

## 2024\_83\_DoLS\_JT: Developing the next generation of trait-based biodiversity metrics for addressing policy targets

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The Kunming-Montreal Global Biodiversity Framework marked a shift in focus from protecting biodiversity to restoring natural ecosystems. The framework highlights the need to maintain, enhance or restore the integrity, connectivity and resilience of ecosystems by 2050, and sets the target of mobilising \$200 billion annually for this purpose. To achieve these objectives, a nature finance system is under active development, guided by the Science-based Targets Network and the Taskforce on Nature-related Financial Disclosures, with the goal of diverting global financial flows towards effective nature-positive outcomes. However, this raises the question of how the impacts of economic activities on ecosystems, along with the success of any countermeasures implemented, can best be quantified.

Operationalising the concept of 'nature positive' in finance and business requires robust, scalable, and cost-effective metrics that can measure ecosystem attributes in a way that is both biologically meaningful and responsive to management actions. Such metrics are urgently needed to enable the valuation of biodiversity and ecosystems in economic modelling, and the development of financial instruments that will 'unlock' nature positive investment. Several potential metrics have been proposed, with some already in circulation, but most are relatively simplistic and there has been little attempt to incorporate components of biodiversity that underpin concepts of ecosystem function and resilience. Failure to properly quantify and include ecosystem function in these metrics could limit the impact of nature markets, or even introduce new forms of systematic risk.

In conjunction with a CASE partner (CreditNature) and colleagues in the Zoological Society of London, this project will explore and test a variety of trait-based metrics with the highest potential to provide robust quantitative links between the recovery of species and the desired properties of ecosystems. The research will focus on adaptations of ZSL's EDGE metric and a selection of composite metrics into which species traits can be integrated. The main questions addressed will be:

- 1) Which species traits work best in combination to provide standardised and widely applicable metrics for use in international nature-positive reporting and financial mechanisms?
- 2) How can trait-based approaches be applied to the setting of robust policy targets, including climate adaptation policies?
- 3) Unlike climate, the complexity of biodiversity and ecosystems means that multiple metrics may need to be aggregated as an index. If so, what is the simplest index available that will be fit for purpose, and what index architectures work best to balance ecological realism with the needs of end-users such as NGOs, governments and corporations?

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