

**INTERNATIONAL**



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**In This Issue of **

Rewilding Pre-requisites | Benefits of Environmental DNA  
Increasing French Protected Areas | Complexity of European Wilderness

# International Journal of Wilderness

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IJW Editor-in-Chief Emeritus



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# International Journal of Wilderness

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**Photo credit:** Image prompt "A wilderness area with a backpacker close-up detail evening."  
Generated with Microsoft Image Creator AI. Created on May 14, 2024.

# Missing the Forest for the Algorithm

by Robert Dvorak

What is the value of wilderness?

Wilderness holds immense value on multiple fronts, serving as a sanctuary for biodiversity and a source of inspiration and renewal for humanity. These untouched landscapes represent a tapestry of life, harboring a rich diversity of plant and animal species that have evolved over millennia. In preserving wilderness, we safeguard vital habitats and ecosystems, ensuring the survival of countless species and the resilience of natural processes. Moreover, wilderness areas act as living laboratories, offering invaluable insights into ecological dynamics and serving as benchmarks for understanding the impacts of human activity on the environment.

Beyond their ecological significance, wilderness areas offer profound benefits for human well-being. They provide spaces for solitude and reflection, offering respite from the hustle and bustle of modern life. Wilderness adventures cultivate a deep appreciation for nature, fostering a sense of stewardship and connection to the natural world. Furthermore, these wild places are essential for outdoor recreation, offering opportunities for hiking, camping, and wildlife observation that promote physical and mental health. Ultimately, the value of wilderness transcends mere monetary worth, enriching our lives spiritually, culturally, and ecologically.

What is the value of wilderness? Well, what you have just completed reading is the “value of wilderness” as described by ChatGPT 3.5, or at least what is presents when given the prompt



Robert Dvorak

"what is the value of wilderness described in two paragraphs." Similarly, the photograph preceding this editorial was created by Microsoft Image Creator with the prompt "A wilderness area with a backpacker close-up detail evening." These examples are intended to demonstrate that the application and incorporation of artificial intelligence (AI) across our society is increasingly rapidly. We are seeing AI grow across multiple sectors, including finance, health care, media and marketing, and education. But what will be the impact of AI on international conversation and wilderness efforts? What will be the potential positive and negative implications of greater integration of AI technologies and practices into our planning, research, and management?

It is important to recognize that AI is not just emerging. Scientists have been using AI technology and applications to address conservation problems for the past decade. Palminteri (2018) describes how scientists have begun using AI to track and predict poaching patterns across landscapes. AI is being used in the mining of social media photos across various platforms for species identification and population distributions connected to georeferenced photographs and visual content. And through machine learning, AI applications are improving their ability to identify and locate different species and pertinent information.



**Figure 1a** - The visual representation by Microsoft Image Creator AI of a landscape negatively impacted by climate change. Created on May 16, 2024.




**Figure 1b** - The visual representation by Microsoft Image Creator AI of nature and a pristine forest. Created on May 16, 2024.

In addition to wildlife monitoring applications, Foyet (2024) has described the future direction of AI technologies. There are applications in global climate change modeling and landscape resilience planning across ecosystems. Practitioners can implement "smart resource management" that can distinguish hotspots, critical areas, and generate predictive maintenance models. Also, Foyet (2024) describes the greater social and cultural impact of AI technologies. AI-powered natural language processing and communication algorithms can be used to extract insights across media and information sources, detecting emerging issues and gaining the current public perception of conservation. AI-powered chatbots and virtual assistants can also answer conservation-related questions, create interactive learning, and disseminate accurate information. In these ways, the reach of AI in engaging the public on conservation issues and efforts can be immense.

However, there are tangible, negative consequences to AI application across conservation. Just as chatbots and virtual assistants can provide information or identify emerging issues, there is distinct selectivity in such a narrative. The technology is still influenced by our perceptions and the magnitude of its impacts are by the expression (or lack thereof) of our societal values. AI can equally represent the perceptions or reality of nature. In Figures 1a and 1b, I queried Microsoft Image Creator to represent "a landscape negatively impacted by climate change" and "nature and a pristine forest." Each image, at best, only reflects a programmed interpretation of how these concepts can be represented. Additionally, interpretations can be modified, manipulated, and changed over time. Just as Microsoft Image Creator has functional toolboxes to "erase and add" content from your image,

so too can we as a society modify the perceptions over the consequences of climate change, threats to natural ecosystems and endangered species, or the value of wilderness and protected areas.

It is uncertain where AI technology will go in the future. But it is evident that it can be a powerful tool to share and create knowledge, for better or worse. As with any tool, the application and implications of it are driven by those who wield it. We have an opportunity to better utilize this tool for the benefit of conservation and wilderness preservation. With responsible application, AI technologies might less represent the "artificial" and instead contribute to the "reality" of wild places.

In this issue of *IJW*, Pablo Garrido suggests the necessary prerequisites for rewilding. Jesse Engebretson and Courtney Larson discuss the benefits and tradeoffs of eDNA in wilderness management. Will Rice introduces the Western Wildlands digital archive. And Alexandra Locquet and Stéphane Héritier continue our "Wilderness Babel" series with the impossibility of translating "wilderness" into French and describing when ecological meaning fails to express cultural complexity. 

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**Photo credit:** Bison rewilding in Riaño, León (Spain). Photos taken by Pelayo García.

# Rewilding Prerequisites: An Ecocentric Approach

## BY PABLO GARRIDO

Rewilding is increasingly gaining momentum as a conservation practice in Europe. The concept was originally developed to support the restoration of large, connected wilderness areas to restore key ecological processes and functions by reintroducing keystone species such as large carnivores (Soulé and Noss 1998), yet multiple definitions have emerged since (see Corlett 2016). Trophic rewilding is currently the main approach applied in Europe. It aims to restore trophic cascades to promote self-regulating biodiverse ecosystems (Svenning et al. 2016). From an ecocentric perspective, the reintroduction of previously extinct species or ecological replacements, as well as their associated processes and functions, are fundamental to restore functional ecosystems and may partly tackle current biodiversity and climate crises.

Global human expansion since the late Pleistocene has been proposed as the main driver for megafaunal declines, and therefore the reversal of such pervasive effects through rewilding seems logical. However, the vast majority of terrestrial land globally is encroached by humans, rendering little space for sympatric, large-bodied mammals to roam freely. In places where wildlife populations are increasing, there is a parallel increase in (perceived) human-wildlife conflict. At best, these conflicts are resolved with multiple mitigation strategies to minimize negative effects on anthropogenic interests. In less tolerant scenarios, recolonized animals are just killed. This leads naturally to the question: What actually needs rewilding?



**Pablo Garrido**

Photo by Andrea Friebe.



**Figure 1** - A rewilding area in Spain. Photo by Carl-Gustaf Thulin.

Once our economic or any other interests are threatened, multiple human-wildlife conflicts may simultaneously arise. For instance, in the Assam region of northeast India, tea plantations have spread without any consideration to wildlife. This leads to human settlements coming into conflict with the last migrating Asian elephants, although such seasonal movements may predate our own human existence as a species. In Europe, the increase of the wolf population in Sweden and Norway are good examples of how we vehemently oppose changes to the “traditional” management practices we have performed for the last century, yet these animals that are now recolonizing their historical distributional ranges were part of European ecosystems for million years. In Norway, such opposition was ignited as a response to avoid changing extensive sheep herding practices. In Sweden, the killing of a few hunting dogs by wolves at moose (*Alces alces*) hunting events escalated tremendously the public debate about wolves, inducing the authorities to allow wolf hunting to “enhance” the species acceptance or tolerance but which clearly threatens this highly endangered population (Laikre et al. 2022).

In November 2019, a Wallenberg Foundation seminar on rewilding was held in Stockholm that presented rewilding as a new paradigm for nature conservation (Wallenberg Seminar 2019). It further discussed the state of the art of the science, appropriate reference baselines for ecosystem restoration, potential conflicts with cultural landscapes, and biodiversity in agricultural areas, as well as suitable targets and scales to implement a rewilding strategy in Sweden and elsewhere. However, none of the renowned speakers questioned nor reflected on the need for a fundamental change in humanity, in ourselves, to facilitate a significant positive global impact on nature, which we all depend on. Thus, despite good intentions, the rewilding phenomenon is limited at its core as an ecocentric-focused paradigm. We do not place enough responsibility upon humans to seriously question the way we currently live and behave. Neither do we fully examine the negative global effects of our actions, which are a mere reflection of our inner psychological conditioning that resonates outward with further detrimental effects on ourselves and others and on nature and global biodiversity at large.



**Figure 2** - Endangered Swedish horse breeds rewilding in Sweden.



**Figure 3** - Endangered Swedish horses introduced in experimental conditions to elucidate the ecological impact of horse grazing. Photo by Lena Holm.

Who told us we are the stewards of the planet and hold the power to decide the fate of all species? Today, we humans are the main species responsible for the ongoing planetary collapse due to our irresponsible nature-destructive behavior. I argue that what we really need to rewild is our minds and hence ourselves. We need to realize that animals and plants alike have the same right to exist, as recently exemplified by New Zealand in 2017 when that country passed a groundbreaking law granting personhood status to the Whanganui River. Yet are we not capable of respecting any natural being unless we force ourselves by stating it in a legal document? Can it be considered as a true understanding of respect to any other being or natural entity when it is enforced? We also need to understand the dynamic nature of ecosystems and accept it


without creating delusion conflicts (we perceive any threat to our commodities, to our "business as usual," as a conflict) when our commodities and economic interests are compromised. Such an understanding may guide humankind to newer, humbler, ecocentric human-nature interactions and therefore more harmonious futures.

The essential and much-needed change of humanity may unfold by self-reflection and inner inquiry, practices purposely neglected in modern societies and educational programs. We may then realize that to live is the only purpose of life, and therefore current paradigms, worldviews, and relationships to nature and other sentient beings (including ourselves) will irremediably automatically change. Such an understanding may facilitate or manifest a deep ecological principle; that is, that we are nature and nature is us, and therefore any harm to nature is harm to ourselves. This necessity for a human behavioural change has already been emphasized from different disciplines and argued to be crucial and urgent (Cowling 2014; Reddy et al. 2017).

As humans, we have the ability to decide whether to coexist within the planet or not. This is not only an opportunity but also represents a huge neglected responsibility. No other species have the luxury to "complain" when our actions decimate their populations or transform the only habitats they have for survival. The reverse, however, applies in all cases of nature affecting humans (manifesting the prevailing human-nature dichotomy). Because of these internal inconsistencies and hypocritical behaviors, are we actually prepared to rewild European landscapes? Shouldn't we need to rewild ourselves first? Today, the UN Decade on Ecosystem Restoration (2021–2030), and the recently passed European Law for Nature Restoration provide the greatest opportunity to take widespread and

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**“By 2030 at least 20% of forest and grassland habitats as well as wetlands, rivers, lakes, and coral reefs need to achieve a favorable conservation status. . . . But can we possibly do that and seize this opportunity without de-domesticating or rewilding ourselves first?”**

immediate action to tackle ecosystem degradation. Currently, 80% of EU habitats are highly damaged or degraded. The law thus regulates this urgent need for ecosystem restoration by setting legally binding biodiversity and restoration targets for all member states. By 2030, at least 20% of forest and grassland habitats as well as wetlands, rivers, lakes, and coral reefs need to achieve a favorable conservation status, increasing to 60% by 2040 and, 90% by 2050, in accordance with international commitments – in particular the UN Kunming-Montreal Global Biodiversity framework. But can we possibly do that and seize this opportunity without de-domesticating or rewilding ourselves first? 

## Acknowledgments

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**Photo credit:** Photo by Ravi Kumar on Unsplash.

# **Trusting Tech and Wilderness in the 21st Century: A Response to Keeling's The Trouble with Virtual Wilderness**

**BY KEELY FISHER**

I would like to thank Paul Keeling for taking the time to thoughtfully engage with my argument. I appreciate his perspectives and understand why he, as well as others, may have reservations about virtual reality (VR) wilderness. Keeling himself goes so far as to characterize VR wilderness as repulsive, taking the possibilities of VR wilderness to an extreme and painting the technology as a pervasive and dangerous threat to the existence of real wilderness. This position overamplifies the negative possibilities of VR wilderness while not addressing the continued ramifications of limiting our understanding about what wilderness is and what it can be. What I hope to do in this response is address some of his concerns about my stance on the relationship between VR wilderness and real wilderness. What I understand, however, is that an argument about the merits of VR wilderness can be an uncomfortable one. Hesitation about VR wilderness – or any new technology – is not an irrational or invalid stance. Technology has and will continue to have an impact on the way that we engage with the natural world, and I am not naive about the ways that people use technology to radically reshape our wilderness. This is not something I am



**Keely Fisher**

worried about with VR, as I continue to argue that VR wilderness acts as a supplement to experiences in the natural world. I hope that by the end of this response, it is better understood that what I am continuing to advocate for is not a replacement of real wilderness or a comparison between VR wilderness and real wilderness. Rather, I argue that VR wilderness acts as a documentation of the natural world, necessitates the existence of real wilderness, does not threaten the existence of real wilderness, and – importantly – can increase the accessibility of wilderness experiences. For these reasons, the merits of VR as a tool to democratize wilderness experiences and promote connection to the natural world far outweigh any supposed risks posed by the new technology.

## **Documentation of the Natural World**

When I originally said that VR grants us access to wilderness as well as the ideals and emotions that we associate with it, I did not think that it was a controversial statement. Throughout history, many people have used different forms of media – paintings, photographs, nature documentaries – to convey replicas of wilderness to those who were unable to visit the real thing. I would argue that people who use these replicas to experience wilderness have, in some ways, been connected to wilderness and had access to it, although they had not experienced real wilderness in person. Keeling disagrees with this characterization, asking, “How can it [VR

wilderness] connect people to real wilderness?” (Keeling 2024, p. 11). He then posits that, perhaps, VR allows for us to connect with wilderness in two ways: by inspiring people to visit a real wilderness area or, as I have argued, by evoking powerful, important emotions that we often connect to experiences in real wilderness. Keeling would suggest the latter does not constitute a connection or access to real wilderness. I believe we might largely agree about what is happening when people experience VR wilderness and may simply be arguing about the words we should use to label this phenomenon. However, there is one element of our respective understandings of the experience of VR wilderness that differs and may be leading to our disagreement over appropriate characterizations of this phenomenon.

Keeling uses an analogy that VR is something akin to talking to a simulation of your loved one instead of talking to them in real life, but this does not at all reflect the relationship between VR wilderness and real wilderness. In this analogy and in other places throughout his response, Keeling seems to suggest that VR simulates or creates fake wilderness from scratch when what VR does in actuality is take high-resolution panoramic images of wilderness in order to present them to viewers in a more engaging and interactive way than traditional media. Keeling’s (2024) repeated use of the words “simulation” and “fabrication” as well as his description of VR as “wholly the product of human purpose, intention and design” (p.13) make it seem as if he is conceiving of VR more like a first-person video

game where the player explores an entirely virtual three-dimensional model based on a real place.

I would argue that there is an important philosophical distinction to be made between simulating and documenting, and VR wilderness falls on the side of documenting wilderness. As a documentation, VR wilderness is in the same category as, for example, a recording of a song, which no one would call a simulation or fabrication or entirely the product of the recorder. Contrary to Keeling's analogy, VR is much more like having a video call with your loved one instead of meeting them in person. It may not be exactly the same (we can recognize it is nice to see your loved ones in person), but as we all learned during the recent COVID-19 pandemic, a video call with your loved one can be incredibly meaningful, especially when you cannot see them in person. Likewise, VR wilderness experiences can be incredibly meaningful and important for those who are not able to access real wilderness spaces in person.

Compared to other media depicting wilderness, such as the Planet Earth documentary series Keeling references, VR is a much more objective documentation of wilderness because it offers multiple perspectives for the user to explore rather than only the perspective and narrative created by a filmmaker, photographer, or artist. Nonetheless, even the most faithful documentation of wilderness reflects the perspective and purposes of its creator, and Keeling may see this as representing "the objective difference in meaning and value between VR wilderness and actual wilderness, namely, their different causal gen-

esis and relation to human purpose" (Keeling 2024, p. 13). This distinction relies on the idea that, unlike VR, real wilderness experiences are not the product of or modulated by human purpose, but this is not true. From the creation of national parks to the Wilderness Act of 1964 to the ways that we manage land for invasive species, we have always held wilderness to a standard of meeting human purpose, and our experiences of wilderness have been largely shaped by human purposes. VR may be more easily traced to its human designers, but that does not mean that real wilderness can be extricated from human intent. Although Keeling points to this supposed distinction as a reason that "VR wilderness can fulfill its purpose without actual wilderness existing at all" (Keeling 2024, p. 13), there are several reasons that VR wilderness necessitates the existence of real wilderness.

## **Necessity of Real Wilderness**

When people use VR wilderness, many of them are using it purposefully to access a place in the real world that they cannot otherwise go to or, for whatever reason, would not otherwise experience. The people who are using VR wilderness are not just "scoring points" or moving through the story as one does in a video game; they are using it to see specific places such as the Grand Canyon or the summit of Mt. Everest that have barriers to visiting in person. The value of these experiences lies in their connection to real, meaningful places in our world, and simulations created by artists' imaginations or even generative AI in digital, video-game style models cannot have the same impact.

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**“If we want to protect wilderness and natural spaces long into the future, we need to ensure that enough people recognize these values. VR wilderness has the potential to be a powerful means of educating and inspiring future generations to ensure these values and our wilderness spaces are not lost.”**

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Certainly, the counterargument can be made that once a piece of wilderness has been documented for the VR version, the real place could then be hypothetically destroyed without decreasing the value of the VR experience. Such a situation could arguably increase the value of a documented VR wilderness if there were no alternative. However, the aforementioned purpose and the rate at which technology continues to evolve would imply that VR wilderness (and other digital technologies) will continue to rely on the existence of real wilderness. For example, many of us know the difference between a movie from 2001 and 2021 because the technology has evolved so rapidly. Likewise, VR has continued to evolve, with new assistive technologies coming out as recently as January 2024 (see, for example, an omnidirectional VR walking pad from Disney [Diaz 2024]). To keep up with technological demands, we will have to reference real wilderness and continually go out and redocument wilderness spaces. This cannot be done if they do not exist.

### **Not a Replacement for Real Wilderness**

VR wilderness's reliance on real wilderness is important because it relates to one of Keeling's primary concerns: if people see VR wilderness as an acceptable substitute to real wilderness, then there will be no reason why we cannot bulldoze wilderness areas for commercial use and instead use VR. I take the threat of such a line of thinking seriously, as wilderness areas face constant pressure from climate change, corporate greed, and urban sprawl, so their preservation relies on a society that recognizes their irreplaceability and value. For two main reasons, however, the threat of VR wilderness replacing real wilderness is not likely enough to warrant such vehement pushback against the existence and progress of VR wilderness.

First, there is enough of a difference between VR and real wilderness that the substitution of VR wilderness experiences for real wilderness experiences would not be accepted by society. This argument is

not based on the technological limitations of today's VR, as we will certainly see the technology improve – perhaps even to the perfect, indistinguishable wilderness experience machine that Keeling hypothesizes (2024). Keeling's explanation of a person feeling "short-changed" by such a machine used deceptively and in place of real wilderness rings true for many people. There is also merit to Kahn's idea of "environmental generational amnesia," which Keeling cites as a mechanism by which these attitudes toward VR wilderness could evolve (Keeling 2024). However, this phenomenon makes more sense for the original context of wilderness degrading in quality and availability than for its complete replacement with VR technology. Although people may set a baseline for what they understand and expect wilderness to be based on their experiences and the environment, I do not believe that expectations of or desires for real versus VR wilderness are set in the same way. In fact, I would contend that people's objections to VR wilderness are a widespread instinct based more on innate human desire for "real" over "fake" than in education or lived experiences. No amount of generational amnesia is or will ever be likely to change the fact that most people will see the difference between real wilderness and VR wilderness as significant.

It is unlikely that VR wilderness will ever be seen as a perfectly suitable replacement for real wilderness, but even if they were to be seen as equivalent, the existence and acceptance of VR wilderness would not necessarily

justify the elimination of wilderness areas. As Keeling argues, the value of wilderness extends beyond the subjective human experience of it, which is the only aspect that VR wilderness could seek to replace. He references Elliott's argument that some part of the value comes from its "non-human genesis" (Keeling 2024, p. 3). I would go even further and say that wilderness has a long list of values beyond our subjective enjoyment of it. These include, for example, habitat preservation, biodiversity and existence values, and air, water, and soil quality. You cannot simulate clean air, endangered species cannot live on a computer, and you cannot encode the true value of wilderness into a VR experience, no matter how compelling. This is more than reason enough to preserve wilderness, even if people feel that VR wilderness might replicate the human experience and enjoyment of natural spaces. If we want to protect wilderness and natural spaces long into the future, we need to ensure that enough people recognize these values. VR wilderness has the potential to be a powerful means of educating and inspiring future generations to ensure these values and our wilderness spaces are not lost.


## **Accessibility to Wilderness Experiences**

One of the values of VR wilderness – arguably one of its most important values – is this technology's ability to democratize access to remote and otherwise inaccessible wilderness. This is especially important as access to natural and wilderness spaces has become even more restrictive. Access to remote wilderness spaces has never been easy or equal for the

masses; historically, national parks have been used to bridge the gap between wilderness and the American public.

It is well-known that visitation to national parks in the United States continues to increase (Flowers 2016; US National Park Service 2024). Although this visitation is incredibly important, it comes with some problems, chief among them overcrowding in parks (US Department of the Interior 2022). During peak times in Yosemite and the Grand Canyon, visitors can expect to wait upward of two hours to even enter the park (Larson 2023; Spencer 2023; US National Park Service 2024). To combat the crowds, many national parks, including Acadia, Arches, Rocky Mountain, Yosemite, and Zion, are now requiring reservations to access either some or all parts of the park (Baran 2023; Fox 2023). Many worry about the effects of such systems, with Rice and others (2022) conducting an exploratory study that found these reservation systems often exclude low-income and possibly nonwhite populations at higher rates than campsites without reservation systems. For some populations, it is certainly possible to jump through the hoops necessary to visit these places or to visit other natural places that are less crowded, but one of the primary purposes of the national parks is to be accessible to the masses. As they become less and less accessible, we must think about alternatives that can be a low barrier-to-entry option. By allowing people who do not have the physical, financial, or temporal ability to access these spaces, VR can be one of our greatest tools for showing the beauty and intrinsic value of wilderness. Therefore, far from providing

an alternative that will stop people from recognizing the need for real wilderness, I believe that VR wilderness has the potential to increase the number of people who see the value of wilderness and its continued existence.

Change has never been comfortable, and it is important to recognize that VR may change how many people choose to engage with the natural world. However, it is also important to recognize that VR does not and cannot act as a replacement for real wilderness. Instead, the existence of VR wilderness both necessitates and strengthens the existence of real wilderness. Accessibility has always been a fundamental aspect of my argument for the recognition of VR wilderness as a valid way of engaging in wilderness experiences and, by extension, as a valid way of learning to care for wilderness spaces. Martin Edström, a National Geographic Explorer and photojournalist who seeks to encourage preservation by connecting his audience to nature, summed up one of the major benefits of VR quite nicely: "If you want someone to care for something, you first have to make them feel it," he says. "That's why working with these immersive techniques is so powerful have this new tool at my disposal to bring people into the story" (Langenheim 2021). For some, VR wilderness will never be acceptable. For others, however, this technology provides an important access point to an otherwise inaccessible place that allows for more people to experience and, by extension, care for the grandeur and intrinsic value associated with our world's wildernesses. 

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# Benefits and Trade-Offs of Environmental DNA (eDNA) in Wilderness Character Monitoring

BY JESSE ENGBRETSON and COURTNEY E. LARSON

The Wilderness Act of 1964 states that federally designated wilderness areas in the United States are to be “protected and managed so as to preserve its natural conditions.” Despite longstanding and important debates about the slippery – and some would argue, unnuanced (Cole and Yung 2012) – implications of “natural,” the federal land management agencies in the US responsible for the stewardship of the National Wilderness Preservation System are mandated to preserve it. An essential aspect of stewarding wilderness is monitoring, as it provides a foundational element of empirically informed management decisions. Keeping It Wild 2, the seminal interagency guide for developing wilderness character monitoring protocols, defines the natural quality of wilderness character as “ecological systems [being] substantially free from the effects of modern civilization” (Landres et al. 2015, p. 11) and suggests several indicators for which managers and on-the-ground personnel identify measures that are unique to – and representative of – the wildernesses they steward. It can be difficult to monitor the natural quality of wilderness character given the remote nature of wilderness areas coupled with the high sensitivity of sampling needed to help preserve it. As such, it is essential for land management agencies to use the best available scientific information



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**“In a wilderness context, it is essential to note that eDNA monitoring is noninvasive, nondestructive, does not constitute a trammeling action, and no permanent or semipermanent installations are needed for data collection.”**

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in developing and improving measures of the natural quality of wilderness character, which could be achieved by adopting novel biophysical monitoring technologies, even if there are some trade-offs associated with new approaches.

### **eDNA in a Wilderness Context**

Genetic material is constantly being shed by all living organisms in an environment. During the past decades, researchers have begun to collect samples of – and analyze – this dizzying array and abundance of environmental material (Kelly et al. 2023). This environmental DNA (eDNA) can be collected, filtered, and isolated to potentially represent all species present in that environment, and analyzed to determine specific species or taxonomic group presence or abundance. For example, a land manager can determine the presence of difficult-to-find invasive species or endangered species when populations are too small to detect using conventional methods such as trapping or visual surveys (Coble et al. 2019). Importantly for resource-strapped land managers, eDNA monitoring is relatively inexpensive, efficient, and reliable (and becoming all the more so as technology advances) (Kelly

et al. 2014). DNA is isolated from an environmental sample (e.g., filtered water or air), and there are several ways of analyzing this DNA. Methods of analyzing eDNA currently include single-species assays using PCR (e.g., quantitative or qPCR) to determine the presence or abundance of a particular species of interest (Beng and Corlett 2020). A slightly different approach, multispecies amplicon sequencing (e.g., metabarcoding), allows determining what species' DNA are present, making it possible to assess biodiversity (Deiner et al. 2017). Such an approach may lead to more comprehensive, representative, and efficiently collected data than traditional biological monitoring. Technical processes and considerations for various contexts are discussed extensively in other publications (e.g., Morissette et al. 2021).

In a wilderness context, it is essential to note that eDNA monitoring is noninvasive, nondestructive, does not constitute a trammeling action, and no permanent or semipermanent installations are needed for data collection. Managers simply need reliable technicians, rangers, volunteers, or other personnel to extract small samples (e.g., from water, soil, or air filters if there are existing air monitoring installations) from wildernesses. Several

methods have been developed and validated to collect samples from remote areas using minimal supplies in easy-to-carry packaging. For example, Carim et al. (2016) uses a lithium battery powered peristaltic pump to filter on site in streams and preserves filters in desiccant. Portable backpack eDNA samplers are also available and include self-desiccating filters (Thomas et al., 2018). Working in partnership with universities (e.g., CAL eDNA), federal agencies (e.g., the Environmental Protection Agency), federal research stations (e.g., National Genomics Center for Wildlife and Fish Conservation), or private contractors to analyze the samples would ameliorate the need for training and access to a lab for analyses.

## **Challenges and Trade-Offs**

Despite the evident benefits of eDNA monitoring, there may be some trade-offs especially salient to the wilderness management community. For instance, there is an eDNA learning curve in implementation. Although eDNA has met the technological criteria as a well-developed technology, each management concern and wilderness area may require a different sampling and analysis strategy, which may need multiple sampling seasons to validate and improve as methods are rapidly evolving (Goldberg et al. 2016). For example, a 2017 implementation of a qPCR assay for invasive *Dreissena* mussels in Lake Superior did not detect any mussels (Treibitz et al., 2019), yet in a 2019 survey, with filtering more water and improving qPCR primers the eDNA methods were more sensitive than conventional methods (Larson et al., 2022). This


requires patience and trustworthy partnerships between eDNA scientists and wilderness managers (Stein et al. 2023). Also, the resource expenditures may still be high based on the research context, despite their potential reduction long term (Fu et al. 2019). There are also concerns with resulting datasets and their interpretation that require guidance and collaboration with eDNA expert partners. Further, it is important to note that differences in both sample collection and laboratory analysis protocols can lead to different results, which further emphasizes the need to understand the tool, or have agencies work closely with an eDNA expert, when interpreting results. Lastly, while eDNA can convey the presence of an organism, scientists are unable to ascertain salient information about the health of a population, such as the number of organisms present, their reproductive success, or their lifespan and quality of life. Given these considerations, eDNA may not be the right tool for every wilderness area, but in some, such critical monitoring datasets could meaningfully inform the stewardship of wilderness.

These tradeoffs have been widely recognized in the literature (Burian et al., 2021; Darling et al. 2021); however, there are additional considerations relevant to application of eDNA methods in wilderness monitoring settings specifically which have not yet been fully appreciated. Taking a sample from the field and sending it to a lab abstracts away the materiality of wilderness. As such, what was once an in-place and purposeful observation of the more-than-human world becomes an S-shaped curve on a graph through a computer screen when DNA is detected.

Contrasting this, conventional taxonomic and morphological monitoring approaches rely on biological technicians spending a significant amount of time in the field and expertise in identification (Ficetola, Thuiller, and Miaud 2007). Although many locations within individual wildernesses will still likely require multiday hikes to collect eDNA samples, these technicians may not have the same opportunities as those in the past to develop taxonomic identification and observation skills because of the shift to eDNA sampling. Additionally, because of potentially less time in the field, technicians may not develop as deep of a sense of place or have crucial time for personal reflection, which may play a significant role in developing as future scientists and managers.

## **Future Potential for Monitoring Wilderness Character**

Although these fears may be realized, eDNA monitoring in wilderness may also impact technicians in novel and powerful ways. For instance, technicians may develop a more spatially extensive sense of place, if, for instance, they are allowed to collect more data across multiple wildernesses within a season. Or, technicians may be profoundly affected by seeing the findings of a computer program's examination of hundreds of thousands of chemical bases of DNA and understand what our human senses are inherently unable to experience: that the signs of life are in nearly every material thing on the planet and that metabarcoding a small sample collected from a wilderness area can vividly

convey that complexity in a comprehensible way. Additionally, a diversity of field sampling protocols including eDNA may make field work more equitable to a variety of physical abilities, creating a more diverse workforce to better steward wilderness areas. Further, in many remote wilderness areas, scientists and managers do not know what species are present because these places are too difficult to access with traditional equipment. As such, an eDNA sample might be the only information that can be easily obtained. In such a situation, data from such a sample could potentially show managers all the species present in an area, not just one species of interest at a particular time. As new management challenges arise, this sample can be archived for analysis of additional species in the future. It can also inform managers where the effort for more intensive data collection and field work will be useful because an organism is likely present. Thus, despite the potential trade-offs, the use of eDNA monitoring in wilderness may yield myriad benefits and help us better understand the state of the natural quality of wilderness character in individual wildernesses as well as help managers make empirically informed decisions based on the best available scientific information available (Darling 2019). Such science-based management is essential for wilderness stewardship in the 21st century. 

**NOTE:** The views expressed in this article are those of the author(s) and do not necessarily represent the views or policies of the United States Environmental Protection Agency

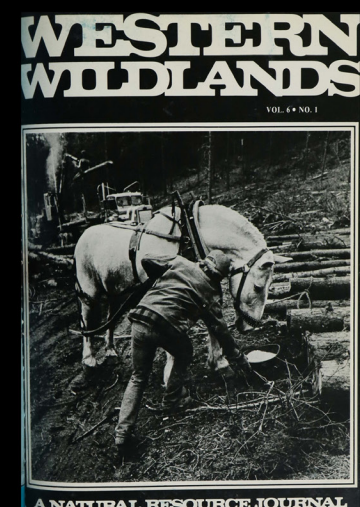
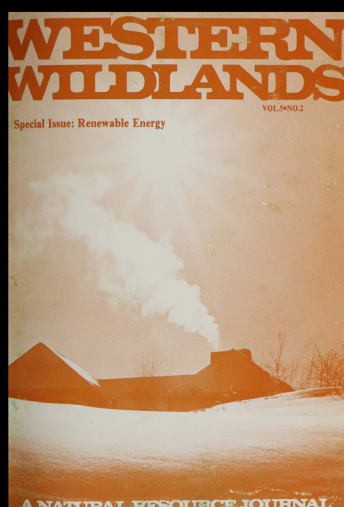
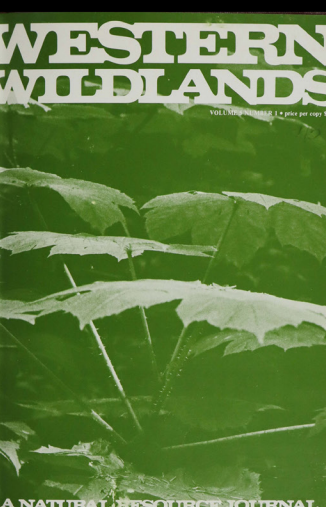
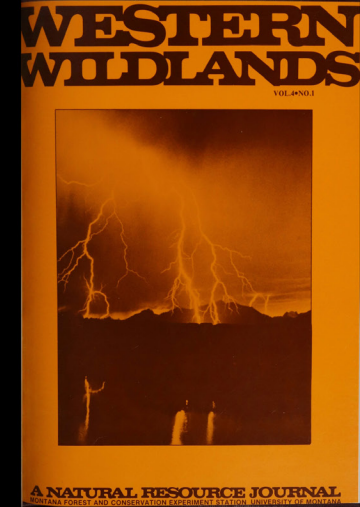
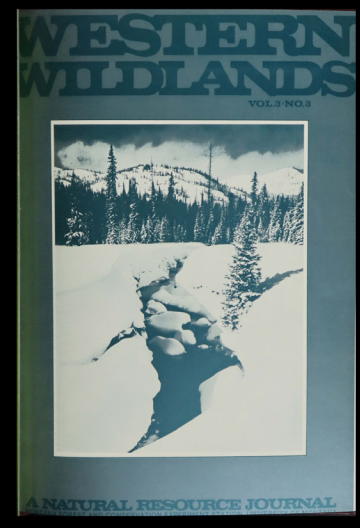
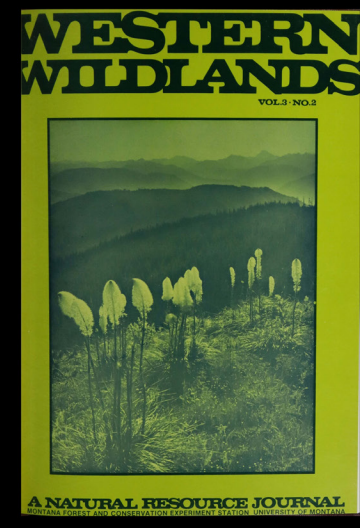
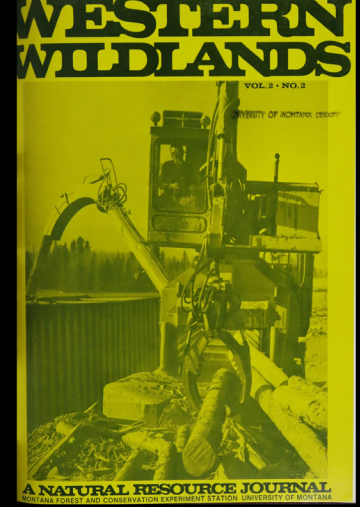
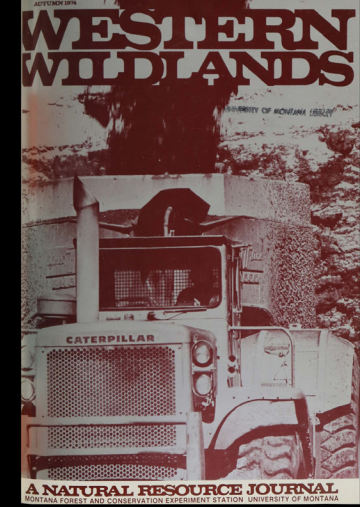
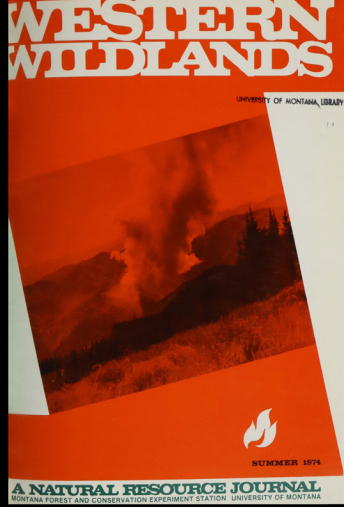
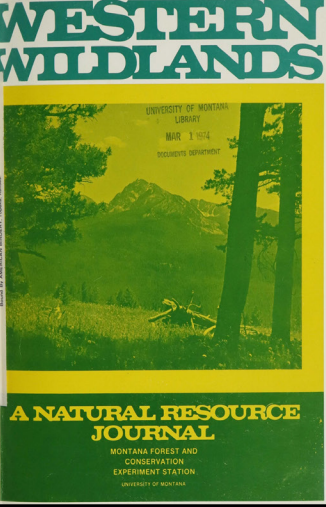
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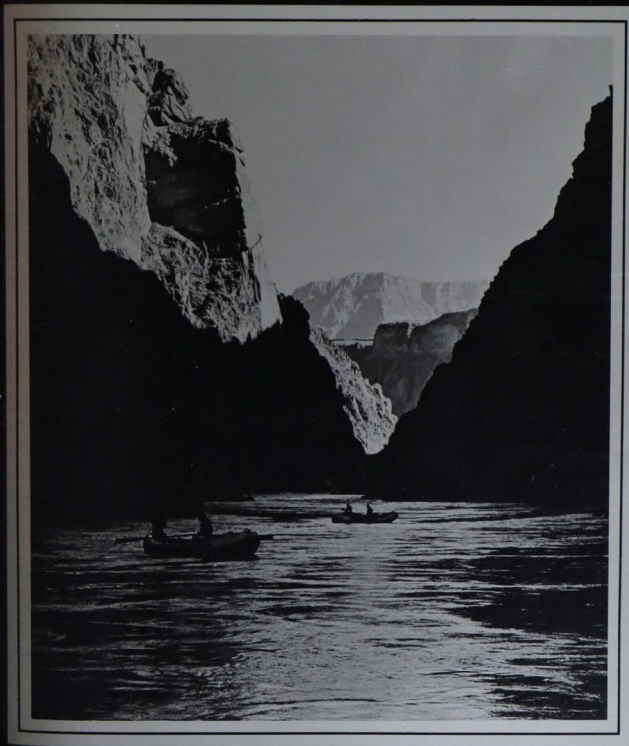
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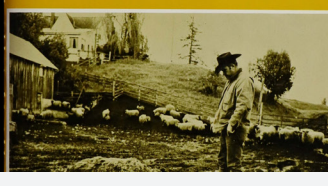
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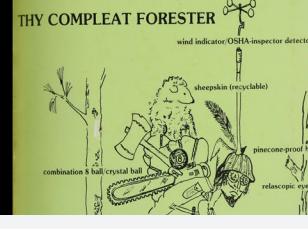
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THY COMPLETE FORESTER

wind indicator, OS&A-inspector detector

sheepskin (recycle table)

pinecone-prow

combination & ball crystal ball

relaxscopic eye

waffle-soled shoes for collecting soil samples

Photo credit: Selections from the Western Wildlands Online Archive. Courtesy of Maureen and Mike Mansfield Library, University of Montana.

# Introducing the Western Wildlands Digital Archive

**BY WILL RICE**

On a likely gray day in Washington, D.C., during the winter of 1974, a magazine-sized glossy publication found itself bouncing out of an incandescent mailroom on Capitol Hill, through a series of mailcarts, and eventually to the desk of US Senator Lee Metcalf. The nation was in the grips of the Watergate scandal and an oil shortage, but on one morning or late one evening that January, or perhaps February, the senator sat down to read the inaugural copy of *Western Wildlands*. In January 1974, the University of Montana's Forest and Conservation Experiment Station minted its first issue of *Western Wildlands* – a publication remarkably like today's *International Journal of Wilderness* – to “provide a service to the scientist, the resource manager, and the public by helping to bridge the communications gap.” We know Senator Metcalf read his copy that winter because he responded with a letter to the editor in the publication's second issue in the spring of 1974 – commending the university for standing up the publication and the editors for striking a good balance between “practical” and “popular” articles.



**William L. Rice**

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**“Many of the contributions related to wilderness recreation during Western Wildlands’ three-decade course focused on the conundrum of restricting and rationing wilderness visitation. This decades-long dialogue is a fascinating read for anyone who wrestles with the trade-offs of wilderness management.”**

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From 1974 to 1992, a scrappy publication compiled quarterly in the Forestry Building at the University of Montana served as a key thoroughfare connecting wilderness research with management. Early wilderness recreation researchers published foundational science in a magazine format, written in an approachable style that sought to make implications clear to managers on the ground. Throughout the 1970s and '80s, Dorothy Anderson, Bob Lucas, Steve McCool, Richard Schreyer, George Stankey, and other leaders in the field published in the pages of *Western Wildlands* what now provides the bedrock for applied wilderness research. In 1974, Bob Lucas provided a summation of wilderness research findings to date, stemming from the Rocky Mountains. In 1985, Joyce Kelly published a strong piece on “the need for a better understanding of, appreciation for and acceptance of” women in the wilderness profession and recognition women’s contributions in wilderness management. Many of the contributions related to wilderness recreation during *Western Wildlands*’ three-decade course focused on the conundrum of restricting and rationing wil-

derness visitation. This decades-long dialogue is a fascinating read for anyone who wrestles with the trade-offs of wilderness management – especially the trade-offs between solitude and confinement. The relevance of these articles today is remarkable. Reading George Stankey and Steve McCool’s 1991 article “Recreation Use Limits: The Wildland Manager’s Continuing Dilemma” in 2024 beckons the modern reader to reflect on how “the more things change, the more things stay the same.” In their article, Stankey and McCool provide a series of findings important for managers to consider prior to limiting use, including, among others, “recreation use level is often not the principal relevant variable that determines environmental impact” and “use limits represent value judgments about the acceptability of impacts.” In the same issue, Mary Beth Hennessy similarly wrestles with the struggle of balancing confinement in wilderness. In the publication’s final year of circulation, David Cole and Edwin Krumpe put forward “Seven Principles of Low-Impact Wilderness Recreation.” Written during the development of Leave No Trace outdoor eth-



**Figure 1** - Collage of content from the Western Wildlands Online Archive. Courtesy of Maureen and Mike Mansfield Library, University of Montana.

ics, this article serves ostensibly as a peek into the developers' thinking during these early days.

For the previous three decades, this foundational work has been sequestered to dim library stacks at a few lucky western and midwestern university libraries in the US. Very few articles were available online. Those that were available were scattered across ResearchGate and various US Forest Service archives. The vast majority of this work had never been digitized, nor made available for the global wildland research and management community. Thus, in 2023, recognizing the need for unlocking this work, I partnered with Wendy Walker, professor and digital initiatives librarian, and Kelly Brown, digital collections and metadata specialist at the University of Montana's Maureen and Mike Mansfield Library, and the University of Montana's Forest and Conservation Experiment Station to digitize the Western Wildlands archive and make it globally available. The credit for making this dream a reality is truly owed to Wendy and Kelly, who did all the legwork in this venture. Today, readers can access the archive at <https://scholarworks.umt.edu/westernwildlands/>.

I've provided citations for a few of my favorites, below. Happy reading! 

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Mountain chamois in French Pyrenees. **Photo by** Sergio Cerrato-Italia from Pixabay.

# Increasing the Acreage of Strictly Protected Areas in France

BY COORDINATION LIBRE EVOLUTION



**Editor's note:** In France, a variety of strategies in favor of naturalness, free evolution (translation of the French term "libre évolution"), feral nature, rewilding, or non-intervention management (Locquet 2024; Génot and Schnitzler 2013) have emerged in the management of private and public lands in recent decades. This is mostly due to the initiatives of different NGOs and public institutions with little direct government regulatory intervention at the national level. As part of an ongoing series to showcase the diversity of initiatives that exist and/or are being created in France, IJW has obtained permission to publish an English translation of an op-ed signed by the leading members of the Coordination Libre Evolution (CLE) that was published in the French national newspaper *Le Monde* in December 2022. CLE is a coordinated network of organizations and stakeholders promoting the development of areas in free evolution in France. The organization was launched in 2021 just after the publication of its manifesto (CLE 2021) as an op-ed in *Le Monde*. According to CLE, "An area in free evolution is an area governed by natural processes. It is unmodified or only slightly modified and without intrusive or extractive human activity, settlements, infrastructure or visual disturbance" (CLE 2022; Wild Europe 2022). The 2022 op-ed showcases one of the multiple facets of the current development of natural/ wild/free evolution areas in France.

## An Urgent Need to Increase the Surface Area of Protected Areas

Faced with the sixth mass extinction and climate change, which took on unexpected proportions in France with this summer's wildfires (French wildfires of summer 2022), we urgently need to take action to adopt a strategy that can address the current challenges and improve nature protection in our territory. The French government has set a target of placing 10% of its territory under strong nature protection by 2030.

This French notion of strong nature protection does not correspond to the strict protection desired by the European Union (EU), which provides a much higher level of protection. The EU's Biodiversity Strategy for 2030 requires each Member State to place 10% of their territory under strict protection, which means no extractive activities (logging, grazing, hunting, fishing).

For a long time now, livestock grazing and timber harvesting have been allowed in the heart of French national parks, as well as in the majority of nature reserves, and hunting is permitted in nature reserves, integral biological reserves, and certain national parks (Figure 1).



**Figure 1** - Flock of sheep and its shepherd in Vanoise National Park. Ibex73, CC BY 4.0 <https://creativecommons.org/licenses/by/4.0>, via Wikimedia Commons.

## 1.54% of French Territory Is under “Strong” Protection

Yet strong protection should imply protected areas that are truly dedicated solely to nature and its evolving ecological processes, and not activities such as livestock grazing, timber harvesting, and hunting. In France today, less than 1.54% of the metropolitan land area benefits from “strong” protection. Today, the free expression of natural processes is ensured on only 0.6% of France’s terrestrial territory.

Less than strong protection leads to negative effects. For example, livestock grazing in national parks results in the decline of numerous plant species, soil erosion, eutrophication of high-altitude lakes and meadows, destruction of wetlands, competition between livestock and wild ungulates (ibex, chamois,

deer, mouflons), and the disappearance of insects due to the use of environmentally toxic and persistent chemicals in the treatment of livestock against parasites. Timber harvesting automatically leads to declines in species that only live in forests and depend on dead wood and old trees. Hunting makes wildlife watching more difficult and artificially favors hunted species, such as wild boars, which threaten ground-nesting avifauna, or deer, which have non-negligible impacts on the vegetation in poor soils (Figure 2). Finally, hunting can lead to the illegal shooting of large predators (bears, wolves, lynxes), which are perceived as undesirable competitors.

## Real Wildlife Sanctuaries

In the face of climate change and extinction of species, it is urgent to increase the surface area of protected areas, but above all, to extend the practice of free evolution – no logging, pastoralism, hunting, or fishing – inside these areas. These protected areas in free evolution ensure the effective preservation of the species that live here and promote the development of spontaneous ecological processes over the long term (primary production, herbivory, predation, necrophagy, decomposition of organic matter, disturbance, etc.), which tends to make ecosystems more complex and resilient.

They also enhance carbon sequestration in woody vegetation and undisturbed soils. Finally, they truly fulfill their role as wildlife sanctuaries if they host ungulates and their predators (bear, wolf, lynx), or encourage the return of these species due to the absence of conflicts with human land use, thus creating

robust food webs capable of reacting positively to global changes and ensuring effective predation and dispersal of large herbivores.



**Figure 2** -In Calanques National Park, hunting is allowed in 49% of the park core area. See <https://www.calanques-parcnational.fr/fr/chasser-dans-les-calanques-de-marseille-cassis-la-ciotat>. RocketMang74, CC BY-SA 4.0 <https://creativecommons.org/licenses/by-sa/4.0>, via Wikimedia Commons.

## A Socioeconomic Asset


Protected areas in free evolution have many benefits. For example, it is time to demonstrate the ecological role of the wolf in a natural ecosystem; the wolf is capable of limiting the numbers of wild ungulates through predation and dispersal of animals that are always on the alert, thus forcing these animals to exert a more diffuse impact on vegetation – the so-called “ecology of fear.” Protected areas in free evolution would allow measurement of the direct and indirect benefits of the return of large predators, particularly in terms of regulating ungulate and mesopredator populations and the natural regeneration of forests.

Protected areas in free evolution are also an asset in socioeconomic terms. They are low maintenance. They are attractive for nature tourism. They have educational and

scientific interests as witnesses to global change, providing valuable information for sustainable natural resource management in neighboring areas. For example, less than 10% of forest fires are of natural origin. Fire risks are more moderate in natural forests, especially in large ones as these favor evapotranspiration and the aerosols that initiate rain. Except at high altitudes, natural forests are mostly made up of hardwoods, which burn much less easily than softwoods. Deadwood, which is a characteristic of forests in free evolution, abounds in moisture. Large trees contribute to heat dissipation; the undergrowth and different levels of vegetation protect the ground from heat, and deep soils retain rainwater. Thus, these forests can demonstrate the important ecological function of natural ecosystems in a time of climate change.

## Questioning Our Domination of Nature

On an ethical level, free evolution calls into question our attitude of domination over nature. According to philosopher Virginie Maris (2018), nature can be seen as an “exteriority” enabling us to “limit our empire.” For the philosopher Baptiste Morizot: “Free evolution is not an enclosure, but the preservation of evolutionary potential, resilience and spontaneous ecological dynamics necessary in and around themselves.”

This increase in the surface area of strictly protected areas in France can foster essential and rich dialogues between citizens, NGOs, socio-professionals, and institutions as well as shared reflections, to build the very future of the territories concerned by these areas. 

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**“In the face of climate change and extinction of species, it is urgent to increase the surface area of protected areas, but above all, to extend the practice of free evolution . . . protected areas in free evolution ensure the effective preservation of the species that live here, and promote the development of spontaneous ecological processes over the long term.”**

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**COORDINATION LIBRE EVOLUTION** is a coordinated network of organizations and stakeholders promoting the development of areas in free evolution in France. Their website is <https://www.coordination-libre-evolution.fr/>.







Ibex in the French Alps. Photo by Adrien Stachowiak on Unsplash.

# Wilderness Babel: On the Impossibility of Translating “Wilderness” into French

BY ALEXANDRA LOCQUET

Wilderness Babel is a project created by Marcus Hall, Wilko Graf Von Hardenberg, Tina Tin, and Robert Dvorak from the original online exhibit at the Environment and Society Portal of the Rachel Carson Center for Environment and Society. It has been developed as an ongoing IJW series that discusses the terminology chosen to express wilderness as a concept in other languages or the nuances of this word in different English-speaking contexts. It discusses the adoption of the term “wilderness” in other cultural contexts – as well as other wilderness terms, from “outback” to “jungle,” and “bush” to “country.” And it explores how concepts of wilderness have found expression in visual representation in media of different sorts as well as in nonverbal communication.

The concept of wilderness has its origins in the English-speaking world and is associated with American culture (Arnould and Glon 2006). The notion of wilderness, although multidimensional and complex (Ceașu et al. 2015), commonly refers to wild spaces where human influence is virtually nonexistent. Defining wilderness remains a complicated task because the notion is highly subjective and depends on individuals' and communities' perceptions of the living world and their perceptions of the relationships between the human and the other-than-human spheres (Kirchhoff and Vicenzotti 2014). In addition, the notion of wilderness is socially constructed, charged with symbolism (Meyer 2013), and highly influenced by the socio-cultural context. It was developed within first mystical and then philosophical contexts and the global environmental



Alexandra Locquet

movement has used it to characterize and designate protected areas. Wilderness has thus become a central concept in nature conservation since the 19th century.

## The French wilderness

The diversity of imaginaries associated with wilderness cannot be reduced to a common definition (Carver, Evans, and Fritz 2002; Jones-Walters and Čivić 2010). The notion of wilderness depends on different mental universes and has no direct equivalent in most languages outside the English-speaking world (Locquet 2021). It is difficult to transpose into other languages because of the complex and multiple dimensions that are involved (Ceaușu et al. 2015).

In French, "naturalité" has been used as a translation of "wilderness" (Lecomte 1999; Val-lauri et al. 2010; Guetté et al. 2018). "Naturalité" refers to a natural or spontaneous state in opposition to what is anthropogenic; in other words, a functional, undisturbed ecosystem. It can be translated into English as "naturalness," which characterizes a state of nature to which a certain quality (ecological or functional) is attributed (Woods 2017). However, according to some authors, naturalness is not an equivalent of wilderness; like wildness – a vital quality that is highly subjective and refers more to the sensation of nature than to a space that meets strict ecological criteria – naturalness can be considered a component of wilderness (Landres et al. 2000; Oelschlaeger 1991; Ridder 2007).

Other French expressions have been used as translations of "wilderness." However, they are mainly translations of the dimensions of the



**Figure 1** - Camargue Regional Nature Park. Photo by Ilona Belloto on Unsplash.

"wild" and the absence of human interference and do not provide a satisfactory match with the notion of wilderness (Locquet and Héritier 2020). While "wilderness" is a noun that refers to something – an idea, a space – its French translations make use of adjectives as descriptors of nature. The most commonly used French translations of "wilderness" are "nature sauvage" (wild nature) and "nature vierge" (pristine, virgin nature) (Barthod 2010). In the official French translation of the European Parliament Resolution on Wilderness Areas in Europe (2009), However, insisting on the pristine nature of wilderness areas, particularly with a view to their application in the European context, is paradoxical. The long-standing role of human activity in modifying ecosystems and landscapes is widely recognized. This is why some authors prefer to use the term "féral" (feral), which is generally associated with animals or plants that have escaped domestication and returned to live in the wild. This concept was revived by Schnitzler and Génot (2012) as feral nature, to describe

areas marked by the return of spontaneous processes following rural abandonment or the abandonment of human activities.

## **Initiatives Shaped by Semantics and Socio-ecosystems**

The difficulties involved in translating the wilderness concept into the European context, and in this case the French one, have contributed to the emergence of a variety of strategies in favor of wilderness in France. These approaches are based on the logic of recovering the wild characteristics of environments, with emphasis on ecosystem functionalities and the return of all the natural and spontaneous dynamics that are integral components of them. Strategies deployed in France vary from interventionist practices involving the introduction of animals (especially large herbivores), sometimes referred to as rewilding, to non-intervention management in which natural processes are free of any human intervention. These approaches are largely dependent on the socio-ecosystems in which they are implemented. For example, the concept of “libre évolution” (free evolution) emerged in the sphere of nature management in the 1990s and was reinforced in the 2000s due to the ecological restoration of forests and interest in the role of deadwood (Barraud 2021). Free evolution refers to the desire to let natural environments evolve spontaneously without human intervention, to “let nature take its course” (Génot 2020). Free evolution appears to be a criticism of interventionist management of nature that is based on the use of technical measures (Génot 2020; Deuffic, Brahic, and Dusacre 2022).

Like wilderness, the notion of free evolution is charged with ethical, political, and managerial dimensions. It invites us to rethink the value systems we attach to nature and the possibility of giving nature greater autonomy (Maris and Beau 2022). Free evolution also encourages us to question the relationship that our societies have with other-than-humans, at a time when the current environmental crisis is challenging our ability to coexist with all living things. In this way, “free evolution is not a candid letting go: it is a diplomatic practice” (Morizot 2020).



**Figure 2** -National Natural Reserve of la Massane, French Pyrenees. Photo by A. Locquet.

about wilderness in France, a working group specifically dedicated to this subject was set up in 2012 within the French Committee of the IUCN, under the guidance of the World Commission on Protected Areas. This group brings together experts with a view to developing “both the conservation approaches to ‘wild’ (relict) nature and the dimension of rewilding areas” (Barthod and Lefebvre 2022).

Its work helps highlight the importance and implementation of free evolution in France,

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**“Free evolution also encourages us to question the relationship that our societies have with other-than-humans, at a time when the current environmental crisis is challenging our ability to coexist with all living things.”**

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drawing attention to the numerous initiatives and discussions that have flourished across various nature conservation networks. The creation of this group was also a response to the need to identify wilderness in the French context, highlighting “the exception represented by what is implied (at least in Western Europe) behind wilderness” (Barthod and Lefebvre 2022). According to the group, acting in favor of wilderness in France necessarily implies the consideration of ecological, societal, and economic factors because of the country’s long history of human modification

of the natural environment. As a result, the notion of wilderness in France does not seem to be in line with the American imaginary of great wild spaces but is rather more in line with rural or former rural spaces that have been profoundly modified by human activity. French wilderness is thus conceived and constructed in direct proximity and close interactions with society.



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Site of the Conservatoire du littoral dunes and forest of Porges, France, 2024. **Photo by** Thomas from Pixabay.

# Wilderness Babel:

## When Ecological Meaning Fails to Express the Cultural Complexity of European Wilderness

BY ALEXANDRA LOCQUET and STÉPHANE HÉRITIER

Wilderness Babel is a project created by Marcus Hall, Wilko Graf Von Hardenberg, Tina Tin, and Robert Dvorak from the original online exhibit at the Environment and Society Portal of the Rachel Carson Center for Environment and Society. It has been developed as an ongoing IJW series that discusses the terminology chosen to express wilderness as a concept in other languages or the nuances of this word in different English-speaking contexts. It discusses the adoption of the term “wilderness” in other cultural contexts – as well as other wilderness terms, from “outback” to “jungle,” and “bush” to “country.” And it explores how concepts of wilderness have found expression in visual representation in media of different sorts as well as in nonverbal communication.

### A European Wilderness?

The wilderness concept has developed in the English-speaking world (Nash 2014). It has played a decisive role in American culture (Arnould and Glon 2006), contributing to a vast field of discussion and debate in the field of conservation (Callicott and Nelson 1998; Nelson and Callicott 2008). Indeed, wilderness is a highly ambivalent term, rather like a medal whose front has a cultural dimension (e.g., religion, ethical philosophy, and nature conservation) and whose back has an ecological and legal dimension (e.g., ecological dynamics, biodiversity, and the Wilderness Act of 1964 in the US). The different conceptualizations agree that the term “wilderness” commonly refers to wild areas where the influence or evidence of human presence is very slight, if not nonexistent. Intellectual movements and the creation of the first national parks helped spread the concept of wilderness around the world. However, this representa-



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Stéphane Héritier

tion of nature is particularly problematic in countries where it has been used to support social exclusion and territorial dispossession of pre-European peoples during colonial times (Cronon 1996; Spence 2000).

In the European context, apart from the British Isles, the wilderness concept was not used to structure the actions of public stakeholders or national organizations until the 1990s. European languages reflect cultural sensitivities rooted in a history of relationships between human societies, their environment, and other species that inhabit it. Europe is the bearer of a range of imaginations and relationships to nature based on a triple heritage: first, the pre-Christian heritage that structured the relationships to the living space of the Germans, Scandinavians, Latins, Celts and Gauls, etc.; second, the agrarian heritage that shaped the relationship between nature and society; and third, the religious heritage, mainly Christian, which translates into distinct sensitivities in terms of relationships with the environment and with nonhuman beings.



**Figure 1** - Carrifran Wildwood (Scotland). Photo by A. Locquet, 2018.

At the European Union level, Natura 2000 has enabled the creation of a European nature protection network. It was set up within the framework of the Birds (1979) and Habitats (1992) Directives and aims to ensure the conservation of threatened species and habitats (Evans 2012). However, the concept of wilderness – or references to it – appeared later as a public policy tool. It emerged as a unifying concept for initiatives between European conservation practitioners in the 2000s (Bastmeijer 2016). It was imported into the debate under the influence of several organizations, such as Wild Europe, which is an NGO created in 2005. Comprising several nongovernmental and government-funded organizations (Pan Parks, UNESCO, Europarc Federation, World Wildlife Fund – WWF, IUCN), Wild Europe promotes and encourages strategies for the protection and restoration of wilderness areas in Europe (see Martin et al. 2002; Wild Europe 2013). And along with about a hundred organizations with varied interests (wildlife protection, environmental protection, tourism, government), it actively participated in promoting the concept to the European Parliament in 2008, culminating in the signing of the Wilderness in Europe Resolution (Resolution 2008/2210(INI)) voted on February 3, 2009 (Kun 2013). This resolution encourages member states to take action to identify and protect wilderness areas in their territories, using the existing protected areas within the European Natura 2000 network.

However, in the context of a European Union characterized by great cultural and ecological diversity, a question arises: Is there a common understanding of what European wilderness represents?

## **Semantic Limits when Translating a Polysemous Idea**

The concept of wilderness is deeply rooted in cultural history, and a variety of connotations coexist even within the English-speaking world (e.g., biblical desert, transcendentalist conception, ecological conception). This highlights the difficulty of transposing and translating the term into other sociocultural contexts, especially in Europe where relationships with nature and the wild world are different within and between countries. With the exception of the Scandinavian languages, there are no exact translations of the word "wilderness" in most European languages (Washington 2007; Callicott 2008). The etymology of "wild-" comes from Teutonic and Nordic languages (Nash 2014). The German word *wildniss* is close to *wildness* and *wilder-ness* (Trommer 2021). Etymologically, *wildniss* is related to *wald* (forest) and *wüste* (desert, wasteland) In Dutch, wilderness is associated with *wildernis* (an area difficult to access) and *woestenij* (a wild area) (Stikvoort 2020). The "wild-" prefix is also found in the Swedish word *vildmark*, which designates an uncultivated, uninhabited wilderness (Elenius 2020). When the word is related to the forest environment, it refers to a virgin forest, a desolate and repulsive place. In Finnish, the word *erämaa*

designates areas that cannot be penetrated by foot in less than one or two days, and where natural resources are available (Myllyntaus 2001).



**Figure 2** -Highland Tilties (Scotland). Photo by A. Locquet, 2018.

In Latin languages, on the other hand, the translation of the term "wilderness" is trickier. For Barragan Paladines (2019), in Spanish, there is no common noun that can be used as an appropriate descriptor of wilderness; wilderness is described using only adjectives: *salvaje* (wild), *silvestre* (wild), *inhóspito* (inhospitable), *prístino* (pristine), *intocado* (untouched). The same applies to Italian, as Piccioni (2020) points out: "the best-known English-Italian dictionaries offer four possibilities: a) *deserto*, *landa* (desert), b) *solitudine* (solitude), c) *riserva naturale* (natural reserve), d) *zona naturale incontaminata* (*incolta* o *disabitata*) (natural uncontaminated area (unmanaged or uninhabited))." In French, *main*

syntagmas are based on the wild dimension and the absence of human interference. However, they do not satisfactorily express the cultural concept of wilderness (Locquet and Héritier 2020). Thus, the expressions nature sauvage or nature vierge (wild nature or virgin nature) are the most commonly used (Barthod 2010), while the term naturalité (as in the English term naturalness) is also used as a translation of wilderness by some authors (Lecomte 1999; Vallauri et al. 2010; Guetté et al. 2018).

The international lingua franca of conservation uses the term “wilderness”. Yet translating it to fit the European cultural imaginary remains a challenge. The list of words used by European Parliament translators to identify appropriate equivalents for the English word wilderness reveals the challenge (Table 1) (Locquet and Héritier 2020). The complexity shows the difficulty of sharing an unambiguous generic term. This situation partly explains why the ecological conception of wilderness, refocused on naturalness; that is, on ecological criteria, now serves as a common referent. But this common ecological-scientific referent creates dissonance when it comes to inscribing it in local territories. Indeed, solving the problem of translation in semantic space does not solve the problem of translation in political space. Most expressions refer to wild and nature (the terms “sauvage” and “nature” in French, for example) and/or emphasize the spatial dimension of wilderness (which is absent from the French terms). Some translations reduce wilderness to an intrinsic state of nature, whereas the very essence of this notion lies in the variety of its meanings.

European language	Term used in the official European Parliament translation	Meanings attached to the terms used in the official European Parliament translation					
		Space	wild, uncontrolled	Intact, virgin	No human being	Fauna	Nature
German	wildnis						
English	Wilderness						
Bulgarian	Дивата природа						
Croatian	NA (not available)						
Danish	Ubersørte naturområder						
Spanish	espacios naturales						
Estonian	põlisloodus						
Finnish	erämaat						
French	Zones de nature vierge						
Gaelic	NA						
Greek	Άγρια φύση						
Hungarian	Érintetlen természeti övezetek						
Italian	Aree naturali						
Latvian	Neskartās teritorijas						
Lithuanian	Laukinė gamta						
Maltese	In-natura selvaġġa						
Dutch	Wilde natuur						
Polish	Dzika przyroda						
Portuguese	Natureza selvagem						
Romanian	Zonele cu natură virgină						
Slovak	Divoká príroda						
Slovenian	Divjina						
Swedish	Vildmark						
Czech	Volná příroda						
<b>Total number of terms associated with each meaning</b>		<b>9</b>	<b>13</b>	<b>8</b>	<b>3</b>	<b>2</b>	<b>15</b>

**Table 1**-Meanings attached to terms used in translations of wilderness in the European Parliament (source: <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P6-TA-2009-0034+0+DOC+XML+V0//EN> (lexilogos.com) (Table also published in Locquet and Héritier 2020)).

Table 1 illustrates the difficulty in translating the concept of wilderness. In methodological terms, this table compiled data from the official February 2009 resolution translations (available on the Parliament's website; see URL in table source). The second column indicates the terms chosen by official interpreters to represent the notion of wilderness in different languages. For each language, we use the definition of the term chosen by interpreters to identify key notions that the interpreters had used to translate or transpose the word “wilderness.” The terms chosen by

official translators may have a broader cultural meaning than the strict translation but are not included in this table.

## **Wilderness in a Context of Human-Made Environments**

Nature and the environment have been both appropriated and culturalized in different ways. The United States passed a federal law in 1964 (Wilderness Act). Europe does not have a homogeneous legislative framework yet, although the European Union is working on it. It is well-known that human activities have long shaped European landscapes. Some of the landscapes that have been intensively modified by human activities are now being replaced by areas of agricultural abandonment, forest regrowth, and land abandonment. Thus, many European translations of “wilderness” refer to areas considered semi-natural or are characterized by a progressive degree of naturalness. For example, in Dutch, in a particularly artificialized country, “the term *wildernis* is therefore used for areas that are not visibly and recently touched by people. Thus, a meadow can be called *wildernis* if it is devoid of signs from human intervention, even though meadows are not ‘natural’ to the Dutch landscape and therefore show past human activity” (Stikvoort 2020). In French, the expression *nature férale* (feral nature) revives an old disused Latin word. Generally associated with animals or plants that have escaped domestication and returned to a wild state, it describes the return of spontaneous processes following rural abandonment or dereliction of human activities (Schnitzler and Génot 2012). In the UK, wild land or wild areas

are two major concepts (Fritz 2001; Boyle and Wheeler 2016). The UK acknowledges the history of human modification of environments, and they refer to moderate naturalness due to human activity (Fritz, Carver, and See 2000; Fritz 2001). In Scotland, in particular, wild lands are recognized as semi-natural spaces that are marked by human modification, but are difficult to access (McMorran, Price, and McVittie 2006).

Moreover, the duration, and above all the intensity, of human activity have modified the European environment. A consensus seems to lead to one key interpretation, that of the greater or lesser intensity of human modification. This concept translates into theorizing a continuum or gradient of wilderness (Carver 2014). It considers various degrees of naturalness, proposing a gradation ranging from wilderness (considered as an “ideal” state, untouched by human activities) to areas that are heavily impacted by human activity. The ways in which wilderness is understood are thus largely dependent on the socio-ecosystem, including wildlife mobilization



**Figure 3** -Wild Ennerdale (England). Photo by A. Locquet, 2018.


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**“The ways in which wilderness is understood are thus largely dependent on the socio-ecosystem, including wildlife mobilization (particularly for large herbivores, such as in rewilding strategies) to let ecosystems evolve freely (such as the concept of “libre évolution” or free evolution in France).”**

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(particularly for large herbivores, such as in rewilding strategies) to let ecosystems evolve freely (such as the concept of libre évolution or “free evolution” in France).

In the end, from an English-speaking perspective and due to a common language, the concept of wilderness refers to connotations that may be different but that are known to authors and a large part of the public. In the European context, linguistic variety also refers

to the diversity of ways for naming wild areas and talking about wild lands. The difficulties in translating “wilderness” into different European languages appear relatively rarely in English-language scientific literature. This provides an important insight into the understanding of initiatives in favor of wilderness and highlight the limits of the transposition of the concept due to the diversity of sociocultural contexts. 

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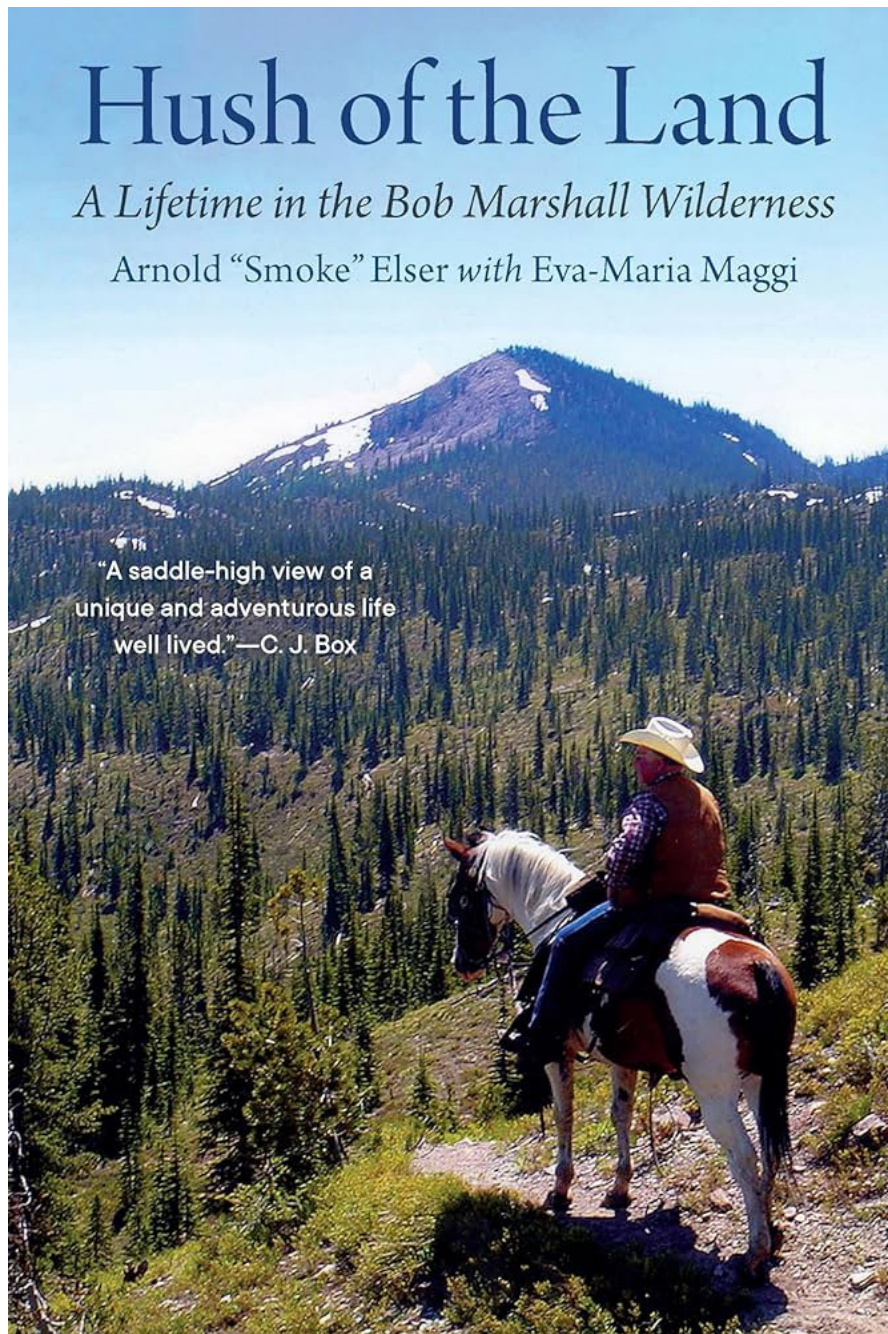


Haystack Mountain in the Bob Marshall Wilderness. **Photo by** Jim Murphy and courtesy of Wilderness Connect.

# Digital Reviews:

**Patrick Kelly, Media And Book Review Editor**

Hush of the Land: A Lifetime in the Bob Marshall Wilderness, by Arnold "Smoke" Elser and Eva-Maria Maggi. 2024. University of Nebraska Press.




These stories celebrate a land, the Bob Marshall Wilderness and the Bitterroot Mountains. These stories also celebrate a life, the career of a man who guided more than half a century of visitors to these remarkable places. More than history and more than biography, however, these stories are an invitation to join the celebration, to experience the place, to become a reflective and appreciative part of the story of these lands and the life they afford.

Hush of the Land records the stories of Arnold "Smoke" Elser. Working as outfitter to the Bob Marshall Wilderness for 57 years, Smoke made a career of sharing the experience and stories of the land. He served as a guide to thousands – hardy scout troops, big game hunters, and families from New York City who had never seen a sky full of stars. He led trips for a generation of business leaders and politicians, each leaving determined to protect and expand wilderness. He aided Indigenous tribal elders during a decade of trips to document and preserve their history on the land. And he shared the stories of the land, and his increasingly storied career on it, with each of them.

A reader with no knowledge of designated wilderness will gain an eyewitness account of what it is and what it took to preserve it. A reader with no knowledge of horses, mules, or pack trains, will gain a longing for the saddle. But even scholars and explorers of the Bob will learn something new and find it all charming.

The book is a result of a chance meeting. Scholar and equestrian Eva-Maria Maggi took one of Smoke's packing classes at the University of Montana. Like all his other students, she recognized the treasure of Smoke's stories. With no larger project in mind, she asked to meet regularly to record any story Smoke felt like telling. Eva-Maria collected hundreds of hours of trail and campfire stories. While the recordings can be safe in an archive, the present book collects the best in a package designed to take on the trail.

The stories are simple, but always worthwhile. Some readers might wish for either more advocacy or more poetry, more fire or more flowers. But Smoke's stories are steady, just like the pack trains he led for so many years. They don't push. They don't preach. Instead, they point steadily away from themselves, back to the land. They invite you to look over the landscape and simply enjoy the view. This invitation is the value. As Smoke puts it: "At night after dinner around the campfire I'd tell them the stories of the land that I had heard and some that happened to me. Stories bring us closer, connect us deeper to the world around us. My stories travel home with them, and my love for the Bob Marshall Wilderness becomes their love for the land" (p. 3) 

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