



Genetic Diversity Indicators for Goal A and Target 4

WHAT POLICY MAKERS NEED TO KNOW

What is genetic diversity?

Genetic diversity is essentially the differences among individuals and populations within the same species.

It gives nature the ability to adapt to changes in the world. It is vital to safeguarding the resilience of biodiversity in terrestrial, marine and other ecosystems.

TARGET 4 & KMGBF CONTEXT

"...maintain and restore genetic diversity within and between populations of native wild and domesticated species to maintain their adaptive potential."

HEADLINE INDICATOR A.4 $N_e > 500$

Proportion of populations within species with an effective population size (N_e) greater than 500.
Note: Other complementary and component genetic indicators are available.

KEY MESSAGES



Existing data works for reporting indicator A.4

Genetic indicator reporting does not necessarily require genetic data. **Many countries have existing data on populations that can be used** to estimate N_e .



Cross-Sector collaboration is fundamental

Effective reporting requires collaboration among national biodiversity authorities, conservation practitioners, and scientists.



Indicators guide direct biodiversity conservation action

Genetic indicators can help identify populations requiring further conservation actions addressing population decline, fragmentation and restoration.



Capacity & technical support for CBD Parties is available

Progress is accelerating in reporting indicator A.4. **Dedicated assistance, technical guidance, and knowledge exchange are available, led by CCG and its partners.**

UNDERSTANDING & IMPLEMENTING THE INDICATORS

1. What do genetic diversity and the Indicators tell us?

Headline indicator A.4: Proportion of populations large enough ($N_e > 500$) to stay genetically healthy, i.e. retain genetic diversity and adaptive potential.

Complementary indicator: "Proportion of populations maintained" is about conserving adaptive variation for different environments.

2. Which species should genetic indicators be calculated for?

National priorities, conservation status, and representativeness should guide species selection.

RECOMMENDED MINIMUM TARGET
100+ Scientists suggest evaluating indicators for at least 100 species (ideally 100 per major taxonomic group).



Assessed genetic indicators for 320 mammal species.

Currently expanding assessments to amphibians and birds.

3. Where are data on populations & N_e found?

Data exists in existing genetic, demographic, and monitoring databases held by universities, museums, botanical gardens, and national portals.



7th National Report used national data portals for biodiversity, IUCN data, and national action plans for threatened species.

- 23 Birds
- 7 Flowering plants
- 2 Non-flowering plants
- 10 Invertebrates
- 15 Mammals
- 6 Fish
- 2 Amphibians
- 4 Reptiles
- 1 Fungus

4. What should we include in indicator reporting?

INDICATOR VALUES

Mean indicator values across species assessed & disaggregation by group



INTERPRETATION

What it means; interpret alongside other info



PLAN for IMPROVING

Identify national policy actions to increase indicator values



The indicators were calculated for 47 species with available data, including species of particular interest like crop wild relatives. The values are now being considered in relation to national information systems and monitoring population trends.

"Working with CCG enabled us to develop simple practical assessments of genetic diversity in the UK. Their help was crucial in gathering data and we valued the two-way process: working together and learning from each other."

- David O'Brien, NatureScot

COALITION FOR CONSERVATION GENETICS

Would you like to know more?

Visit www.coalitionforconservationgenetics.org

FURTHER GUIDANCE

Scan the QR code for the genetic diversity indicators Quickstart Guide.



Funded by
the European Union

This material is based upon work from COST Action GENOA, CA23121, supported by COST (European Cooperation in Science and Technology). COST is a funding agency for research and innovation networks. Our Actions help connect research initiatives across Europe and enable scientists to grow their ideas by sharing them with their peers. This boosts their research, career and innovation.