

Rewilding the future

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New research shows that the loss of large animals has had strong effects on ecosystem functions, and that reintroducing large animal faunas may restore biodiverse ecosystems.

Rewilding is gaining a lot of interest as an alternative conservation and land management approach in recent years, but remains controversial. It is increasingly clear that Earth harbored rich faunas of large animals such as elephants, wild horses and big cats - pretty much everywhere, but that these have starkly declined with the spread of humans across the world - a decline that continues in many areas.

A range of studies now show that these losses have had strong effects on <u>ecosystem functions</u>, and a prominent strain of rewilding, trophic rewilding, focuses on restoring large animal faunas and their top-down food-web effects to promote self-regulating biodiverse ecosystems.

A new study led by researchers from Department of Bioscience, Aarhus University, published in *PNAS* today, synthesizes the current scientific research on trophic rewilding and outlines key research priorities for rewilding science.

"Reviewing the evidence from major rewilding projects such as the wolf reintroduction to the Yellowstone National Park and the Oostvaardersplassen experiment in the Netherlands, the study concludes that species reintroductions and ecological replacements can successfully restore lost food-web cascades with strong ecological effects", says lead author Professor Jens-Christian Svenning, Department of Bioscience,



Aarhus University.

"Unfortunately, empirical rewilding research is rare and geographically biased, with the scientific literature on rewilding dominated by opinion pieces", supplements co-lead PhD Student Pil B.M. Pedersen, Department of Bioscience, Aarhus University.

As a key point the study highlights the need for the increasing number of rewilding projects to include hypothesis testing and science-based monitoring to help building a robust scientific basis for rewilding as an important component of conservation and land management.

The study also concludes that rewilding may be affected by trophic complexity (for example, functional variation among large herbivores) and interactions with landscape settings and human activities, but that these important complexities are poorly understood and should be prioritized for future research.

"One major science gap is experimental rewilding studies on elephants and other very large herbivores, as these used to be present in pretty much all regions and ecosystems and have particularly large ecological effects", says Professor Svenning.

Additional research prioritized listed by the study include developing rewilding's global scope - as large animals have been lost everywhere and tools to reduce human-wildlife conflicts, to allow realizing rewilding in a world densely populated with people.

More information: Jens-Christian Svenning et al. Science for a wilder Anthropocene: Synthesis and future directions for trophic rewilding research, *Proceedings of the National Academy of Sciences* (2015). DOI: <u>10.1073/pnas.1502556112</u>



Provided by Aarhus University

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