Threats to Biodiversity

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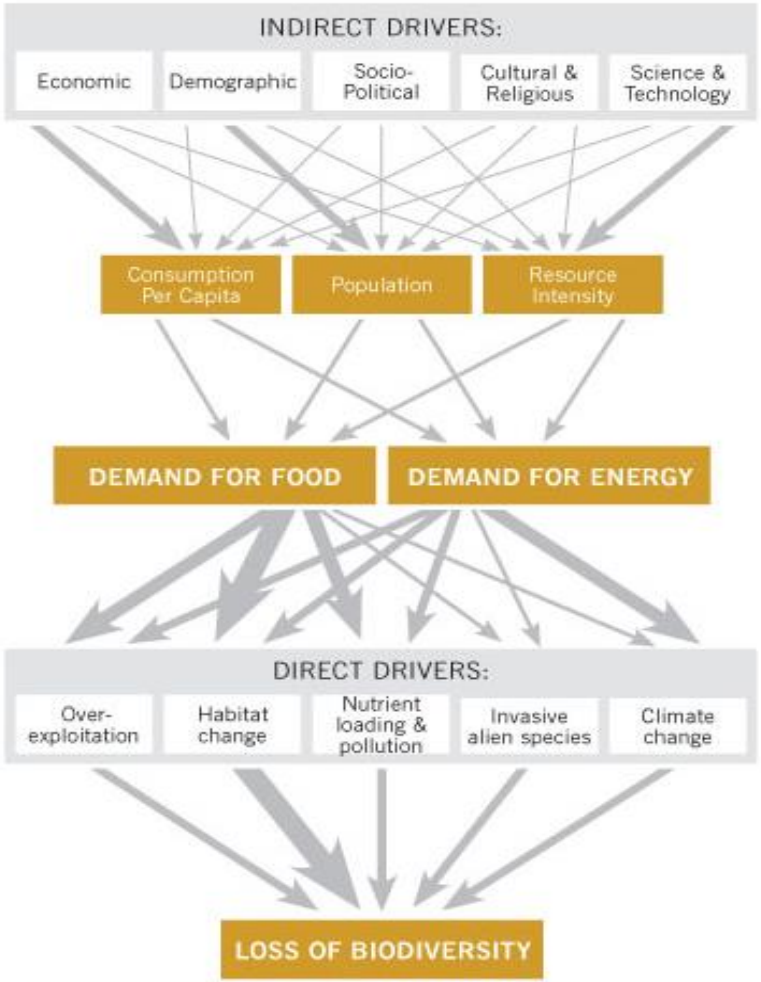
Biodiversity and threats to it



Schematic representation of the links between biodiversity loss, the direct and indirect drivers of change, and the demand for food and energy. The width of the arrows gives a broad and approximate illustration of the importance of the economic sectors in driving biodiversity loss.

Threats in terrestrial areas	
Degradation, destruction and fragmentation of natural habitats	Spread of the urbanised areas, road network and industrial areas and associated problems (noise, pollution); abandon of former agricultural practices that were favourable to biodiversity
Decrease in the capacity of the agricultural areas to host wildlife	Intensification of agricultural practices (yielding pollution and disturbance) and disappearance of landscape elements that provide food and shelter that are exploitable by wildlife (such as hedges, trees, ponds, etc.)
Pollution of soils, air and water	Excess of heavy metals (industry, roads), manure and pesticides (agriculture) and other pollutants
Invasions by alien species	International trade and transport (roads, railways, rivers), gardening practices, exotic trees in forestry, exotic pests released in the wild, climate change, etc.
Epidemics affecting wildlife	Arrivals of pathogens that are favoured by the introduction of exotic species, pollution and the destruction of habitats
Climate change	Carbon emissions, deforestation and other land use changes due to human activities
Dessication of soils and wetlands	Excess pumping of underground water tables
Recreation and leisure	Overuse of green open spaces and wild areas, little respect for nature, mountain biking and motor sports in fragile areas, dogs not on leash
Threats in marine areas	
Overfishing and decline of species	Industrial fishing, overexploitation of target species, by-catch species
Pollution and eutrophication	Land-based activities (river run-off), atmospheric deposition, maritime traffic
Degradation and destruction of the sea floor	Beam trawling, dredging, sand and gravel extraction
Alien species introductions	Maritime trade (ballast waters, fouling), leisure navigation, mariculture, climate change
Leisure and tourism	Coastal development, water quality in summer (high population), mechanical beach cleaning, noise and other perturbations due to the high population

Causes of threats to biodiversity

- **Habitat destruction**
- **Global climate change**
- **Habitat fragmentation**
- **Pollution**
- **Over exploitation**
- **Invasive species**
- **Disease**
- **Poaching**

- **Reason for habitat loss by humans**
  - Agriculture farming.
  - Harvesting natural resources
  - Industrial era
  - Urbanization – urban sprawl
  - Habitat destruction is currently ranked as a primary causes of species extinction world wide.

Forest fire – Man Made or Natural

Habitat Fragmentation


Human development, such as subdivisions, can fragment large blocks of habitat into smaller, scattered pieces.

Habitat Destruction

Habitat destruction and **fragmentation**, the carving of large blocks of habitat into smaller, scattered pieces, are the biggest threats to most species. Without adequate habitat in which to grow, survive and reproduce, births decrease, deaths increase, and it isn't long before species goes extinct.

Poaching

Figure 9-15 White rhinoceros killed by a poacher for its horn in South Africa. **Question:** What would you say if you could talk to the poacher of this animal?

Poaching is not limited to animals its also for plants too……!

Three of the most often poached species in the park are galax, black cohosh, and ginseng.

GALAX

BLACK COHOSH

GINSENG

Illegally killing and capturing – threat to species

- 2/3 of the live animals smuggled around the world die in transit.
- Poor people in areas rich with wildlife may kill or trap them for money to survive and feed their families.
- To poachers
  - Mountain gorilla – $150,000
  - Gaint panda $1,00,000
  - Chimpanzee $ 50000
  - Dragon reptile from Indonesia – $ 30000
  - One horn rhinoceros $ 28,600
  - Bengal tiger or Indian tiger is at risk for its fur – $ 1,00,000

Encroachment of animals – man wildlife conflicts

- Human Encroachment into the forest.
- The ill, weak, and injured animals- attack man.
- Forest dept. cultivate the staple foods for animals.

  eg. One adult elephant- 2 quintal of green fodder.

➢ Villagers – electric wiring around the fields, suffer with pain & turn violent.

➢ Due to human settlement in the forest, the animals attack the settlement.

- The cash compensation paid by the government – damage – farmers crop is not enough.
- In Mysore, a farmer gets the cash compensation of Rs. 400/- per quintal. While the market value is Rs. 2400/-
- Revengeful and kills the wild animals.

Remedial Measures of Man- Wildlife Conflict

- Tiger conservation project.
- Adequate cash compensation.
- Solar Powered fencing.
- Cropping pattern near the forest region should be changed.
- Seasonal migration.
- Sanctuary.

Disease –Animals

GRASS TETANY (GRASS STAGGERS)

- Cause
  – Low blood Mg and in many cases low blood Ca
  – Cattle grazing on lush grass pastures in latter stages of gestation or early lactation
- Symptoms
  – Nervousness, staggering, convulsions, coma and death

Invasive species- case study

- Introducing the exotic species also disturb the ecosystem.

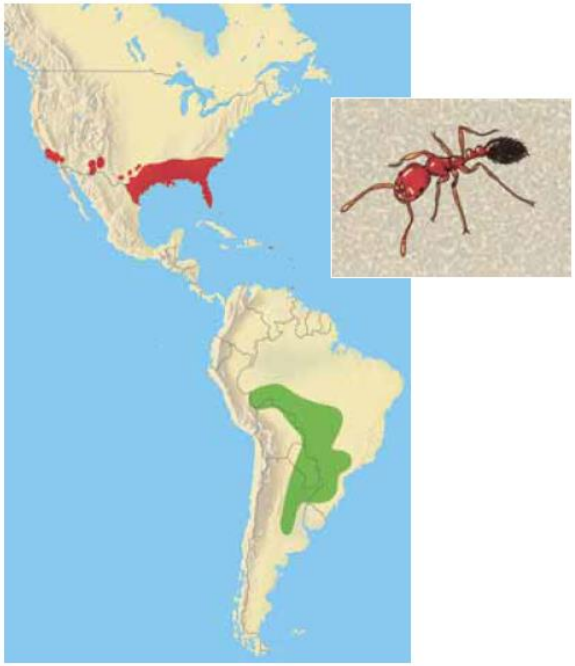


Figure 9-11 *Accidentally introduced invasive species:* the *Argentina fire ant,* introduced accidentally into Mobile, Alabama, in 1932 from South America (green area), has spread over much of the southern United States (red area). This invader is also found in Puerto Rico, New Mexico, and California. **Question:** How might this accidental introduction of fire ants have been prevented? (Data from S.D. Porter, Agricultural Research Service, U.S. Department of Agriculture)

- Aggressive argentina fire ant introduced

Into the United states.

- When these ant invade an area, they

wipe off 90% native species.

- They killed the deer, fawns, birds, livestock

Pets, 80 % people was allergic to their venom.

Pollution

- Air pollution lead to acid rain- therefore the pH of the soil/ water bodies go acidic.
- The monuments get corroded. Eg. Taj mahal.
- Hence the species living in those aquatic system may die.
  - Eg. Fishes, frog, reptiles, insects become extinct.

Global warming is a major threat to biodiversity

- Acc. To 2007 IPCC report, changes in climate may affect the biodiversity. Eg. Weeds, insect pest- fire ant, etc.

By 2050 polar bears may be found in zoos,
due to arctic sea ice melts.

Figure 15-19 Melting of Alaska's Muir Glacier in the popular Glacier Bay National Park and Preserve between 1948 and 2004. **Question:** How might melting glaciers in Alaska and other parts of the Arctic affect your lifestyle during this century?

Premature extinction

- Changes in structure and location of wildlife cause to premature extinction
  - Eg: **golden toad – found in costa Rica's mountainous region. In 1989 it became extinct.**
  - ***Reason***: warmer air from global climate change caused the area's moisture bearing clouds in caribbean sea to rise and dry out the habitat for this frog.

Figure 4-7 Depleted natural capital: male golden toad in Costa Rica's high-altitude Monteverde Cloud Forest Reserve. This species has recently become extinct because changes in climate dried up its habitat.

Ways to reduce threat of global warming

- Four major strategies
  - Improve energy *efficiency* to reduce fossil fuel use
  - Shift to renewable resources
  - Stop cutting down tropical forest.
  - Capture CO2 as possible in soil, vegetation, and deep in ocean.

Figure 15-22 Methods for slowing atmospheric warming during this century (Concept 15-5A). **Question:** Which five of these solutions do you think are the most important? Why?

Thank You