



▲ Flooding due to heavy rainfall at Neckargemund on the Neckar River in southern Germany in early summer 2021.



Adapt, Survive, Thrive

Rewilding boosts the climate change resilience of landscapes and communities.

The rapidly changing climate that the world is now experiencing is intimately connected with the health and functioning of wild nature. Today, ecosystems are increasingly being impacted by changes in average temperature, shifts in seasons, and a growing number of extreme weather events – as well as other associated trends, such as increasing levels of ocean acidification and atmospheric carbon dioxide. Climate change also interacts with other pressures on ecosystems, such as degradation, defaunation, and fragmentation.

An existential threat

Climate change affects the wildlife within ecosystems in myriad ways. It may force species to migrate to higher latitudes or higher elevations where temperatures are more conducive to their survival (although often there is nowhere left for species to move to). As sea levels rise, saltwater intrusion into freshwater habitats may lead to the migration or mortality of important species, thereby disrupting entire food webs. It may enable invasive plant and animal species to move into completely

new areas, outcompeting naturally resident flora and fauna. In short, global warming is a pervasive and growing threat to nature and, by extension, to humanity.

Empowering nature

But if this is the bad news, then the recovery of nature offers significant hope for the future. It has already been demonstrated that rewilding at scale is an immediate, practical and cost-effective solution for mitigating global warming, enhancing the ability of ecosystems to capture and store millions of tonnes of atmospheric carbon. As such, it offers us a real chance of keeping such warming below the critical 1.5°C threshold, if we take the necessary action now.

But more than this, rewilding can also help to boost climate resilience, enabling communities – both ecological and human – to adapt to the worst impacts of climate change. As more global warming is inevitable (the Earth's average temperature has already risen roughly 1.2°C above pre-industrial levels), this is just as important as keeping any further rise in temperature to an absolute minimum.



▲ Wetlands can act as climate buffers, ensuring water is available during dry spells.

► No ice on rivers in spring will make reindeer migration far more difficult in Swedish Lapland.



"When it comes to climate change, rewilding empowers nature," says Rewilding Europe's Executive Director Frans Schepers. "It not only gives nature the capacity to lock up more carbon, but also boosts nature's ability to adapt to global warming. While mitigation happens on a global level and adaptation on a local level, they are both essential if people and nature are to survive and thrive. As a nature-based climate solution, rewilding can deliver both."

Impacts and interventions

Rewilding works at nature's scale – and that includes timescales. Long-term thinking ensures rewilding efforts have a sustainable impact, helping to build robust ecosystems that can benefit nature and people for generations to come. This also means that rewilding initiatives span the predicted scale of climate change.

Going forwards, climate change will increasingly impact all the rewilding landscapes where Rewilding Europe operates, with the nature of the impact dependent on a wide range of factors – not least geographic location. Rewilding

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landscapes in southern and southeastern Europe, for example, are likely to experience the most adverse effects, as heatwaves and droughts become more intense and frequent.

The table on the next page illustrates the expected impact of climate change in the landscapes where we operate, and how rewilding interventions are contributing to climate change mitigation and adaptation at a local level.




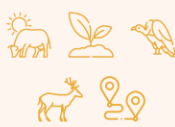














Healthier ecosystems

Today, many European wildlife populations are diminished and in poor

condition, which makes them far more susceptible to the stresses associated with current and future climate heating. Rewilding boosts the resilience of wildlife to climate change by not only enhancing such populations (through reintroduction and restocking, for example), but also by creating more healthy and functional landscapes and more complex ecosystems where species can exist and flourish.

In the Oder Delta rewilding landscape in Germany and Poland, for example, climate change is increasingly manifesting itself through periods of persistent drought, followed by periods of heavy rainfall. The local rewilding team has been working to restore rivers here, which helps to regulate river flow and enhances fish populations. As a key component of local food chains, healthier fish stocks support a whole range of wildlife species, from white-tailed eagles and kingfishers to otters and grey seals. Naturalised river flow also helps local communities because it minimises the risk of catastrophic flooding, which is far higher when waterways are channelised.

In the Rhodope Mountains rewilding landscape in Bulgaria, global warming is leading to milder winters and hotter summers, which will invariably impact the local vulture populations. The local rewilding team are increasing the health and climate resilience of this population through various vulture-focused rewilding interventions, such as the reintroduction of red and fallow deer (to increase the availability of food) and

Rewilding landscape	Expected impact of climate change	What specific negative impact will this have on nature and people?	How is rewilding contributing to climate change mitigation?
 <p>RHODOPE MOUNTAINS BULGARIA</p>	Milder winters, hotter summers, less snow cover.	More outbreaks of catastrophic wildfire and disease, particularly in coniferous plantations. Some local livelihoods may be affected.	
 <p>GREATER COA VALLEY PORTUGAL</p>	Warmer and drier climate, with longer summers, and winters that oscillate between dry and wet. More drought.	More outbreaks of catastrophic wildfire, lower precipitation and soil fertility could exacerbate rural depopulation. Fewer tourists may visit in summer due to higher temperatures. Less water in the Côa River, affecting wildlife and fish.	
 <p>SOUTHERN CARPATHIANS ROMANIA</p>	Warmer winters, less snow cover, far hotter summers, prolonged drought.	Stressed forest ecosystems and dried up rivers. Forests more disease prone and forest-pasture mosaics more vulnerable to catastrophic wildfire. Fewer tourists may visit in summer due to higher temperatures. Snow-based winter tourism may suffer.	
 <p>CENTRAL APENNINES ITALY</p>	Milder winters, hotter summers, less snow cover, prolonged drought.	Livelihoods dependent on winter tourism are at risk as winter and snow-related experiences may close. Hibernating bears may wake up during winter or much earlier in the season, having food problems.	
 <p>SWEDISH LAPLAND SWEDEN</p>	Warmer winters and summers.	No ice on rivers in spring will make reindeer migration far more difficult. Low and no-flow events catastrophic for a lot of wildlife, possibly leading to crashes in freshwater fish populations. Increasing the risk of catastrophic wildfire and outbreaks of disease in trees and dried-up peatlands.	
 <p>VELEBIT MOUNTAINS CROATIA</p>	Hotter and drier, especially in the summer, less snow cover.	More catastrophic wildfire outbreaks. Higher tree mortality will drive bark beetle populations into forests ecosystems. Thinning of forests and loss of cover will alter food/water supply and negatively impact wildlife.	
 <p>DANUBE DELTA UKRAINE ROMANIA MOLDOVA</p>	Milder winters, less precipitation in summer, prolonged drought. Rising salt levels on land and in aquifers. River discharge will fluctuate more widely.	Droughts will stress wetlands and all related (aquatic) wildlife. Annual floods will become less frequent. Wildfire outbreaks will become more frequent, particularly in extensive reedbeds. Artisanal fisheries will be negatively impacted.	
 <p>ODER DELTA GERMANY POLAND</p>	Milder winters, moderately hotter summers. Far more precipitation in winter, less in summer.	Greater fluctuation in river flow. Low and no-flow events catastrophic for a lot of wildlife, possibly leading to crashes in freshwater fish populations. Drained peatland more susceptible to subsidence, leading to increased carbon emissions. Stettin Lagoon will be mainly ice-free in winter.	
 <p>AFFRIC HIGHLANDS SCOTLAND</p>	Warmer wetter winters with less snow cover, hotter drier summers and more stormy weather events.	Less snow cover will adversely affect montane habitats and associated species like mountain hare. It may also change to hydrology adversely impacting aquatic habitats. Drier summers increase fire risk in forest and moorland, increased summer temperatures affect the ability of salmon to spawn.	



NATURAL GRAZING
to reduce combustible biomass



INCREASE SCAVENGER POPULATIONS
to control spread of disease



DAM REMOVAL
to restore natural flows and dynamics



NATURAL FOREST REGENERATION
to increase resilience



WILDLIFE REINTRODUCTIONS
to enhance ecosystem functioning



REWETTING PEATLANDS
to reduce carbon emissions



PROFORESTATION
to allow forest to get older for carbon uptake



BOOSTING CONNECTIVITY
help wildlife to move and adapt



WETLAND RESTORATION
to combat drought through water retention



▲ Higher temperatures can increase the risk of catastrophic wildfire.

◀ Reconnecting Lake Kartal and Lake Katlabuh in the Danube Delta in Ukraine, to restore natural water flow dynamics.

lack of connectivity within European landscapes presents a major obstacle to such movement. The intensification of other land uses, such as industrial farming and forestry, compounds this issue.

The creation of wildlife corridors in Europe is therefore critical. These should substantially increase habitat quality and connectivity in a way that allows species to disperse and migrate as climate zones shift, emphasising movement towards cooler latitudes and topographies.

Rewilding Europe is currently developing wildlife corridors in a number of its operational landscapes. In the Greater Côa Valley in Portugal, for example, the local rewilding team is developing a 120,000-hectare wildlife corridor (essentially the Greater Côa Valley itself) that connects the Malcata mountain range in the south with the larger Douro Valley in the north. This will enable a wide range of wildlife to follow shifting climate zones more easily and safely, as well as allowing keystone species such as the Iberian wolf and Iberian lynx to recolonise the landscape, thereby strengthening local food webs.

The people perspective

Rewilding not only boosts the climate change resilience of wildlife populations and landscapes, but communities too. Nature-based climate solutions, such as the regeneration of natural forests and increased natural grazing, can help people and businesses by minimising the risk and impact of global

the deployment of an anti-poison dog team. By removing carcasses from the landscape, vultures also help to control disease – disease that may become more prevalent as average temperatures rise.

Critical connectivity

For many species, particularly larger-bodied animals, the ability to move within landscapes is vital. This not only enables them to keep within shifting climate zones (where possible), but also facilitates territorial expansion, the recolonisation of habitats, and genetic exchange – all of which boost the overall health and resilience of ecosystems.

With Europe's network of protected areas currently far too fragmented, the

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-20%

Climate change is already affecting wildlife across Europe, and predictions for the future are concerning. With a rise in average global temperature of less than 3°C, the geographical range of a typical European breeding bird is projected to shift around 550 kilometres further north, causing a 20% loss in breeding range.

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JAMES GOSWAMI / REWILDING EUROPE

warming-related events, such as floods, droughts, and outbreaks of disease and catastrophic wildfire. They can also enhance recovery rates afterwards.

In the Danube Delta rewilding landscape in Ukraine, for example, rewilding efforts are breathing new life into lakes that had previously been disconnected from the River Danube by dykes and canals. The restoration of water flow is helping local communities by raising water levels and making the lakes more resistant to the effects of climate change, which is decreasing the amount of summer rainfall. The water in the lakes is less saline, which means it can be used for irrigation, while the diversity and abundance of fish populations is also increasing, benefitting local fishermen.

Future focus

The greatest solutions to a changing climate can be found in nature. Nature-based solutions represent an integrated way of boosting climate change adaptation, climate change mitigation, and biodiversity. They can also provide

a range of co-benefits for sustainable economic development, health, and societal wellbeing.

Yet the huge potential of rewilding to deliver such solutions remains largely untapped, which means most European landscapes and the wildlife they contain are vulnerable to climate change. This is one of the reasons why Rewilding Europe is working so hard to scale up rewilding as quickly as possible – by demonstrating the benefits through its own practical action, by encouraging and supporting other climate positive rewilding initiatives, and by exploring options to increase investment in nature recovery.

Adaptation is often seen as the poor cousin of the climate change challenge, with the glamour of international debate focused on mitigation agreements. Yet awareness is growing that effective adaptation will be essential if we are to deal with the unavoidable impact of global warming. Boosting the climate change resilience of landscapes and communities through rewilding can and should play a critical role.

▲ Summer temperatures in the Greater Côa Valley in Portugal are increasing, elevating the risk of water shortages and fire outbreaks.

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9%

A 2007 study evaluated the potential impact of climate change on 120 native terrestrial (non-flying) European mammals under two of the IPCC's future climatic scenarios. In the worst case, the study predicted that up to 9% of European mammals risk extinction by 2100.

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