

Diversity at risk

How to
preserve
biodiversity?



Not always pretty, but vital



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It is not considered particularly pretty. And let's not mention its reputation. But when it comes to one particular characteristic, the termite is unrivalled: it can significantly improve the quality of depleted soils. This makes it just one of countless species that are important for the well-being of nature – and in turn also for us. It is not only the beauty of different plant and animal species that captivates us when it comes to biological diversity. Genetic diversity, species richness and the diversity of ecosystems are also essential to our very lives, whether we look at pollination by bees or the filtering of air by trees in our neighbourhoods.

Nevertheless we do not protect biodiversity adequately. Quite the opposite: According to the German Nature and Biodiversity Conservation Union (NABU), every day 150 species become extinct somewhere in the world as a consequence of our actions. Moreover, valuable ecosystems are being lost at an ever greater pace, even though biodiversity conservation is no less important for our livelihoods than climate change mitigation. At the same time, biodiversity allows for improved adaptation to the rapidly changing climate: it contributes to greater resilience, and ecosystem-based adaptation measures expand options for action. Moreover, nature actively aids climate change mitigation: CO₂ is not only stored by trees, but also by peatlands and grasslands. Conversely, we will not be able to halt biodiversity loss without addressing the climate crisis.

The global community will hopefully adopt ambitious targets for the expansion of protected areas at the Biodiversity Conference in Kunming in May 2022. But biodiversity surrounds us wherever we look. It also includes the sparrow's nest in the gutter, the mosquito in your bedroom, the river in our city and the insect populations in the fields. That's why we can't just erect a protective fence around it and assume that all will be well. We have to live, consume and produce in ways that do not further diminish biodiversity, but preserve it. Therefore, reductions in pesticide use should also be discussed at the conference. At the same time, the question arises as to the opportunities and risks for biodiversity that emerge from the expanding capabilities of digital transformation and genetic engineering and how to deal with them sensibly. These questions urgently need answers.

Just how miraculous nature is always becomes evident for me when I think about how much we can learn from it. I'm thinking of the lotus effect, for example, where dirt and water are simply repelled, or the Velcro fastener, which also has its counterpart in nature. In your opinion, what are the most ground-breaking innovations that we owe to nature?

Yours,
Jan Peter Schemmel

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“The new Biodiversity Strategy cuts across various EU policies”



Biodiversity in Europe is at great risk; the protection afforded to animal and plant species and their habitats is not sufficient. The EU Biodiversity Strategy, which was developed as part of the Green Deal, seeks to significantly improve the setting for conservation action. Its objectives include the statutory protection of terrestrial and marine areas, the restoration of damaged ecosystems and the reversal of the decline in pollinators such as wild bees and butterflies. In an interview with *eco@work*, Stefan Leiner, Head of the Biodiversity Unit at the EU Commission’s Directorate-General for the Environment, explains how these goals can be reached and whether it is realistic to achieve a good conservation status for ecosystems by 2050.

Mr Leiner, what are the benefits of the new EU Biodiversity Strategy?

It is based on scientific evidence. We now have measures that directly address the causes of biodiversity loss – and very tangible, measurable targets. One example would be the target of at least 30 per cent of the terrestrial and marine areas to be given protected status and one third of these, i.e. a total of ten per cent, to be afforded very strict protection. At the same time, rather than focusing solely on environmental policy, the new biodiversity strategy addresses a variety of EU policies, such as agriculture and forestry, research and development, finance and economics, and development cooperation.

Why does the issue of consumption hardly play a role in the biodiversity strategy?

Because it is not all that easy to do something about this, here at the European level. This is more a matter for national and local authorities. At the same time, many measures or regulations that we initiate will influence consumption patterns, for example when it comes to cooperating with private-sector businesses or working towards targets set for organic agriculture. In addition, the Farm-To-Fork Strategy, which was adopted at the same time as the Biodiversity Strategy, addresses several

issues around consumption. Examples would be changes to food labelling or the avoidance of food waste.

The nature restoration targets are designed to help restore biodiversity in the future. How can this be achieved?

By formulating a general objective as part of an EU legislative act to achieve a good conservation status for ecosystems by 2050. In addition, we need highly tangible, legally binding targets for Member States to restore a certain proportion of the different ecosystems listed in the EU Nature Directives by 2030, 2040 and 2050. There is a need for very clear requirements for Member States to achieve significantly more than they have so far. For example, the proportion of areas that have a good conservation status should increase substantially. And special attention should be paid to pollinator populations, the restoration of marine ecosystems, and increases in urban greenspaces. To this end, the Member States are to draw up national nature restoration plans.

Is it realistic to achieve a good conservation status for ecosystems by 2050?

It is feasible, if the various legal, financial and social incentives that exist for the protection and restoration of healthy ecosystems are really put to work. It’s not like we’re lacking good ex-

amples. Successful EU LIFE projects, for example, including those implemented in Germany, have shown what can be achieved within short timeframes, such as in peatland restoration.

What should an agricultural policy look like that is more strongly oriented towards biodiversity?

It should, for example, direct funding in such a way that farms that host more biodiversity on their land also receive more money. Unfortunately, that is not the case at the moment.

Thank you for talking to *eco@work*.

The interviewer was Christiane Weihe.



In conversation with eco@work: Stefan Leiner, Head of the Biodiversity Unit at the European Commission’s Directorate-General for the Environment

The endangered grass snake





Conservation and restoration

The Bavarian pine vole has gone extinct. The rare purple subspecies of sea thrift is at risk of extinction. And the grass snake is endangered. The fascinating diversity of our planet – biodiversity – is diminishing more and more. According to the United Nations, one million species of flora and fauna around the globe are threatened with extinction. The primary drivers are human, degrading land use and environmental pollution. The 2021 to 2030 „UN Decade on Ecosystem Restoration“ may now give new impetus to the protection and sustainable use of ecosystems and thus also to biodiversity conservation. At the European level, the EU, as part of its Biodiversity Strategy, is setting nature restoration targets, which are intended to contribute to the conservation and restoration of biodiversity. They are also a focus of the Oeko-Institut's work.

Biodiversity merits protection for its beauty and richness alone. But we also need it for our own survival. „We utilise animals and plants for food and use biological raw materials to produce goods – such as timber for our houses or plant oils for cosmetics,” says Judith Reise of the Oeko-Institut, „and at the same time we depend on what are known as ecosystem services.” By this she means the sequestration of CO₂ in forests, plant pollination by insects, or the soil fertility that ensures our food supply.

And yet, collectively we humans destroy ecosystems. According to the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IP-BES), more than 50 per cent of the loss of species diversity is due to the overex-



ploitation of resources and changes in land and marine use. Climate change, environmental pollution and invasive species also contribute to the problem. „Moreover, the existing protection mechanisms for species of flora and fauna lack sufficient implementation,” says the scientist. „For example, enforcement of nature conservation and animal welfare legislation provisions at the federal and regional-state levels in this country is hampered by serious staff shortages.”

RESTORING BIODIVERSITY

The EU Biodiversity Strategy envisages that at least 30 per cent of the EU's terrestrial and marine areas are to be converted into sustainably managed protected areas by 2030. Ten per cent of these areas are to be afforded particularly strict protection; this includes all remaining primary forests, for example. „Moreover, habitats that have been particularly badly damaged or are in poor condition are to be restored.” Restoration in this context can include, for example, the rewetting of peatlands currently used for farming or the planting of trees – the new EU Biodiversity Strategy commits to the planting of at least 3 billion additional trees. By the end of 2021, the EU Commission aims to present restoration targets, i.e. goals for the restoration of natural habitats. „In formulating the restoration targets, the great challenge is to hold all EU member states accountable, but also to enable them to achieve the protection and restoration of ecosystems and their biodiversity,” says Judith Reise. „The member states must set clear and quantitative targets to this end and establish appropriate monitoring. Moreover, funding needs to be secured.”

What is more, the restoration of ecosystems not only serves biodiversity but also climate change mitigation. „When tropical rainforests are cleared by burning, for example, not only do natural habitats and the most species-rich ecosystems on our planet get destroyed, but this also generates huge volumes of greenhouse gas emissions and destroys

important global carbon sinks that absorb a lot of CO₂,” the scientist explains. She also illustrates the urgent need to protect such ecosystems by adding a disquieting assessment: „Some experts fear that due to deforestation, global warming and the many fires in the Amazon, a tipping point could soon be reached after which parts of this valuable ecosystem will no longer be able to regenerate.”

Many biodiversity hotspots, such as tropical rainforests, have already lost up to



In the project entitled „Exploratory Analysis of an EU Sink and Restoration Target”, commissioned by Greenpeace Germany, the Oeko-Institut analysed how carbon sequestration in natural sinks such as forests or peatlands could be strengthened in the LULUCF sector (Land Use, Land Use Change and Forestry). Forests in particular are at risk as a result of storms and droughts, causing tree mortality and allowing biological disturbances, such as the bark beetle, to spread more easily. „Here, too, we incorporated both climate change mitigation and biodiversity into our thinking,” says Judith Reise. „If peatlands are re-

stored and old-growth forests are protected, this makes them more resilient to climate phenomena such as storms, and they can absorb and sequester more carbon.“ The scientists defined a realistic target for potential CO₂ sequestration in natural sinks. In 2018, the EU LULUCF sector’s net sink was 280 megatonnes of CO₂, roughly the same as in 1990. „By 2030, natural sinks in the EU could store 400 to 600 million tonnes of greenhouse gases each year,“ she said, „but to achieve this there should be binding and enforceable targets for the sinks’ development and protection.“ Important measures include sustainable forest management and the protection of old-growth forests. „We also need clear accounting and reporting rules and ecological and social sustainability criteria, including for biomass.“

Natural sinks
could store



million tonnes of greenhouse gases annually in the EU by 2030.

In the working paper on „Options for Strengthening Natural Carbon Sinks and Reducing Land Use Emissions in the EU“, funded by the German Federal Ministry for the Environment, the scientists, together with the Ecologic Institute, also looked at how natural sinks in the

EU such as forests, peatland soils and other organic soils, coastal ecosystems such as seagrass beds and grasslands can be stabilised and preserved. „We assessed a variety of options and analysed their potential to reduce greenhouse gas emissions,“ she says. „It became clear that forests are particularly important in this context; forest conservation, reforestation and expansion are indispensable. The rewetting of peatland soils also plays an important role in reducing emissions from agriculture.“

THE MOST IMPORTANT NATURAL CARBON SINK

In its brief expert report entitled „Natürliche Senken. Die Potenziale natürlicher Ökosysteme zur Vermeidung von Treibhausgasemissionen und Speicherung von Kohlenstoff“ (Natural sinks. The potential of natural ecosystems to avoid greenhouse gas emissions and store carbon“), commissioned by the German Energy Agency (dena), the Oeko-Institut addressed the LULUCF sector and its importance for climate change mitigation in Germany. „Forests are currently the most important natural carbon sinks in this country,“ says Judith Reise. „They store 60 million tonnes of CO₂-equivalents annually – an amount that is, however, expected to decline sharply.“ Germany’s target of achieving carbon neutrality by 2045 necessitates that natural carbon sinks be reinforced.

Emissions from the farming sector also need to be reduced greatly. „Today, emissions from the use of arable land and grassland come to more than 40 million tonnes of CO₂-equivalents; that figure must be more than halved.“ Effective measures identified in the report include rewetting peatland soils and putting an end to peat extraction. „Rewetting 20 per cent of peatlands drained for agriculture alone would save up to 27 tonnes of CO₂-equivalents per hectare by 2030 compared to 2020,“ she says. „The rewetted land could then be used for paludiculture, for example.“ Extensive forest use, which is characterised above all by less interventionist

management in deciduous forests, or reforestation can also contribute effectively to carbon sequestration. „And of course this would also benefit biodiversity.“

CHANGE IS THE ONLY CONSTANT

However, species decline is not always due to human pressures. It can also be a natural development. „Ecosystems are subject to constant change, which also always involves a change in diversity. That’s just natural,“ says Judith Reise. „But it is no longer acceptable that human interventions continue to be so incredibly severe and that we change the environment in ways that no longer leave room for natural processes.“ In other words: we need more biodiversity conservation, so that tropical rainforests, European beech forests and even the humble grass snake are strengthened in their occurrence and can continue to develop naturally for many centuries to come.

Christiane Weihe



*Judith Reise holds a Master of Science in Global Change Ecology and joined the Oeko-Institut’s Energy & Climate Division in 2019, where she works on the conservation and restoration of carbon-rich ecosystems and the synergies between biodiversity and climate change mitigation, among other topics.
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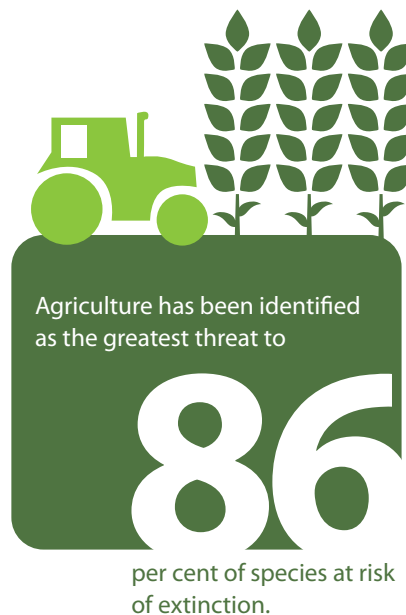
Know more, consume less

Consumption patterns and biodiversity

We consume more and more fish. And the oceans' riches are under severe threat. Our creams and ointments contain palm oil; species-rich rainforests are cleared for palm oil plantations. Food production or cosmetics, mobility or tourism – what and how we consume has a profound impact on global biodiversity. Or to put it differently: our consumption and production patterns are destroying biodiversity and disrupting ecosystem services such as clean air, fresh water and fertile soils. A change of course is vital. The Oeko-Institut is exploring the options to tackle the problem.

„If the EU wants to achieve its biodiversity restoration objectives in the future, consumption and associated production patterns urgently need to change,“ says Dr Jenny Teufel of the Oeko-Institut. „In countless areas they adversely impact on biodiversity. Of course there are differences, such as between high-quality sustainable clothing that lasts a long time and disposable products that deteriorate after a few washes.“ The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) identifies the main drivers of the loss of biodiversity and ecosystem services: they include the destruction of habitats for settlement and infrastructure development, deforestation, exceedance of the carrying capacity of ecosystems, for example by overgrazing or pollutant inputs, and land use change, for example in the form of agricultural intensification. Our food system is one of the biggest drivers of biodiversity loss. A report by the UN Environment Programme (UNEP) and Chatham House highlights that

more and more animal and plant species are disappearing due to the global food system. According to UNEP, agriculture alone has been identified as the greatest threat to 86 per cent of species at risk of extinction.



GREATER SUFFICIENCY

What are the tangible impacts of consumption patterns on biodiversity? And what measures could be taken for its protection in this context? The Oeko-Institut, together with the think tank and public policy consultancy adelphi, addressed these questions in the literature review entitled „Sustainable Consumption for Biodiversity and Ecosystem Services“, which was commissioned

by the German Federal Agency for Nature Conservation (BfN) with funding from the Federal Environment Ministry (BMU). „In addition, we present positive examples of communication regarding sustainable consumption, as this is still sorely missing,“ says the scientist who works at our Sustainable Products & Material Flows Division.

The analysis shows that the destruction of biodiversity as well as the loss of ecosystem services are directly linked to increasing consumption. „Especially the countries of the global South, from which we obtain many raw materials, are affected by this.“ To counter these developments, sufficiency is needed – consumption must change, i.e. there must be a greater focus on sustainably produced products, and reduced consumption of, for example, dairy and meat products. However, consumers are often not aware of how strongly their consumption is linked to the disappearance of biodiversity. „The fact that we don't see or feel the effects so strongly in this country very likely plays into that,“ says Dr Jenny Teufel. „When orangutans go extinct or tropical rainforests disappear to satisfy our demand for meat or for the palm oil which is contained in many products, then that's not so much on our radar.“ But of course you can't tell from the product itself whether or not it is harming biodiversity – be that an item of clothing or a glass of milk. „The huge importance of production methods for our biodiversity is difficult to pack into simple slogans.“ Therefore, more information and communication is needed, especially with regard to ecosystem services.



The analysis was assisted by the international Working Group on Biodiversity Communication, which was set up as part of the UN's One Planet Network to promote information, communication and international cooperation on ecologically compatible consumption. It includes members from NGOs, science and politics, such as the Forest Stewardship Council (FSC), the Stockholm Environment Institute and the Indonesian Ministry of the Environment.

POLITICS AND THE PRIVATE SECTOR

Of course, it is not enough simply for consumers to consume less. „We have to pull out all the stops, because we are destroying the natural resource base on which our lives depend,“ says Dr Jenny Teufel. Many of these levers are in the hands of politicians. „They could bring in taxes on resource consumption or make public procurement more biodiversity-friendly.“ This was shown by the project on biodiversity conservation in federal procurement (Biodiversitätsschutz in der Beschaffung des Bundes), which was carried out jointly with the Institute for Ecological Economic Research (IÖW) and the law firm Dageförde on behalf of the German Federal Agency for Nature Conservation (BfN). It focused on

canteen food procurement as well as on paper and hygiene products. „As part of the project we formulated tangible requirements that products or services must meet. These ensure that biodiversity conservation is taken into account in procurement decisions.“ The requirements include, for example, a higher proportion of plant-based foods in menu planning in combination with a mandatory feedback system to ensure that the guests' palate is pleased too, or the mandatory purchase of recycled hygiene paper products.

Sustainability labels such as the Blue Angel or standards with regard to ecological product design can also help to ensure that biodiversity conservation is at long last granted the necessary priority, including in the business world. „It is part of a company's duty of care to operate as sustainably as possible,“ says the Oeko-Institut expert. „It would be short-sighted to merely start focussing on our own consumption while Germany continues to export a great deal of meat, for example. Conventionally produced meat can have many adverse effects in terms of animal welfare and also the importation of feedstuffs, which in turn can impact on biodiversity in other countries.“ But she emphasises that „there is also a growing awareness on the part of companies that they are destroying their operations' very founda-

tions if they do not conserve biodiversity and ecosystem services.“

A lot of research is still needed to really understand how production and consumption patterns affect biodiversity, stresses Dr Jenny Teufel. „You always need to look at the entire value chain in all its details. That's easier to do for foods than for complex products such as laptops, which contain a large number of different raw materials, the extraction of which in turn results in many different impacts.“ The extraction of lithium in South America is one such example. It destroys the habitats of Andean flamingos, an endangered species.

Christiane Weihe



Dr Jenny Teufel's work focuses on sustainable food production and sustainable nutrition. Among other aspects, she evaluates and analyses the ecological and health risks along the entire product life cycle of food. In addition, the biologist works on sustainable public procurement of food and other products.
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