

estimated at 21 years (2). This slow pace and ever-increasing backlog are the result of the decreasing number of taxonomists and the lack of financial investment in the field of taxonomy and museum collections (3). Many megadiverse groups, including less charismatic plants, fungi, and invertebrates, have very few or no specialists with the necessary knowledge to describe them, whereas most scientists study charismatic groups and dedicate their time to ecological and evolutionary science (4). Without support for proper long-term housing and morphological descriptions, which is what is required to officially name a species under the rules of the International Codes of Nomenclature (5), species identified by DNA barcode will likely just add to the already massive backlog.

The lack of investment in natural history collections and research worldwide is clear and especially apparent in developing countries (6) that hold most of the biodiversity on our planet. Many new species that might be at risk of extinction in nature have the same risk of disappearing from museum shelves due to the lack of maintenance (6). DNA barcodes alone are not enough to document the biological diversity. Overcoming the taxonomic backlog can lead to incredible advances in conservation and biodiversity science, but this will only happen if governments, societies, and institutions recognize and invest in taxonomists, museum collections, and their staff.

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## Trophy hunting bans imperil biodiversity

Trophy hunting is under pressure: There are high-profile campaigns to ban it, and several governments have legislated against it (1). In the United States, the CECIL Act (2) would prohibit lion and elephant

trophy imports from Tanzania, Zambia, and Zimbabwe and restrict imports of species listed as threatened or endangered on the Endangered Species Act. Australia, the Netherlands, and France have also restricted trophy imports (1), and the United Kingdom is under pressure to follow. Calls for hunting bans usually cite conservation concerns. However, there is compelling evidence that banning trophy hunting would negatively affect conservation.

In African trophy hunting countries, more land has been conserved under trophy hunting than under national parks (3), and ending trophy hunting risks land conversion and biodiversity loss (4). Poorly managed trophy hunting can cause local population declines (5), but unless better land-use alter-



**Banning trophy hunting can have unintended consequences for species such as lions.**

natives exist, hunting reforms—which have proved effective (6)—should be prioritized over bans (7). Positive population impacts of well-regulated hunting have been demonstrated for many species, including rhinos, markhor, argali, bighorn sheep, and many African ungulates (7).

Trophy hunting can also provide income for marginalized and impoverished rural communities (7). Viable alternatives are often lacking; opponents of hunting promote the substitution of photo-tourism, but many hunting areas are too remote or unappealing to attract sufficient visitors (8). Species such as lions fare worst in areas without photo-tourism or trophy hunting (9), where unregulated killing can be far more prevalent than in hunting zones, with serious repercussions for conservation and animal welfare (10). Focusing on trophy hunting also distracts attention from the major threats to wildlife.

The International Union for Conservation of Nature (IUCN), a global

conservation authority, clearly concludes that “with effective governance and management trophy hunting can and does have positive impacts” on conservation and local livelihoods (7). Although there is considerable room for improvement, including in governance, management, and transparency of funding flows and community benefits (11), the IUCN calls for multiple steps to be taken before decisions are made that restrict or end trophy hunting programs (7). Crucially, as African countries call for a “New Deal” for rural communities (12) that allows them to achieve the self-determination to sustainably manage wildlife and reduce poverty, it is incumbent on the international community not to undermine that. Some people find trophy hunting repugnant (including many of us), but conservation policy that is not based on science threatens habitat and biodiversity and risks disempowering and impoverishing rural communities.

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