

Commentary

# From antagonistic conservation to biodiversity democracy in rewilding

Taylor Dotson<sup>1,2,\*</sup> and Henrique M. Pereira<sup>2,3,4</sup>

<sup>1</sup>Department of Communication, Liberal Arts and Social Science, New Mexico Institute of Mining and Technology, Leroy Place, Socorro, NM 87801, USA

<sup>2</sup>German Centre for Integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig, Deutscher Platz 5e, 04103 Leipzig, Germany

<sup>3</sup>Institute of Biology, Martin Luther University Halle Wittenberg, Am Kirchtor 1, 06108 Halle (Saale), Germany

<sup>4</sup>CIBIO/InBIO, Centro de Investigação em Biodiversidade e Recursos Genéticos, Universidade do Porto, Campus Agrário de Vairão, R. Padre Armando Quintas, 4485-661 Vairão, Portugal

\*Correspondence: [taylor.dotson@nmt.edu](mailto:taylor.dotson@nmt.edu)

<https://doi.org/10.1016/j.oneear.2022.04.014>

The importance of conservation is matched by its potential to provoke contention, especially for rewilding. Treating rural peoples as biodiversity “problems” has given way to viewing them as “solutions,” but most needed is a turn toward biodiversity democracy, resolving conservation conflicts and balancing rural-urban interests despite knowledge and value disagreements.

## Conservation conflict

According to the 2019 Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services global assessment report, some 1 million species may be threatened with extinction. Many of the drivers of global biodiversity loss, including alterations in land use and over-exploitation, have only accelerated in the last 50 years. After failing to meeting the 2020 Aichi Targets, the Convention on Biological Diversity has been developing a set of goals and action-oriented targets for Post-2020.<sup>1</sup> These ambitious goals aim not only to stabilize biodiversity loss by 2030 but also to allow for recovery of the area, connectivity, and integrity of natural ecosystems by 15% by 2050. To achieve these goals, a combination of including all land and sea under integrated spatial planning, effective implementation of protected areas for conserving wilderness areas and biodiversity in 30% of the planet, and placing 20% of degraded ecosystems under restoration have been set as targets.

In order to achieve the goals, large-scale restoration will be required, and rewilding is one of the restoration approaches that has the potential for large-scale deployment.<sup>2</sup> The concept of rewilding has evolved since the late 20<sup>th</sup> century. Earlier emphasis on large protected areas with connecting corridors for large carnivores has given way to focusing on complexity and on promoting ecological succession in a dynamic func-

tional view of ecosystems.<sup>2</sup> Rewilded habitats are defined by their resilience to recurring natural disturbances such as fire. Trophic relationships are multiplex and diverse. Species and their interactions “engineer” the environment. Rewilding practice encompasses many strategies, including agricultural land abandonment, allowing natural vegetation dynamics in urban parks, diversifying forests, non-management of ecological disturbances, species reintroductions, and restoring connectivity. But the goal is eventually realizing more self-regulating natural landscapes.

Ecosystems are inexorably intertwined with human society. Wilder landscapes present both risks and benefits to people. The experience of wilderness can be culturally and psychologically valuable, and high-integrity ecosystems provide a number of services to human beings, including flood protection, pollination, and wildlife game. But ecological changes invariably come with the risk of social conflicts. People already live in most of the areas that could be targeted for rewilding, both inside and outside protected areas. Currently, over a quarter billion people live in protected areas, a number that may reach over 1 billion people in some protected area expansion scenarios.<sup>3</sup> These estimates do not include other rural areas that may be targeted for restoration, and over half of the world population lives in rural landscapes.<sup>4</sup> While some rewilding interventions pose only low or indirect

risks (e.g., passive regeneration of native grassland can bring increased fire risk of shrub encroachment), approaches such as carnivore reintroduction or recolonization pose higher perceived and immediate risks to local livelihoods and can even provoke psychological distress among pastoralists.<sup>5</sup>

Conservation’s relationship with these social risks and the role of rural peoples has evolved. Rural people were widely treated as a “problem” during much of the 20<sup>th</sup> century (Table 1). But this view has given way to presenting rural residents as biodiversity “solutions,” at least in theory. We argue that the social risks of rewilding will not be averted by idealizing either scientific or local knowledge. Rather, the solution is biodiversity democracy.

## Rural people as the problem

Throughout the 20<sup>th</sup> century, environmental policy has increasingly “followed the science.” In the United States and elsewhere, environmental issues have been decreasingly settled through a democratic process, becoming administrative matter for experts and/or decided within the court system.<sup>6</sup> Traditionally, conservation scientists have been seen as having the privilege to “speak for” not only biodiversity but also which environmental values people should ostensibly have (Table 1).

When conservationists have spoken for nature, agriculture and other traditional



**Table 1. An overview of competing frames for the relationship between the conservation movement, people, and science**

Stakeholder engagement	Dominant period	Distribution of responsibility	Orientation toward knowledge/values
Rural people as the problem	before 2000	local communities are responsible for the degradation of ecosystems and the loss of biodiversity urban citizens and scientists act to prevent rural extractive behavior	scientists and conservationists (typically from urban backgrounds) prove how ecosystems should be managed to protect biodiversity and are source of correct environmental values
Rural people as the solution	2000–2020	local communities are the best managers of landscapes and the guardians of biodiversity urban communities are the main drivers of biodiversity loss through their remote impacts	scientists should study ILK and incorporate it in their understanding of ecosystems and learn from traditional value systems
Biodiversity democracy	after 2020	both local communities and urban communities are key stakeholders and responsible actors for ecosystems and rural landscapes	a diversity of values and preferences for nature across stakeholders needs to be incorporated in democratic decision making on rewilding scientific ecological knowledge and ILK are applied toward developing and implementing solutions

rural ways of life have usually been either absent or the target of critique. The spread of agriculture and indigenous hunting and gathering are often blamed for losses in biodiversity. For many years, biodiversity science presumed rather than demonstrated that non-native habitat areas were also “non-habitats.”<sup>7</sup> Rural people were rendered as part of “the problem” by default.

Interview data bear this out. In Katherine Cramer’s interviews with rural Wisconsinites, resentment of university researchers and environmental bureaucrats was motivated by the feeling that the latter only held contempt for rural people and their ways of life. Residents saw researchers as urban interlopers who refused to acknowledge the environmental knowledge that rural people did possess.<sup>8</sup>

Conservation efforts have often floundered because of this resentment. For instance, the proposed introduction of grizzly bears to Montana’s Bitterroot Mountains was stymied by polarization and mistrust. The bear came to symbolize the declining “Old West,” built upon ranching, mining, and forestry, and the ascendance of a “New West”, defined by conservation and ecotourism. Rural residents saw reintroduction as a sort of invasion, an imposition of the vision of nature believed by urban, liberal newcomers. The “real” goal of grizzly advocates was seen as the extermination of Old West lifeways. One landowner put the matter bluntly: “I don’t think this is about grizzly bears. This is about power.”

A compromise reintroduction plan languished amidst increasing gridlock before fading into irrelevancy.<sup>6</sup>

This historical episode illustrates rewilding’s potential to provoke resentment. Even restoration cases that don’t involve species reintroduction are strikingly similar. Wetland restoration efforts on the former border between West and East Germany succumbed to local resistance. Farmers not only cited worries about possible damage to their fields but also felt compelled to “narrate their histories, their decades-long grievances,” viewing the effort as an attempt by conservationists to impose their anti-agricultural “ideology.”<sup>9</sup>

No doubt that this is but a short excerpt of the history of rural exclusion, one that stretches back to removal of indigenous groups from national parks and arguably continues in the contemporary push for protected areas. Summarized as a conservation “ideal type,” it is where scientific knowledge is held as everywhere superior to local know-how. It frames rural peoples as biodiversity “problems” for pristine nature, which results in the interests of usually urban citizens being privileged over those who already live within biodiverse landscapes.

### Rural people as the solution

Many biodiversity advocates now realize that making rural peoples into a “problem” often turns them into conservation enemies. Conservation science has evolved to recognize the biodiversity value of traditional or local ecological

knowledge (ILK) ( Table 1). For instance, forest gardens tended by First Nations groups in the Pacific Northwest have higher species richness and functional diversity than the surrounding landscape, even 150 years after the end of management by indigenous communities.<sup>10</sup> And similar studies exist for traditional pastoral and forestry systems.<sup>11</sup> Biodiversity solutions do not necessarily require “pristine” nature.

At some level, rewilding advocates have already recognized this. A study of political discourse in Scotland found that rewilders have been already distancing themselves from narrative that rewilding is about creating a world without people or unilaterally imposing animal reintroductions. The “new storyline” emphasizes that people are essential to rewilding and are beneficiaries of “nature-based economies.”<sup>12</sup>

But this recognition risks turning rural peoples into “the solution.” NGOs like the World Wildlife Federation now declare that indigenous people protect the majority of global biodiversity. Such statements omit complicated questions regarding which practices from which indigenous and local peoples are actually so protective. For instance, Polynesians may have driven to extinction up to half of the bird species in the Central Pacific between 4,000 and 1,000 years ago,<sup>13</sup> and the arrival of humans to many other regions of the world saw the extinction of several megafauna species at the end of the Pleistocene.<sup>14</sup> Centuries of deforestation through traditional grazing and fire

degraded Mediterranean mountain landscapes, leading to corrective state afforestation programs in the late 19<sup>th</sup> century, often in confrontation with local communities.<sup>15</sup> While “modern” societies should bear much of the blame, the anthropological evidence nevertheless shows that indigenous and local practices are not always ecologically friendly.

In addition, local knowledge and values are too often presented as only at risk of being impoverished by scientific reasoning rather than potentially enhanced. For all the talk of conservation plurality, learning between rural peoples and scientists is often depicted as a one-way street. One recent article rightfully critiques “pristine” nature but ends up concluding that effective biodiversity protection means simply “empowering the environmental stewardship of Indigenous peoples and local communities.”<sup>11</sup>

“Rural people as solution” as an ideal type is the polar opposite of “people as problem.” The denigration of rural knowledge and culture is replaced by its romanticization, and even by the Commodification of Poverty, as many nature protection schemes associated with maintaining traditional populations may hamper the capacity of those societies to adapt and deal with new economic and demographic changes.<sup>16</sup> Urban scientists are no longer biodiversity saviors but rather tasked with empirically verifying traditional conservation wisdom and values. It is also a form of environmental “epistocracy,” wherein a subset of traditional knowledges and values dictate conservation action and development pathways.

### Toward biodiversity democracy

The debate between ILK and conservation science mirrors disputes within public administration and science and technology studies about the rightful role of expertise. And it is reflected today in contemporary political discourse, which is often divided between advocates of “follow the science” and populist pleas to respect the “common sense” of ordinary people.

The dilemma persists because of the tendency to mistake political conflicts for knowledge problems, something that should not be repeated for rewilding. Both urbanites and rural peoples have legitimate interests at stake in conserva-

tion decisions, involving cultural, experiential, economic, and environmental values, even if urbanites live farther away. Resolving conservation conflicts doesn’t really require “indigenizing” science or the value systems of urbanites, and neither should rural people’s inclusion hinge on the robustness of their “traditional knowledge” or their adherence to certain ideas of nativeness. Instead, the answer lies in doing democracy, fairly negotiating the competing interests to find tentative solutions that work well enough for most stakeholders.

One insightful case study involves biodiversity-enhancing agri-environmental schemes, such as flower planting and delayed mowing, among Dutch farmers. The previous institutional arrangement emphasized state control, with frequent and complicated audits to ensure individual compliance. Framing farmers as biodiversity problems fostered frustration and mistrust. The new model, which delegated some of the responsibility for administration and planning to farmers’ collectives, not only lowered transaction costs but sowed goodwill. Some farmers even began seeing themselves as “guardians of the Dutch landscape.” While participating environmentalists remained skeptical that the ecological impact would be enough, the arrangement is an advance over the previous political ecosystem defined by antagonism and apathy.<sup>17</sup>

But this does not nearly go far enough. Agri-environmental schemes are helpful for inducing farmers to embrace new biodiversity practices and moving away from the rural people as “problems.” But it lets them be part of the solution mainly insofar as they follow scientists’ instructions. Biodiversity democracy involves not only more mutual learning but also giving a broader set of stakeholders influence on goal setting (Table 1).

Rewilders could learn from toxic chemical policy. The bureaucratic system created by the Toxic Substance Control Act is highly adversarial, relying on definitively proving harms and balancing them against the economic costs. Industry has demanded “sound science” in order to slow the process, but also practices a moderately precautionary form of “self-regulation.” Massachusetts, in contrast, developed a more collaborative model

through the Toxics Use Reduction Act. Firms pay fees in proportion to their use of toxics. But this legislation also created a scientific institution, the Toxics Use Reduction Institute, to assist firms in reducing their use of toxic chemicals. Together they codevelop functionally equivalent but also more benign substances and processes. Toxics use was reduced by 40% in the first 15 years of the program, contrasting paltrier national-level declines.<sup>18</sup> The more democratic institutional arrangement sidestepped an antagonistic stalemate, not to mention endless scientific debate. Most importantly, the relationship with knowledge changed. Rather than trying to *prove risks*, Massachusetts tasks firms and government scientists to work together to *reduce hazards*, despite their competing interests. It works because it asks stakeholders to combine their distinct expertise to come up with *solutions* rather than *answers*.

The equivalent could be achieved for rewilding. Rather than set up scientists and locals as adversaries, cultural and productive goals of rural peoples could be balanced with the biodiversity aspirations of rewilders. Most importantly, because the focus would be on interests, it doesn’t require scientists and locals to totally accept each other’s knowledge or values as equally valid, only that they work together to achieve some of each other’s goals.

At the national and supranational level, this means better balancing so-called “land sparing” with “land-sharing” approaches. It is all too easy for rural peoples to look at calls to dedicate a third to half of the Earth for protected areas and see a future that doesn’t include them. While more protected areas may still be necessary, policy should also support incremental and collaborative rewilding across a mosaic of different land uses.

The outcome of these policies would be a kind of socio-ecological succession. When restoring a habitat, rewilding advocates should expect the process of evolving toward a hopefully more diverse and resilient, dynamic state to take some time. The social dimension is no different. The replacement of “intensive” political management with a more “self-regulating” democratic arrangement enabling local people to participate in a rewilding story that is not only

scientifically well-grounded but also trustworthy and responsive.

#### ACKNOWLEDGMENTS

Support for this study was provided by the German-American Fulbright Commission and by the German Centre for Integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig, funded by the German Research Foundation (FZT 118).

#### DECLARATION OF INTERESTS

The authors declare no competing interests.

#### REFERENCES

- Perino, A., Pereira, H.M., Felipe-Lucia, M., Kim, H., Kühl, H.S., Marselle, M.R., Meya, J.N., Meyer, C., Navarro, L.M., van Klink, R., et al. (2021). Biodiversity post-2020: Closing the gap between global targets and national-level implementation. *Conservation Lett.*, e12848. <https://doi.org/10.1111/conl.12848>.
- Perino, A., Pereira, H.M., Navarro, L.M., Fernandez, N., Bullock, J.M., Ceaușu, S., Cortés-Avizanda, A., van Klink, R., Kuemmerle, T., Lomba, A., et al. (2019). Rewilding complex ecosystems. *Science* 364, eaav5570. <https://doi.org/10.1126/science.aav5570>.
- Schleicher, J., Zaehring, J.G., Fastré, C., Vira, B., Visconti, P., and Sandbrook, C. (2019). Protecting half of the planet could directly affect over one billion people. *Nature* 2, 1094–1096. <https://doi.org/10.1038/s41893-019-0423-y>.
- McDonald, R.I., Mansur, A.V., Ascensão, F., Colbert, M., Crossman, K., Elmqvist, T., Gonzalez, A., Guneralp, B., Haase, D., Hamann, M., et al. (2020). Research gaps in knowledge of the impact of urban growth on biodiversity. *Nat. Sustainability* 3, 16–24. <https://doi.org/10.1038/s41893-019-0436-6>.
- Zahl-Thanem, A., Burton, R.J.F., Blekesaune, A., Haugen, M.S., and Ronningen, K. (2020). The impact of wolves on psychological distress among farmers in Norway. *J. Rural Stud.* 78, 1–11. <https://doi.org/10.1016/j.jrurstud.2020.05.010>.
- Dax, M.J. (2015). *Grizzly West: A Failed Attempt to Reintroduce Grizzly Bears in the Mountain West* (University of Nebraska Press).
- Vellend, M. (2019). The Behavioral economics of biodiversity conservation scientists. *Philos. Top.* 47, 219–237. <https://doi.org/10.5840/philtopics201947112>.
- Cramer, K. (2016). *The Politics of Resentment: Rural Consciousness in Wisconsin and the Rise of Scott Walker* (University of Chicago Press).
- Pieck, S.K. (2020). Conserving novel ecosystems and layered landscapes along the inter-German border. *Landscape Res.* 45, 346–358. <https://doi.org/10.1080/01426397.2019.1623183>.
- Armstrong, C.G., Miller, J.E.D., Ritchie, P.M., and Lepofsky, D. (2021). Historical indigenous land-use explains plant functional trait diversity. *Ecol. Soc.* 26, 6. <https://doi.org/10.5751/es-12322-260206>.
- Ellis, E.C., Gauthier, N., Klein Goldewijk, K., Bliege Bird, R., Boivin, N., Díaz, S., Fuller, D.Q., Gill, J.L., Kaplan, J.O., Kingston, N., et al. (2021). People have shaped most of terrestrial nature for at least 12,000 years. *P Natl. Acad. Sci. USA* 118, e2023483118. <https://doi.org/10.1073/pnas.2023483118>.
- Martin, A., Fischer, A., McMorrán, R., and Smith, M. (2021). Taming rewilding – from the ecological to the social: How rewilding discourse in Scotland has come to include people. *Land Use Policy* 111, 105677. <https://doi.org/10.1016/j.landusepol.2021.105677>.
- Pimm, S.L., Moulton, M.P., and Justice, L.J. (1994). Bird extinctions in the central Pacific. *Philos. T R. Soc. B* 344, 27–33.
- Barnosky, A.D., Koch, P.L., Feranec, R.S., Wing, S.L., and Shabel, A.B. (2004). Assessing the causes of Late Pleistocene extinctions on the continents. *Science* 306, 70–75. 5693. <https://doi.org/10.1126/science.1101476>.
- Navarro, L.M., and Pereira, H.M. (2012). Rewilding abandoned landscapes in Europe. *Ecosystems* 15, 900–912. <https://doi.org/10.1007/s10021-012-9558-7>.
- Penna-Firme, R., and Brondizio, E. (2007). The risks of commodifying poverty: rural communities, Quilombola identity, and nature conservation in Brazil. *Habitat* 5, 355–373. <https://doi.org/10.18224/hab.v5.2.2007.355-373>.
- de Vries, J.R., van der Zee, E., Beunen, R., Kat, R., and Feindt, P.H. (2019). Trusting the people and the system. The Interrelation between Interpersonal and institutional Trust in collective action for agri-environmental management. *Sustainability* 11, 7022. <https://doi.org/10.3390/su11247022>.
- Rayner, S., and Sarewitz, D. (2021). Policymaking in the post-truth world. *Breakthrough J.* 13. <https://thebreakthrough.org/journal/no-13-winter-2021/policy-making-in-the-post-truth-world>.