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Authors
Hilty, Jodi A.
Laur, Aaron T.

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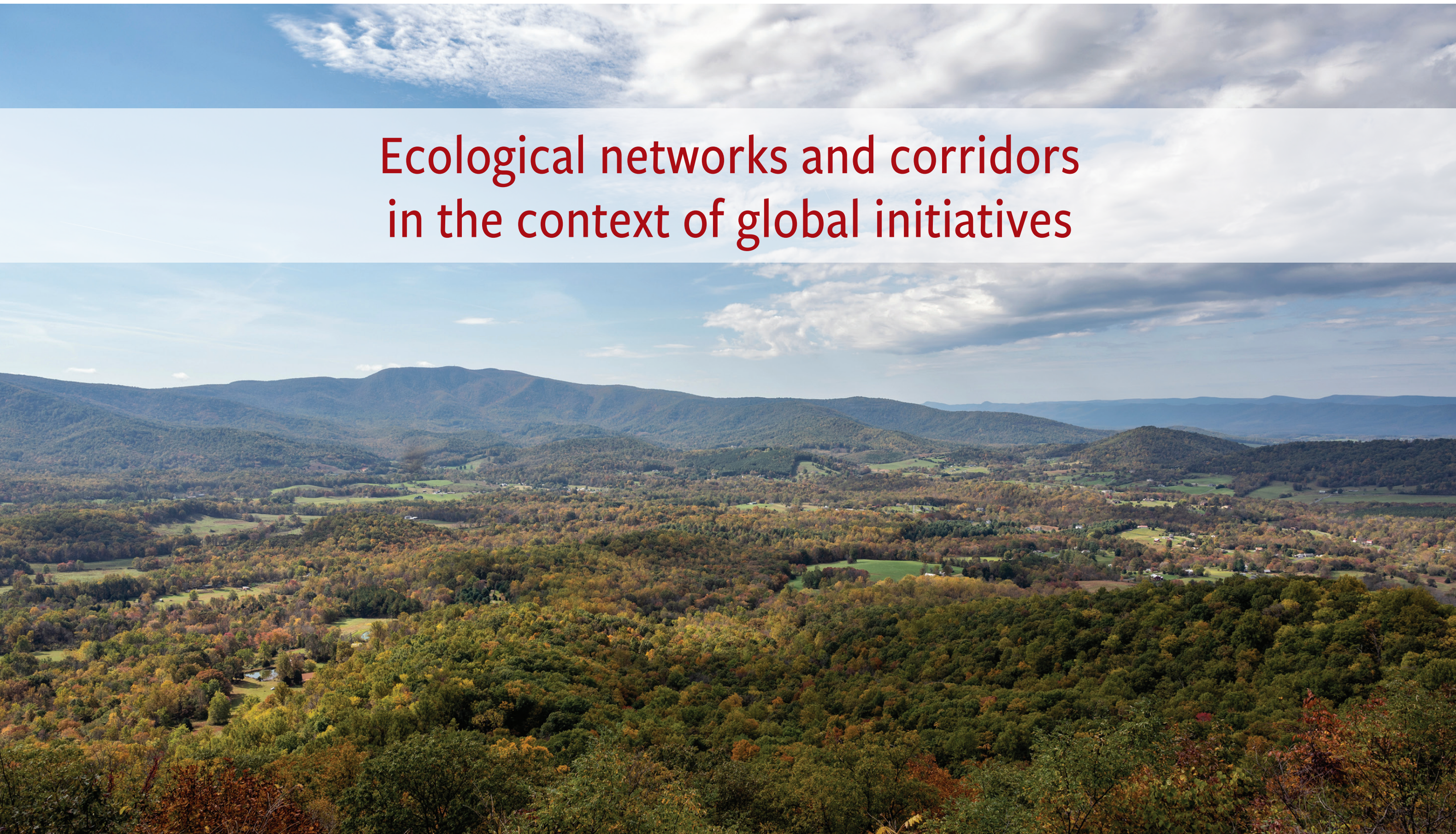
Ecological networks and corridors in the context of global initiatives



Jodi A. Hilty, *Yellowstone to Yukon Conservation Initiative and IUCN World Commission on Protected Areas Connectivity Conservation Specialist Group*
Aaron T. Laur, *Center for Large Landscape Conservation and IUCN World Commission on Protected Areas Connectivity Conservation Specialist Group*

CORRESPONDING AUTHOR

Jodi Hilty, 200-1350 Railway Ave., Canmore, Alberta T1W 1P6 Canada; jodi@y2y.net

ABSTRACT

Ecological connectivity is defined by the United Nations Convention on Migratory Species to be "[t]he unimpeded movement of species and the flow of natural processes that sustain life on Earth." To conserve these vital links within and across ecosystems and political boundaries, scientists, policymakers, and practitioners around the world are increasing and combining their efforts to provide consistent and focused solutions. The most recent *Protected Planet Report* reveals that 7.84% of terrestrial protected areas are connected to each other. This remains far short of the stated target of connecting the over 17% of the planet that is now officially protected in one way or another. Much more effort is also required to maintain, enhance, and restore ecological connectivity across the matrix of human uses outside of such areas. The importance of conserving ecological connectivity to protect biodiversity, increase resilience to climate change, and provide

A mosaic of private and public lands is viewed from Shenandoah National Park, Virginia. N. LEWIS / NATIONAL PARK SERVICE the host of other benefits that humans receive from nature is clear and actionable as science and policy align to support the livelihoods of local communities while contributing to global environmental conservation goals.

INTRODUCTION

According to the most recent *Protected Planet Report*, the world exceeded the goal of protecting at least 17% of the world's land and inland water ecosystems, and 10% of its coastal waters and oceans, by 2020 (UNEP-WCMC and IUCN 2021). Yet only 7.84% of the world's terrestrial surface is both protected *and connected to other such areas*, and methods for assessing marine connectivity are still being developed and refined. This is one of several trends identified in the most recent assessment of progress toward achieving commitments under the Convention on Biological Diversity's (CBD) Aichi Biodiversity Target 11, focused on increasing and improving protected areas and other effective area-based conservation measures (OECMs, also called "conserved areas") during the period 2011–2020 (CBD 2010). This highlights the importance of redoubling efforts to not only increase the quantity of area, but also better account for the quality of connecting the global network of protected and conserved areas as new goals are negotiated in anticipation of dramatically boosting ambitions under the CBD's post-2020 global biodiversity framework for 2030 and beyond (CBD 2021a). According to a recent joint report of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) and the Intergovernmental Panel on Climate Change (IPCC), protecting biodiversity and limiting global warming are mutually supporting goals (Pörtner et al. 2021). Therefore, by better safeguarding ecological connectivity, area-based commitments can more comprehensively contribute toward stemming the fragmentation of nature, reversing biodiversity loss, and increasing resilience to climate change.

To do this more effectively, there is a need to address conservation at larger spatial scales, where well-designed protected and conserved areas are ecologically connected to ultimately create functional ecological networks (Hilty et al. 2020). Bearing in mind that ecological connectivity could be better reflected in global agreements and implemented at national levels, numerous intergovernmental institutions and processes beyond the CBD are also prioritizing connectivity solutions that can better contribute to achieving the United Nations' (UN) 2030 Agenda for Sustainable Development (also referred to as the Sustainable Development Goals, or SDGs; UN 2021a). It is at the interface of policy, science, and practice that protected and conserved areas, and their interconnections across surrounding lands, inland waters, and marine areas, can be managed more consistently to protect biodiversity and ecological processes. This article provides an overview of the policy, science, and tools that can help advance ecological connectivity conservation.

WHAT IS ECOLOGICAL CONNECTIVITY?

The 1979 UN Convention on Migratory Species (CMS)—signed by 132 countries—defines ecological connectivity as "the unimpeded movement of species and the flow of natural processes that sustain life on Earth" (CMS 2020a). Importantly, this definition recognizes that ecological connectivity is not just about the movement of individual organisms; it also must support the function of entire ecosystems. However, if habitat loss and fragmentation continue unabated, ecosystems can slowly degrade and further threaten the persistence of organisms and processes (Ceballos 2017). By conserving ecological connectivity, the habitats, survival, and genetic diversity of wild animal and plant species can be better safeguarded, along with ecosystem functions and characteristics such as migration, hydrology, nutrient cycling, pollination, seed dispersal, food security, climate resilience, and disease resistance, across all biomes and spatial scales.

THE NEED FOR ECOLOGICAL CONNECTIVITY

In the 20th century, the focus of area-based conservation was on new and expanded protected areas. Now in the 21st century a focus on dramatically upscaling protected areas is still needed, but it must be supplemented by additional conserved areas (i.e., OECMs). A conserved area is "a geographically defined area other than a Protected Area, which is governed and managed in ways that achieve positive and sustained long-term outcomes for the *in-situ* conservation of biodiversity, with associated ecosystem functions and services and where applicable, cultural, spiritual, socio-economic, and other locally relevant values" (CBD 2018). Beyond any specific protected parcel, conserved areas are important to implement conservation at large scales, for these are the only scales at which nature can be resilient in the long term. There is clear scientific and public support for a significant increase in protected and conserved areas around the world. As discussed in more depth later, the prevalence of evidence suggests that a minimum of 30%, and likely somewhere around 50% of various ecosystems, require protection or conservation to function in the long term (Woodley et al. 2019a). The public actually agrees with these large numbers. Various public surveys reveal that people around the world think approximately 50% of land and sea should be set aside for nature (e.g., Wright et al. 2019). The uptick in conservation initiatives demonstrates the demand for new and expanded protected and conserved areas. The most recent is the 30x30 Campaign, which calls for protecting or conserving 30% of land and seas by 2030. By February 2021, more than 55 countries had pledged to work toward this goal, including the United States and Canada (HCA 2021).

It is critical to understand that conservation is not only about percentage coverage figures. Protected and conserved areas not only must be located in areas that are important for conserving biodiversity, they also must be properly designed, well-governed, and effectively managed. Only where all these conditions are met will protected and conserved areas deliver effective conservation outcomes (Hockings et al. 2019). However, many of the world's protected and conserved areas suffer from improper design because they are just not large enough to encompass large-scale ecological processes and meet the needs of all organisms. (Newmark 1995). For this reason, ecological connectivity through the use of ecological corridors can increase the effective size of protected and conserved areas by encompassing smaller units within ecological networks. In this way, ecological corridors are a design solution that is especially important in view to adapting to the impacts of global climate change and halting biodiversity loss, because many species' ranges are already shifting to adapt to new conditions, and many species that cannot move through human-modified landscapes require conserved ecological corridors (Hilty et al. 2019).

An Arctic tern (*Sterna paradisaea*) lifts off from a sandbar. This animal embarks on the longest annual migration known, covering over 40,000 miles in a single trip.
Peter Pearsall / US Fish and Wildlife Service

CONNECTIVITY IN GLOBAL CONSERVATION POLICY

The concept of ecological connectivity is not new and has become increasingly visible in global policy over the last decades. Foremost, the 1992 CBD is a global instrument that has near-universal participation, with only a few member countries of the United Nations—including the United States of America—having not joined (CBD 2021b). Ecological connectivity is relevant for the achievement of all three objectives of the convention (UN 1992) and has featured in its policymaking for over a decade. This includes a ground-breaking 2018 decision, quoted above, on "Protected areas and other effective area-based conservation measures" (CBD 2018) and the long-standing Strategic Plan for Biodiversity 2011–2020, which calls for this goal:

> By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and **well-connected systems** [bold emphasis added] of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes (CBD 2010).

The CMS provides a global platform to address the conservation of migratory species, their habitats, and migration routes as they move across or outside of national boundaries. Providing the legal foundation for coordinated conservation measures throughout migratory ranges, CMS has reaffirmed its commitment to ecological connectivity as a top priority in its 2020 Ghandinagar Declaration (CMS 2020a) and related policy resolution "Improving Ways of Addressing Connectivity in the Conservation of Migratory Species" (CMS 2020b).

Many other multilateral instruments and international institutions are also emphasizing ecological connectivity to achieve their objectives. They include:

- The 2021 G7 Leaders Summit (Canada, France, Germany, Italy, Japan, United Kingdom, United States) agreeing to the "2030 Nature Compact," advocating for "improved quality, effectiveness and connectivity of protected areas and other effective area-based conservation measures (OECMs)…" (G7 2021).
- The UN General Assembly adopting Resolution 75/271, "Nature Knows No Borders: Transboundary Cooperation—A Key Factor for Biodiversity Conservation," including encouraging "member States to maintain and enhance connectivity of habitats, including but not limited to those of protected species and those relevant for the provision of ecosystem services, including through increasing the establishment of transboundary protected areas, as appropriate, and ecological corridors based on the best available scientific data…" (UN 2021b);
- The *United Nations Decade on Ecosystem Restoration: Strategy* (2021–2030), indicating activities necessary for catalyzing large-scale restoration, including "the importance of ecological connectivity in restoring ecosystem functioning and how to incorporate this concept into natural resource planning and management" (UN 2021c);
- The UN Environment Programme's (UNEP) 2021 synthesis report *Making Peace with Nature: A Scientific Blueprint to Tackle the Climate, Biodiversity and Pollution Emergencies* identifying ecological connectivity between protected and conserved areas and within urban areas as key to transforming humankind's relationship with nature (UNEP 2021); and
- The International Union for Conservation of Nature (IUCN) Policy Resolution 073 on "Ecological connectivity conservation in the post-2020 global biodiversity framework: From local to international levels," emphasizing the importance of ecological networks and corridors to sustaining biodiversity and nature's contributions to people, and recommending that all IUCN members work to conserve connectivity by documenting it across ecosystems; informing policies, laws, and plans; identifying key drivers, and building synergies across institutions and borders to implement solutions (IUCN 2021).

THE NEED FOR LARGE-SCALE CONSERVATION: A REVIEW OF THE EVIDENCE

The need for large-scale area-based conservation is rooted in the fact that the world faces a global biodiversity crisis. Extinction rates are estimated to be 1,000 times the background rate and future rates could be 10,000 times higher (De Vos et al. 2015). IPBES reports that 75% of the earth's land surface is significantly altered, 66% of the ocean is experiencing increasing cumulative impacts, and over

A green darner dragonfly (*Anax junius*) rests. While less well-known than monarch butterflies, these insects also migrate great distances for winter.
TINA SHAW / US FISH AND WILDLIFE SERVICE

85% of wetlands (by area) have been lost (Díaz et al. 2019). On average, population sizes of wild vertebrate species have declined precipitously over the last 50 years on land, in freshwater and in the sea, and around 25% of species in assessed animal and plant groups are threatened (Díaz et al. 2019).

Driven by extensive habitat loss and fragmentation, connected systems of protected and conserved areas enhance traditional area-based conservation and are an innovative approach that can significantly contribute toward halting and reversing the biodiversity crisis. The following key conclusions from a scientific review of evidence for large-scale conservation (Woodley et al. 2019a) apply equally to terrestrial, marine, and freshwater ecosystems:

1. Under the CBD's Strategic Plan for Biodiversity, Aichi Target 11 called for the protection of 17% terrestrial area and 10% marine area by 2020. No published research considered that Aichi Target 11 was adequate for the area-based conservation of biodiversity, either on sea (O'Leary et al. 2016) or on land (Rodriguez and Gaston 2001; Svancara et al. 2005; Noss et al. 2012; Butchart et al. 2015). Even with the best locations for protected and conserved areas, there is simply too much species diversity and too high levels of endangerment to cover these elements in relatively small percentages of the global surface. Almost universally, when conservation targets are based on the research and expert opinion of scientists, they far exceed targets set to meet political or policy goals (Svancara et al. 2005; Noss et al. 2012). This is supported by a global survey of conservation scientists conducted in 2017, who massively supported very large percentage area targets to conserve biodiversity (Woodley et al. 2019b).
2. Percentage area targets cannot be considered in isolation from the quality considerations presented in Aichi Target 11. There is some concern that a focus on percentage area targets might draw away from a focus on quality (Visconti et al. 2019). Protected and conserved areas are policy tools to achieve nature conservation and need to be selectively

located, properly designed, equitably governed, and effectively managed in order to achieve biodiversity outcomes. Questions of ecological design, equitable governance, and management effectiveness that led to conservation outcomes are included in the IUCN Green List of Protected and Conserved Areas Standard (IUCN-WCPA 2017). The question of where to locate protected and conserved areas is complex, but there is good agreement in the literature that they should focus on areas of importance for biodiversity, including Key Biodiversity Areas (IUCN 2016), Ecologically or Biologically Significant Marine Areas (EBSAs) (CBD 2021c), and equivalent national and open ocean priorities.

3. As pointed out in the paper by Woodley et al. 2021 (this issue), there are different approaches to considering percentage area targets, but all agree that large parts of the globe need to be kept in a natural condition to conserve biodiversity. There is no clear indication of how much of the earth, or a region, should be protected or conserved to sustain biodiversity (Woodley et al 2019a). The answers are complicated by spatial scale, patterns of biodiversity, weaknesses in selection approaches, and the conservation values used in systematic conservation planning. Each time a new conservation value is selected, it raises the percentage targets. For example, selecting only for endangered or rare biodiversity will result in a lower percentage target than if also considering ecological connectivity or ecosystem services. Studies that include a more complete set of values produce targets that are well over 50% and up to 80%, while a narrower subset results in lower percentage area targets—though never under 30%—which represent minimum estimates and are likely inadequate. As such, area conservation targets should be established based on the desired outcomes (e.g., halting biodiversity loss by 2030). It is clear in this respect that decisions already taken by the global conservation community—for example, the goal of protecting or conserving at least 30% protection of the ocean by 2030—can only be but way points toward what is really needed to address the current biodiversity and climate crises.

Large area-based targets should never be considered as percentages for percentages' sake. They should always be determined and implemented, whether at the global, regional, or local scale, through systematic conservation planning or other science-based approaches. However, there is strong evidence that percentage targets materially increase national conservation efforts. Aichi Target 11 is seen as one of the most successful targets reached, including in mega-diverse countries (Bacon et al. 2019; Green et al. 2019). There is consistent scientific agreement that very large-scale conservation is required to deal with the known drivers of biodiversity loss. Suggested conservation targets of 30%, 50%, or even 70%, while not based on precision, are consistent with the scientific literature on what is required to save biodiversity.

If area targets are inadequate by themselves to halt biodiversity loss, then they have to be complemented by an emphasis on quality, notably the equitable governance and effective management of systems of protected and conserved areas. Protected and conserved areas must also be carefully located where they make the most impact for nature conservation and should be ecologically connected to function as conservation networks. It is clear there is a need to dramatically increase both the quality and quantity of protected and conserved areas as an essential means to halt and reverse the catastrophic loss of biodiversity undermining all life on earth. They must also be part of broader, truly sustainable actions across the whole of lands, waters, and oceans to realize their full benefits.

DEVELOPING GUIDELINES FOR ECOLOGICAL CONNECTIVITY

The Connectivity Conservation Specialist Group (CCSG) was formally established in 2016 under the IUCN World Commission on Protected Areas (WCPA) and was primarily tasked with developing IUCN's first-ever *Guidelines for Conserving Connectivity through Ecological Networks and Corridors,* which eventually was published in 2020 (Hilty et al. 2020). Despite the CCSG's rather recent creation, the WCPA Mountains Specialist Group had been advancing discussion and work on ecological connectivity years before. This includes the formative 2006 Papallacta Declaration devoted to the development and promotion of mountain connectivity conservation management (Workshop on Mountain Connectivity Conservation Management 2006), and a considerable body of work on connectivity led by the late Dr. Graeme L. Worboys, among others. By 2021, CCSG membership grew to more than 970 members in over 120 countries working in government, scientific, academic, non-profit, and business sectors, with over 450 institutions represented across the community. In view to promoting collaboration around the world, the mission of CCSG is "to serve as the global hub for providing scientific, policy, and technical advice that mainstreams connectivity conservation as a nature-based solution to enhance the integrity of protected areas, save biodiversity, and increase resilience to climate change across terrestrial, freshwater, and marine ecosystems" (CCSG 2021). To focus contributions toward its objectives, the specialist group also fosters the activities of the Marine Connectivity Working Group, Transport Working Group, Asian Elephant Transport Working Group, and Latin American and Caribbean Transport Working Group.

Advancing the idea and application of ecological connectivity has been several decades in the making, and general agreement on concepts and ways forward was catalyzed in 2016 with adoption of the official IUCN Policy Resolution 87, "Awareness of Connectivity Conservation Definition and Guidelines" (IUCN 2021b). At the outset of this earnest work, a wide spectrum of experts, including academics, policymakers, and practitioners, had varying ideas of what ecological connectivity is, how to advance policy, and ways to achieve on-the-ground action. Between 2017 and 2020, more than 100 contributors in 30 countries came together to write, discuss, review, and eventually agree to that a new area-based conservation tool, *ecological corridors,* was important for conserving ecological connectivity. In early discussions, concern was expressed about adding another area-based tool distinct from protected and conserved areas. It was wondered whether protected and conserved areas on their own might be adequate. Other perspectives sought to define areas of connectivity that would include protected and conserved areas, but it was ultimately recognized that these area-based tools need to be separate and distinct spaces. There were also worries that proposing ecological corridors could distract from the essential business of continuing to expand protected and conserved areas. Finally, others were concerned that the first steps defining specific areas for connectivity might be limiting and that most spaces between protected areas should ideally be serving connectivity.

These were all legitimate concerns, but ultimately they were resolved, and the *Guidelines for Conserving Connectivity* moved forward to recognize ecological corridors as distinct and separate from protected and conserved areas (Table 1). It was also recognized that while ecological corridors may conserve biodiversity in their own right, their only strict requirement is to conserve ecological connectivity. Many corridors will not be habitat for focal species, but rather will function only to permit movement of those species. However, other corridors that connect protected and conserved areas will provide continuous habitat for a variety of species. Therefore, the *Guidelines* provide for different types of ecological corridors suitable to a range of connectivity goals. It is also understood that different regions of the world have varying ability to implement the *Guidelines* right now. Importantly, the *Guidelines* establish what might be thought of as aspirational connectivity futures in some places by clarifying what would be required to conserve an ecological corridor based on a defined set of objectives as countries consider laws, policies, and management practices pertaining to connectivity.

Once the concept of ecological corridor was in place, the *Guidelines* were advanced, with significant input from around the world, with these purposes:

- Consolidate a wealth of knowledge and best available practices;
- Agree upon global definitions that function

Table 1. Differences in the role of protected areas, conserved areas (formally called OECMs), and ecological corridors. Note that all three terms refer to areas with conservation outcomes. Protected areas and OECMs protect nature as a primary consideration. Ecological corridors play a supporting role for protected areas and OECMs in building ecological networks.

	Protected areas	OECMs	Ecological corridors
MUST conserve *in situ* biodiversity	●	●	
MAY conserve *in situ* biodiversity			●
MUST conserve connectivity			●
MAY conserve connectivity	●	●	

across terrestrial, freshwater, and marine environments much in the same way that IUCN's protected area definition is agnostic of ecosystem type;
- Outline the fundamentals of what needs to be in place to recognize an ecological corridor as being effectively conserved; and
- Highlight an approach that could be used to begin tracking conserved ecological corridors at a global level.

THE NEED FOR ECOLOGICAL CORRIDORS AND ECOLOGICAL NETWORKS

The need and scientific basis for ecological corridors is well articulated in the *Guidelines* (Hilty et al. 2020) and a deeper dive into the cumulative science on connectivity can be found in the book *Corridor Ecology* (Hilty et al. 2019). In addition, as the science is rapidly becoming more sophisticated, new manuscripts have been published.

In brief, ecological corridors are necessary because the preponderance of science demonstrates that this tool, if used together with expanding protected and conserved areas, will help to conserve biological diversity in all its forms (e.g., Heller et al. 2009). The challenge is that human impacts on the earth continue to expand at the expense of other species. Even well-managed, existing protected areas are increasingly becoming isolated from others and being surrounded by a sea of human influence—and with that comes the loss, sometimes delayed by decades, of species and functionality (Hansen and DeFries 2007). At the same time, climate change is altering once predictable connectivity pathways, such as those migratory ungulates traditionally follow. In order to survive the twin threats of ecosystem fragmentation and climate change, migratory animals need more room to roam in order to survive. Unfortunately, at a time when connectivity needs to be maintained, enhanced, and restored the opposite trend is happening, with movement being truncated, such as global migration routes being shortened and or lost (e.g., Williams et al. 2020).

Beyond establishing the concept of ecological corridors, a second major accomplishment of the *Guidelines* was to define *ecological networks for conservation:* systems of protected and conserved areas with ecological connectivity in the context of large landscapes and seascapes.

> An ecological network for conservation is a system of core habitats (protected areas, OECMs and other intact natural areas), connected by ecological corridors, which is established, restored as needed and maintained to conserve biological diversity in systems that have been fragmented (Hilty et al. 2020).

These ecological networks ensure ecological connectivity but also help meet a number of other ecological values, such as representativeness, redundancy, and other variables beyond the scope of this article.

Ecological networks (Figure 1) are made up of three basic elements: (1) protected areas (both terrestrial/freshwater and marine), (2) conserved areas, or OECMs; and (3) ecological corridors. It is the emergent properties of all three of these elements functioning together that can enable increased conservation effectiveness. When well designed, they are considered important to facilitate adaptation to climate change.

Key considerations for the three elements are whether they are in the right places, appropriately sized, and well-managed. If not, the compromised elements will affect the overall integrity of the entire ecological network. Assuming that the elements are decently designed and managed, the ecological network will function to conserve biological diversity over time and through space better than any individual element on its own (Bennett and Mulongoy 2006; Hilty et al. 2020).

PLANNING AND IMPLEMENTING ECOLOGICAL CORRIDORS

It is important to restate that ecological corridors are only effective if protected and conserved areas already exist. Simply put, you need something to connect, and this is true whether in terrestrial, freshwater, or marine environments. Some work on connectivity has begun for airspaces but remains preliminary. No matter the environment, various research and modeling approaches can identify where conserving ecological connectivity may be important (Hilty et al. 2019). Once the specific area is identified, conserving connectivity requires a number of steps ranging from documenting basic information, selecting objectives, choosing a governance model, delineating boundaries, implementing management, and designing monitoring plans that reach the objec-

Figure 1. A conceptual representation of an ecological network for conservation. Terrestrial protected areas are in dark green and depicted as surrounded by human activities. Marine protected areas are in dark blue. OECMs are represented in orange. Ecological corridors, both those that are continuous and those that function as stepping stones, are outlined with dashed lines. The ecological network for conservation includes protected areas, OECMs and ecological corridors. © KENDRA HOFF / CLLC

tives. Here follow the basic requirements to achieve a conserved ecological corridor (Hilty et al. 2020):

- Objectives: what biodiversity elements are to be connected?
- Contribution to ecological network: what role does the corridor plan in the larger network?
- Social and economic values: what are the interactions between the corridor and other social and economic values?
- Delineation: what are the boundaries of the corridor?
- Governance: who manages the areas of the corridor?
- Tenure: who owns areas of the corridor?
- Legal mechanisms: what legal protection is in place for the corridor?
- Longevity: what arrangements are in place for the corridor to be effective for the long term?
- Management: what management is required within the corridor so it can meet its conservation objectives?
- Monitoring, evaluation, reporting: how will they be accomplished?

In this connection it is important to highlight a few matters. Every corridor should have specific ecological objectives and be governed and managed to achieve connectivity outcomes. Ecological corridors may consist partly or entirely of natural areas managed primarily for connectivity. So long as their conservation objectives are supported, they also may include compatible human activities that involve sustainable resource use. However, ecological corridors should be differentiated from non-designated areas by specific uses that are allowed or prohibited. Likewise, they should have the governance and/or legal mechanisms in place that ensure their management for the connectivity objective in perpetuity. For without permanence, they become subject to human pressures like any other areas and thus cannot guarantee connectivity goals. To support efforts to meet these requirements and achieve long-standing ecological connectivity, as of the writing of this article CCSG is working with partners at the World Database on Protected Areas to build a database that will track conserved ecological corridors. This will greatly contribute toward understanding how effective ecological networks are now and likely to be into the future by assessing where they exist that include all three required elements: protected areas, conserved areas, and ecological corridors.

CLOSING REMARKS

With recent science clearly showing the need for conservation at landscape and seascape scales, the need to define and conserve ecological corridors has never been greater. The new IUCN *Guidelines for Conserving Connectivity through Ecological Networks and Corridors* now shift the focus from what area-based connectivity is to how to advance policy and practice at international, regional, national, and local levels. Fortunately, there are many countries and institutions already advancing connectivity conservation. The CBD's post-2020 global biodiversity framework is an opportunity to set more ambitious global targets related to connectivity. Doing so will help move area-based biodiversity conservation from a focus solely on protected and conserved areas to also considering ecological connectivity, thereby shifting the paradigm toward ecological networks for conservation.

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