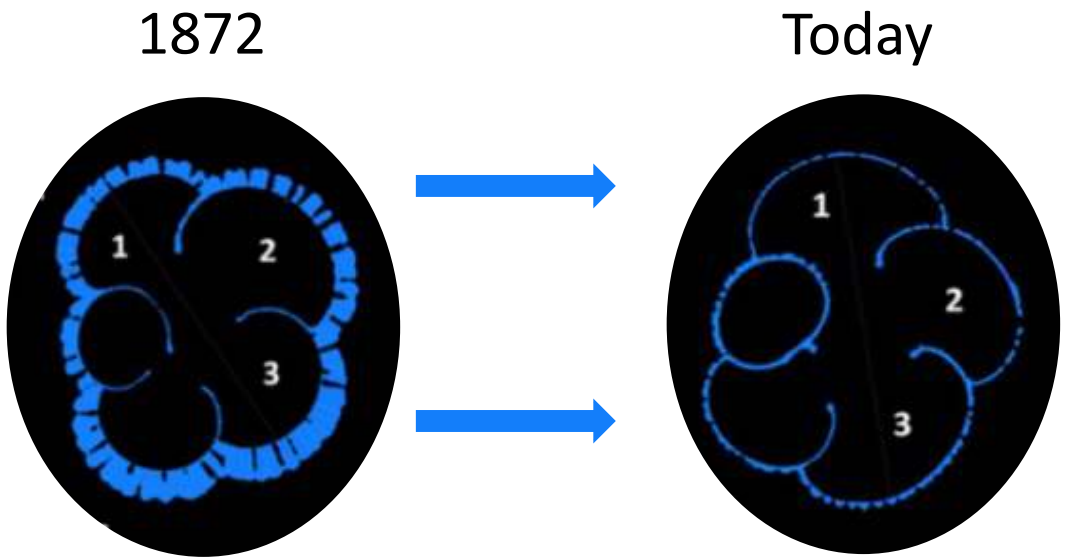
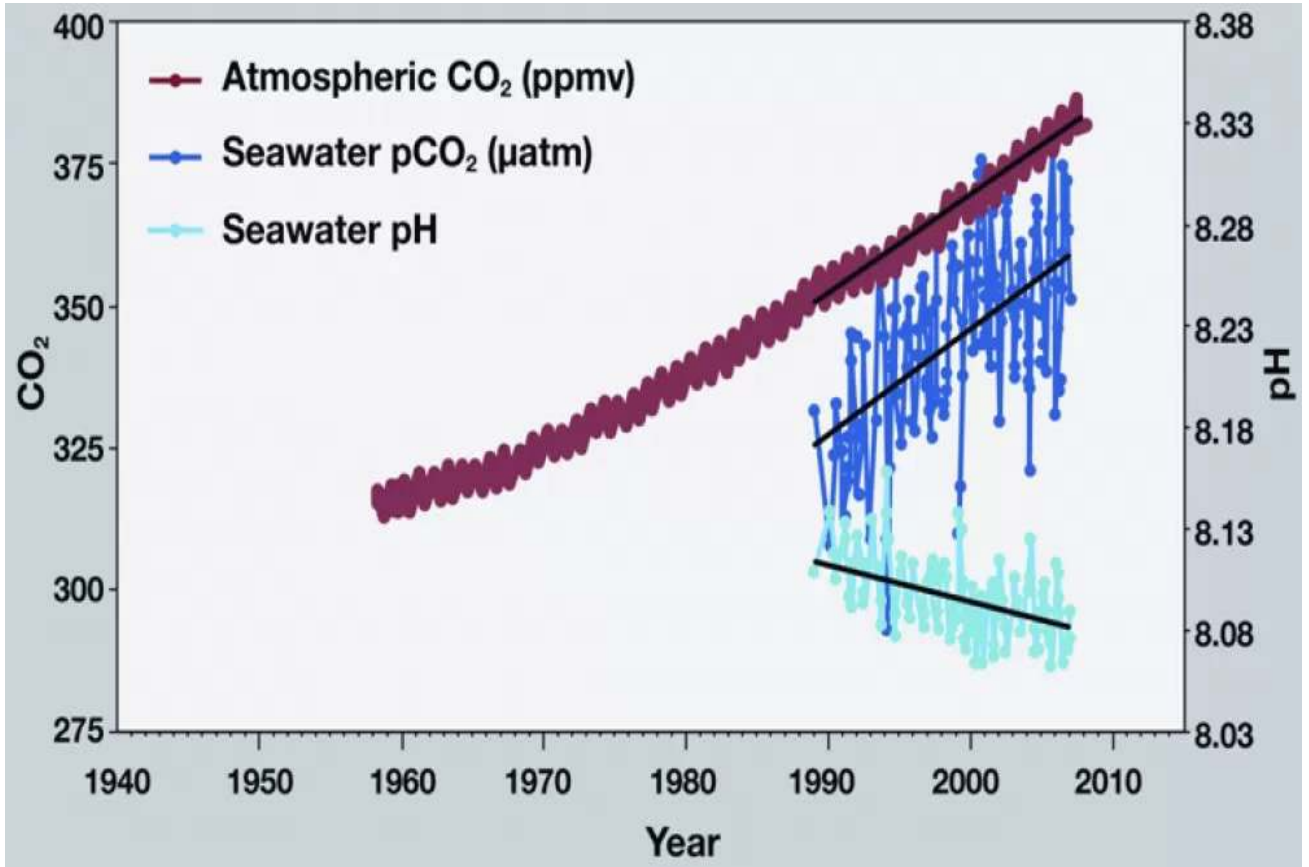
Biodiversity in Crisis:
How much nature is left?

Dr Doug Gurr, Director

Federated Hermes Presentation

Oceans acidification and climate change

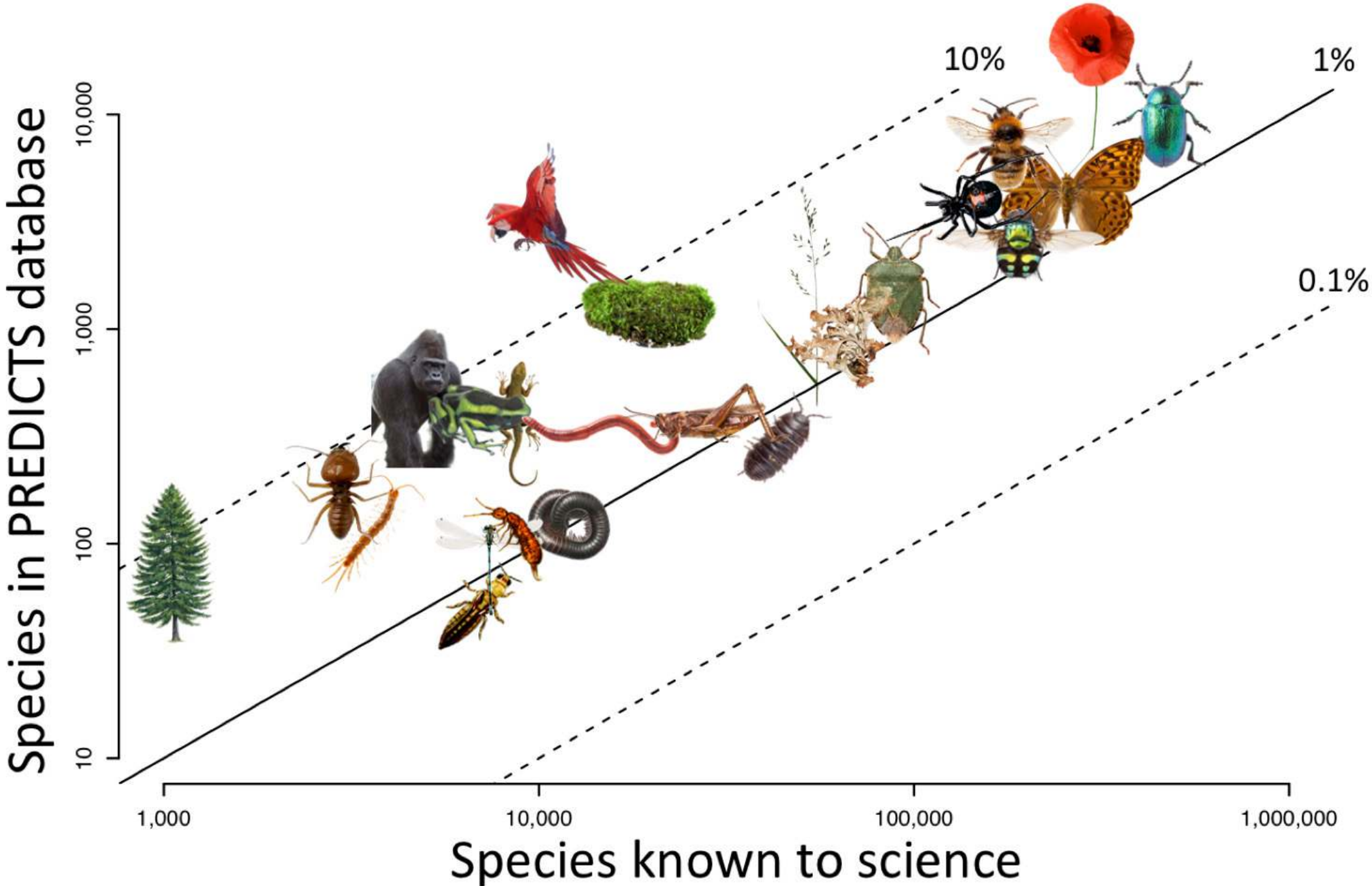




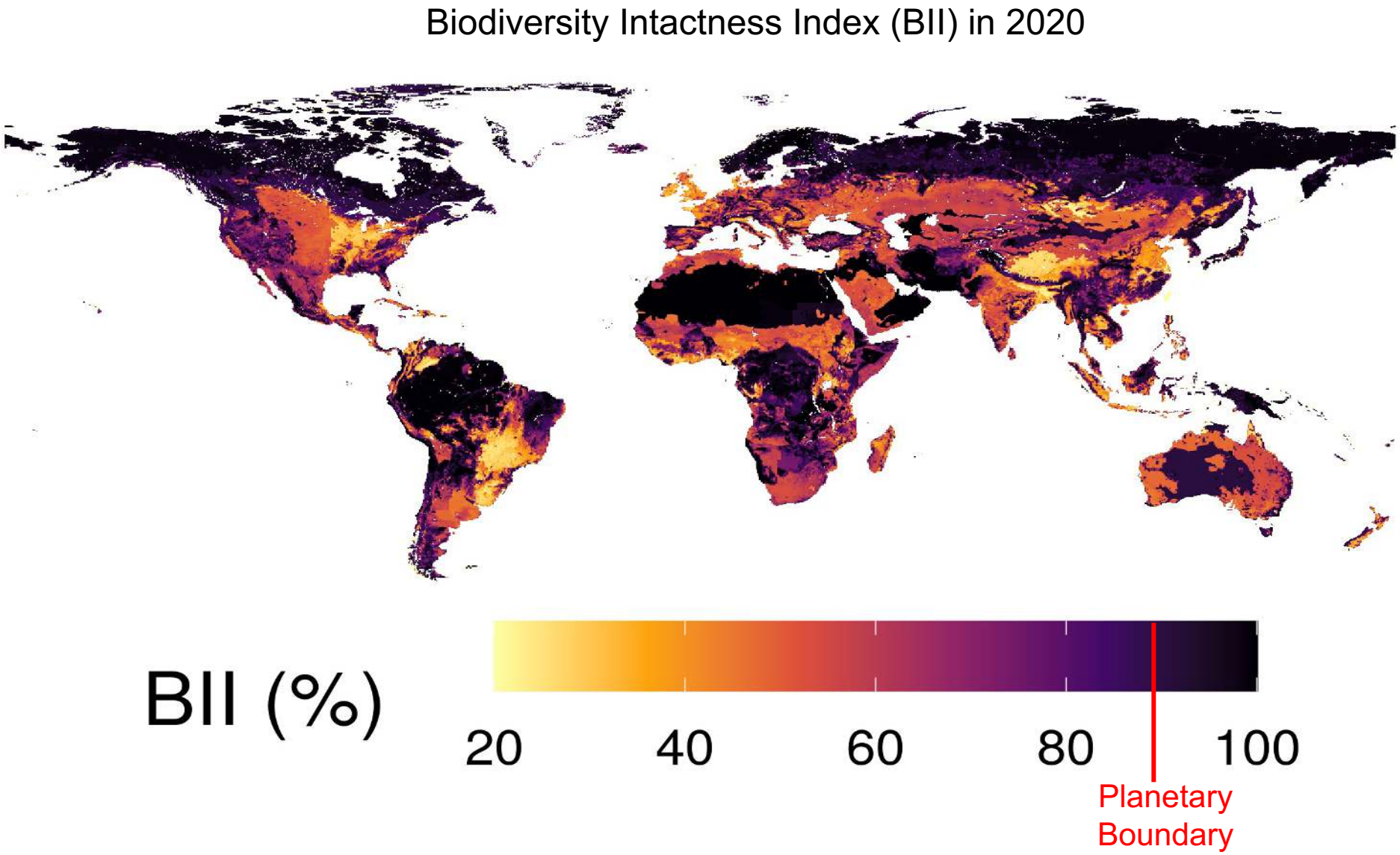
*We are using Museum collections and data to develop more comprehensive and precise visuals

Let's talk about biodiversity

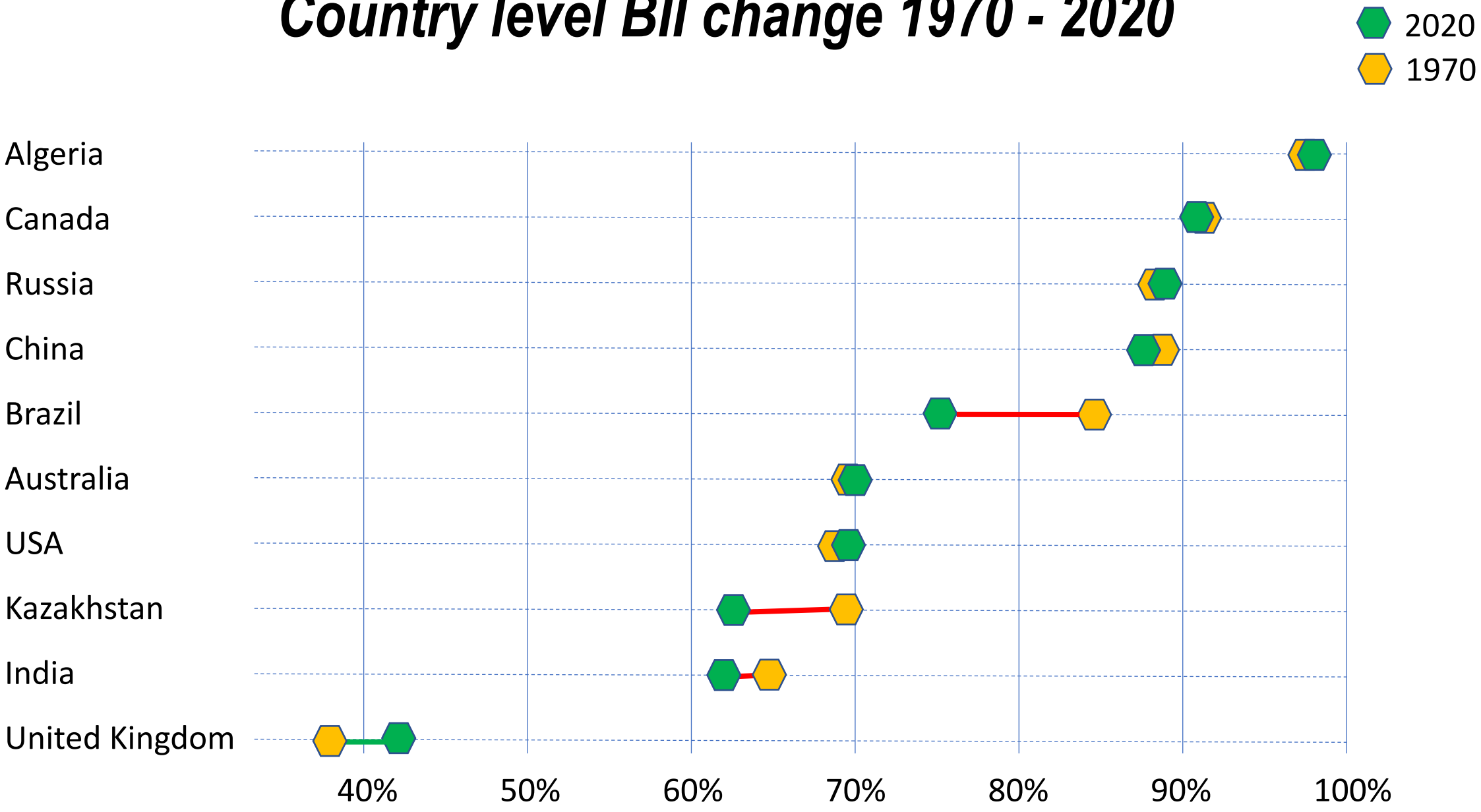
- Historically more focus on climate than on nature
- Biodiversity: complex, hard to measure …. until now


10%
1%
0.1%
Species in PREDICTS database
10,000
1,000
100
10
1,000
10,000
100,000
1,000,000
Species known to science

Our solution: the Biodiversity Intactness Index (BII)



Country level BII change 1970 - 2020



The richest regions

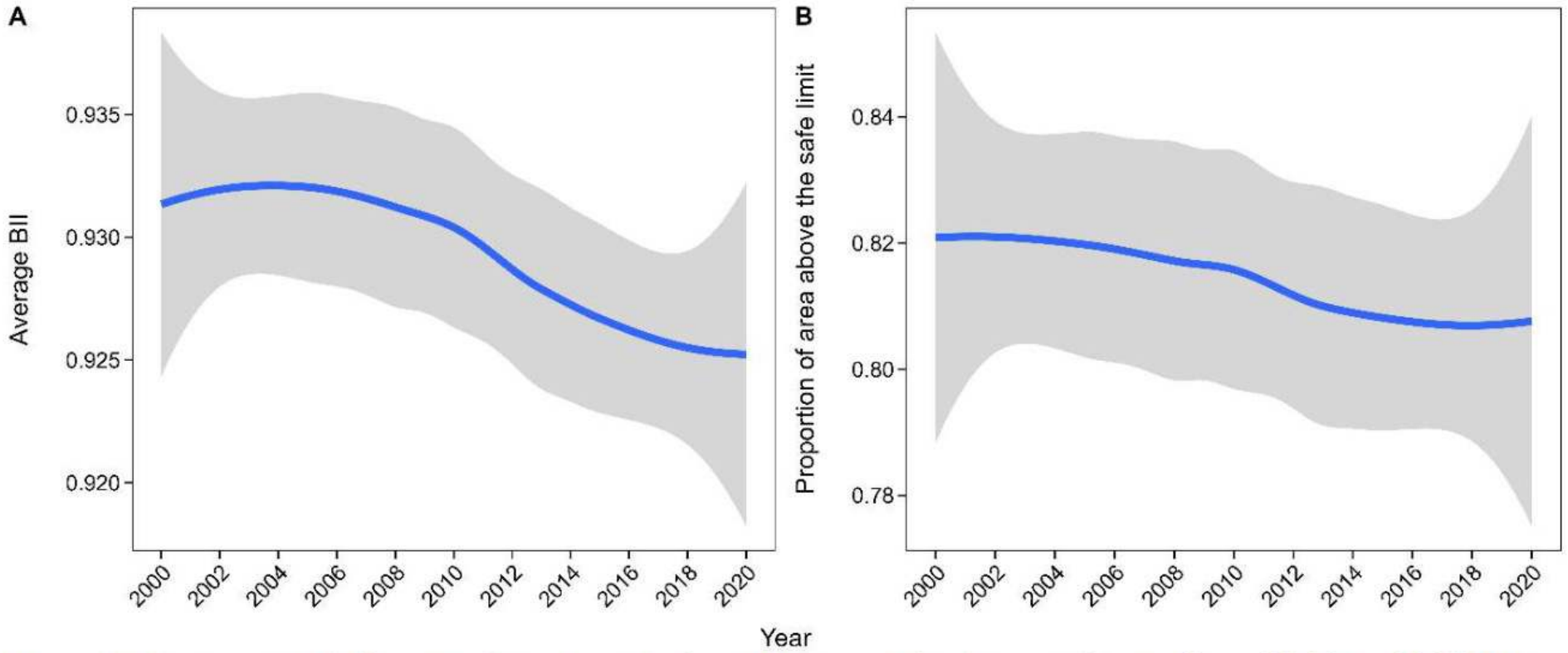


Figure 1: (A) average Biodiversity Intactness Index (BII) across the Amazon biome from 2000 to 2020, (B) proportion of the Amazon biome where the BII is projected to remain above the proposed Planetary Boundary. Grey areas in both A and B represent 95% confidence intervals.

Forest intense countries	% of protected land area
Brazil	30.3%
Canada	11.91%
China	15.62%
Russia	11.45%
United States	13.02%

BII in the Amazon: A closer look

a. Where did BII decrease between 2000 and 2020?

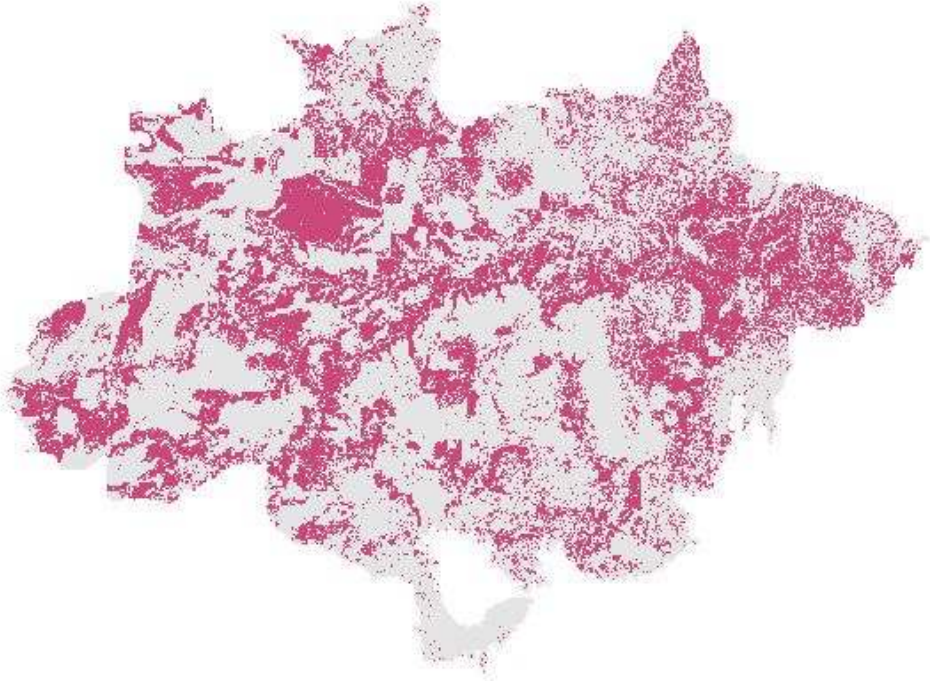


Figure a: Areas within the Amazon biome, from 2000 – 2020, where the Biodiversity Intactness Index is decreasing across all sets of projections.

b. Where do all projections agree that BII is already < 90%?

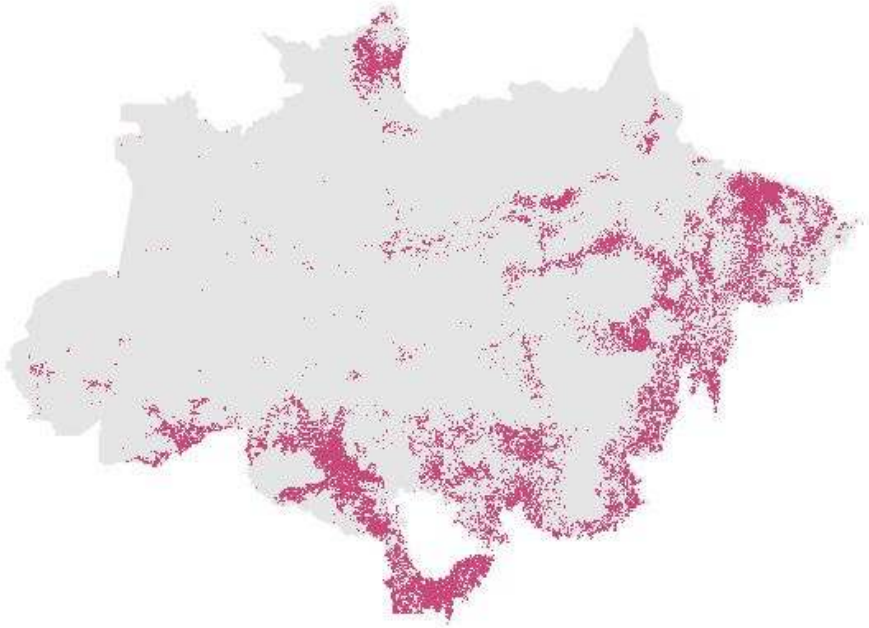


Figure b: Areas within the Amazon biome where the Biodiversity Intactness Index in 2020 was below the 90% safe-planetary boundary threshold in all sets of projections

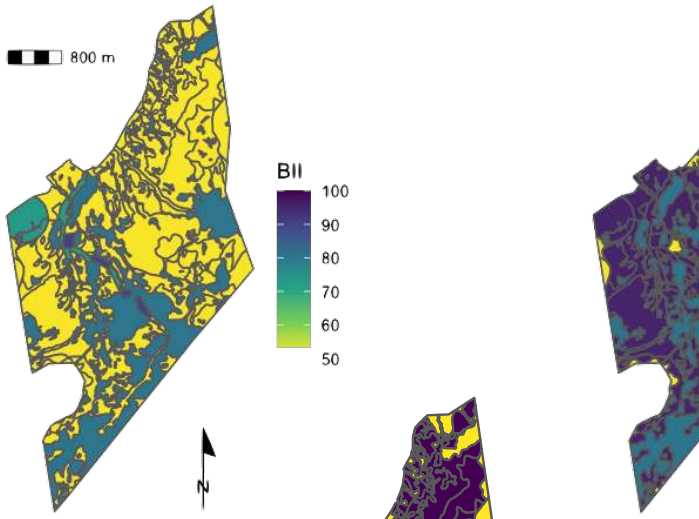
Drivers of loss

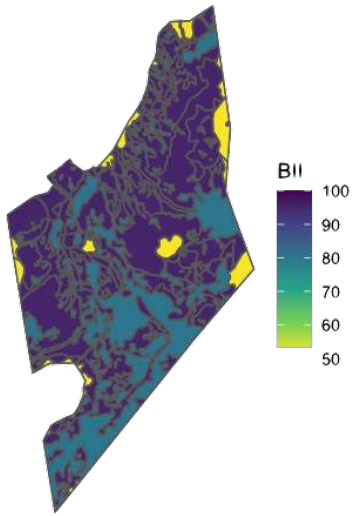
- Ranching (63%)
- Crops (20%)
- Fires (9%)
- Logging (6%)
- New roads (2%)

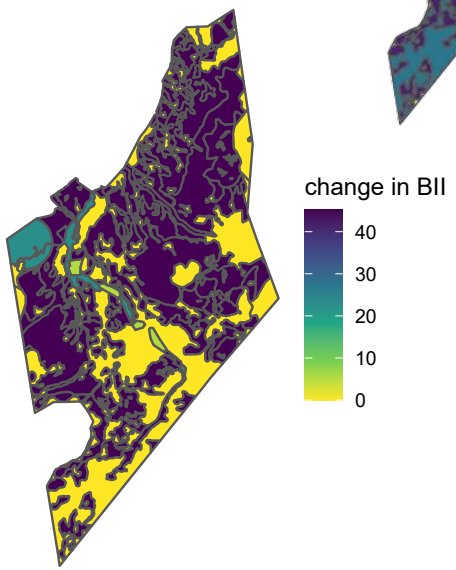
Planning for biodiversity recovery in Far Ralia

BII now

BII in 75 years

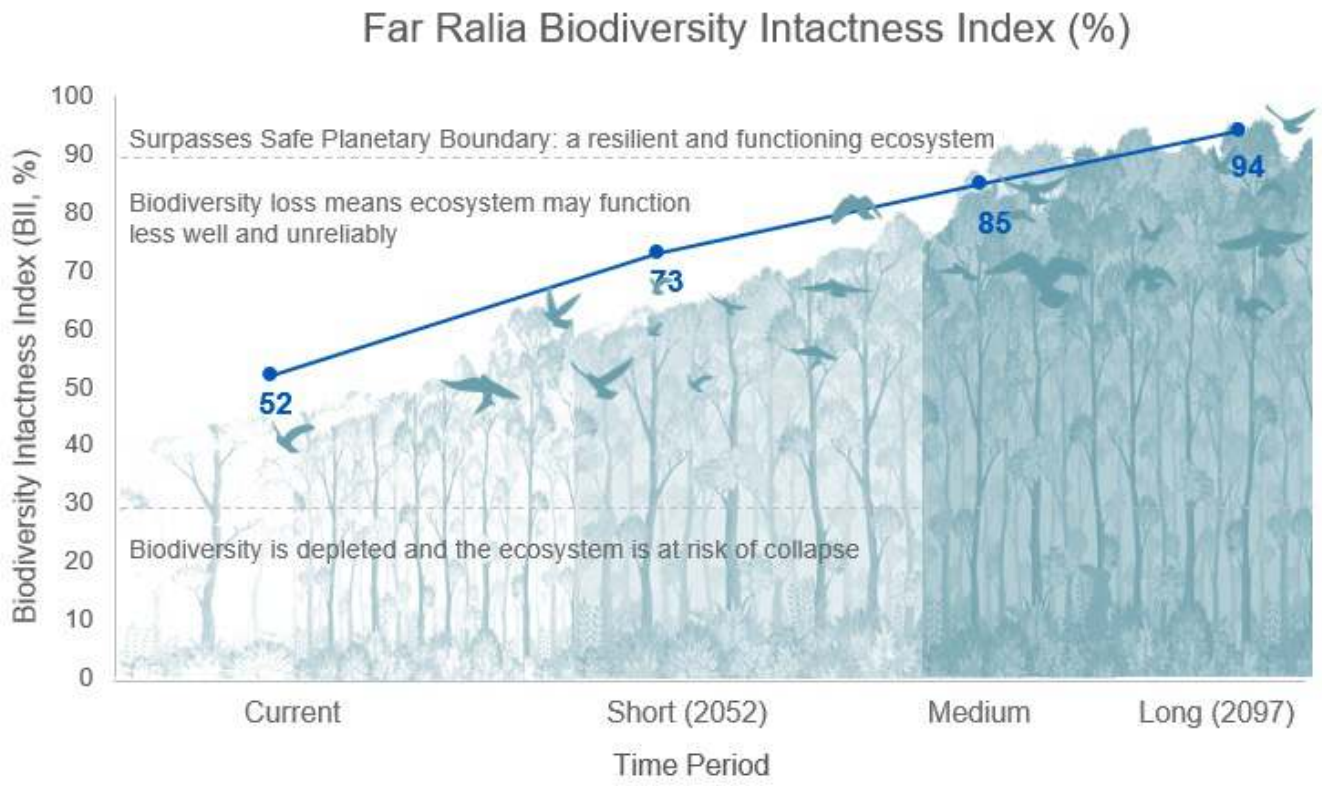






BII change

De Palma et al. 2022



"Working with the NHM's BII has reassured us that our regeneration plans will achieve a high biodiversity impact. There is also a real opportunity for the index to be applied at scale to other asset classes and geographies to better understand and improve our impact on nature."

Georgie Nelson, Head of RE - ESG – abrdn

BII can be applied to:

- Map BII across regions of interests
- Reports of intactness and uniqueness of a region's biodiversity
- Infer how BII has changed over recent years in areas of interest
- Project changes in biodiversity under future land use and management
- Model and project impacts of land usage and other pressures on biodiversity as a whole or particular groups
- Compare dimensions of biodiversity e.g., taxonomic, functional and phylogenic diversity
- Compare biodiversity impacts of crops
- Screen policy options for biodiversity consequences
- Develop goal-seeking scenarios while integrating with economic models to achieve biodiversity
- Test the likely impact of specific management decisions aimed at increasing biodiversity

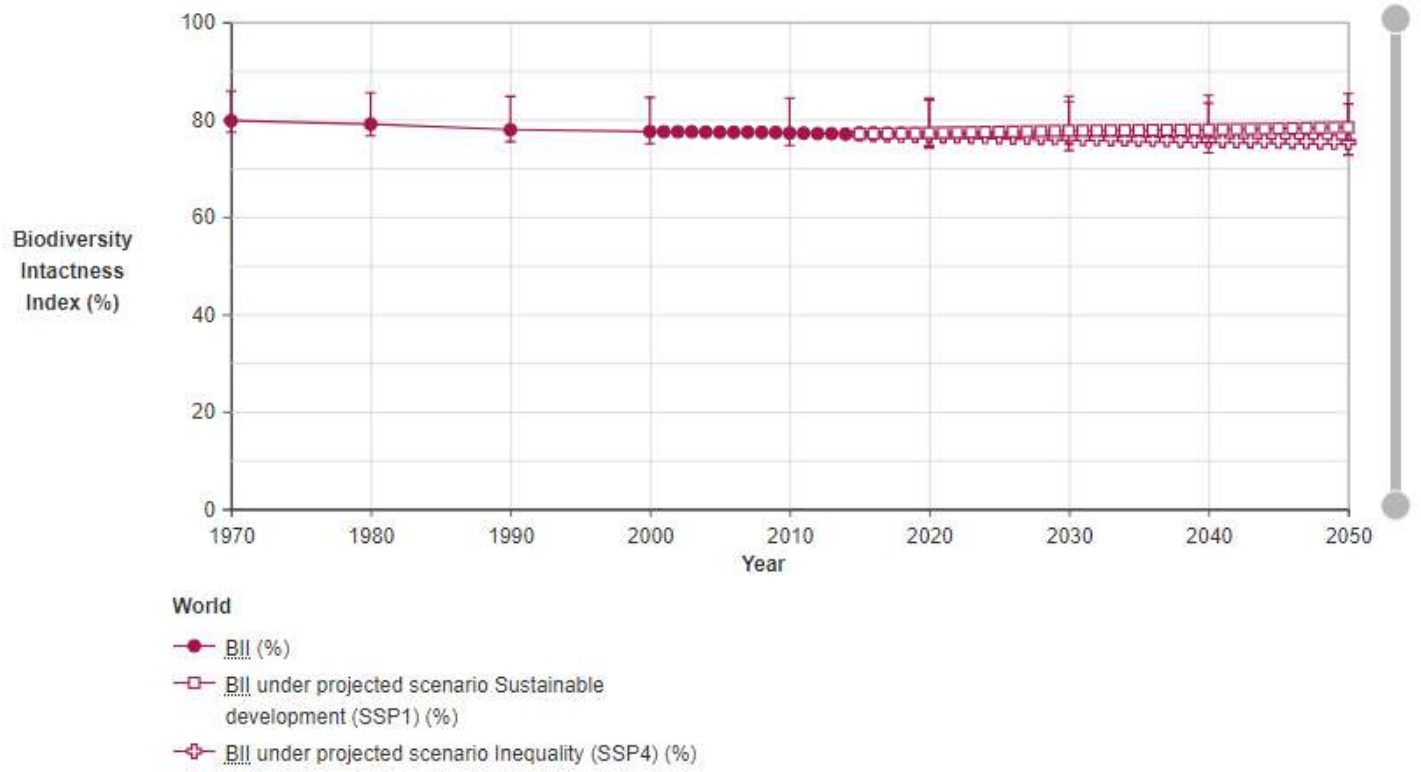
Econario' (2022). Artist: Thijs Biersteker.

OUR MESSAGE OF HOPE

Graph | Table | Download

Filters World | 1970-2050 | Sustainable development (SSP1) | Inequality (SSP4)

Estimated uncertainty margins (per decade)



World

Between 1970 and 2014 the BII changes by -2.74 percentage points. Between 2015 and 2050 the BII under the projected scenario Sustainable development (SSP1) changes by 1.36 percentage points and the BII under the projected scenario Inequality (SSP4) changes by -1.65 percentage points.

Less consumption

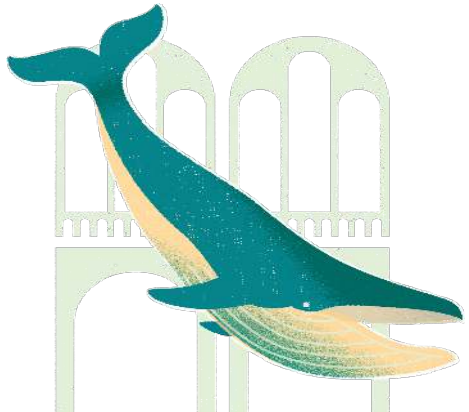
Less damaging farming

Reductions in pollution, invasive species,
and harvesting of wild species

Prevent runaway climate change

Conserve and restore habitat

LeClere et al. 2020 *Nature*; Global *Biodiversity Outlook 5*



NATURAL HISTORY MUSEUM

BECOME AN ADVOCATE FOR THE PLANET

BTE – explore the data yourself

https://www.nhm.ac.uk/our-science/data/biodiversity-indicators/biodiversity-intactness-index-data

Discover Biodiversity – start your own mission today

https://www.nhm.ac.uk/discover/biodiversity/act

Our Broken Planet – understand how we got here and ways to fix it

https://www.nhm.ac.uk/visit/our-broken-planet.html