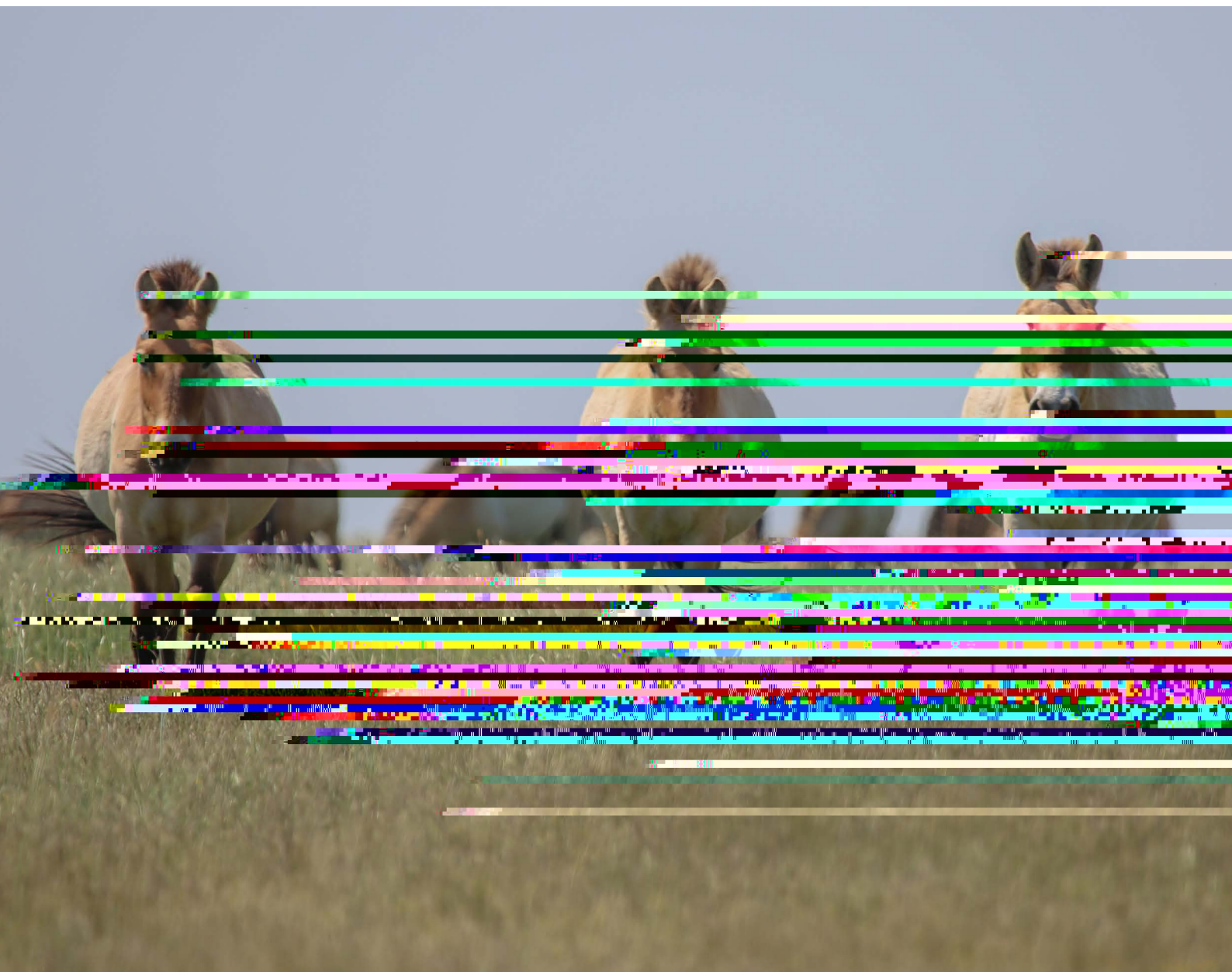


Position Statement

On the role of botanic gardens, aquariums, and zoos
in species conservation



POSITION STATEMENT ON THE ROLE OF BOTANIC GARDENS, AQUARIUMS, AND ZOOS IN SPECIES CONSERVATION

What do Kihansi spray toad (*Nectophrynoides asperginis*), pink pigeon (*Nesoenas mayeri*), tequila splitfin (*Zoogoneticus tequila*) and café marron (*Ramosmania rodriguesii*) have in common? These species and many others were on the brink of extinction but are now on the road to recovery in the wild through the expertise and conservation efforts of botanic gardens, aquariums and zoos. To achieve these outcomes, many botanic gardens, aquariums and zoos practice high standards of care, conservation, education and research. They are professionally organised and active in national, regional and international professional associations. These institutions work cooperatively with diverse stakeholders contributing their expertise in *ex situ* and *in situ* management, education, research, community engagement and fundraising to prevent the extinction of these and other species and to recover them to a favorable conservation status.

The IUCN Species Survival Commission (SSC) recognises that botanic gardens, aquariums and zoos are not the only types of institutions that manage animals, fungi and plants *ex situ*. However, while botanic gardens, aquariums and zoos can, and do, contribute significantly to species conservation, this role is often under-valued, underrecognised and misunderstood. SSC also recognises that not all botanic gardens, aquariums and zoos around the world are meeting their conservation potential. Therefore, the purpose of this document is 1) to outline SSC's position on the roles played by these institutions in the conservation of species and their genetic diversity, 2) to urge all these institutions to achieve their potential in ensuring that animals, fungi and plants thrive in the wild, and 3) to encourage the global species conservation community to work in a collaborative and integrated fashion towards reversing biodiversity declines. This SSC position statement directly contributes to the implementation of [WCC-2020-Res-079](#) on linking *in situ* and *ex situ* efforts to save threatened species.

Citation: IUCN SSC 2023. *Position Statement on the role of botanic gardens, aquariums, and zoos in species conservation*. IUCN Species Survival Commission (SSC), Gland, Switzerland. 8 pp. Available at: [IUCN Resources](#)

Cover: Przewalski's Horse, *Equus ferus*, EN © Kira Mileham

Acknowledgements: This document is the result of a deeply collaborative, iterative, distributed public consultation overseen by Kira Mileham, Kris Vehrs, Mayerlin Ramos and Jon Paul Rodriguez. Input came from numerous working groups, SSC Steering Committee, and over 4,000 comments from more than 350 individuals. This feedback and the team's reactions are available upon request to SSC@iucn.org.

As with other sectors involved in nature conservation, many botanic gardens, aquariums and zoos are working hard to prevent and reverse negative trends in species survival, while others could do more to meaningfully achieve their potential in supporting the conservation and recovery of plants, animals and fungi around the world. With the increased rate of species loss, SSC urges all conservation partners to use all the tools, capacity and expertise available by working together to save species.

Examples of roles botanic gardens, aquariums, and zoos can, and do, fulfill in the conservation of wild species

The list below is a non-exhaustive list of examples where botanic gardens, aquariums, and zoos currently contribute or can be further called upon to fulfill their conservation roles and aid in the critical work of ensuring the long-term survival of species in the wild.

1) Care, knowledge, and management of *ex situ* and *in situ* populations of animals, fungi and plants and their environments

- Knowledge of, and expertise in managing species *ex situ* that can be applied *in situ* (e.g., *ex situ* propagation, identification, handling, care, ecological and socio-biological needs and behavior); not limited to threatened species but also for related species that may serve as models for threatened counterparts *in situ*.
- Hold, rear, propagate, breed a wide range of species *ex situ* as part of highly diverse roles of *ex situ* management for species conservation – including providing samples for and/or managing and coordinating biobanks or germplasm banks.
- Care for and expand populations of the only surviving individuals of particular species (which are by definition Extinct in the Wild) either locally or globally, thereby preserving and striving towards future conservation interventions for *in situ* recovery.
- Ability to demographically manipulate populations to increase productivity or reduce mortality at particular stages to influence population growth of threatened populations *in situ*.
- Lead and/or assist in rescue, recovery and rehabilitation of species.
- Assist in combating wildlife crime by working with law enforcement on animal, fungi and plant cases (e.g., species identification, care, placement and possible repatriation of confiscated live specimens, pathology and biosecurity expertise and capacity, and marking and tracing to identify illegal trafficking of species).

- Support in managing and preventing the risk of emerging pests and pathogens and invasive species including biological approaches, awareness raising, outreach and planning.
- Contribute to landscape and ecosystem restoration and protection through direct efforts and indirect community mobilisation.
- Manage sustainable *ex situ* populations which decreases the need for sourcing from *in situ*, striving for genetic and demographically healthy populations where possible.
- Expertise in non-invasive management and manipulation of individuals that can for example, help monitor wild populations or guide operant conditioning to help shape and modify behaviour in the management of human-animal conflict and coexistence scenarios.

2) Health and pathology

- Ability to use *ex situ* species expertise, medical data and capacity to monitor, prevent and treat diseases and pests and conserve species *in situ*.
- Opportunities for applied research and treatment development with *ex situ* populations and biobanks for emerging and zoonotic diseases and other aspects of wildlife and plant health.
- Possibility to monitor and research diseases in *ex situ* individuals that are not observable in *in situ* populations.
- Expertise in the One Health Approach – assistance in understanding the connection between health of people, animals, fungi and plants and the environment and for advocating on related approaches and policies with communities and policy makers.
- Expand knowledge about comparative pathology, pathogen discovery and pathogen ecology, including

3) Conservation translocations

- Source of individuals for conservation translocations in line with the [IUCN SSC Guidelines](#).
- Evaluation of pedigree or molecular genetic information for the purposes of conservation translocations.
- Expertise and resources important to conservation

¹¹ Farhadinia, M.S., et al., *Ex situ management as insurance against extinction of mammalian megafauna in an uncertain world*. Conservation Biology, 2020. 34(4): p. 988-996.

¹² Smith, D., et al., *Extinct in the wild: The precarious state of Earth's most threatened group of species*. Science, 2023. 379(6634): p. eadd2889.

¹³ Lees, C.M., A. Rutschmann, A.W. Santure, and J.R. Beggs, *Science-based, stakeholder-inclusive and participatory conservation planning helps reverse the decline of threatened species*. Biological Conservation, 2021. 260: p. 109194.

¹⁴ Byers, O., et al., *Reversing the Decline in Threatened Species through Effective Conservation Planning*. Diversity, 2022. 14(9): p. 754.

¹⁵ IUCN/SSC, *Guidelines on the Use of Ex Situ Management for Species Conservation. Version 2.0*. 2014, Gland, Switzerland: IUCN Species Survival Commission. 15.

¹⁶ Grajal, A., et al., *The complex relationship between personal sense of connection to animals and self-reported proenvironmental behaviors by zoo visitors*. Conservation Biology, 2017. 31(2): p. 322-330.

¹⁷ Colodner, D., et al., *Why Partner with a Zoo or Garden? Selected Lessons from Seventy Years of Regional Conservation Partnerships at the Arizona-Sonora Desert Museum*. Journal of Zoological and Botanical Gardens, 2022. 3(4): p. 725-737.

¹⁸ Consorte-McCrea, A., et al., *Large carnivores and zoos as catalysts for engaging the public in the protection of biodiversity*. Nature Conservation, 2019. 37.

¹⁹ Gusset, M. and G. Dick, *The global reach of zoos and aquariums in visitor numbers and conservation expenditures*. Zoo Biology, 2010. 29: p. 1-4.