What if 'rewilding' could help reverse biodiversity loss in Europe?

Biodiversity is in crisis across the globe: species extinctions and a loss of nature occurring at rates unprecedented in human history, and with the EU no exception, our biodiversity and the essential value it brings are under threat. Could 'rewilding' help restore Europe's nature?

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Biodiversity refers to the variety of life on Earth in all its forms and interactions: from the genetic level to individual species, right up to complex ecological communities. Biodiversity is essential for human life – from the air we breathe, to the food we eat and the water we drink. However, the over-exploitation of land and water, climate change, pollution and invasive species are exerting immense pressure on biodiversity and only 16 % of EU habitats and 23 % of EU species have favourable status, Europe's biodiversity and its intrinsic social and economic value are under grave threat.

The EU biodiversity strategy for 2030 acknowledges the urgency of this crisis and its importance in tackling other existential threats such as climate change and pandemics. The strategy has ecosystem restoration at its core, which is also the main goal of 'rewilding', a conservation practice that is gaining increasing attention as a way to combat the crisis of biodiversity loss.

Potential impacts and developments

Rewilding can be broadly defined as the restoration of ecosystems and natural processes through the creation or upgrading of natural areas with minimal human activity, promoting the connectivity of these areas, and reintroducing integral species and their interactions. These are known as keystone species, playing a disproportionate role in the ecosystems they inhabit and vital to their healthy functioning. In Europe, keystone species include large carnivores that control and influence prey populations, such as the brown bear, grey wolf, lynx and wolverine, birds of prey (e.g. eagles and vultures), large grazing animals that promote plant diversity such as European bison and deer species, and 'ecosystem engineers' such as the Eurasian beaver.

The Natura 2000 network, part of the Birds and Habitats Directives, is a coordinated network of protected areas, currently covering 18 % of EU land and 6 % of EU marine territory. However, not all of the areas that fall under the network are strictly protected, with most privately owned; the effectiveness of the network is therefore limited by insufficient stakeholder participation and a lack of habitat connectivity and diversity covered. There are 60 active rewilding initiatives from non-profit and private organisations under way across Europe, from restoring the natural processes of the Oder river delta in Poland to the return of bison in the Carpathian mountains of Romania, and from reintroducing moose to a protected region in northern Denmark to establishing self-sustaining ecosystems in the Côa valley in Portugal.

Healthy ecosystems and their biodiversity are essential to human life on Earth, with complex biological functions underpinning our societies and economies in the form of ecosystem services. These include essential processes that range from climate regulation and carbon sequestration and storage, and the delivery of clean air and water, to plant pollination, soil formation, and the production of goods, medicinal resources, raw materials and energy. In their current degraded state, European ecosystems' capability to deliver these vital services is reduced. In restoring these ecosystems, the beneficial services they provide would also be restored: their economic value in agriculture and fisheries; habitats acting as natural carbon dioxide sinks to limit climate change; increased climate resilience to natural disasters such as droughts, flooding and wildfires; greater food security; reducing the risk of and increasing resilience to future diseases. Nature also has cultural importance, offering people aesthetic and

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spiritual enrichment, cognitive development, and recreation opportunities. As well as the benefits to physical health from cleaner air and water, nature also has positive effects on mental health in alleviating anxiety, depression and stress.

Rural depopulation and the abandonment of farmland is an increasing and ongoing phenomenon in Europe. Rewilding initiatives could play a part in trans-European green infrastructure initiatives to repurpose this abandoned land, increasing biodiversity and stimulating local economies. Marine environments are particularly difficult to protect, due to the myriad pressures they face and the inherent complexity in working within them, and have therefore made less progress in their recovery under the Natura 2000 network. Restoring nature is not limited to just wilderness; Europe's increasingly urban population would benefit from greener cities with accessible and connected urban forests and parks, and reduced use of pesticides and harmful management, allowing biodiversity to return.

Large animals do pose risks to human safety. While wild animals are generally wary of humans, and direct attacks on people are rare, increasing numbers of these species could result in increased incidence of human-wildlife conflict. Fears around apex predators are culturally ingrained throughout Europe, with many persecuted to local extinction; indeed, where some species have been increasing in number, old conflicts have returned. European attitudes to the return of wildlife differ between rural and urban communities, with the latter more likely to hold favourable views towards rewilding schemes. Those living in rural areas will have legitimate concerns and will be the most likely to encounter conflict with wildlife, specifically pertaining to the loss of livestock, damage to crops, or drastic changes to their environment.

Ecological restoration can be limited where habitats are heavily degraded and require high levels of intervention, as well as where the area required for certain ecological processes and large animals is simply not available or poorly connected. Several large animal species in Europe are extinct, while others have been locally extinct for centuries; species occupying similar ecological niches can fulfil these missing roles, such as semi-wild cattle replacing the extinct bovines, the aurochs. Where a self-sustaining ecosystem is not attainable or a long time in coming, active management may be required, which raises questions regarding the level of management required or whether the term 'rewilding' in such situations is appropriate. Indeed, debate exists amongst ecologists surrounding the exact definition, while the semi-wild managed Dutch nature reserve Oostvaardersplassen, for example, has been the subject of much controversy, particularly when thousands of animals died from starvation.

Anticipatory policy-making

In light of the insufficient progress made by the previous strategy in halting the loss of biodiversity and ecosystem services degradation, the EU biodiversity strategy for 2030 builds upon existing legislation to commit to an expansion of 30 % of EU land and 30 % of EU seas as protected Natura 2000 network areas. Promoting the connectivity of these areas will be essential for their functional viability, to allow for animal movement and sufficient genetic exchange between populations, and to enhance ecosystem service delivery. Habitats and ecosystems across Europe are heterogeneous, which means that policies relating to their unique attributes will have to be equally diverse; specific coordination and cooperation with local communities and stakeholders will be integral to the success of ecological restoration projects.

The strategy plays a key role in the European Green Deal, highlighting the need to tackle biodiversity loss conjointly with tackling climate change. It is also linked to the Farm to Fork strategy, with commitments to reduce pesticide use, establish biodiverse habitat on 10 % of farmland and manage 25 % of agro-ecological farmland. Proposed reform of the Common Agricultural Policy could offer results-based payment schemes to give farmers an incentive to invest actively in facilitating the transition to a more sustainable food system in which production and biodiversity can co-exist.

The European green infrastructure strategy aims to serve both people and nature, and could work to stimulate rural areas by providing jobs, making sustainable practices in farming more profitable and offering alternative sources of income, such as tourism. Assessment of suitable areas and potential risks in establishing this trans-European infrastructure will be required.

Many keystone species in Europe are already protected under current EU legislation. Recent years have seen calls for greater exemptions to cull species of large carnivores that are deemed to pose an economic threat. As populations continue to stabilise and increase, sustained and coordinated conflict mitigation with relevant stakeholders will be required, expanding upon existing compensation and other mitigation measures.