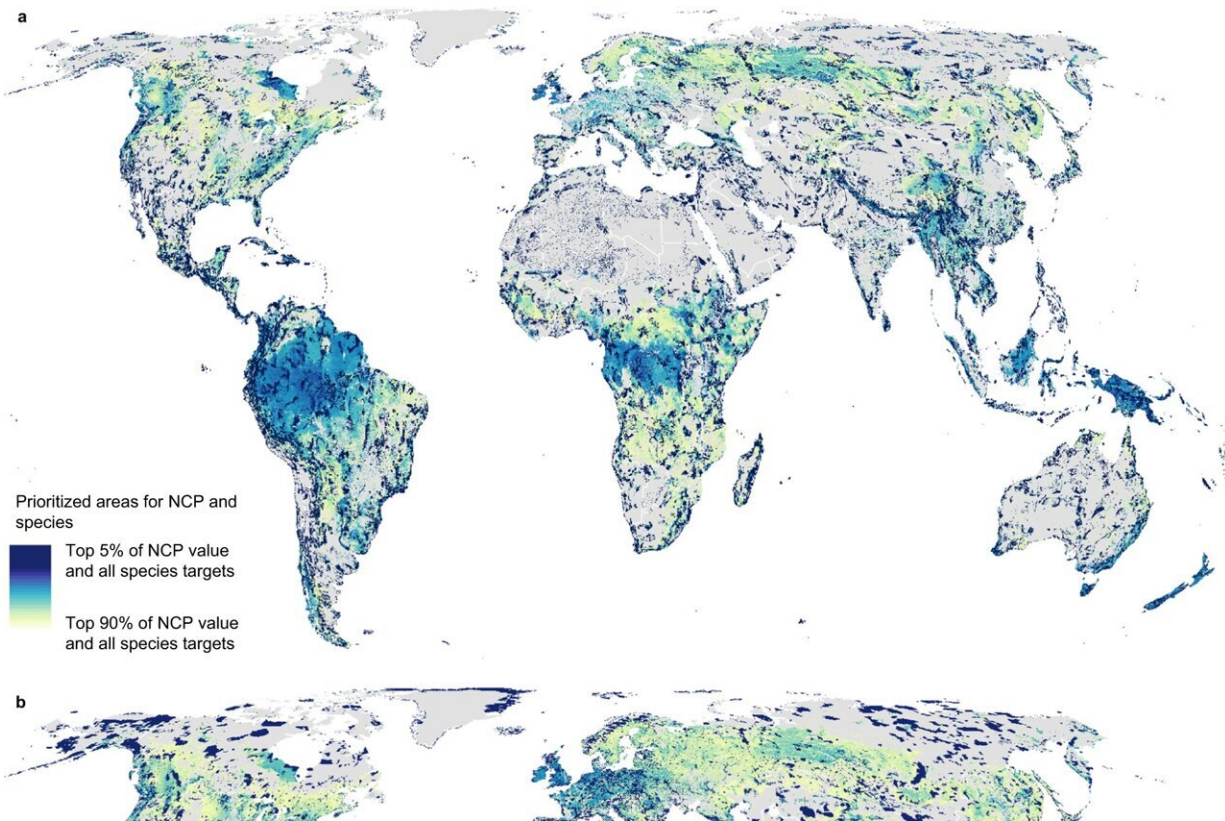


Most of the land humans need to thrive is unprotected, new study finds

January 10 2024, by Pat Leonard



Prioritized areas for nature's contributions to people (NCP) and biodiversity. a Combined prioritization results for all species representation targets and NCP targets ranging from 5% (dark blue) to 90% (light yellow). b Combined prioritization results for NCP and species with the World Database of Protected Areas (WDPA) and other effective area-based conservation mechanisms (OECM) sites locked in to prioritization results. In all cases, dark blue areas represent areas required to achieve targets in the least amount of area. Collectively, dark blue to light yellow areas provide 90% of all ten NCP and

meet species representation targets in the least amount of area. Prioritized areas achieve all species representation targets; only the level of NCP achieved varies. Credit: *Nature Communications* (2024). DOI: 10.1038/s41467-023-43832-9

More than 80% of global land area needed to maintain human well-being and meet biodiversity targets is at risk of conflict with human development, according to a new study led by the Cornell Lab of Ornithology.

The study, [published](#) Jan. 10 in *Nature Communications*, found that roughly half of global land, excluding Antarctica, provides nearly all current levels of nature's services to people while also conserving biodiversity for 27,000 species of birds, mammals, reptiles and amphibians. Of that, only 18% is adequately protected, the study found.

"Biodiversity, climate and [sustainable development](#) cannot be considered in isolation," said lead author Rachel Neugarten, a doctoral student at the Cornell Lab. "We must also factor in nature's contributions to human well-being, including [clean water](#), carbon storage, crop pollination, flood mitigation, coastal protection and more."

These findings point to potential conflict because 37% of the [land areas](#) that provide nature's services are also highly suitable for development by agriculture, renewable energy, oil and gas, mining or urban expansion. The potential for development, coupled with the fact that few priority areas are currently protected, means that successful conservation will require creative solutions, such as sustainable use and multifunctional landscape planning.

"We face enormous challenges," said senior author Amanda Rodewald, the Garvin Professor and Senior Director of the Center for Avian

Population Studies at the Cornell Lab. "With [limited resources](#) available to address climate change, biodiversity loss, poverty and water insecurity, we must be strategic and find ways to tackle more than one challenge at a time."

This study is based on a global-scale optimization of land uses to identify joint priorities for biodiversity and nature's contributions to people.

"If designed carefully, renewable energy development can be compatible with biodiversity conservation and ecosystem services to people," Neugarten said. "Examples of this include livestock grazing under wind farms or cultivating native pollinator gardens under solar panels. But there's a real risk that achieving [renewable energy](#) goals could conflict with nature conservation goals without careful planning."

More information: Rachel A. Neugarten et al, Mapping the planet's critical areas for biodiversity and nature's contributions to people, *Nature Communications* (2024). [DOI: 10.1038/s41467-023-43832-9](https://doi.org/10.1038/s41467-023-43832-9)

Provided by Cornell University

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