# 3.2 Human impact on biodiversity

Name: _____ Class: _____ Date: _____ **Total: 28 marks**

**KEY WORDS** habitat loss • fragmentation • invasive species • overexploitation • IUCN Red List IUCN • edge effect

## Objective

Build the skills to answer exam questions on **human impact** on biodiversity: the causes of biodiversity loss, **habitat fragmentation** , **invasive species** and the **IUCN Red List** IUCN .

**You must be able to:**

- explain the main human causes of biodiversity loss
- explain the effects of habitat loss and fragmentation
- use IUCN Red List criteria and categories
- explain why some species are more vulnerable to extinction than others

## 1 Key knowledge and worked examples

### ■ Human impact on biodiversity

| cause | example |
|---|---|
| **habitat loss** and fragmentation | forest cleared for palm oil, soy or cattle |
| **invasive species** | cane toads in Australia; rats on islands |
| **pollution** | pesticides, plastics, nutrient runoff |
| **overexploitation** | overfishing, hunting, the pet and medicine trade |
| **climate change** | coral bleaching; species moving or unable to move |

**Fragmentation** splits a habitat into small patches. Effects: smaller populations (more inbreeding, more risk from chance events); more **edge**, where light, wind and predators differ from the interior; animals cannot move between patches.

**Invasive species** are brought by humans to new areas, where they spread with no natural predators and out-compete or prey on native species.



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**IUCN Red List:** assesses the risk of extinction using criteria such as **population size**, **rate of decline**, **geographic range** and degree of **fragmentation**. Categories, from least to most at risk: Least Concern, Near Threatened, Vulnerable, Endangered, Critically Endangered, Extinct in the Wild, Extinct.

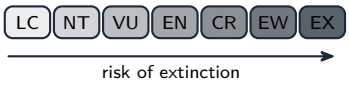
Species most at risk are often: large, slow-breeding (K-strategists), top predators, specialists with narrow niches, found in one small area (endemic), or valued by people (hunted).

**Worked example.** The passenger pigeon numbered in the billions in 19th-century North America, but hunting and forest clearing made it extinct by 1914.

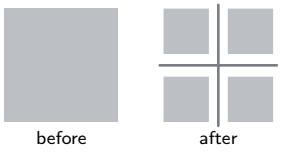
**Answer shapes:** name the cause, explain how it reduces survival or reproduction, and give a named example.

## 2 Practice

**2.1** State **two** criteria used by the IUCN to decide a species' Red List category. [2]



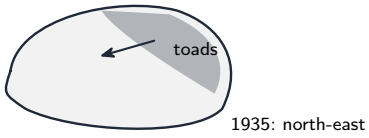

**2.2** A forest of 100 km$^2$ is cut into four patches of 5 km$^2$ by roads and farms. Explain **three** effects on the species living there. [3]




**2.3** Explain why large, slow-breeding species such as rhinos are more vulnerable to extinction than small, fast-breeding species. [3]



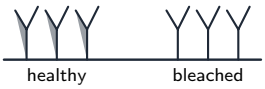
**2.4** Cane toads were brought to Australia in 1935 to control beetles in sugar-cane fields. Explain why they became a problem. [3]



## 3 Exam-style questions

**3.1** Coral reefs cover less than 1% of the ocean floor but hold about a quarter of marine species.

(a) Explain how rising sea temperatures cause coral bleaching. [2]

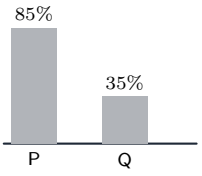



(b) Describe **two** other human threats to coral reefs. [2]

**3.2** The table shows Red List data for two species.

| | **species P** | **species Q** |
|---|---|---|
| decline over 10 years | 85% | 35% |
| range | one island, 40 $km^2$ | three countries |

(a) Suggest which species would be placed in the higher category, with **two** reasons. [3]




(b) Suggest **two** human causes that could explain species P's decline. [2]



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**3.3** An area of tropical rainforest is to be cleared for an oil-palm plantation.

(a) Explain **two** ways the plantation reduces biodiversity. [4]



(b) Discuss whether certification schemes for "sustainable palm oil" can protect rainforest biodiversity. [4]



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