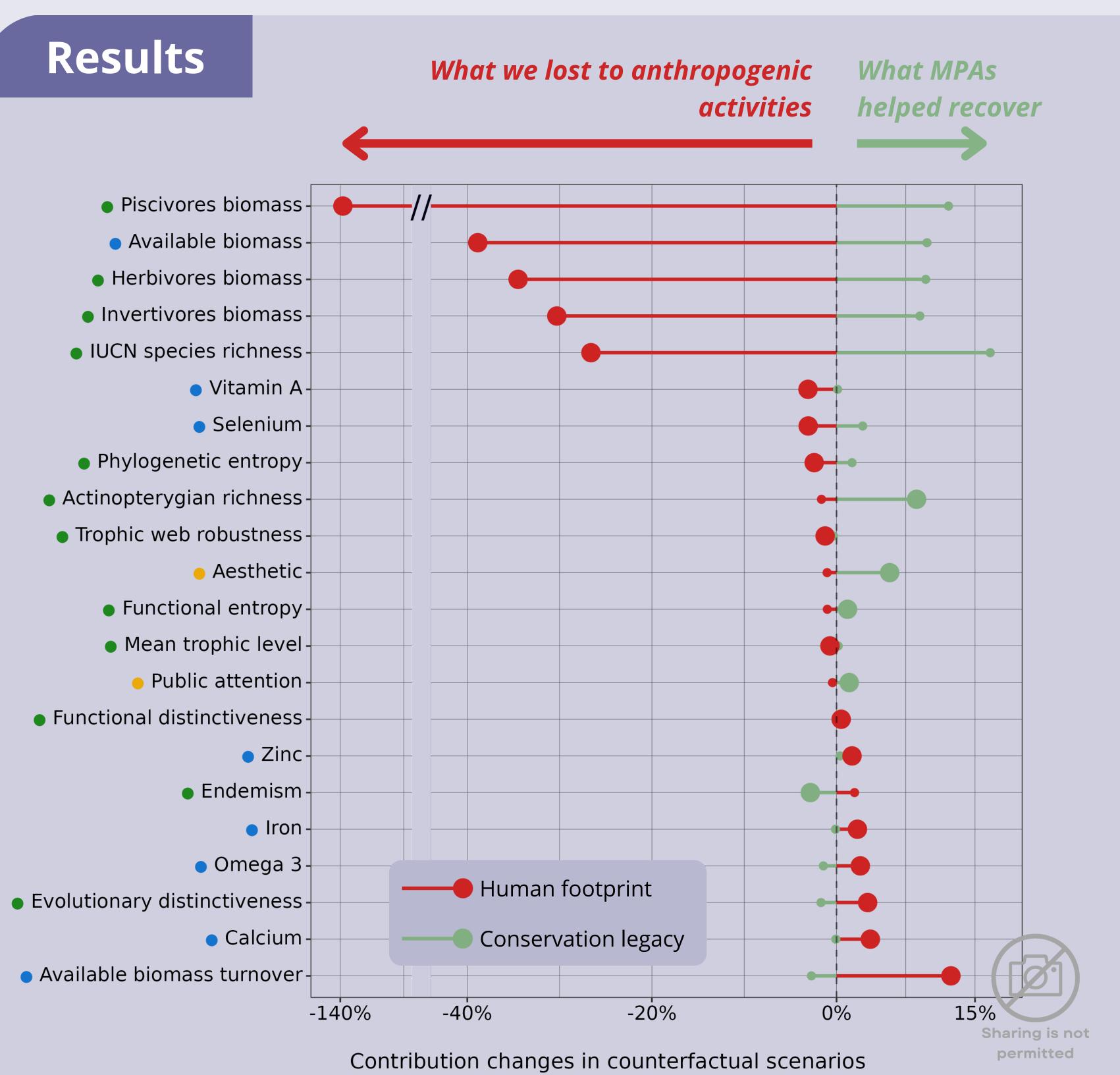


Conservation only marginally mitigates the decline in tropical fish contributions



Marine Protected Areas (MPAs) are insufficient to restore most of reef

Relative changes in fish contributions on tropical reefs under counterfactual

fish community contributions in the face of anthropogenic activities.

Full protection Gravity Aesthetic Public attention Actinopterygian richness **IUCN** species richness Invertivores biomass Phylogenetic entropy Herbivores biomass **Functional entropy** Piscivores biomass Mean trophic level Functional distinctiveness Trophic web robustness Endemism **Evolutionary distinctiveness** Selenium Available biomass Vitamin A Calcium Omega 3 Available biomass turnover 0.0 0.2 0.4 -0.2 permitted Nature-for-Society Nature-as-Culture Nature-for-Nature

Effect sizes of anthropic covariates on fish contributions on **tropical reefs.** "Gravity" = proxy of human pressure. "GDP" = Gross Domestic Product.

OH, PHEW, GOOD NEWS! AT LEAST YOU

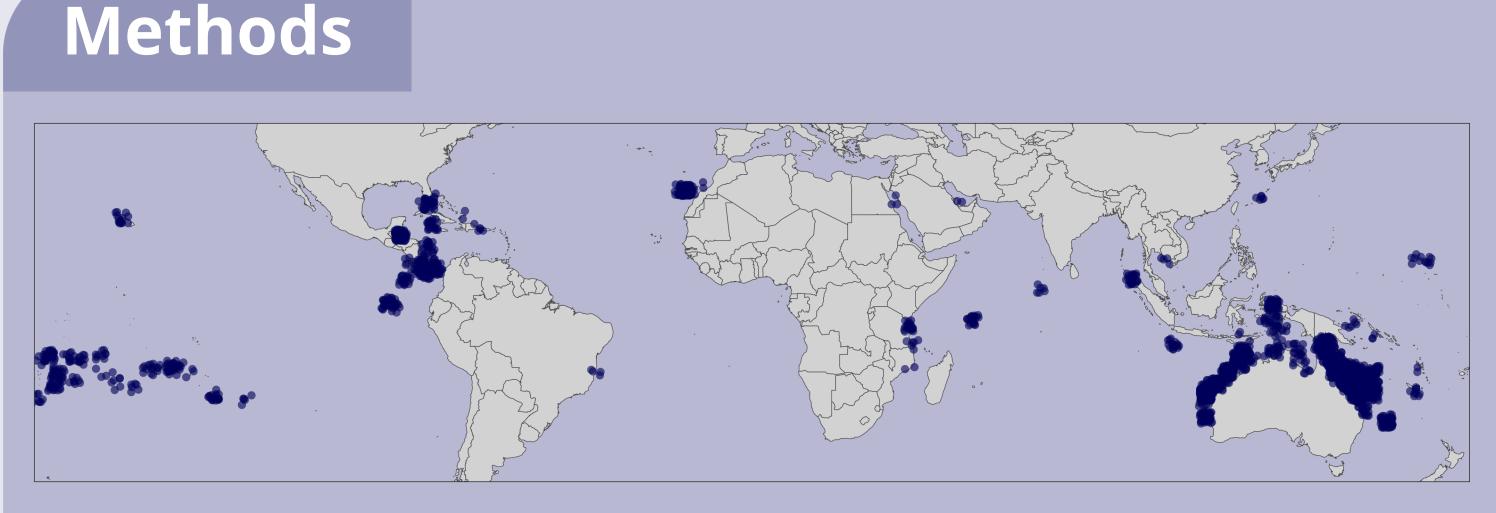
Human caused major biodiversity and biomass loss

MPAs alone can't reverse these impacts

MPAs still support **cultural and** emotional ties to nature

We must rethink our relationship with nature for lasting change

scenarios of pseudo-pristine conditions or no conservation efforts.



Underwater Visual Census (n = 2,800 sites) Fish abundance and biomass

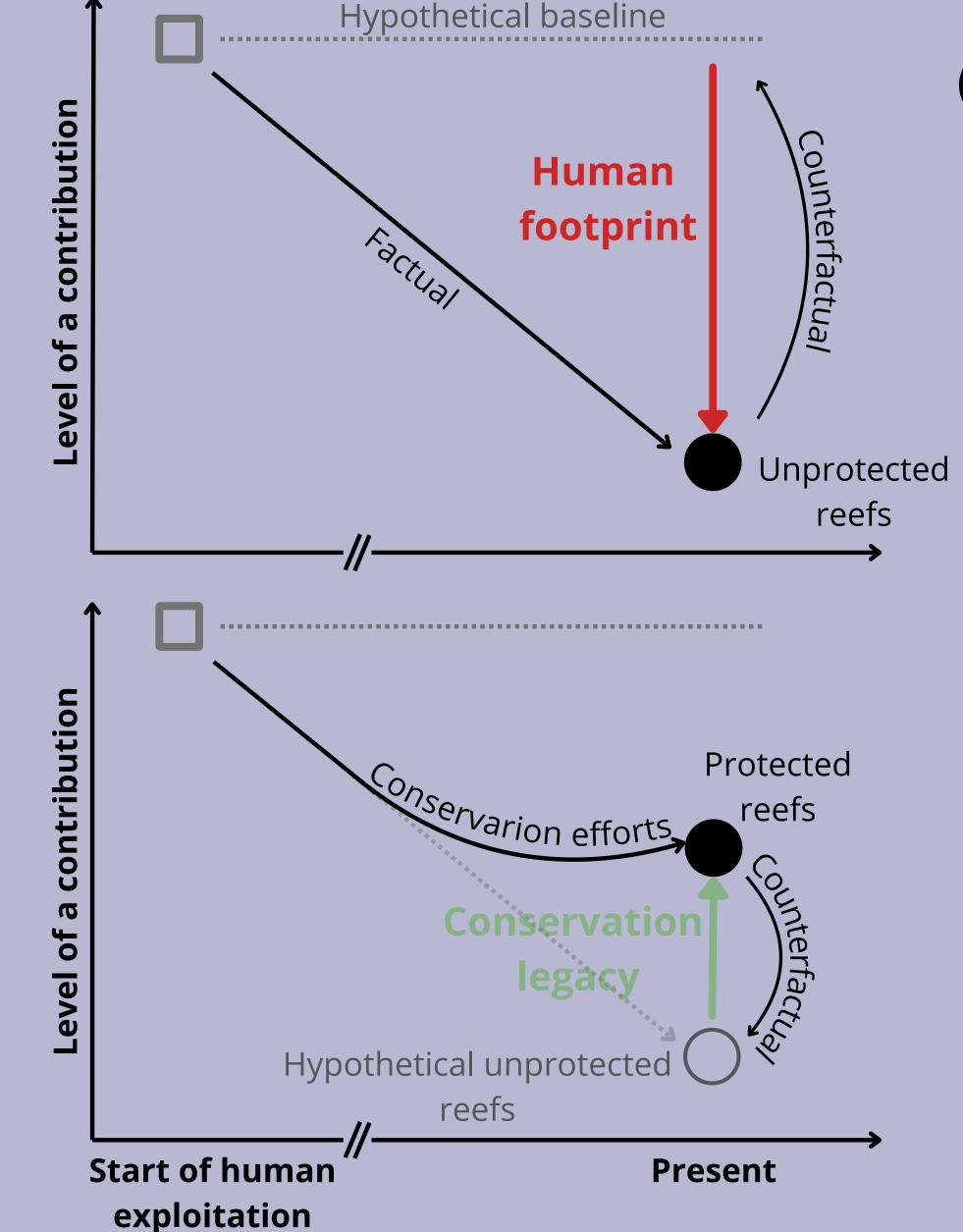


22 forms of fish contributions to nature and people

Covariates:

- Habitat
- Environment
- Human activities

Hierarchical Bayesian framework



Counterfactual scenarios

Unprotected reefs modelled as pseudo-pristine:

- minimal gravity
- minimal commercial fishing
- maximal travel time to the nearest market
- protection status to 'full MPA'

Protected reefs modelled without conservation efforts:

- protection status to 'out MPA'
- mean commercial fishing



Conservation marginally bends the declining curve of tropical fish contributions

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