

# CAN ANIMALS 'SAVE' US FROM CLIMATE CHANGE?

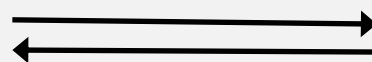
ANDREW J. ABRAHAM  
MARCH 2025, SSNM



# The twin crises defining our time

Climate change

Biodiversity loss



Nature-based solutions (NbS)

# NbS have predominately focused on plants, soils and sediments...

Current Biology

CellPress

Review

## The role of large wild animals in climate change mitigation and adaptation

Yadvinder Malhi<sup>1,\*</sup>, Tonya Lander<sup>2</sup>, Elizabeth le Roux<sup>1,3</sup>, Nicola Stevens<sup>1</sup>, Marc Macias-Fauria<sup>4</sup>, Lisa Wedding<sup>4</sup>, Cécile Girardin<sup>1</sup>, Jeppe Agård Kristensen<sup>1,3</sup>, Christopher J. Sandom<sup>5,6</sup>, Tom D. Evans<sup>7</sup>, Jens-Christian Svenning<sup>3</sup>, and Susan Canney<sup>3</sup>

nature climate change

Perspective

<https://doi.org/10.1038/s41558-023-01631-6>

## Trophic rewilding can expand natural climate solutions

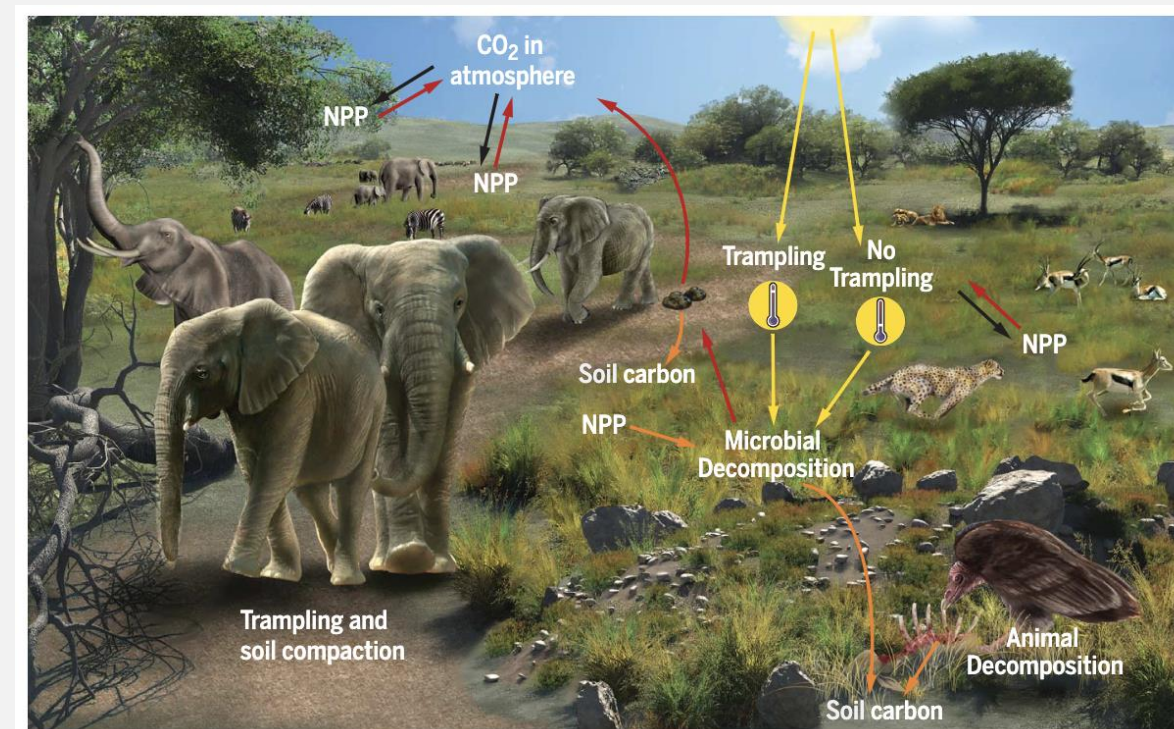
Received: 20 April 2022

Accepted: 13 February 2023

Published online: 27 March 2023

Check for updates

Oswald J. Schmitz<sup>1</sup>, Magnus Sylvén<sup>2</sup>, Trisha B. Atwood<sup>3</sup>, Elisabeth S. Bakker<sup>4,5</sup>, Fabio Berzaghi<sup>6</sup>, Jedediah F. Brodie<sup>7</sup>, Joris P. G. M. Cromsigt<sup>8,9</sup>, Andrew B. Davies<sup>10</sup>, Shawn J. Leroux<sup>11</sup>, Frans J. Schepers<sup>12</sup>, Felisa A. Smith<sup>13</sup>, Sari Stark<sup>14</sup>, Jens-Christian Svenning<sup>15</sup>, Andrew Tilkner<sup>16,17</sup> & Henni Ylänne<sup>18</sup>



Schmitz et al. (2018) Science

# The media and NGOs have swiftly begun promoting these ideas

**BBC**

Home News Sport Business Innovation Culture Arts Travel

## Wildebeest and wolves: The weapons against climate change

20 November 2023

Fernando Duarte  
Features correspondent



# the guardian

## Herd of 170 bison could help store CO2 equivalent of 43,000 cars, researchers say

Free-roaming animals reintroduced in Romania's Tarcu mountains are stimulating plant growth and securing carbon stored in the soil while grazing



European bison disappeared from Romania more than 200 years ago, but the species was reintroduced to the southern Carpathian mountains in 2014. Photograph: Michel Doutemont

# TIME

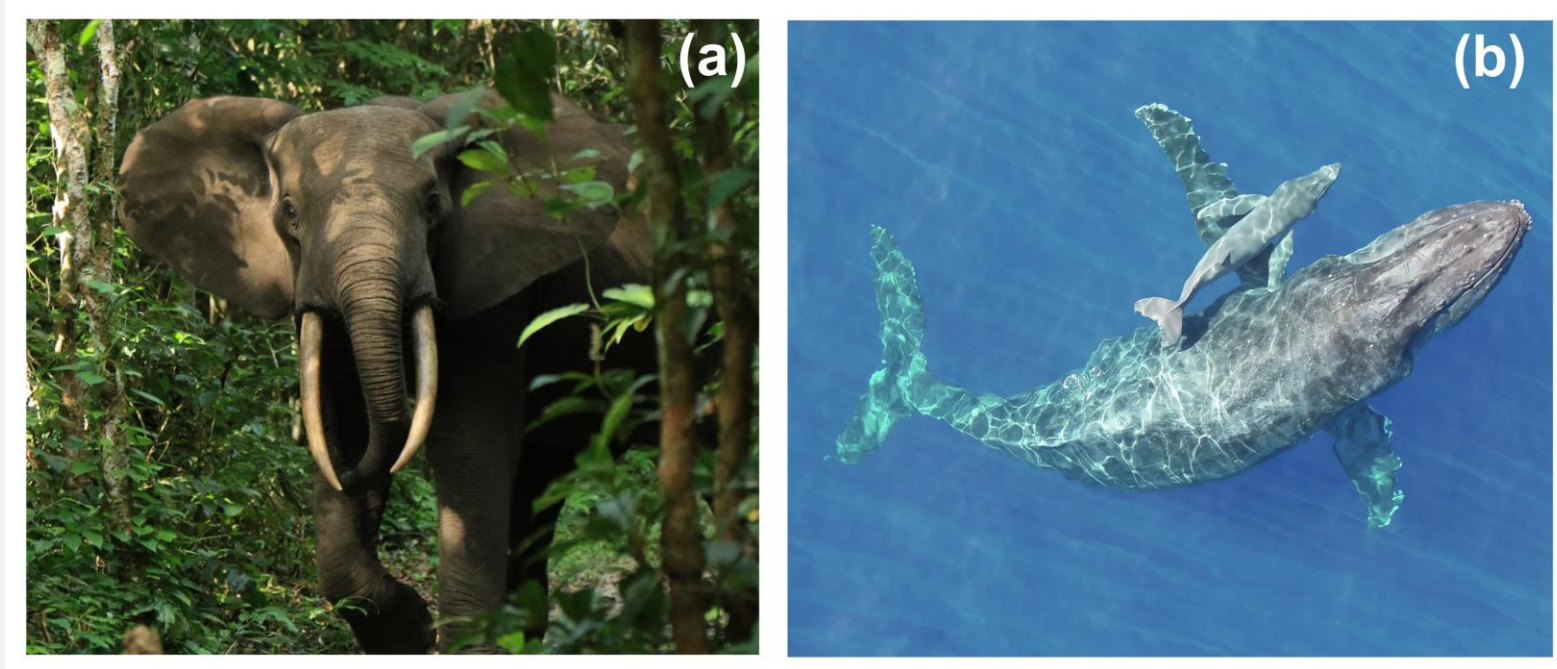
IDEAS • ANIMALS

## How Wolves Can Save Us—If We Let Them

7 MINUTE READ



## But, how accurately do we understand animal roles in the carbon cycle?

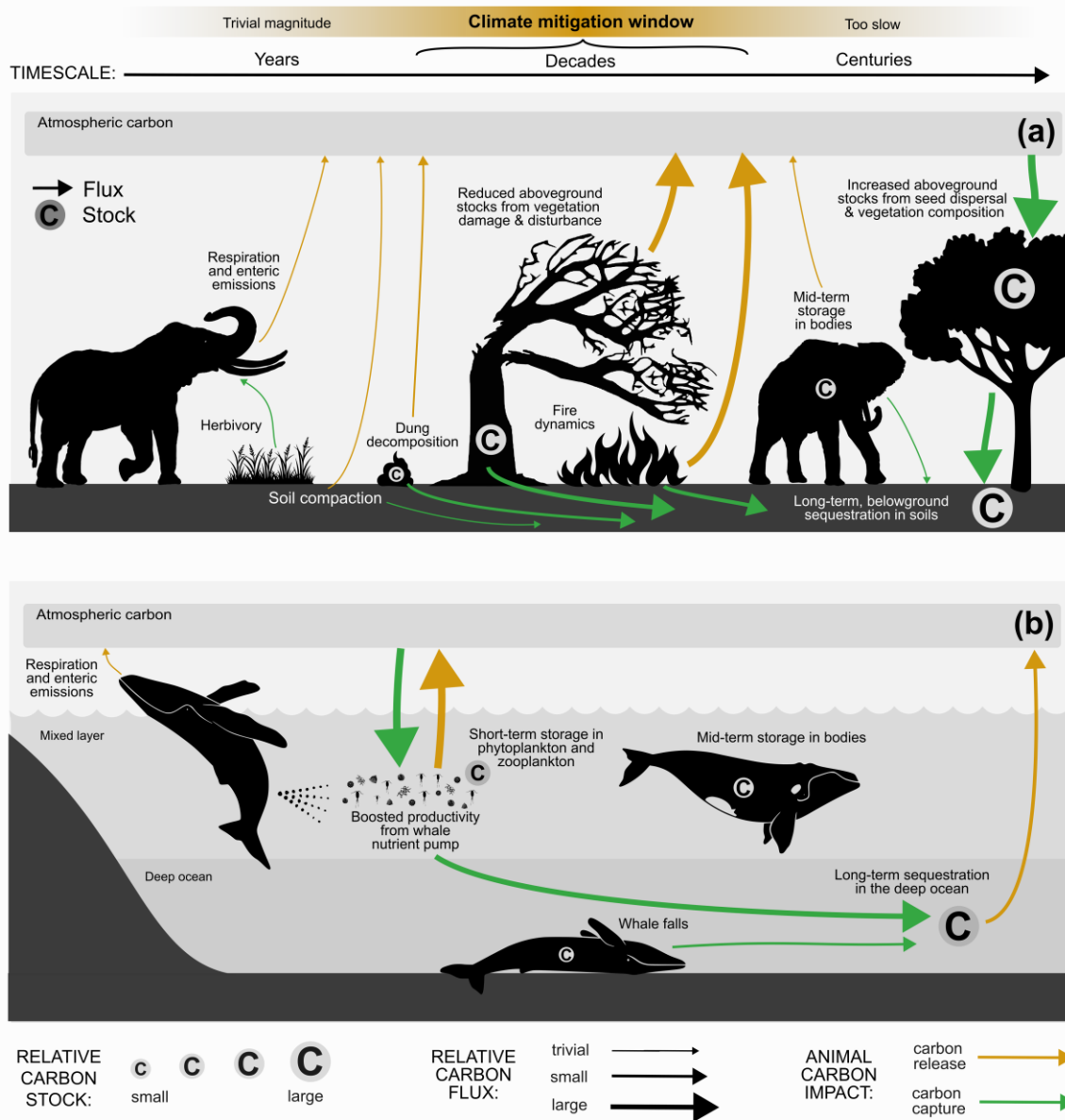


3 aims:

- I. Review all suggested carbon mechanisms (magnitude, uncertainty, timescales)
- II. Compare elephant and whales to assess carbon storage potential in terrestrial and marine systems
- III. Discuss readiness of this knowledge for present-day and future climate mitigation



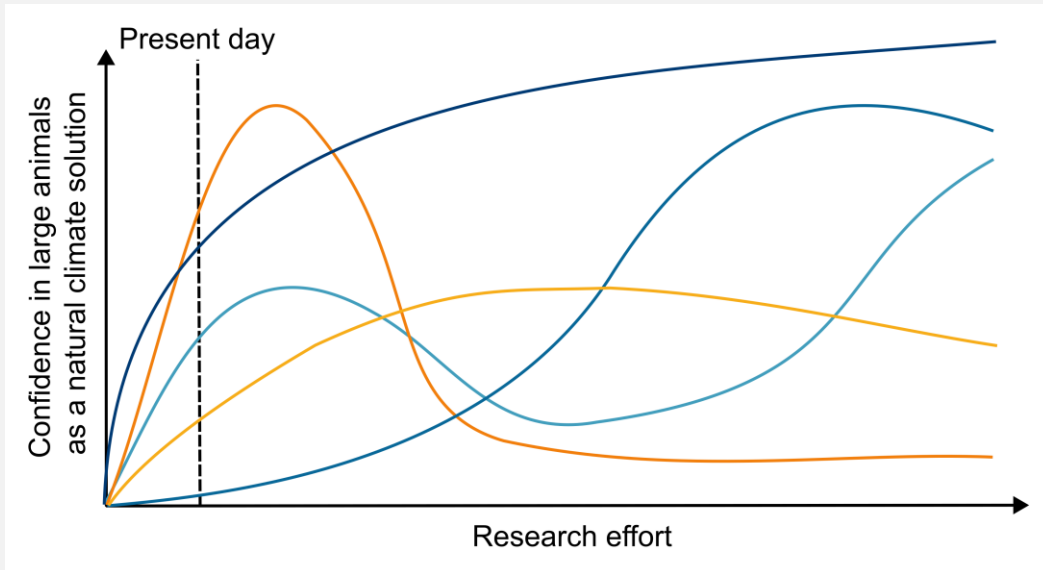
# Key carbon mechanisms



- Many (and interlinked) carbon pathways, including both sources and sinks
- Indirect effects > direct effects
- Timescales of defaunation: potentially quick
- Timescales of restoration: generally slow
- High-degree of uncertainty
- High-degree of context dependency (species, ecosystem, biospheric conditions)
- Few data points for scaling across environmental contexts

Abraham et al. (in review)

# Our understanding is quickly changing



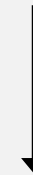
PRIMARY RESEARCH ARTICLE

WILEY Global Change Biology



## Elephants limit aboveground carbon gains in African savannas

Andrew B. Davies<sup>1,2</sup> | Gregory P. Asner<sup>1,2</sup>



PRIMARY RESEARCH ARTICLE

Global Change Biology WILEY

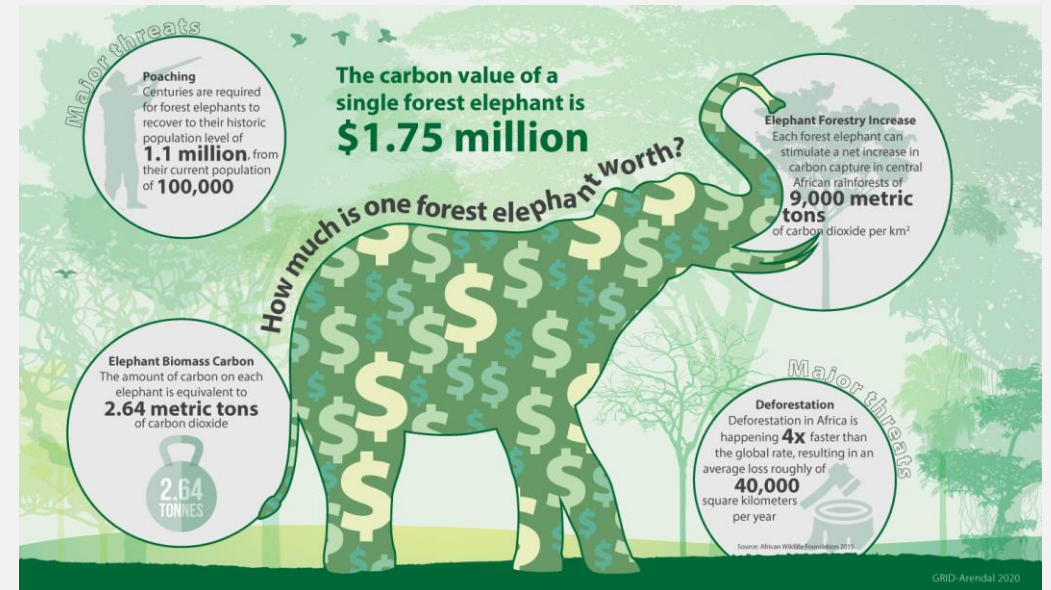


## Conservation with elevated elephant densities sequesters carbon in soils despite losses of woody biomass

Alexandra Sandhage-Hofmann<sup>1</sup> | Anja Linstädter<sup>2,3</sup> | Liana Kindermann<sup>2,3</sup> | Simon Angombe<sup>4</sup> | Wulf Amelung<sup>1</sup>

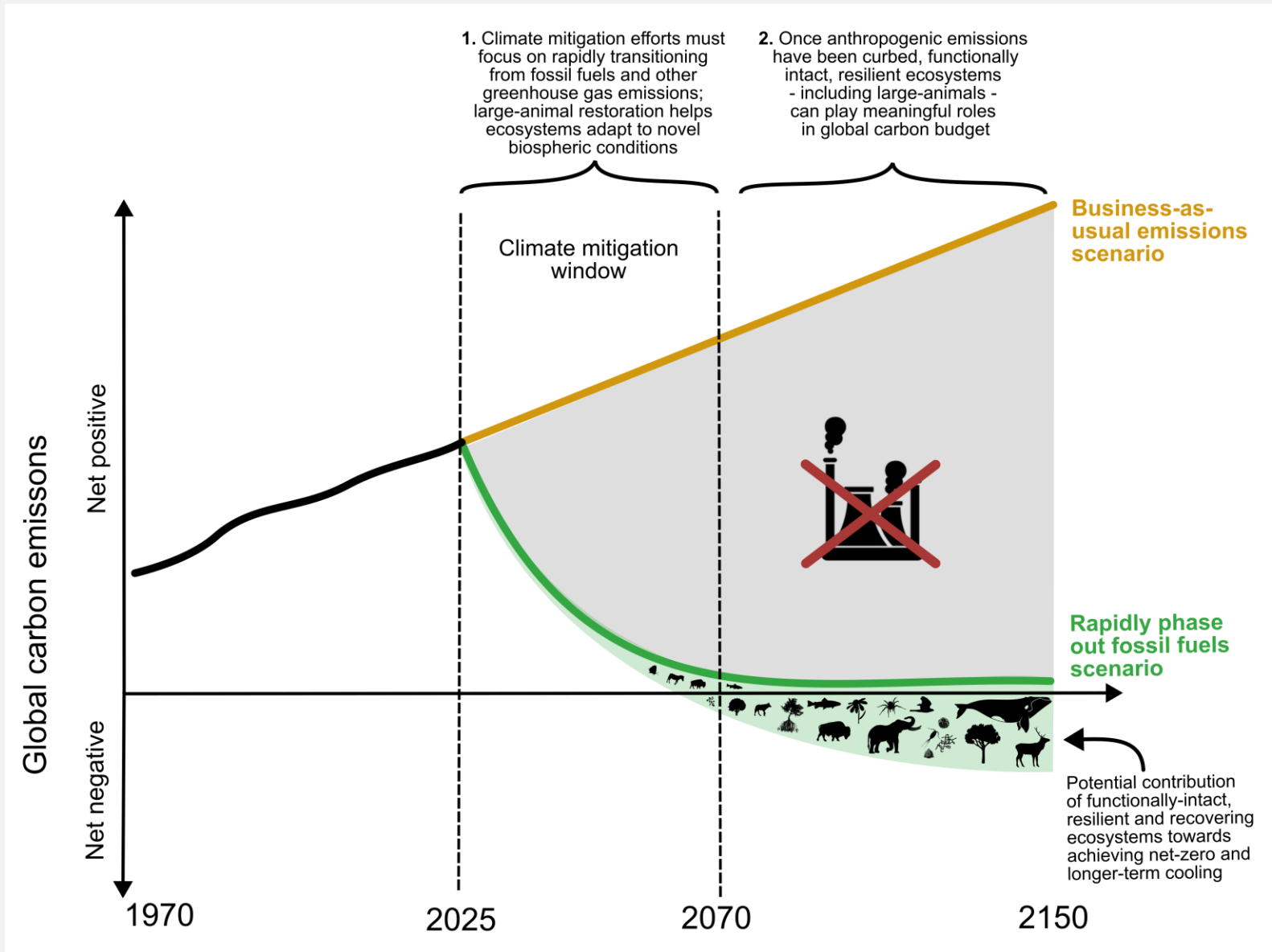
# Monetization of large animal impacts on carbon

- Elephants and whales have both been subject to carbon monetization schemes, most prominently by the IMF:
  - US\$ 1.75 million/forest elephant
  - \$US 2 million/whale
- This opens opportunities to leverage \$\$\$ for biodiversity conservation?
- Neither elephants nor whales pass the Verified Carbon Standard.
- The issue of additionality.
- Carbon-based value systems inherently creates “good” and “bad” species.





# Based on what we know, how should we value animal carbon roles?



- Recovering ecosystems can be key for achieving net-zero in the long-term, if anthropogenic emissions are drastically curbed.
- We should promote and value functionally-intact ecosystems, which are more likely to be resilient to novel conditions in the future and avoids pitfalls of “good” and “bad” species.

# Looking forward

- It's clear we need more research; A LOT more!
- In the meantime, it's important we don't overstate the role of animal restoration as a natural climate solution.
- Current saga with tree planting is a timely reminder of the ecological, social and economic complexities of NbS.
- Issues of blowback and lost confidence if carbon benefits fail to materialise or conflicts with people occur.
- Divert attention away from more reliable solutions.

## Resisting the carbonization of animals as climate solutions

Ethan S. Duvall, Elizabeth le Roux, Heidi C. Pearson, Joe Roman, Yadvinder Malhi & Andrew J. Abraham

Duvall et al. (2024) *Nature Climate Change*

EXCLUSIVE

## British Airways and Netflix used green scheme that unlawfully took tribes' land

Global brands, also including Meta and Gucci, have paid millions of pounds for carbon credits from a project in Kenya, which a court ruled acquired land unlawfully from indigenous people



The Northern Rangelands Trust in Kenya claims it will remove and store 50 million tonnes of carbon

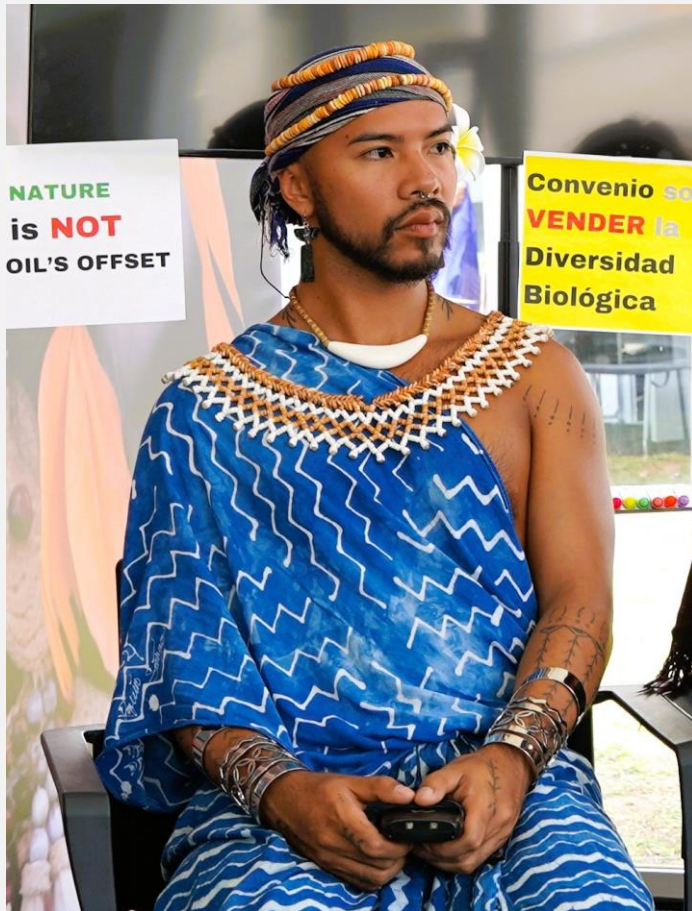
# Conclusion

1. Large animals play important local-scale carbon roles in savanna ecosystems, and worldwide.
2. We must promote animal-carbon roles in an effective way that does not undermine their value now and in the future.
3. Wildlife restoration won't "save" us from climate change, but is a key part of long-term Planetary Stewardship, and may be essential for achieving net-zero over the coming century.

With thanks to co-authors: Elizabeth le Roux, Joe Roman, Heidi Pearson, Jeppe Kristensen, Ethan Duvall and Yadvinder Malhi



## A final word...



*“We face the risk of oil companies using whales [elephants] as supposed sponges for their pollution. The United Nations, the International Monetary Fund, 41 countries and conservation NGOs are turning whales [elephants] into offsets for the carbon market and greenwash. This is a false solution to our climate crisis and could accelerate the extinction of whales [biodiversity].”*

Roquin-Jon Quichocho Sionco at the COP16 Convention of Biological Diversity, Cali, Columbia, Nov 2024.