*This is the **Higher Separate** version — includes all Higher Tier content (marked ★) and all Separate Science content.*

Biodiversity refers to the variety of life on Earth — the number of different species, the genetic variation within species, and the variety of ecosystems.

- High biodiversity: more species → more stable ecosystem (if one species is lost, others fill its role).
- Biodiversity provides: food, medicines (>50% of pharmaceuticals derived from nature), materials, clean water, clean air, climate regulation.
- Threats to biodiversity: habitat destruction, deforestation, pollution, overexploitation (hunting, overfishing), invasive species, climate change.
- Extinction: the permanent loss of a species. Extinction rates today are 100-1000× the natural background rate.
- Conservation strategies: nature reserves, captive breeding and reintroduction, seed banks, sustainable fishing (quotas), reforestation, international agreements.
- ★ **HT** Sustainable development: meeting the needs of today without compromising the ability of future generations to meet their needs.
- ★ **HT** Flagship species: iconic species (e.g. giant panda) used to raise conservation funds and awareness — conservation of their habitat protects many other species.

Key Terms

Biodiversity	The variety of different species in an area and the genetic variation within them
Conservation	The protection and management of species and habitats to prevent extinction and loss of biodiversity
Extinction	The permanent disappearance of a species — last individual dies
Sustainable development	Meeting present needs without preventing future generations from meeting theirs

■ **Exam Tip:** When evaluating conservation strategies: always give benefits AND limitations. E.g. nature reserves: benefit = protects habitat from development; limitation = may be too small for viable populations. Balanced answers gain evaluation marks.