

The freshwater biodiversity crisis

The 2018 Living Planet Index (LPI) (1) shows that populations of freshwater species have declined by an average of 83% since 1970, a far steeper drop than for terrestrial or marine species. Extinction rates for freshwater species are also exceptionally high (2). For example, freshwater fish extinction rates in the United States and Europe have been estimated to be more than 100 times their natural rates (3). Meanwhile, wetland loss is three times as high as forest loss (4). In 2006, the protection of freshwater biodiversity was noted as “the ultimate conservation challenge,” requiring “immediate action” (5). The LPI underscores that actions taken since have been grossly inadequate.

Management of freshwater resources often focuses on human water security rather than natural ecosystem integrity (6). We urgently need effective policy solutions that can achieve both sets of objectives. Substantial advances have been made in understanding freshwater biodiversity distributions, trends, and patterns (7, 8). Now, scientists must translate this science into recommendations for action for practitioners and policy-makers.

Many of the Convention on Biological Diversity's Aichi targets will not be met by 2020 (9, 10). The post-2020 revision of the Aichi targets should better address freshwater biodiversity. Because freshwater biodiversity conservation must operate in partnership with the needs for socio-economic development under a changing climate, revised Aichi targets should correspond to the UN Sustainable Development Goals and UN Framework Convention on Climate Change. The conservation community, as well as governments and international organizations that are shaping the broader post-2020 agenda for biodiversity and sustainable development, need to ensure that there is dedicated space in emerging policy frameworks to address the steep decline of freshwater species.

Ian Harrison^{1,2*}, Robin Abell², William Darwall¹, Michele L. Thieme³, David Tickner⁴, Ingrid Timboe⁵

¹IUCN, 1196 Gland, Switzerland. ²Conservation International, Arlington, VA 22202, USA. ³WWF-US, Washington, DC 20037, USA. ⁴WWF-UK, Woking, Surrey GU21 4LL, UK. ⁵Alliance for Global Water Adaptation, Salt Lake City, UT 84105, USA.

*Corresponding author.

Email: iharrison@conservation.org

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China's reopened rhino horn trade

On 29 October, China revoked its 1993 rhino horn trade ban (1) and reopened its domestic rhino horn trade under two conditions: Horns must be sourced sustainably, and the use of the horns must be limited to traditional Chinese medicine (TCM), medical research, the preservation



Smuggled pangolin scales reveal gaps in the trade ban. China's new rhino horn policy may have similar flaws.

of antique cultural artifacts, and educational materials (2). This policy reversal could have substantial consequences for rhino conservation. State agencies are working to determine regulatory details such as product certification and enforcement infrastructure. African and Asian rhino range states and conservationists should work with Beijing on the implementation of this directive to minimize risks and maximize conservation gains (3).

Regulatory shortcomings in the pangolin scale trade can provide insight for

implementing the horn trade. Although the pangolin scale trade has, at least on paper, been strictly controlled through a certification system since 2008, seizures of illegal pangolin products remain frequent nationwide (4, 5). Demand far outweighs supply, and the volume of pangolin scales sold each year through designated, legal outlets exceeds annual quotas (6). Understanding consumer preferences (7) can help ensure that sustainably sourced rhino horn serves as a substitute for poached supplies (8). The pangolin trade's setbacks show that TCM practitioners, industry leaders, law enforcement agencies, and conservation stakeholders should participate in policy-making and that implementation details must be adequately publicized (6). Farmed animals should be genetically registered to make legal goods traceable and enable reliable identification of laundering.

Hubert Cheung^{1*}, Yifu Wang², Duan Biggs^{1,3,4}

¹ARC Centre of Excellence for Environmental Decisions, Centre for Biodiversity & Conservation Science, University of Queensland, Brisbane, QLD 4072, Australia. ²Department of Geography, University of Cambridge, Cambridge CB2 3EN, UK. ³Environmental Futures Research Institute, Griffith University, Nathan, QLD 4111, Australia. ⁴Department of Conservation Ecology and Entomology, Stellenbosch University, Matieland 7602, South Africa.

*Corresponding author.

Email: h.cheung@uqconnect.edu.au

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ERRATA

Erratum for the Research Article

“Recombination initiation maps of individual human genomes” by F. Pratto *et al.*, *Science* **362**, eaav6294 (2018). Published online 19 October 2018; 10.1126/science.aav6294