How to bend the curve of biodiversity loss? New analytical framework provides answers

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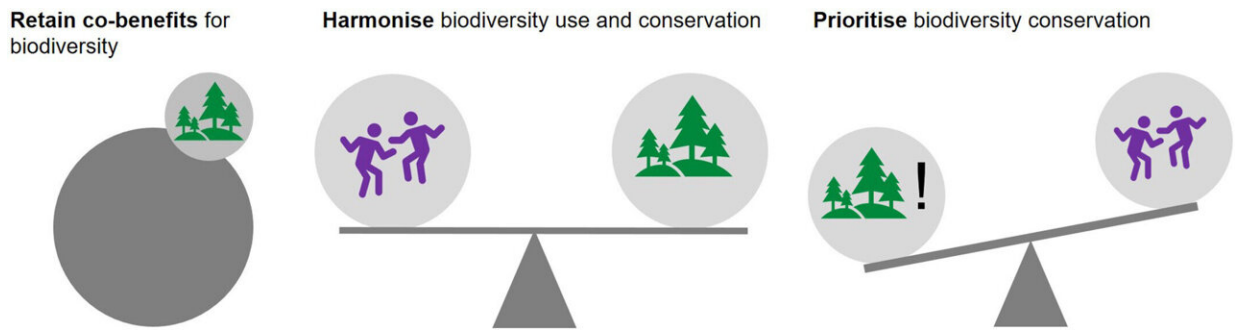

Classification of change processes with regard to evident positive effects on biodiversity: Retain a co-benefit for biodiversity, harmonize biodiversity use and conservation, prioritize biodiversity conservation. Credit: *People and Nature* (2024). DOI: 10.1002/pan3.10690

Biodiversity loss is considered a global crisis, as species extinction is worldwide, impairing ecosystem functions that are also essential for human survival. The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, IPBES, is therefore calling for a rapid transformative change that involves all areas of society.

However, there are no specific concepts as yet.

In the journal *People and Nature*, biodiversity researchers from the Biodiversity Assessment group Faktencheck Artenvielfalt present a new

analytical framework to assess the impact of societal change processes on biodiversity and subsequently derive specific recommendations for the first time.

A significant proportion of all animals and plants, almost a third, are threatened by extinction. Yet despite numerous international and national initiatives and agreements for more species protection, this development continues. And it has long been apparent that in order to maintain the balance of ecosystems in the long run, the current trend must not just be halted but reversed. That is why IPBES is calling for a transformative change that includes all aspects of society.

"Calls for societal changes to protect and increase biodiversity are sensible and urgently needed, but have so far remained very abstract," says Marion Mehring from ISOE—Institute for Social-Ecological Research. In fact, there is currently still a lack of specific concepts and recommendations for transformative change, i.e. for a trend reversal that leads to a real protection of biodiversity.

Better understanding indirect drivers of biodiversity loss

"Up to now, we still know too little about how societal changes affect biodiversity. But it is important to understand which indirect drivers of biodiversity loss result from overarching societal developments," explains Mehring.

The question is, for example, what role do structural change or the development of a new technology play in this context. And how does the change in values influence the development of biodiversity?

"With regard to these questions, it must be said that we are currently

lacking suitable instruments to measure the complex effects on biodiversity in such societal processes. However, they are prerequisite for achieving a reversal in the protection of biodiversity," says the biodiversity researcher, who has now, together with a team of scientists, developed a tool for this issue.

In the article, "Multiple ways to bend the curve of biodiversity loss. An analytical framework to support transformative change," the team of authors present an empirical approach that enables scientists to assess the complex relationships between societal change processes, the so-called indirect drivers, and their effects on biodiversity.

Learning from successes: Examples of biodiversity conservation

The idea behind this approach is to learn from successful cases in which societal change processes have had a positive impact on biodiversity.

To this end, the team of authors have developed a comprehensive set of questions for use in biodiversity research. This allows for both the societal change processes themselves—their roots and their context—and for the effects of these processes on nature and society to be recorded and evaluated.

The authors applied this set of questions to three case study regions in Germany, and this gives an example of how relevant knowledge can be generated in order to promote the process of societal change in such a way that biodiversity is preserved.

One case study is the conversion of the Emscher river from a sewer defined by industrialization to an attractive river with floodplains and recreational areas in the 1990s.

"Although it was not the declared goal, the Emscher river conversion has led to a significant increase in species. And the decisive success factor leading to positive side effects for biodiversity was the targeted management of co-benefits for biodiversity with other objectives such as housing, culture and tourism in the course of the structural change in the coal and steel region," explains Mehring.

Not just one concept: A variety of approaches leads to a trend reversal

However, the protection of biodiversity can also be the successful result of a societal compromise. The Franconian stepping stone concept of 2006, for example, emerged from a conflict-laden debate on the protection or use of forest areas.

This new concept enables a mosaic of protected areas as well as areas used for forestry and thus allows harmonizing both the protection and use of the forest. This leads to an increase in biodiversity and also offers added societal value for tourism.

Finally, the third case study dealing with the Bavarian referendum on biodiversity in 2019 shows that a targeted prioritization of biodiversity protection can also be widely supported by society. It is crucial that windows of opportunity for species protection are used, like, for instance in this case, by means of a societally initiated petition.

"The analysis of the three case studies using the questionnaire showed us that, surprisingly, the preservation of biodiversity does not always have to be the declared goal of a change process, but that it can also occur as a side effect resulting from a biodiversity-sensitive design of processes. It also emerged that there is no one single concept for bending the curve of biodiversity loss, but that a variety of approaches are needed," concludes

Mehring.

More information: Marion Mehring et al, Multiple ways to bend the curve of biodiversity loss: An analytical framework to support transformative change, *People and Nature* (2024). DOI: 10.1002/pan3.10690

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