

Modelling species-habitat relationships across scales for nature conservation

Day 4 – Cross-scale dynamics in Ecology

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Extinctions

- 1690 [Dodo bird](#) – extinct from predation by introduced pigs and cats
- 1870 [Labrador duck](#) – extinct from human competition for mussels and other shellfish
- 1900 [Rocky mountain locust](#) – extinct from habitat conversion to farmland
- 1936 [Thylacine](#) (Tasmanian tiger or wolf) – extinct from hunting, habitat loss, and competition with dogs
- 1952 [Deepwater cisco fish](#) – extinct from competition and predation by introduced fishes
- 1962 [Hawaii chaff flower](#) – extinct from habitat conversion to military installations
- 1989 [Golden toad](#) – extinct from climate change or other impacts

Biodiversity loss

The Living Planet Index across scales

- Biodiversity conservation = protecting and managing the variety of life on Earth, including species, their habitats, and ecosystems, to ensure their survival and the continued provision of essential ecosystem services
- Even in places where nature is perceptibly altered by human actions, the number of species does not necessarily decline.
- <https://www.americanscientist.org/article/the-biodiversity-conservation-paradox>

Beta diversity - Intermediate disturbance hypothesis

Trophic cascade

- The term “trophic cascade” refers to how animals at the top of a food chain affect plants and animals farther down the line.
 - Trophic cascades have been well-documented in lakes.

Correlation vs. Causation

Conservation in practice 2: broad-scale

policy frameworks

CITES (Convention on International Trade in Endangered Species)

- Regulates international trade in endangered wildlife and plants.
- International agreement between governments.
- Over 38,000 species of animals and plants, requiring permits for international trade to be authorized.

Ramsar Convention on Wetlands

- International treaty for the conservation and wise use of wetlands.
- Adopted in 1971 in Ramsar, Iran.

United Nations Sustainable Development Goals (SDGs)

Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) 2024

- highlight the interconnectedness of biodiversity loss, climate change, water scarcity, food security, and human health, emphasizing the need for integrated solutions.
- current efforts often fail to address these challenges holistically, leading to inconsistent governance and negative outcomes.
- interconnectedness of crises
- emphasize the urgency of addressing biodiversity loss and related challenges through integrated approaches and transformative change, with a strong focus on the interconnectedness of nature and human well-being

Convention on Biological Diversity (CBD)

- A multilateral treaty that aims to conserve biological diversity, promote the sustainable use of its components, and ensure the fair and equitable sharing of benefits arising from the use of genetic resources.
- UN treaty (international agreement) aiming to conserve biodiversity, use it sustainably, and share genetic resources fairly.
- Includes Aichi Biodiversity Targets and the Kunming-Montreal Global Biodiversity Framework (GBF).

Aichi Biodiversity Targets (2011–2020)

- Framework: Convention on Biological Diversity (CBD)
- Deadline: 2020

Kunming-Montreal Global Biodiversity Framework (2022)

- Post-2020 framework under the CBD.
- Includes 23 targets to halt and reverse biodiversity loss by 2030.
- By November 2024, 119 countries had submitted national biodiversity targets aligned with the GBF. Additionally, 44 countries had submitted National Biodiversity Strategy and Action Plans (NBSAPs), outlining how they plan to achieve these targets.

- Implementation Delays
- Financial Gaps: Challenges (ensuring equitable access) to the establishment of dedicated funds, such as the Global Biodiversity Framework Fund

Biodiversity strategy for 2030

- The EU's biodiversity strategy for 2030 is a comprehensive, ambitious and long-term plan to protect nature and reverse [the degradation of ecosystems](#). The strategy aims to put Europe's biodiversity on a path to recovery by 2030 and contains specific actions and commitments.
- It is the proposal for the EU's contribution to the upcoming international negotiations on the global post-2020 biodiversity framework. A core part of the [European Green Deal](#), it will also support a green recovery following the Covid-19 pandemic.

Objectives

- the biodiversity strategy aims to put Europe's biodiversity on the path to recovery by 2030 for the benefit of people, climate and the planet.
- in the post-COVID-19 context, the strategy aims to build our societies' resilience to future threats such as
- the impacts of climate change
- forest fires
- food insecurity
- disease outbreaks - including protecting wildlife and fighting illegal wildlife trade

Actions

- The strategy contains specific commitments and actions to be delivered by 2030.
- Establishing a larger EU-wide network of protected areas on land and at sea
- The EU will **enlarge** [existing Natura 2000 areas](#), with strict protection for areas of very high biodiversity and climate value.
- Launching an EU nature restoration plan
- Introducing measures to enable the necessary transformative change
- Introducing measures to tackle the global biodiversity challenge
- Aims to protect 30% of EU land and sea, restore degraded ecosystems, and integrate biodiversity into all policies.

COP16

- 16th Conference of the Parties to the UN Convention on Biological Diversity (CBD), scheduled to take place in Cali, Colombia from October 21 to November 1, 2024.
- Main goal: To review progress and advance the implementation of the Kunming-Montreal Global Biodiversity Framework (GBF), a global plan to halt and reverse biodiversity loss by 2030.
- Expected outcomes include setting measurable targets, mobilizing financial resources, and strengthening commitments from countries to protect at least 30% of land and oceans by 2030 (the "30x30" goal).