



NATURE-BASED SOLUTIONS

The concepts of “wilderness,” “rewilding” & “Nature Needs Half” & their critical importance for Nature-based Solutions

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EXECUTIVE SUMMARY

To meet societal challenges, such as climate change, disaster risk reduction, economic and social development, human health and water security, and environmental degradation and biodiversity loss, the concept of nature-based solutions (NbS) has been launched. At the core of NbS is to protect, sustainably manage and restore natural and modified ecosystems. This paper analyzes how the three issues of “wilderness,” “rewilding” and “Nature Needs Half” can contribute to NbS. It concludes that all three concepts could play a very essential role in implementing NbS. A detailed assessment of the potential contribution of “wilderness,” “rewilding” and “Nature Needs Half” to the eight Criteria of the IUCN Global Standard for Nature-based Solutions illustrates that. It is, therefore, recommended to take all the three aspects into account when rolling out these new standards.

1 INTRODUCTION

THE KEY ROLE OF NATURE-BASED SOLUTIONS

The rapid and dramatic loss of biodiversity erodes the capacity of ecosystems to deliver the services that are essential for human well-being – our economy, livelihoods, food security, health and quality of life. In response, the concept of Nature-based Solutions¹ has been developed:

“Nature-based solutions are actions to protect, sustainably manage and restore natural and modified ecosystems in ways that address societal challenges effectively and adaptively, to provide both human well-being and biodiversity benefits.”

Nature-based Solutions (NbS) is anchored in the power of functioning ecosystems². It is considered an umbrella framework for several ecosystem-based approaches, such as Natural Solutions (the role of protected areas in combatting climate change), Ecosystem-based Adaptation, Ecosystem-based Disaster Risk Reduction, Green Infrastructure, Natural Infrastructure, and Regenerative Landscape Management.

For an intervention to be considered an NbS, it must either maintain or enhance biodiversity and it must also address one or multiple societal challenges in an integrated manner. The IUCN Global Standard for Nature-based Solutions published in July 2020³ addresses seven issues (Figure 1). The biodiversity and climate change crises should be analyzed and addressed simultaneously through NbS.



Figure 1: Major societal challenges addressed by NbS⁴

This paper briefly addresses three key areas of focus for the WILD Foundation – wilderness, rewilding & Nature Needs Half – in the context of NbS. To start with it describes the principle contributions of the three concepts to NbS. Then it analyzes the three concepts in relation to the eight Criterion of the IUCN Global Standard for Nature-based Solutions.

2 WHAT DO THE CONCEPTS OF “WILDERNESS,” “REWILDING” AND “NATURE NEEDS HALF” ENTAIL?

In summary, the three concepts could be described as follows:

- Wilderness:** Wilderness areas, recognized by the IUCN as Category 1b of the global protected areas classification system⁵, are now the only places on the planet that contain mixes of species at near-natural levels of abundance. They are also the only areas supporting the ecological processes that sustain biodiversity over evolutionary timescales as well as providing humanity with critical ecosystem services⁶. However, there is so little wilderness left: 23% on land and 13% in the oceans⁷. High-functioning wilderness areas sequester and protect large amounts of carbon, regulate local climate regimes including hydrological cycles, and provide a direct defense against climate related hazards such as floods, sea-level rise and cyclones.
- Rewilding:** The process to rebuild “the structural and functional complexity of degraded ecosystems while gradually reducing human influence”⁸ has been called “rewilding.” It is about allowing natural processes to shape whole ecosystems so that they work in all their colorful complexity to give life to the land and the seas⁹. Rewilding has a particular focus on promoting wildlife species and their critical role in ecosystem functioning. With such dramatic declines of species across the world leading to “ecological extinctions,” a particular challenge for restoration efforts is to rebuild

wildlife populations, especially keystone species, so they can exert their critical ecological roles in the future.

- **Nature Needs Half:** In response to the dual biodiversity/climate crises, two interrelated concepts have been launched: Nature Needs Half (NNH) and Half Earth¹⁰. It has been argued that with at least half the global area protected, 85% of all species would be secured. Based on a recent, extensive review of the literature¹¹, “the global protection of a minimum of 30% and up to 70%, or even higher, of the land and sea on Earth” is required, with a “call for 50% as a mid-point” to avoid biodiversity loss and ensure ecosystem services for people, including carbon storage.

The Appendix provides more detailed information on definitions, status and the conservation rationale of the three approaches.

3 HOW DOES “WILDERNESS,” “REWILDING” AND “NATURE NEEDS HALF” ADD VALUE TO THE NATURE-BASED SOLUTIONS CONCEPT?

GENERAL ASPECTS

To meet the aspirations of the NbS to maintain and enhance biodiversity as well as addressing the interdependent issues of climate change mitigation/adaptation and environmental degradation/biodiversity loss, it is essential to secure and not jeopardize the qualities and intactness of *wilderness areas*. In fact, by conserving wilderness as part of the NbS both human well-being and biodiversity benefits will be secured, not only locally but also globally.

A core aspect of the NbS concept is to maintain and enhance the “power of functioning ecosystems,” which is the overall aim of *rewilding*. Through rewilding, the “ecological integrity” will be enhanced – a key aspect of the NbS. Therefore, as part of the NbS, it is recommended to apply the 12 guiding principles of the “Global Charter for Rewilding the Earth – Advancing nature-based solutions to the extinction and climate crises”¹².

Implementation of more ambitious global conservation targets like *Nature Needs Half (NNH)* can be integrated with sustainable human use across the world. The IUCN “Beyond the Aichi Targets Task Force”¹³ has developed an enabling framework consisting of three global conditions - the 3Cs¹⁴. The 3Cs framework evaluates land-use drivers and human pressures to establish a baseline

state of three broad terrestrial conditions: Cities and Farms (C₁; covering 18% of land), Shared Lands (C₂; covering 56% of the land), and Large Wild Areas (C₃, covering 26% of the land). It is recommended to consider this framework when developing the NbS (for more details, see Appendix).

IUCN GLOBAL STANDARDS

The table on the next page provides an analysis of the three concepts of wilderness, rewilding and Nature Needs Half (NNH) in relation to the eight “criteria” with associated indicators. As shown, all three concepts could potentially contribute many valuable, new aspects and provide significant added-value.

Criterion #	Wilderness	Rewilding	Nature Needs Half	Comment
1: NbS effectively address societal challenges	✓	✓	✓	It is recommended to assess the three concepts as part of the initial situation analysis and whether they could deliver human well-being benefits, and since “the activities defined should also aim to sustain and enhance ecosystem services while maintaining ecosystem structure, function and composition”.
2: Design of NbS is informed by scale	✓	✓	✓	All three aspects are important since each NbS “must be considered within a landscape/seascape scale because ecosystems are affected by and have effects on the large land and seascape in which they are embedded” in order to “deliver ecosystem services”. It is also important to look beyond the specific landscape/ seascape when it comes to risk management.
3: NbS result in a net gain to biodiversity and ecosystem integrity	✓	✓	✓	For Indicator C- 3.1, which addresses the current state of the ecosystems (like “trophic dynamics”, species composition, key ecosystem functions like keystone species, connectivity, etc.), in particular protection of wilderness and rewilding must be considered. As for identifying “clear and measurable conservation outcomes” (criteria C-3.2), all three factors should be considered. Criteria (C-3.4) addresses “ecosystem integrity”, which is directly relevant to the “wilderness” concept. Since the concept of ecological integrity is a continuum of different aspects of ecological sustainability, it has been argued that those areas with highest ecological integrity are synonymous with the wilderness concept, and therefore should be given highest priority ¹ . Through rewilding, the “ecological integrity” will also be enhanced.
4: NbS are economically viable	✓	✓		It is recommended to take into account both the wilderness qualities as well as the potential contribution of rewilding when undertaking the initial cost-benefit assessment as outlined under Indicator C-4.1. There exists a wide array of studies on the economic values of wilderness, such as onsite, passive-use, ecosystem service & property values around wilderness areas ² . In rewilding, the opportunities for the development of a “nature-based economy” have already been demonstrated, supported by facilities such as the Rewilding Europe Capital ³ . Practical applications of the economic prospects of nature through enterprise development and investment finance in and around wilderness areas and through rewilding are available from organizations like Conservation Capital ⁴ , which could provide valuable input to resourcing options as outlined in Indicator C-4.4.
5: NbS are based on inclusive, transparent and empowering processes	✓	✓	✓	To ensure the participation of indigenous peoples, tribes, local communities and other stakeholders in the management of wilderness areas, specific guidelines have been elaborated by the IUCN WCPA Wilderness Specialist Group ⁵ . The guidelines also specify the governance set-up. As for rewilding, specific guiding principles for the involvement of different stakeholders are available through the Global Charter for Rewilding the Earth ⁶ .
6: NbS equitably balance trade-offs between achievements of their primary goal(s) and the continued provision of multiple benefits	✓	✓	✓	The acknowledgement and respect for “the rights, usage of and access to land and resources, along with the responsibilities of different stakeholders” (Indicator C-6.2) are inherent in all the three concepts.
7: NbS are managed adaptively, based on evidence	✓	✓		The IUCN Guidelines for Wilderness Protected Areas ⁷ promotes an indicator-based planning system to allow for good monitoring and adaptive management. The Global Charter for Rewilding the Earth ⁸ has identified “evidence-based adaptive management” as one of the principles: “Learning from others, using the best-available evidence, gathering and sharing data, and having the confidence to learn from failure will lead to success and grow the institutional capacity of the rewilding community.”
8: NbS are sustainable and mainstreamed within appropriate jurisdictional context	✓	✓	✓	Whilst the “wilderness” concept is already well recognized in most societies and at the international level, the rewilding and NNH concepts are relatively new, although rapidly gaining acceptance. However, their relevance to the NbS concept is under development.

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3 <https://rewilding-europe.com/rewilding-in-action/nature-based-economies/>

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7 <https://www.iucn.org/news/protected-areas/201612/wilderness-protected-areas-management-guidelines>

8 The Global Charter for Rewilding the Earth – Advancing nature-based solutions to the extinction and climate crises, 11th World Wilderness Congress, (WILD11, Resolutions Committee, March 2020); <https://wild11.org/charter/>

APPENDIX BACKGROUND INFORMATION ON THE THREE CONCEPTS OF "WILDERNESS," "REWILDING" AND "NATURE NEEDS HALF"

1 WILDERNESS

Definition: Broadly speaking, the WILD Foundation defines wilderness areas as: “The most intact, undisturbed wild natural areas left on our planet – those last truly wild places that humans do not control and have not developed with roads, pipelines or other industrial infrastructure”. A wilderness area can have two dimensions: (i) a place that is mostly biologically intact, and (ii) a place that is legally protected so that it remains wild, and free of industrial infrastructure, and open to traditional indigenous use, or low impact recreation (see text box).

A wilderness area is not necessarily a place that is biologically “pristine.” Very few places on Earth are not in some way impacted by humans. Rather, the key is that a wilderness area be mainly biologically intact: evidence of minor human impact, or indications of historical human activity does not disqualify an area from being considered wilderness. Nor must a wilderness area be free of human habitation: many indigenous populations live in wild areas around the world, often playing a key role in keeping wilderness intact and free of development. The essence of a wilderness area is that it is a place where humans can maintain a relationship with wild nature. Whether that relationship is characterized by recreational use or traditional, indigenous use does not matter, so long as the relationship is predicated on a fundamental respect for – and appreciation of – wild nature. Wilderness areas are protected for a broad range of biological, social, economic, spiritual and recreational benefits. They often also have powerful iconic value, holding great significance as spectacular, awe inspiring places.

What is “wilderness”? – the IUCN definition: It is a biological descriptor, referring to places that are mainly ecologically intact. It is a type of protected-area classification, referring to a category of protected areas that seek to maintain wilderness quality over time, while still allowing for human uses that are compatible with those wilderness qualities. It is also used to describe an essential dimension of human culture, which is that humans, like all other species, were born in the wilderness: they evolved for millions of years in caves, trees and open savannahs.

Source: <https://portals.iucn.org/library/sites/library/files/documents/PAG-025.pdf>

Status: Wilderness is becoming a rare quality of the Earth. A century ago¹⁵, only 15% of the surface was used to grow crops and raise livestock. Today, human activities have modified more than 77% of land (excluding Antarctica) and 87% of the ocean. As recently as from 1993 to 2009, an area of terrestrial wild nature larger than India – a staggering 3.3 million square kilometers – was lost to human settlement, farming, mining and other pressures. In the ocean, areas free of industrial fishing, pollution and shipping are almost completely confined to the polar regions. Over a third of planet’s original forest cover has been cleared including half of the tropical forests, much of that in the last sixty years¹⁶. The wetlands have declined between 64-71% in the 20th century, with 30% in the last 40 years alone¹⁷. Three quarters of the world’s terrestrial ecoregions have lost their ecological intactness¹⁸ and the ones with least impact are found in the most remote regions with the lowest population density, such as in the northern boreal and tundra areas, the arid regions of Africa and Australia, and parts of the Amazon. The areas that lost most of their intactness during the period 1993-2009 were New Guinea, Borneo, the Middle East, Central and East Africa, Brazil and several ecoregions in Asia.

Conservation rationale: Conserving primary, wild areas is an imperative for biodiversity conservation; as disturbance-sensitive species disappear from human-dominated landscapes, wild areas are becoming their last remaining strongholds. Wilderness areas host highly unique biological communities and therefore act as a buffer against extinction risk. It has been shown that the extinction risk for species within wilderness communities is, on average, less than half that of species in non-wilderness communities¹⁹. Protecting wilderness areas is also important because they provide high-value ecosystem services which are being lost in landscapes modified and degraded by humans. High-functioning ecosystems sequester and protect large amounts of carbon, regulate local climate regimes including hydrological cycles, and provide a direct defense against climate related hazards such as floods, sea-level rise and cyclones. “Protecting intact ecosystems is humanity’s most cost-effective defense against climate change and the loss of biodiversity and may also prove to be the most cost-effective way of meeting many of the United Nations Sustainable Development Goals (SDG’s)”²⁰. The urgent need is, therefore, to immediately stop the destruction of what is left of such areas of wild nature on land and in the sea.

2 REWILDING – RESTORING NATURE’S FUNCTIONALITY

Definition: The process to rebuild “the structural and functional complexity of degraded ecosystems while gradually reducing the human influence”²¹ has been called “rewilding.”

Rewilding means helping nature heal²². Rewilding means giving space back to wildlife and returning wildlife back to the land, as well as to the seas. Rewilding means the mass recovery of ecosystems and the life-supporting functions they provide and protecting specific places—on land and in the ocean—where nature is free to direct the ebb and flow of life. Rewilding is about allowing natural processes to shape whole ecosystems so that they work in all their colorful complexity to give life to the land and the seas. Such wild lands and waters are critical to sustain ecological vitality by supporting intact food webs and natural processes.

Status: With the degradation of ecosystems, comes species decline and loss. Current rates of extinction are about 1000 times the likely background rate of extinction²³. Future rates depend on many factors and are poised to increase. Out of 120,000 species assessed, 32,000 are threatened with extinction (27%)²⁴. Most threatened are amphibians (41%) followed by conifers (34%), reef corals (33%), sharks and rays (30%), mammals (26%) and birds (14%). In a recent study on plants²⁵, close to 600 species were confirmed wiped out since 1750, with an extinction rate about 500 times higher now than before the industrial revolution. Based on an estimated number of 8.1 millions of animal and plant species globally, the Intergovernmental Platform on Biodiversity and Ecosystem Service (IPBES) estimates that 1 million species are at risk of extinction²⁶. An overall population decline globally of over 50% in less than 50 years has been documented for 4,000 vertebrate species, with the most dramatic changes in South and Central America and the Caribbean (89%) followed by Indo-Pacific (64%), tropical Africa (56%), Palearctic (31%) and North America (23%)²⁷. Most affected are freshwater species with an overall decline of 81% between 1970 and 2012²⁸. Tropical forest species declined 41% between 1970 and 2009, and marine species declined 36% between 1970 and 2012²⁹. Rivers and lakes cover just about one percent of Earth's surface but are home to one third of all vertebrate species worldwide. From 1970 to 2012, global populations of freshwater “megafauna” declined by 88% – twice the loss of vertebrate populations on land or in the ocean³⁰. Large fish species are particularly affected, such as the 76% plunge of migratory species populations across the world over the last 50 years³¹.

A missed component of biodiversity loss that often accompanies or even precedes species disappearance is the extinction of ecological interactions. The loss of ecological interactions may occur well before species disappearance, affecting species functionality and ecosystems services at a faster rate than species extinctions³². Many species now survive at such low densities that they can be considered practically extinct from an ecological point of view³³, ultimately collapsing the derived ecosystem services provided to humans, such as pollination, seed dispersal

and climate change mitigation through carbon sequestration³⁴.

Conservation rationale: With the degradation of the planet, there is an enormous need for restoring nature’s web of life. It is particularly “about eliminating or mitigating ecological wounds so that natural processes can rebound”³⁵. Rewilding is a prerequisite for turning around the extinction of species and ecosystems and to mitigate climate emergency. To allow wildlife species to shape and increase the diversity of ecosystems through “trophic cascading” both on land and in the sea³⁶ and exert their pivotal role in mediating biochemical processes, such on the uptake, storage and release of carbon³⁷. To enable small and large carnivores and herbivores to manage the carbon flow using “food web dynamics”³⁸, to mobilize the “marine vertebrate carbon services”³⁹, to enable beavers creating meadows and dams at the landscape level⁴⁰, and allowing rhinoceroses, elephants, equids, and camelids shaping nutrient transport in grasslands, thereby reducing fire regimes and mobilizing landscape-scale vegetation changes while having the lowest methane emissions⁴¹, could magnify carbon sequestration by 20-140%, in some cases even more. But rewilding is also about promoting human/wildlife coexistence⁴², removing unnecessary dams⁴³ and roads, and excluding fisheries in marine protected areas and establishing no-take zones – or “replenishment zones”⁴⁴. As part of a “Global Charter for Rewilding the Earth – Advancing nature-based solutions to the extinction and climate crises”⁴⁵, a set of 12 rewilding principles have been identified to guide the work. These and other conservation tools help sustain and restore wildness in places that reflect the variety of conditions covering the globe, from highly manipulated landscapes such as cities and farmlands to remaining large wild areas⁴⁶. Rewilding supports human welfare by contributing to climate stability, clean air and water, pollination services, beauty, physical and mental health, moral satisfaction, and other life-supporting services that undergird flourishing human communities⁴⁷.

3 NATURE NEEDS HALF

Definition: In response to the dual biodiversity/climate crises, two similar concepts have been launched: Nature Needs Half (NNH) and Half Earth⁴⁸. It has been argued that with half the global area protected, at least, 85% of all species would be secured. Based on a recent, extensive review of the literature⁴⁹, “the global protection of a minimum of 30% and up to 70%, or even higher, of the land and sea on Earth” is required, with a “call for 50% as a mid-point” to avoid biodiversity loss and ensure ecosystem services for people, including carbon storage. The critical importance of intact, functional ecosystems to “avoid regime shifts” – or trajectories of the Earth System⁵⁰ and tipping points⁵¹ - and “maintain keystone species” has been highlighted. The NNH/

Half Earth perspectives have already been used as a baseline for the safe operating space for global food production⁵².

Status: In the 150 years since the emergence of the conservation movement and the array of land/sea/wildlife-protecting activities it has advocated, approximately 15% of the Earth's land surface and 10% of the oceans have been conserved to various degrees, with far less strictly protected from exploitation⁵³. While global investments in protected areas and adoption of wildlife conservation policies have produced many ecological and social benefits⁵⁴ and slowed the pace of biodiversity loss⁵⁵, the current ecological trends are starkly negative—plummeting wildlife populations⁵⁶, ocean acidification killing coral reefs⁵⁷, more frequent and prolonged marine heatwaves⁵⁸, dramatically higher greenhouse gas concentrations in the atmosphere than at the onset of the Industrial Revolution⁵⁹, and a million species at risk of extinction⁶⁰. We are on the trajectory towards global tipping points, reshaping the entire web of life by the end of this century or earlier⁶¹. Though conservation is known to be effective - such as through creating formally protected areas - the scale at which it has been implemented has been ineffective to reverse the negative trends. These data show that new large-scale efforts to reduce both degradation and loss of intact natural landscapes in combination with large-scale restoration efforts are urgently needed to protect against an intensified wave of extinctions in the world's last natural areas.

Conservation rationale: To ensure that climate targets are met while preventing species extinctions and the rapid erosion of biodiversity, it has been proposed to create a Global Deal for Nature⁶², a companion pact with the Paris Climate Agreement. Coupled with a transfer to renewable energy production, it is envisioned that a combination of protected areas and “Other Effective Area-based Conservation Measures” (OECM) - or Climate Stabilization Areas (CSAs), like high carbon and species richness corridors⁶³ - has a real potential of realizing this vision. A first milestone of conserving at least 30% of the Earth's surface by 2030 could serve as a valuable step towards the larger end target of half of the planet by 2050. It has even been argued that the only way of enabling a climate-resilient future is to implement a fast-track, 50% protection and restoration of all-natural habitats by 2030⁶⁴!

However, since biodiversity is unevenly distributed on Earth, the global milestone and target need to be translated into smaller geographical entities – ecoregions – while also taking into account other factors such as the rarest, most range-limited species, and intact ecosystems connectivity between key conservation areas⁶⁵. Some regions, especially the Amazon, Congo

Basin, Southeast Asia, boreal forests and tundra, need much more under protection to sustain species and ecological processes and to avoid biospheric feedback from release of GHGs after conversion.

Implementation of more ambitious global conservation targets such as NNH can be integrated with sustainable human use across the world. The IUCN “Beyond the Aichi Targets Task Force”⁶⁶ has developed an enabling framework consisting of three global conditions - the 3Cs⁶⁷. The 3Cs framework evaluates land-use drivers and human pressures to establish a baseline state of three broad terrestrial conditions: Cities and Farms cover 18% of land (C1), Shared Lands 56% (C2), and Large Wild Areas 26% (C3). It maps all but Antarctica and enables development of suites of conservation responses and production practices appropriate for each condition that are clustered on a continuum from those appropriate to the most heavily impacted areas to those best suited to the wildest areas remaining on Earth.

These include:

- **C1, Cities & Farms:** Increase conservation efforts to secure endangered species and protect all remaining primary ecosystem fragments. Mainstream sustainable practices such as protecting good farmland, practicing productive regenerative agriculture, and keeping nitrogen out of freshwater. Maintain pollinators and increase ecological restoration. Green cities to reduce carbon emissions, prevent urban sprawl, and provide access to nature for urban dwellers’ health and well-being.
- **C2, Shared Lands:** Establish “ecologically representative and well-connected systems of protected areas (PAs)” while increasing coverage of Key Biodiversity Areas (KBAs); restore and maintain ecological processes and viable populations of native species (ensure area protected is in the range of 25-75% per ecoregion). Across landscapes integrate sustainable natural resource extraction and activities such as tourism, grazing and use of wildlife (where appropriate and sustainable) with Indigenous knowledge and well-managed, equitable and properly funded PA networks.
- **C3, Large Wild Areas:** Retain overall ecological integrity and associated global processes such as carbon storage and rainfall generation, fluvial flows and large migrations; prevent further fragmentation allowing only rare nodes of intense industrial development enveloped in a largely wild matrix. Remove and restore anomalies. Establish large PAs and Indigenous and community conserved areas. Secure Indigenous knowledge and livelihoods.

Endnotes

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