

The next generation of biodiversity conservation targets must aim higher than ever

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Dehesas are landscapes co-created by nature and people for centuries, contributing greatly to biodiversity conservation and food security. Credit: Noelia Zafra-Calvo

Nearly three decades have passed since world leaders agreed to reverse biodiversity loss. It hasn't gone according to plan. This year, the current decade of biodiversity conservation targets are set to expire well short of the goal line. The world needs to change strategies if we are to have any hope for biodiversity. A global group of scientists has provided advice for a more successful replacement scheme, a quite literal "next-generation" plan being hashed out by the Convention on Biological Diversity (CBD).

Writing this week in *Science*, 40 researchers argue for a set of holistic actions for new [biodiversity](#) goals that are unambiguously clear, sufficiently ambitious, and based on the best knowledge available. Most importantly, the goals need to aim higher if they are to be successful in the face of worsening trends for the climate and life on Earth.

"Building a sufficiently ambitious '[safety net](#)' for nature will be a major global challenge," said Sandra Díaz, the article's lead author and a senior researcher at Argentina's national research council, CONICET. "But unless we do it, we are leaving huge problems for every future generation."

Díaz is a leader of the Earth Commission, a network of sustainability scientists who led the research. Co-authors included three scientists from the Alliance of Bioversity International and CIAT.

The CBD, an intergovernmental treaty that entered into force in 1993, recently announced that none of its 20 Aichi Biodiversity Targets set in 2010 will be achieved by this year's due date. Of those, only six have been partially achieved. These targets expired after a previous strategic plan that concluded in 2010 was declared a failure.

Food diversity, too

The good news is that public understanding of [biological diversity](#)'s complexity and its importance to human and planetary health has improved considerably in the intervening years. Perhaps one of the most important lessons is that biodiversity is not just pandas, polar bears and pangolins, but the plethora of interwoven organisms living in ecosystems and harboring tremendous genetic diversity.



Ruaha NP holds a remarkable diversity of fauna. Credit: Noelia Zafra-Calvo

This includes the plants, animals, fungi and other micro-organisms that

are critical to nourishing, healing, housing and clothing humanity. A substantial portion of this biodiversity is—or was—found on the world's hundreds of millions of small farms, where thousands of years of diversity has evolved into the foods people eat. But as global diets increasingly rely on just a handful of crops and livestock, and often just a few varieties and breeds, much of this biodiversity is imperiled.

This worries experts for two reasons: genetic diversity within our domesticated species of crops and livestock is key to finding ways to make crops and animals more resilient to [climate change](#) and emerging pests and diseases, and edible plant and animal diversity are considered key to improving global diets.

"If we want to guarantee that people have enough good quality healthy food and that people continue to benefit from nature, we need to safeguard the genetic diversity of the myriads of crop varieties and animal breeds and their wild relatives," said Ehsan Dulloo, an Alliance co-author on the article. "This genetic diversity is insurance for sustainable food security for the present and future generations. Without it, we will fail to achieve CBD's 2050 Vision and also fail on meeting the Zero Hunger Sustainable Development Goals."

"The new post-2020 framework for global biodiversity needs to make sure that none of these very important components falls through the cracks," he said.

A checklist for success

To make their recommendations, the researchers reviewed various proposals being studied by nations' delegates who are working on implementing the CBD's 2050 Vision. They encourage delegates to set goals across the whole gradient from "natural" to "managed" ecosystems and to set mutually reinforcing goals—where progress on one contributes

to progress on another.

They also urge policymakers to refrain from "net zero" compliance mechanisms, which allow for the destruction or deterioration of one ecosystem to be offset by vague and loosely quantifiable restoration or conservation commitments elsewhere.



Traditional maize in Peru holds an extraordinary genetic diversity. Credit: Daniel M. Cáceres

The researchers propose holistic goals centered around four main components: ecosystems, species, genetic diversity and nature's contributions to people.

"These ways of understanding the functioning and usefulness of biodiversity at different levels show you need to have different goals and targets based on them," said Colin Khoury, an Alliance co-author who researches crop diversity. "If you just focus on ecosystems or species, you're going to miss critical elements, like genetic diversity."

To help guide policymakers toward the 2050 vision of "Living in harmony with nature," halting or reversing declines in biodiversity within 30 years, the researchers propose a checklist of realistic targets if ambition is cranked to "high" or "very high." These include:

- To attain no net [biodiversity loss](#) between 2020 and 2030, dedicated action is required to balance losses and expand full protection to all critical ecosystems.
- For a 20% net gain in biodiversity by 2050, transformative change and integrated land and sea-use planning are required.
- For a 90% reduction in extinction rates—considered the upper limit of what can be achieved—major transformative change is required.
- To maintain 90% of genetic diversity of species in all major taxonomic groups, very large conservation efforts are required—but this is needed to sustain species survival in the wild.
- To maintain 90% of genetic diversity of domesticated species and their wild relatives, concerted action is required but this would provide "high-level benefits to the majority of people and provide adequate adaptive capacity to cope with climate change."



Varecia variegata white & black ruffed lemur in Ranomafana, Madagascar.
Credit: Daniel M. Cáceres

Even under best-case scenarios, which rule out an "extremely high" level of ambition since this is likely impossible to achieve, some loss is inevitable. But any actions undertaken at a level below "high" ambition are unlikely to meaningfully slow biodiversity declines.

"Ultimately, the main challenge ahead lies not in the number of goals, but rather in making them happen," the authors conclude.

More information: Set ambitious goals for biodiversity and sustainability. *Science* (2020). [DOI: 10.1126/science.abe1530](https://doi.org/10.1126/science.abe1530).

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