



Endangered Wildlife Trust

Perspective on the de-extinction and reintroduction of previously extinct species

Our mission: The Endangered Wildlife Trust (EWT) is dedicated to conserving threatened species and ecosystems in Africa to the benefit of all.

Background

De-extinction is the process of reviving extinct species or creating functional proxies using various approaches. There are several ways to carry out the process of de-extinction. Cloning is the most widely proposed method, although other approaches like genome editing and selective breeding have also been employed. Similar techniques have been applied to certain endangered species, in the hopes of boosting their genetic diversity.

It is important to note that, in almost all known examples, the de-extinction process does not "bring back" the exact original animal, even in instances where a complete genome of the original animal is available. It is rather, a very close replica of the original species that is produced.

Genome editing has been rapidly advancing with the help of the CRISPR/Cas systems (see appendix for details). By using cells from a closely related species, genome editing can be used to genetically create a replica of the extinct organism. The result is an animal which is not completely the same as the extinct species, but rather a hybrid of the extinct species and the closely related, non-extinct species. Because it is possible to sequence and assemble the genome of extinct organisms from highly degraded tissue. Genome editing does not require living cells from the exact same species and can target specific adaptive traits, but an organism created via this method can only ever be a proxy/hybrid.

The subsequent reintroduction of these animals back into what was their natural habitat also requires robust planning to mitigate all possible risks, and a suite of stringent checks and controls are required if this is to be attempted responsibly and ethically. These risks parallel those for introducing non-native species or reintroducing locally extinct species and include the possibility that the proxy becomes invasive and affects native species, communities, or ecosystems through predation, competition, browsing, hybridisation, facilitation of disease spread, and various ecosystem-level impacts such as changed hydrology or fire regimes. The safety of existing native species and maintenance of existing ecosystem functions should be prioritized over any potential benefits of releasing a proxy for an extinct species when the reliability of the risk assessments is limited, as is especially likely when the proxied species is long extinct.

The EWT perspective

The EWT recognises that the de-extinction of species is a complex and controversial topic. While it may seem like a promising solution to restore lost biodiversity, conservation practitioners must prioritize conservation efforts for existing species and ecosystems. If the processes can align and de-extinction project can leverage significantly scaled conservation benefits for associated



threatened species and ecosystems, then this might be considered as adequate motivation for project viability.

Work towards the de-extinction of species is happening anyway, whether the EWT or any other conservation entities are involved or not. Given this, and acknowledging how fast our world is changing through all forms of technological development, we would only be involved in order to help safeguard against detrimental impacts associated with them.

Key Considerations:

- Conservation Priority: conservation efforts must retain a strong and ambitious focus on protecting and preserving existing species and habitats, addressing current extinction drivers (habitat loss, climate change, poaching).
- Ecological Uncertainty: De-extinction introduces unknowns about species' ecological roles, potential impacts on current ecosystems, and unintended consequences.
- Resource Allocation: De-extinction can not be allowed to divert resources from proven conservation strategies and pressing biodiversity needs, it must rather unlock resources for conservation at scale in focal areas.
- Ethical Implications: the welfare of de-extinct species, potential suffering, and motivations behind de-extinction efforts need to be carefully scrutinised and monitored to prevent any and all unintended or intentional abuse or harm.
- Lack of Formal Policy: there is not yet any global or regional policy framework around the reintroduction of previously extinct taxa and these policy frameworks, along with associated best practice guidelines and minimum standards are urgently required to guide practice.
- Genetic contamination: every effort, including permitting/policy processes and active population management principles, must be implemented in order to prevent any genetic contamination between the de-extinct species and any closely-related extant species extant or individuals.

De-extinction efforts must only prioritize species with viable habitats and clear conservation benefits. Conservationists must prioritize habitat protection and the conservation of existing species over de-extinction without a clear ecological purpose, unless the reintroduction process catalyzes and leverages sufficient support to act as a flagship for significant conservation benefit for extant species that co-occur over the original distribution range of the revived species. This conservation benefit must be tangible and long-term, ideally as formally protected and restored landscapes to sustain large-scale ecosystem functioning and biodiversity conservation.

If de-extinction is pursued, it must:

1. Protect and restore large-scale habitat integrity for the long-term sustainability of viable wildlife populations native to those landscapes.
2. Support and leverage the conservation of existing species and ecosystems at scale
3. Address all known human-induced extinction drivers



4. Support existing and ambitious regional and global conservation goals
5. Involve rigorous risk assessment
6. Prioritize animal welfare and long-term conservation
7. Manage de-extinct species populations with every possible precautionary approach to prevent any secondary detrimental impacts on existing wildlife.
8. Engage all relevant stakeholders

The EWT does not support de-extinction efforts focused on species with no remaining natural habitat or where the natural habitat and associated species have changed over time, or are poorly understood. Reintroducing extinct species to environments that have been subsequently altered by human-induced activity, carries significant risk and must be very cautiously evaluated. Without extensive suitable habitat, de-extinct species face uncertain survival, potential suffering, and ecological disruption.

Finally, the EWT does not support the attempted revival of ancient species that no longer have functional ecological relevance, do not have ecological context in terms of associated prey, food availability and other co-adapted species and ecosystems. It is critical that only species that have viable and functional environments to sustain their naturally occurring and viable populations in the wild, be pursued in the interests our conservation obligations and duty.

The Endangered Wildlife Trust approaches de-extinction with caution and discipline. Any engagement must demonstrate clear conservation value for living species and functioning ecosystems, respond to a genuine conservation need rather than technological curiosity, and not divert limited funding, attention, or credibility away from urgent, proven conservation priorities. The EWT's focus remains firmly on safeguarding existing biodiversity, restoring habitats, and supporting communities, and it engages in de-extinction-related work where it strengthens—not compromises—these objectives, with transparent governance, clear limits, and no implied endorsement.

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Appendix – CRISPR technology

CRISPR (Clustered Regularly Interspaced Short Palindromic Repeats) technology offers revolutionary, precise tools for conservation, ranging from protecting endangered species to managing invasive ones. However, its use in wild ecosystems carries potential ecological and ethical risks.

Potential pros of CRISPR in Conservation

Invasive Species Management: CRISPR-based gene drives can accelerate the spread of traits (like sex-ratio distortion or reduced fertility) through a population to eliminate invasive species (e.g., rodents on islands) that threaten native biodiversity.

Disease Resistance: Genetic editing can bolster species against diseases, such as making American chestnut trees resistant to blight or developing coral resilient to rising water temperatures.

Restoring Genetic Diversity: CRISPR can help restore lost genetic variation in small, endangered populations, increasing their ability to adapt to environmental changes.

De-extinction and Climate Adaptation: It offers the potential to adapt species to climate change by introducing resilient genes or potentially recreating traits of extinct species to restore ecosystem functions.

Potential risks/cons of CRISPR in Conservation

Unintended Ecological Impacts: Modifying a species can have unpredictable, irreversible effects on entire ecosystems, disrupting food chains or leading to unwanted species extinction.

Off-Target Effects: Although highly precise, CRISPR can still produce "off-target" edits—accidental, unintended changes to the genome that may cause unexpected health or behavioral issues in the organism.

Reversibility and Containment Challenges: Once gene-edited organisms are released into the wild, it is difficult or impossible to recall them, making containment of modified genes nearly impossible.

Ethical Concerns: The ability to permanently alter wild species raises ethical questions regarding human "dominion" over nature and the intrinsic value of organisms, leading to public apprehension.

Regulatory and Legal Hurdles: The rapid development of CRISPR technology has outpaced the creation of international laws and regulations for releasing gene-edited organisms, creating uncertainty in approval processes.

While CRISPR technology offers potentially game-changing benefits such as alien invasive plant and animal management, the EWT feels strongly that any tampering with the genetic makeup of existing extant wildlife, comes with significant and irreversible risk. Potentially conservation



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positive approaches need to be limited to carefully assessed and risk averse strategies that avoid all potential detrimental consequences.