Post-2020 goals overlook genetic diversity

In January, the secretariat of the Convention on Biological Diversity (CBD) released the first draft of a post-2020 global biodiversity framework with goals and targets for biodiversity (*1*, *2*). We are deeply concerned that the goal suggested for genetic diversity—the basic element for evolutionary processes and all biological diversity—is weak. Abundant scientific evidence recognizes the crucial role of intraspecific genetic diversity in ecosystem resilience, species survival, and adaptation, especially under increased threats of climate change, habitat loss, and diseases (*3*). The new goals should correct omissions in the previous strategy document.

The previous biodiversity strategy, CBD 2011–2020, includes Aichi Target 13 on genetic diversity, which focuses on "cultivated plants and farmed and domesticated animals" and their wild relatives. Indicators associated with Target 13 follow trends, number, and threat status of domestic animal breeds and crops (*4*). While the post-2020 CBD draft includes a much-needed goal to maintain genetic diversity it does not explicitly state that genetic diversity maintenance is crucial for all species, not just a few. Because no indicators to follow trends of genetic diversity of wild animals and plants are suggested in the draft, genetic diversity could continue to be considered only for domestic organisms, as it was under Target 13.

The newly proposed framework should incorporate several revisions before it is finalized. The post-2020 framework should explicitly commit to maintaining genetic diversity within all species and to implementing strategies to halt genetic erosion and preserve adaptive potential of populations of both wild and domesticated species. The framework should also define indicators of progress toward this goal (*5*). Such indicators could include collecting data on the number of species, populations, or metapopulations that are large enough to maintain genetic diversity as well as those that are not. A widely used measure in this context is the "genetically effective population size," which quantifies the rate at which a population loses genetic variation. When the effective size is measured as 500 "ideal individuals", the population is considered "genetically safe" (*6*, *7*). We therefore suggest monitoring the number of populations above and below the genetically effective size of 500. The effective size is assessed from genetic or demographic data and is usually much lower – by about an order of magnitude – than the total number of mature individuals. Another indicator could be the number of species or populations in which genetic diversity is being monitored by national agencies or universities using DNA-markers. A third indicator could be measuring rates of loss of distinct populations within species.

It is encouraging that the CBD post-2020-draft includes genetic diversity in one of five main goals. However, including explicit protection for genetic diversity in wild as well as domestic species, and strategies to measure the effectiveness of efforts toward that goal, will ensure that signatories prioritize this important aspect of biodiversity conservation.

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COMPETING INTERESTS

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