Global determinants and conservation of evolutionary and geographic rarity in land vertebrates

What is phylogenetic endemism?
A biodiversity measure that highlights areas rich in evolutionarily unique lineages that are found nowhere else on the planet.

Why is phylogenetic endemism important?
Understanding phylogenetic endemism patterns can provide novel insights about evolutionary processes shaping biodiversity and potentially relevant for conservation.

Where are the hotspots of phylogenetic endemism?

Phylogenetic endemism is high in regions with:
- Temperature seasonality
- Precipitation seasonality
- Net primary productivity
- Elevation range

*Geo-climatic variables weakly associated with phylogenetic endemism are not shown.

Phylogenetic endemism hotspots need better protection

70% of hotspots have <10% protected area coverage.
Phylogenetic endemism hotspots have similar coverage by protected areas than non-hotspots for mammals, amphibians, and reptiles.

Phylogenetic endemism hotspots are threatened by human activities

Human footprint index is 1.75 times higher in hotspots than non-hotspot regions.

Phylogenetic endemism hotspots are threatened by climate change

Rate of climate change is 160 times higher in hotspots than those same areas experienced historically, and will experience ~1.18 times greater rate of climate change than non-hotspot regions.

What does this mean for conservation?
Most phylogenetic endemism hotspots face a greater risk from both current threats and projected climate change, emphasizing the urgent need for strategic conservation to safeguard these regions.

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