

New method prioritizes species for conservation in the face of uncertainty

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A new way to prioritize species for conservation efforts outperforms other similar methods, according to research presented in *PLOS ONE* by Rikki Gumbs of Imperial College London, UK, and colleagues at the Zoological Society of London, UK.

The ongoing "sixth mass extinction", driven by human activity, threatens [species](#) around the world. A variety of different metrics have been used to prioritize species for conservation efforts, including the Evolutionarily Distinct and Globally Endangered (EDGE) metric, developed at the Zoological Society of London. EDGE ranks each species based on its relative contribution to the total evolutionary history of its taxonomic group, combined with its risk of extinction. More evolutionarily distinct species represent a greater amount of evolutionary history than species with many close relatives, meaning that their extinction results in a greater loss of biodiversity. However, a species' evolutionary distinctness can be difficult to determine if genetic sequencing data is unavailable.

To address this issue, Gumbs and colleagues developed a new method to estimate evolutionary distinctness scores for "missing" species and correct the scores of their relatives. The researchers then compared their new method with two previously developed strategies for determining evolutionary distinctness to see how well they reproduced evolutionary distinctness scores for known species.

The analysis showed that the new method gave the most accurate estimates of species' evolutionary distinctness scores. Its estimates

differed from known scores by an average of 1 percent, while the two older methods' estimates differed from true scores by 31 and 38 percent. Using the new method, the researchers updated evolutionary distinctness scores and EDGE prioritization rankings for all tetrapods (four-footed animals), including the first ranking for reptiles. In the future, the new method promises to help researchers keep up with new genetic data and updated phylogenetic trees that could affect prioritization rankings.

Rikki Gumbs says: "Using a novel [method](#) to incorporate species with no evolutionary data, we updated existing EDGE prioritisations for amphibians, birds and mammals, and created the first EDGE prioritisation for reptiles, including a Top 100 EDGE Reptile List to inform and inspire conservation efforts on some of the world's most unique, threatened and overlooked species."

More information: Gumbs R, Gray CL, Wearn OR, Owen NR (2018) Tetrapods on the EDGE: Overcoming data limitations to identify phylogenetic conservation priorities. PLoS ONE 13(4): e0194680. doi.org/10.1371/journal.pone.0194680

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