Oryx

Improving estimates of global conserved area coverage

By Helen O'Neill, Zoe Davies and Bob Smith, 7th November 2023

Creating and managing protected areas is one of the oldest and most commonly used conservation approaches. In fact, this approach to biodiversity conservation is so well established that there have been international targets for global protected area coverage for over 40 years. As the decades have passed, and the biodiversity crisis has deepened, these targets have become more extensive. In 2022, the Convention on Biological Diversity's Global Biodiversity Framework was agreed on, with signatories committing through Target 3 to conserve 30% of the planet by 2030—a target commonly referred to as 30 by 30.

The percentage element of Target 3 is only one component though, and there is a renewed focus on boosting conservation outcomes and respecting people's rights. As part of this, there is an emphasis on recognizing and creating other effective area-based conservation measures (OECMs), a new type of conserved area that is often privately- or community-governed and may not have conservation as its primary goal.

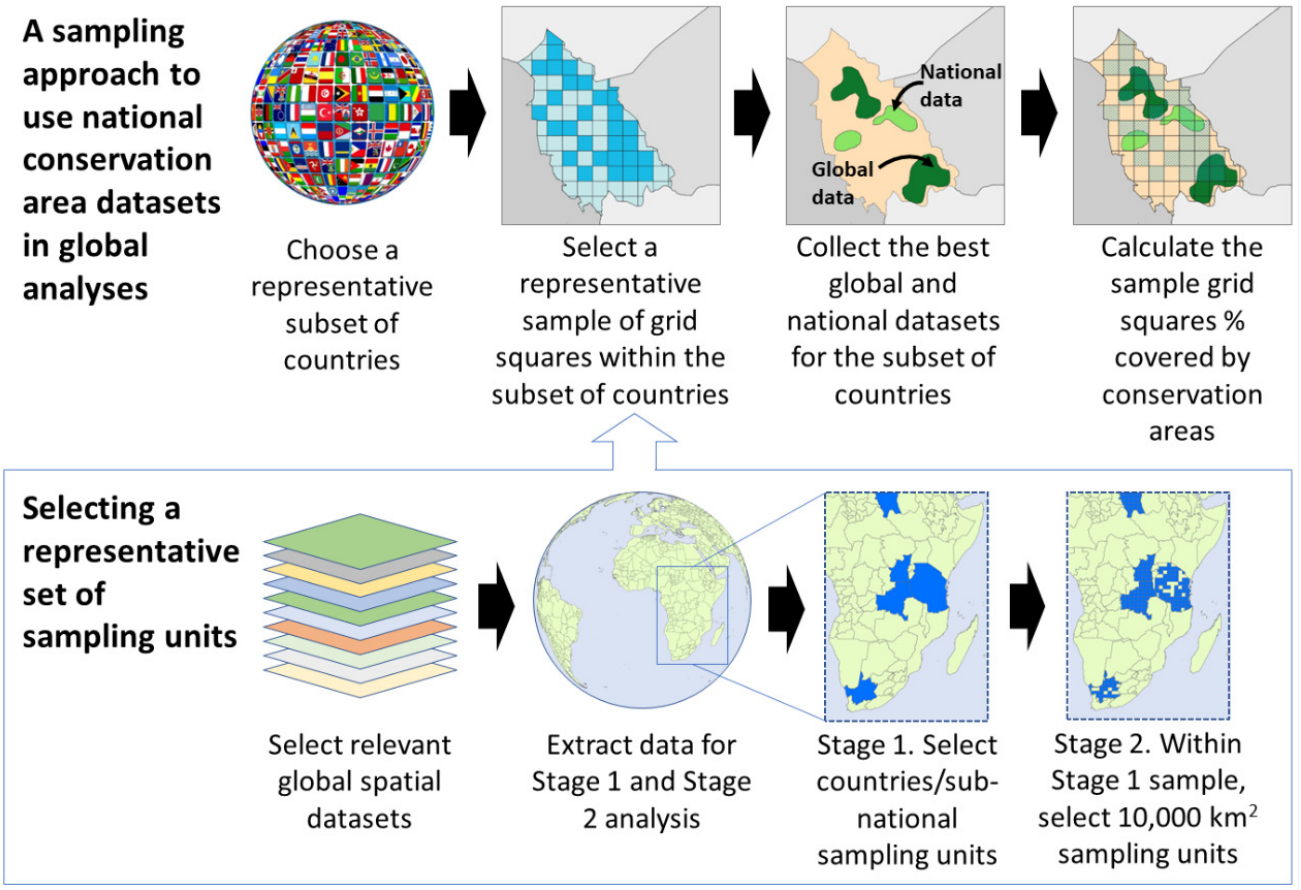
View over the Blyde River Canyon, a nature reserve in South Africa within the 28,748 km squared Kruger to Canyons Biosphere Reserve, which is a designated OECM as per Protected Planet. Photo: Javarman/Adobe Stock.

So, we have these global targets about protecting areas for conservation, but how do we know if we're close to reaching them? How is progress measured? The answer to that is through the World

Database on Protected Areas (WDPA) and the World Database on Other Effective Area-Based Conservation Measures (WDOECM). These are incredible datasets that aim to be a full global census of the world's protected areas and OECMs, based on approved datasets provided by national governments and other official authorities. A huge amount of work has gone, and continues to go, into developing, maintaining and updating these databases.

The WDPA and WDOECM are designed to answer the question of how well each country is progressing towards meeting their international commitments. More recently though, other questions have arisen about conserved areas and the potential impacts of Target 3. In particular, there have been heated debates about whether 30 by 30 will have negative impacts on biodiversity, by stretching resources too thinly, and on people, by negatively affecting their livelihoods and traditional rights. To help inform these debates, we need a snapshot of current conserved area coverage. Currently, the official datasets only give a partial answer, as most governments have only just started the process of recognizing and mapping OECMs.

Fortunately, there is a way around this. Many countries have already recognized and mapped different types of conserved areas that could potentially become OECMs. These efforts could help us to better estimate conserved area coverage by combining national datasets with the official global datasets. But as the WDPA and WDOECM illustrate, collecting data from every country is very time consuming, and producing a quick and accurate estimate using this method is not feasible without spending a considerable amount of time and money.

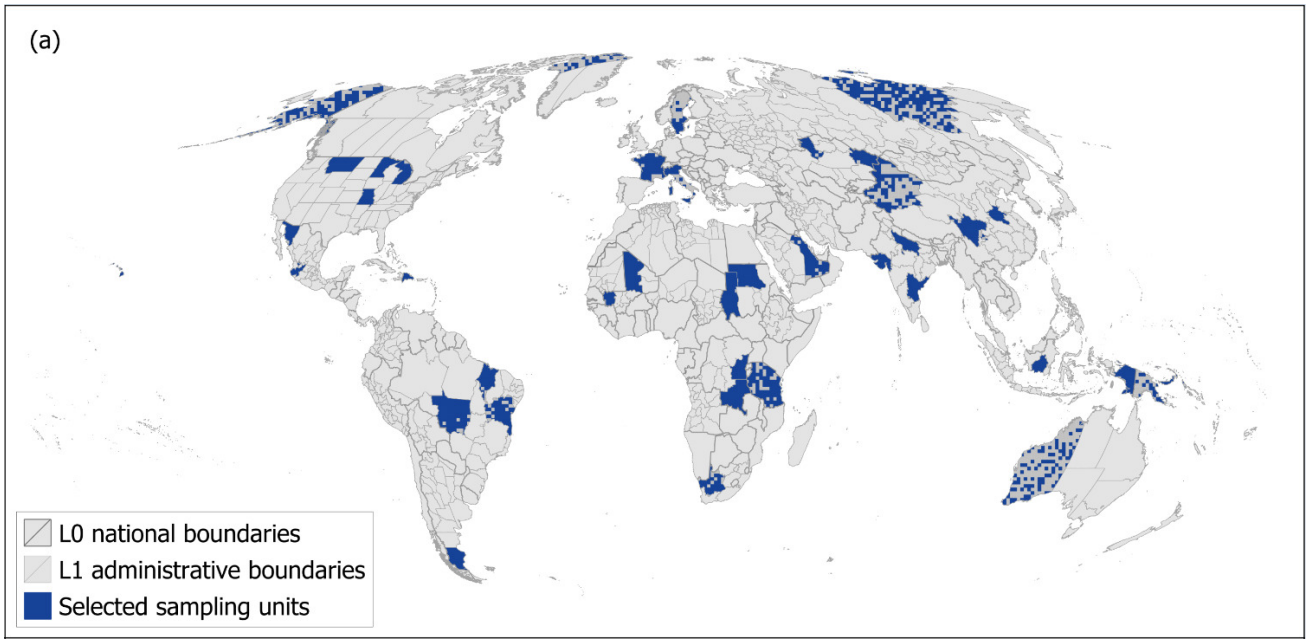


Graphic illustrating our sampling approach for developing more accurate estimates of global conservation area coverage based on national data sets.

This is a common problem, but with a common solution; political pollsters don't interview the entire electorate and ecologists don't measure every individual of their study species. Instead, they

produce estimates based on a sample of the total population. This is why, in our recent study, we developed a new sample-based methodology to measure conserved area coverage—a methodology that could also be used more broadly to reduce the time and effort needed to create other global datasets.

Our analysis was based on sampling 10% of the world's land surface based on a series of 100-km^2 grid squares. Initially we chose the sample at random, and on average this resulted in selecting squares in 162 countries. Collating and analysing data from that many countries would require almost the same data collection effort as attempting a global census. Therefore, to make future data collection more feasible, we developed an approach to select a representative global sample area while minimizing the number of nations sampled. This was based on using optimization software to select grid squares that account for the known drivers of protected area establishment and biodiversity patterns.



A map showing the final sample of 100×100 km grid squares, meeting 10% of targets for biogeographical and conservation area extent factors whilst minimizing sample area. See Figure 3a in our article for more detail.

Our final sample consisted of grid squares that covered just over 10% of the terrestrial realm but within only 25 countries. This representative sample is a much more feasible basis of future research, and we are now working with partners to collect the available national data. This will provide the snapshot that we need to inform future debates and policies, not replacing but complementing the WDPA and WDOECM. It also provides a model for other worldwide conservation analyses, which will allow us to use a range of high-quality national datasets to better understand global issues.

The article 'Developing a framework to improve global estimates of conservation area coverage' is available open access in *Oryx—The International Journal of Conservation.*

Header image credit: Sebastien Seck / Unsplash. Feature image credit: Jachan DeVol / Unsplash.

Helen O'Neill, Zoe Davies and Bob Smith

Helen O'Neill is a Postdoctoral Research Associate at the Durrell Institute of Conservation and Ecology (DICE), University of Kent, UK. Her research focuses on global conserved area networks, capacity building in international sustainable trade and large carnivore conservation ecology.

Zoe Davies is Professor of Biodiversity Conservation at the Durrell Institute of Conservation and Ecology (DICE), University of Kent, UK. Her research focuses on the use of empirical data to address questions of importance to conservation management and policy. This includes conservation planning, implementation and protected area development, as well as the effectiveness of conservation interventions, policies and initiatives.

Bob Smith is the Director of the Durrell Institute of Conservation and Ecology (DICE) and Professor of Conservation Science at the University of Kent. His research focuses on the trade-offs involved in developing conserved area systems and other nature recovery networks.