rate the following: (1 = Excellent) (2 = Good) (3 = Fair) (4 = Poor)

Is the methodology clearly written with adequate detail for implementation?	2
Is the underlying foundation of the methodology clear?	2
Is the methodology feasible?	3
Will the proposed methods achieve the results defined in the methodology?	3
Are the sampling and measurement protocols robust?	3
Total Score:	13

Reviewer's Confidential Comments to Editor by Section:

<<define any section if needed>>	<<please enter your comment here>>
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Additional Information

Please answer the following questions

Do you want to be named in the review? (Expert Reviewers will be anonymous unless you choose to be named)	Yes / No
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Recommendation

Kindly mark with an X

Accept As Is:	
Requires Minor Revision:	X
Requires Moderate Revision:	
Requires Major Revision:	
Reject and re-submit:	

Rejection: (Please provide reasons)	
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