eDNA: working together to scale up the measurement of nature

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21st National Biodiversity Network Conference
Wednesday 24 November 2021
Biodiversity data – from collection to use

@NatureMetrics

BIODIVERSITY HAS A MEASUREMENT PROBLEM

Conventional surveys give patchy, inconsistent & incomplete data that is not fit for purpose

‘Gold standard’ data can be 100 years out of data

TNFD

BUSINESS FOR NATURE

NATURE POSITIVE BY 2030

NATUREMETRICS: End-to-end service

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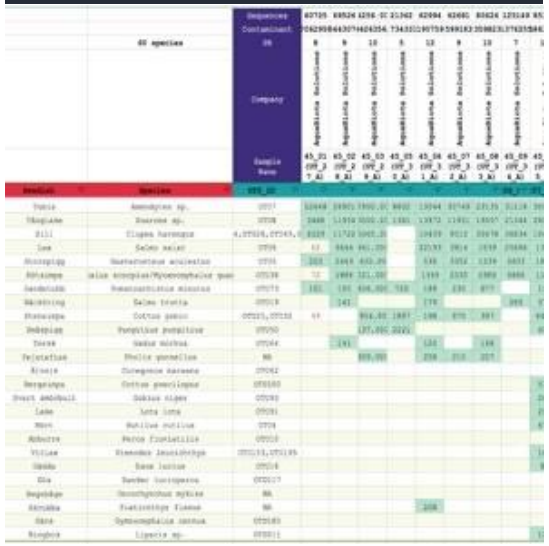
NATURE METRICS
DNA-BASED MONITORING

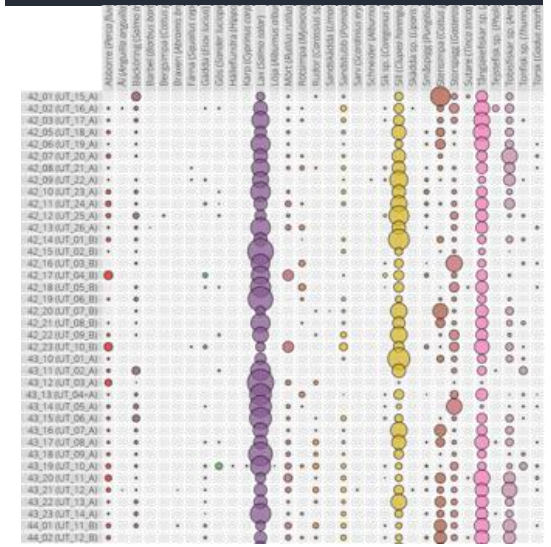
MOBILE APP FOR FIELD DATA

Sequence the DNA

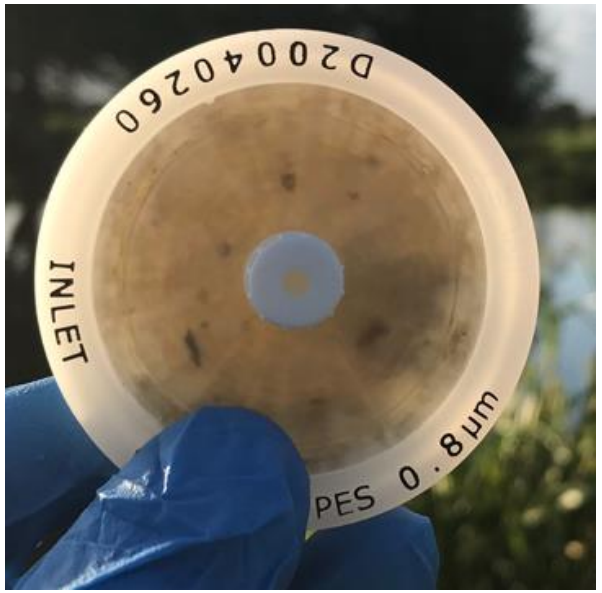
Process data



Ecological reporting



NATUREMETRICS: End-to-end service

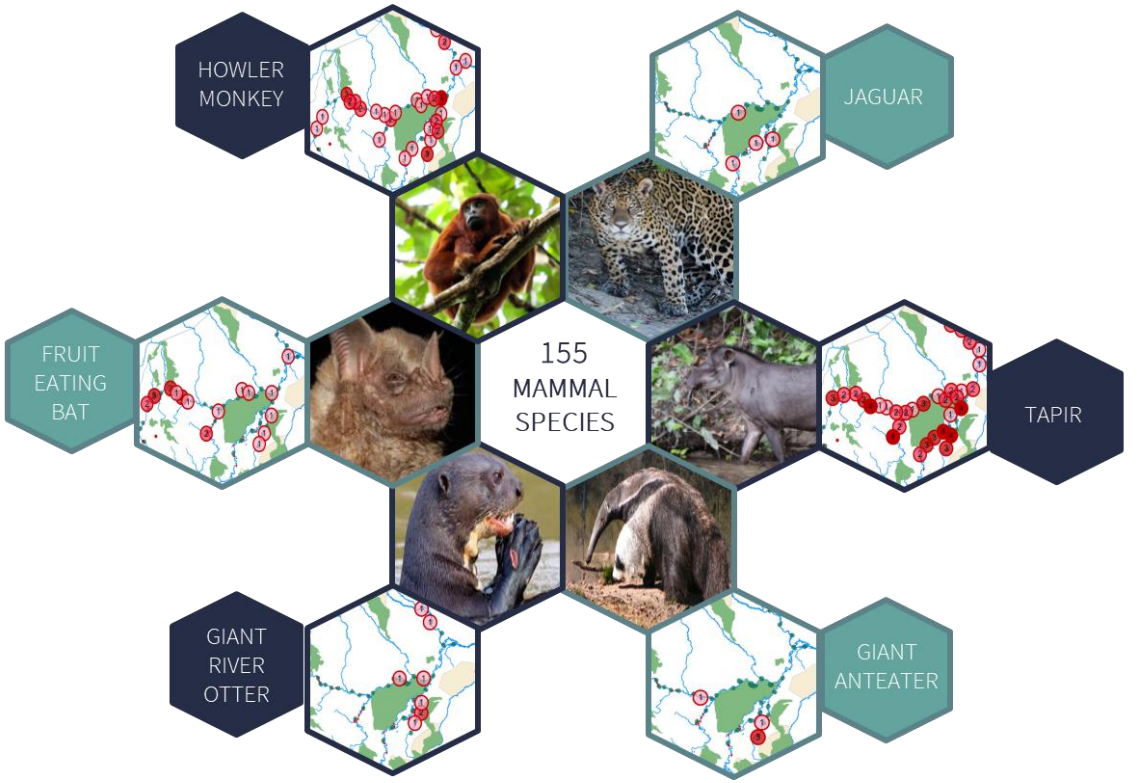


NATURE METRICS
DNA-BASED MONITORING

WWF

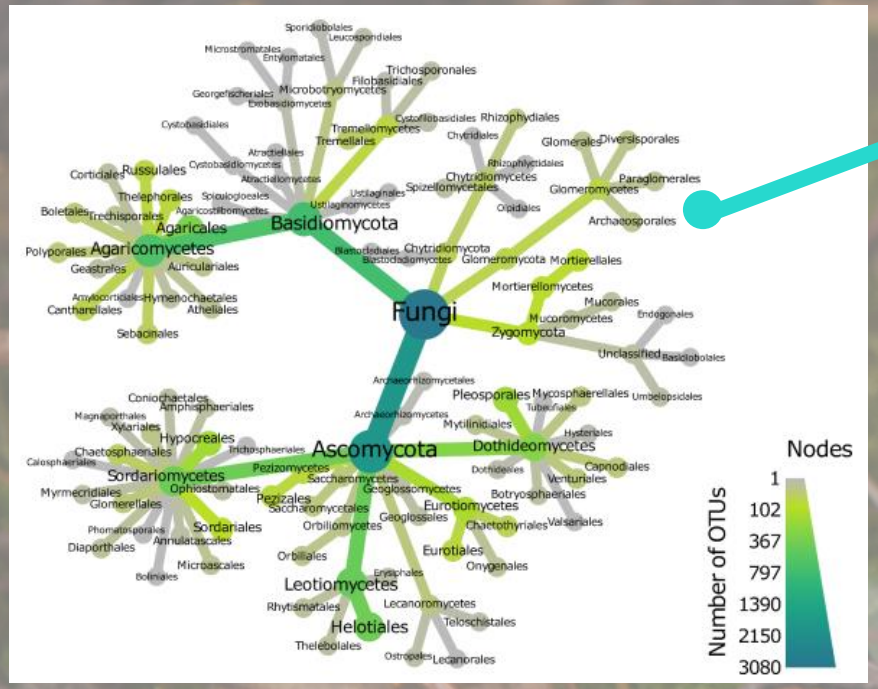
RIVER DOLPHIN & eDNA SURVEY IN THE PERUVIAN AMAZON

Group	Species
Fish	375
Mammals	155
Amphibians	74
Reptiles	6
Birds	65



NATURE METRICS
DNA-BASED MONITORING

Soil biodiversity

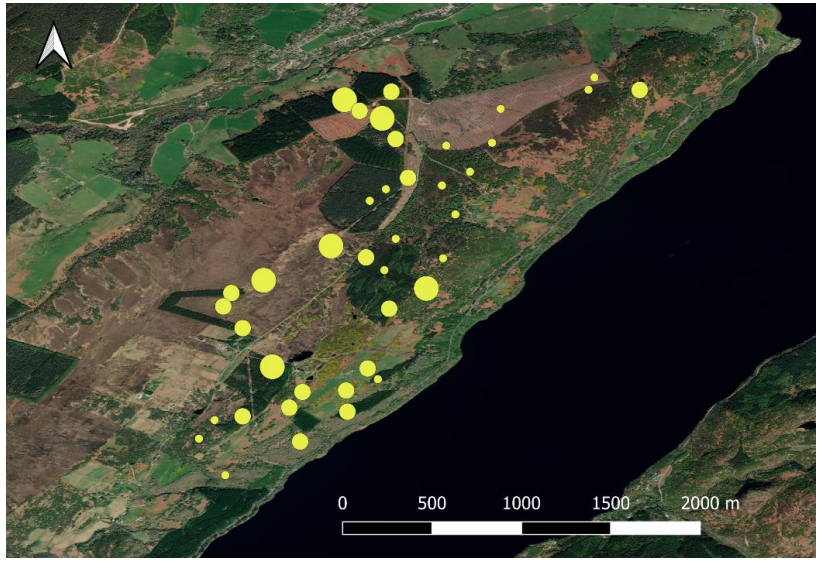


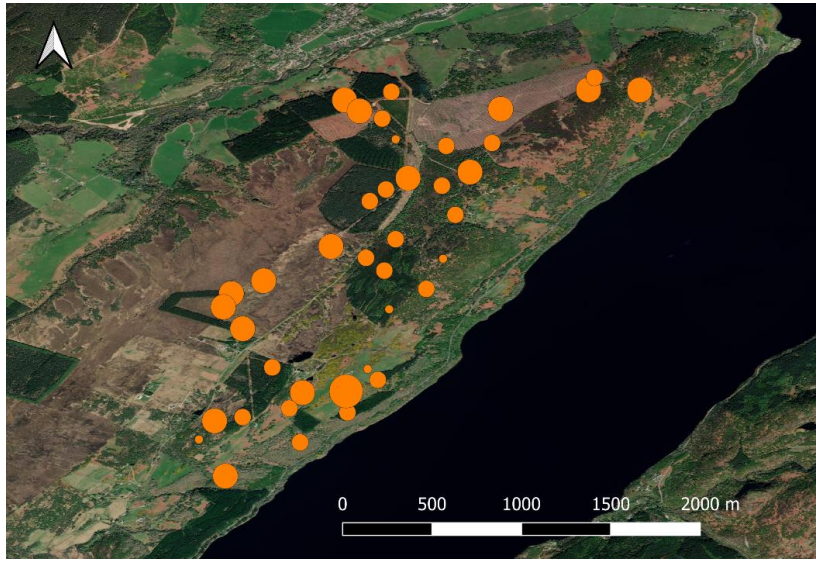
Biodiversity Modelling

42 soil samples analysed for fauna & fungi

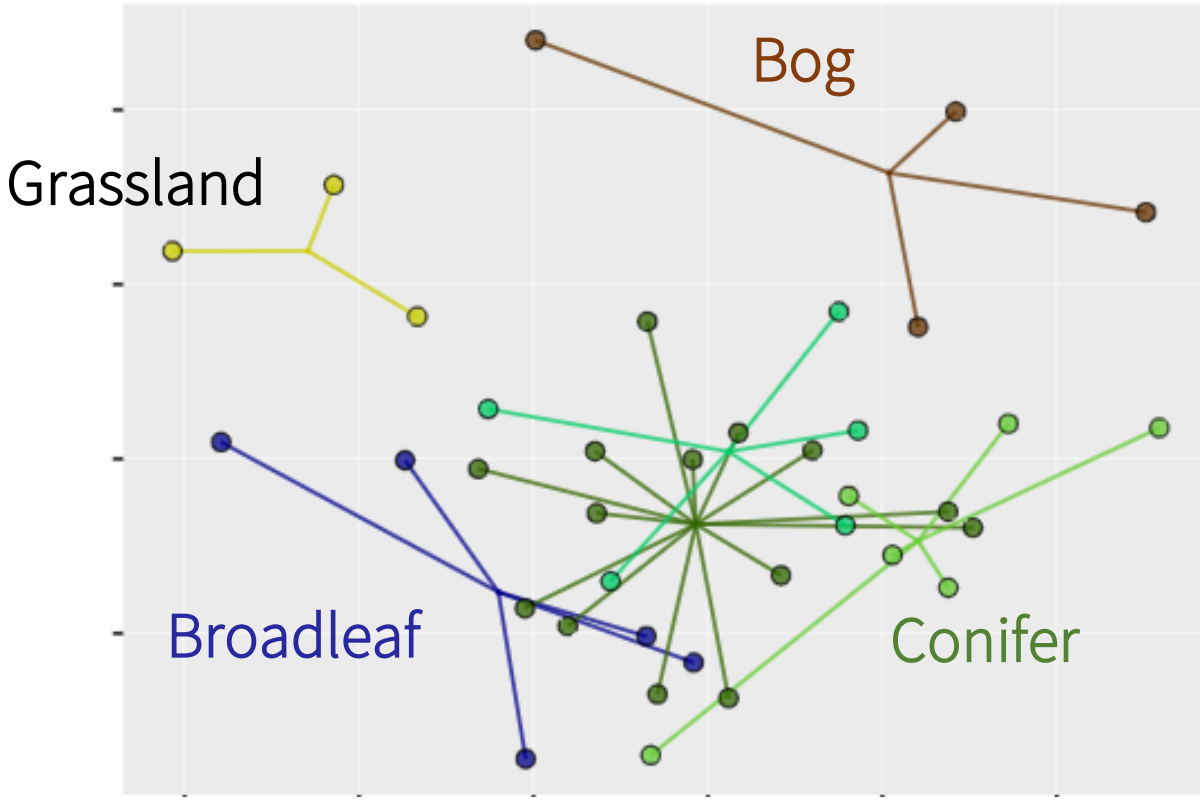
- 1,168 fungi species
- 352 soil fauna species

- Soil fauna most diverse in the peat bogs
- Lowest diversity in coniferous woodlands

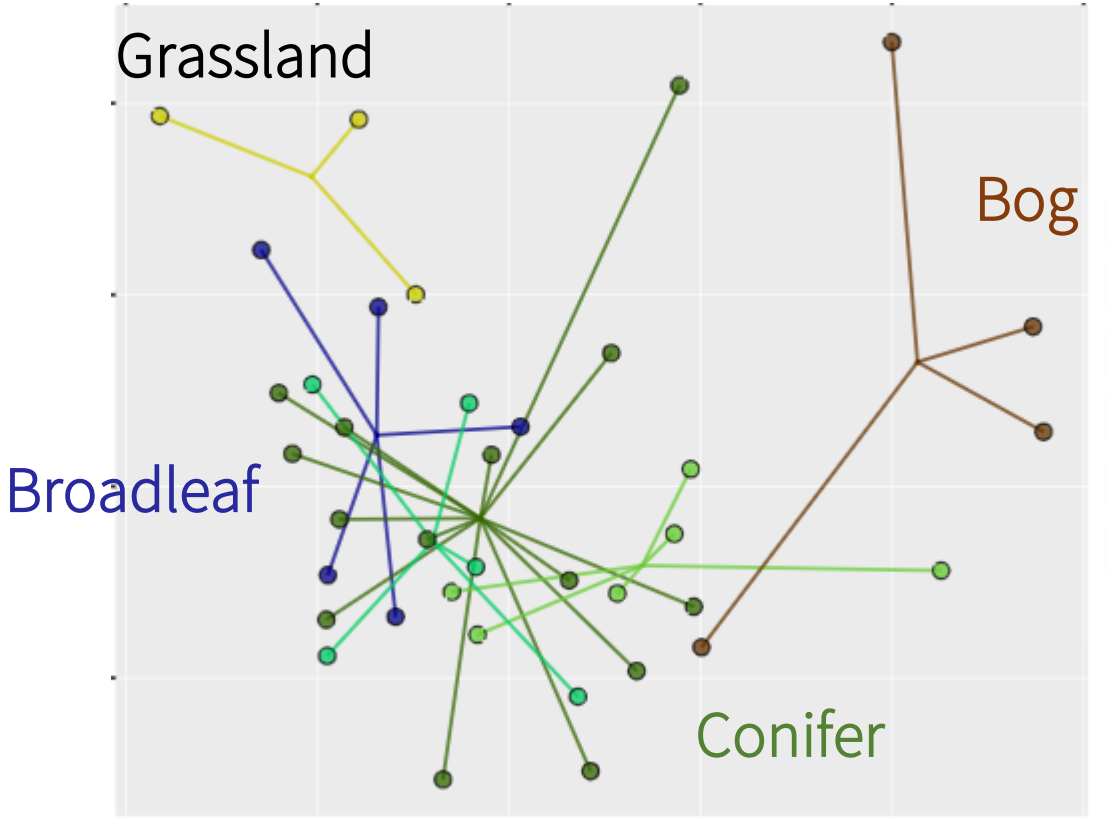




Biodiversity Modelling



Fungi



Soil Fauna

SCALING UP eDNA

eBioAtlas

Mapping the world's biodiversity using environmental DNA

A PARTNERSHIP BETWEEN IUCN AND NATURE METRICS DNA-BASED MONITORING

NATURE METRICS
DNA-BASED MONITORING

ENVIRONMENTAL DNA (eDNA)

30,000 samples over 3 years

FILTER

FILTER

PRESERVE

SEND

eBioAtlas

EAST LONDON

MALAYSIA

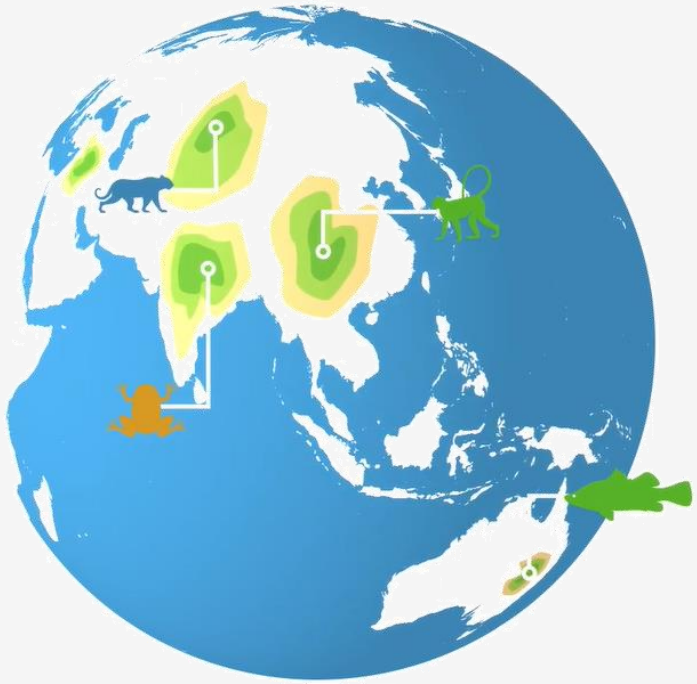
SOUTH AFRICA

eBioAtlas

Convention on Biological Diversity

Global Biodiversity Framework

eBioAtlas



30,000+ eDNA samples

Global reference library

Equip local stakeholders

Digital infrastructure

Open data

Sustainable financing

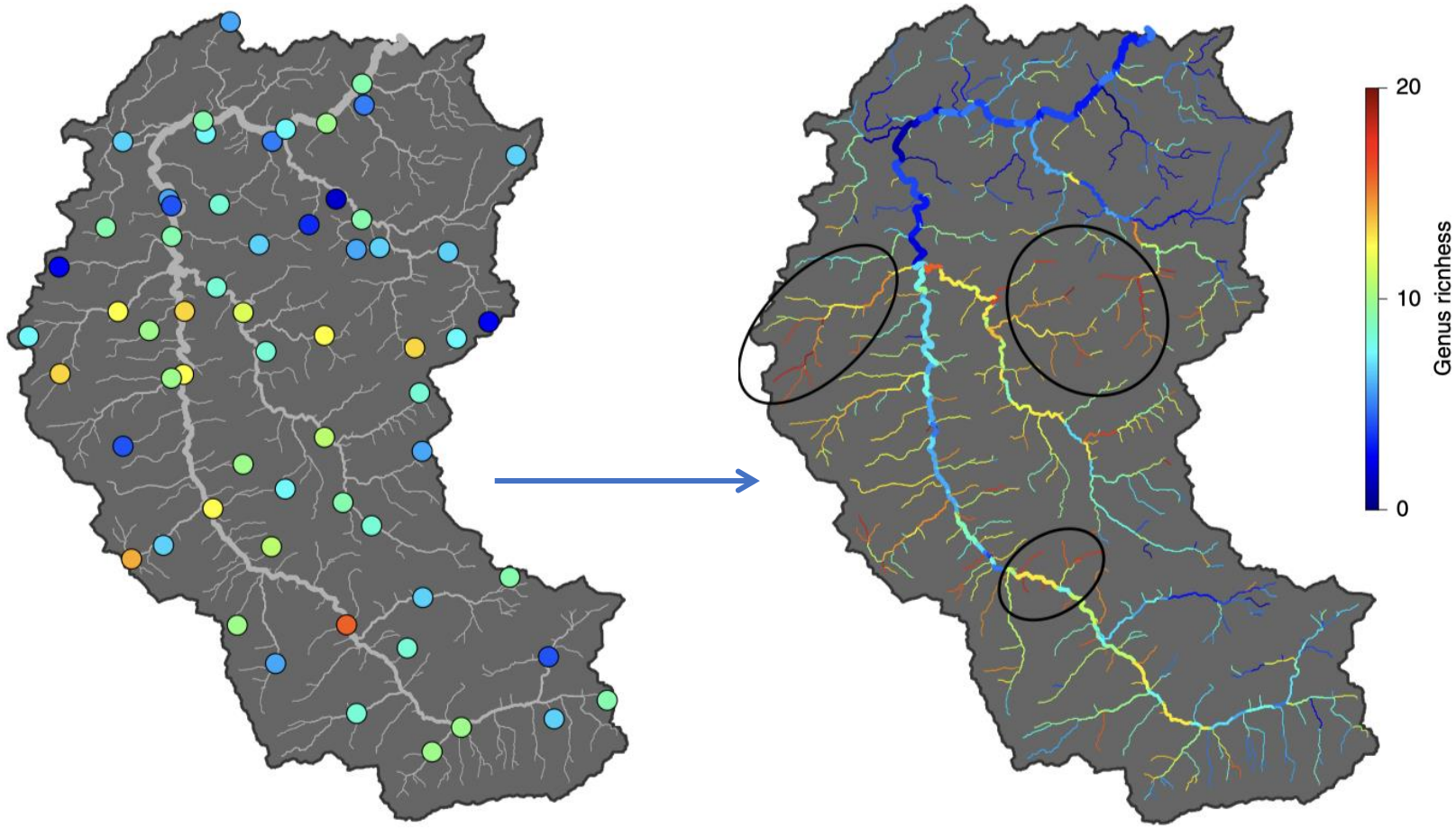
Upscaling eDNA point samples to continuous biodiversity maps of whole river basins

Carraro *et al*. 2020. **Environmental DNA allows upscaling spatial patterns of biodiversity in freshwater ecosystems**. *Nat Comms* 11:3585.

Carraro *et al*. 2021. **How to design optimal eDNA sampling strategies for biomonitoring in river networks**. *Environmental DNA* 3:157–172.

61 eDNA samples over a 740 km²
subcatchment of the River Thur, Switzerland

eBioAtlas



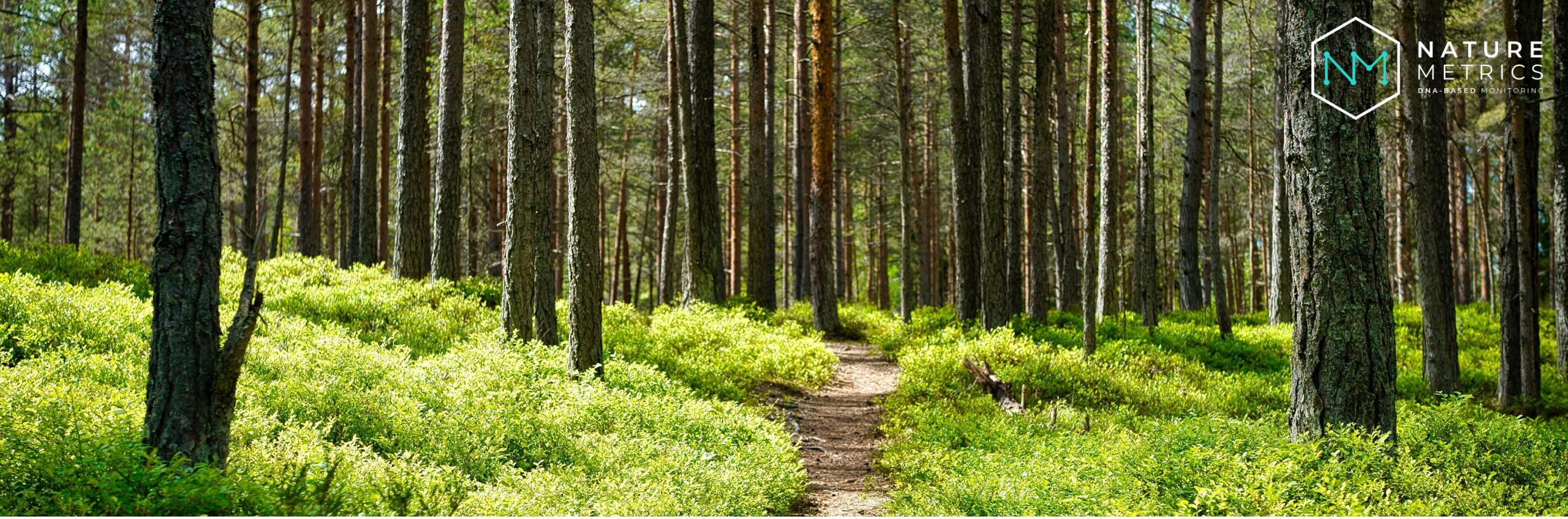
eDNA flows downstream. With a set of eDNA samples and estimates of water velocities, it is possible to estimate where the eDNA from each species originated from, creating **continuous biodiversity maps that can be used to calculate ecosystem health metrics across whole basins**.

eBioAtlas

OUR VISION

By empowering local stakeholders to **monitor biodiversity** at previously unimaginable scales, we **address global knowledge gaps** and lay the **foundations** for meeting global goals on nature & biodiversity.

BROUGHT TO YOU BY IUCN **AND** NATURE METRICS DNA-BASED MONITORING



Thank you and please contact us

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