



GOVERNMENT OF ANDHRA PRADESH
COMMISSIONERATE OF COLLEGIATE EDUCATION



THREATS TO BIODIVERSITY

Life Skill Course: Environmental Education

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Threats to Biodiversity

Table of Contents:

1. Learning Outcomes
2. Threats to Biodiversity
 - Natural Calamities
 - Habitat Destruction and Fragmentation
 - Over Exploitation
 - Hunting & Poaching
 - Introduction of Exotic Species
 - Pollution
 - Predator and Pest Control

Learning Outcomes

After completion of this topic the students will be able to :

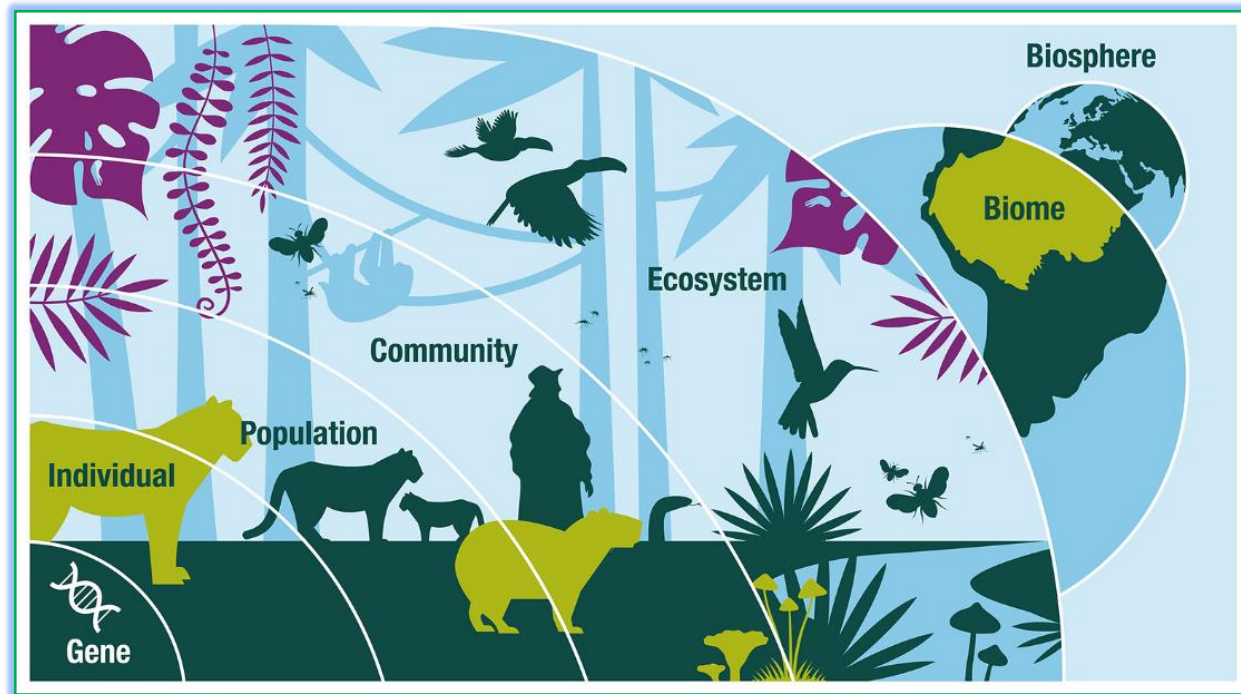
- *Understand the current threats to biodiversity.*
- *Explain the effects of over exploitation, Pollution, habitat loss and hunting on biodiversity*
- *Realize the role of each species and its importance in sustaining the biodiversity in the ecosystem.*
- *Assess how human interactions can affect ecosystem biodiversity.*



**Threats
to
Biodiversity**

Biodiversity

- Biodiversity is the variety of living things.
- Highly significant in balancing of natural processes.
- It provides food, clothing, medicine and many more.



Biodiversity

- Economists - goods and services provided by the ecosystem (biodiversity) as “ecological services”.

These services include:

- ✓ **Water Purification**
- ✓ **Nutrient Recycling**
- ✓ **Crop Pollination**
- ✓ **Stable Climate**
- ✓ **Pollution Control**
- ✓ **Protection from Natural Calamities etc.**



Threats to Biodiversity

But.....

- Ecosystem services are closing down as species go extinct.
- The increased growth of human populations, consumption levels and mobility are the origin of today's most of the serious threats to biodiversity.



Threats to Biodiversity

At present, there are many threats to biodiversity, they include:

1. Natural Calamities
2. Habitat Destruction and Fragmentation
3. Over Exploitation
4. Introduction of Exotic Species
5. Pollution
6. Predator and Pest Control

1. Natural Calamities

Natural calamities like floods, earthquakes, droughts, wildfires, tsunamis volcanos etc. create a great loss of biodiversity.



1. Natural Calamities

- Due to flooding, large amount of nutrients from soil gets washed away.



Source: <https://rb.gy/1cobdq>

1. Natural Calamities

- Drought - dryness of the soil, declines water table.



Source: <https://rb.gy/ixnsm7>

1. Natural Calamities

- Wild fires, Earthquakes & Volcanoes – Great loss to Biodiversity



2. Habitat Destruction

- **Destruction:** When a particular area is converted from healthy habitat to unhealthy one.
- **Main reasons for habitat loss:**
 - Deforestation
 - Desertification
 - Filling wetlands
 - Mining
 - Industrial activities



Deforestation

Source: <https://rb.gy/gdl33d>

2. Habitat Destruction

- **Destruction:** When a particular area is converted from healthy habitat to unhealthy one.
- **Main reasons for habitat loss:**
 - Pollution
 - Soil erosion
 - Depletion of nutrients
 - Logging
 - Harvest of fossil fuels
 - Water extraction



Logging

Source: <https://rb.gy/5qwyf0>

2. Habitat Fragmentation

- **Fragmentation:** Large wild areas are transformed into smaller fragments.
- It refers to the loss of large units of habitat.

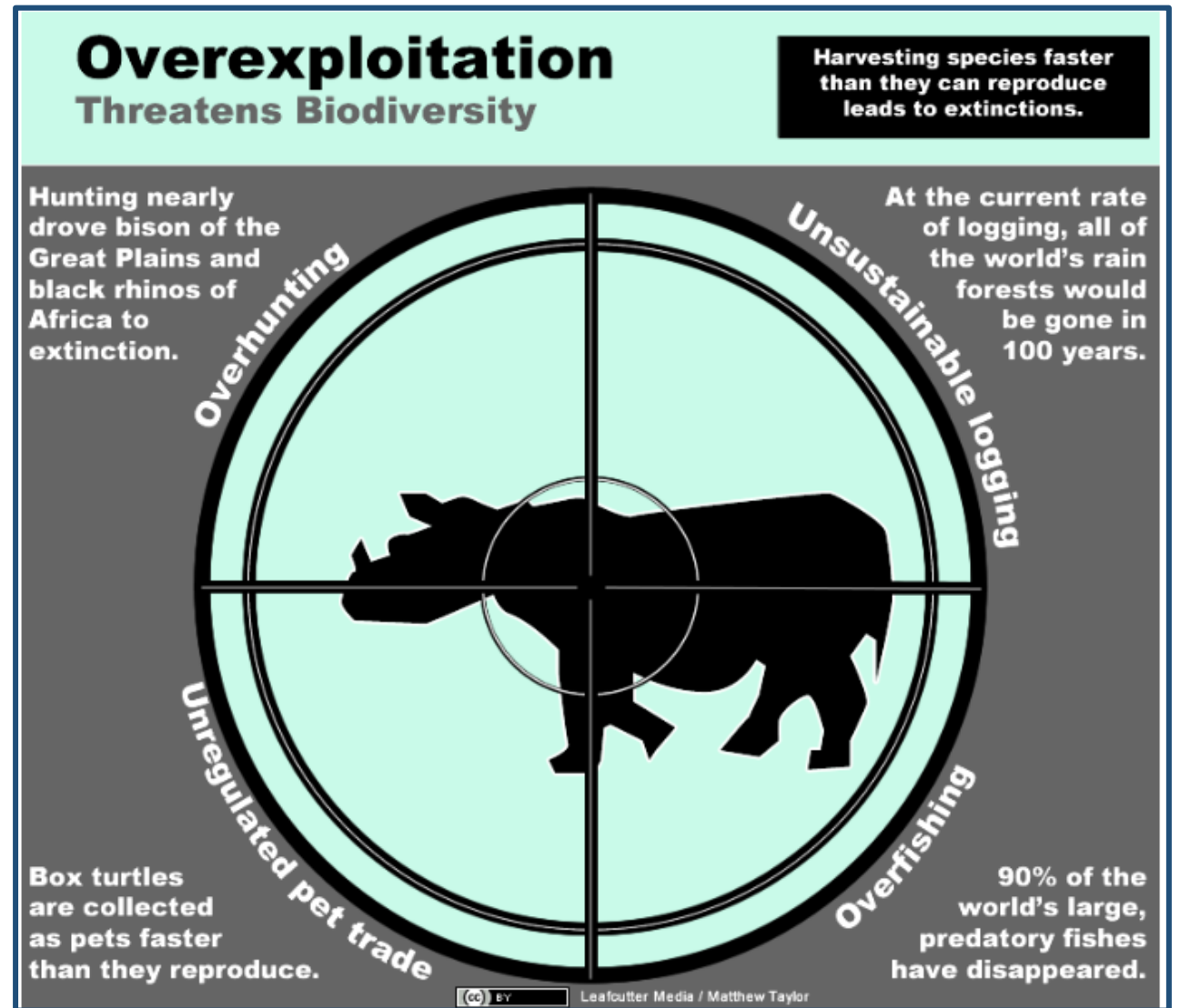
Breakdown the habitats → detach animal communities → Reduces genetic diversity.



Source: <https://rb.gy/ui7zmo>

3. Over Exploitation

- ❑ Massive collection of species from their native habitats.
- ❑ When large number of species exploited more: Entire network of life in that area collapses.



3. Over Exploitation

❑ Actions like fishing, collection of medicinal plants and logging can be done sustainably- but today they are over exploited.



3. Over Exploitation

- ❑ Actions like fishing, collection of medicinal plants and logging can be done sustainably- but today they are over exploited.



Source: <https://rb.gy/g9gaa>

3. Over Exploitation

❑ Some plants over exploited for experimental studies and academic tutorials.

Ex: Pitcher plants, Drosera sp., Psilotum Sp., etc.



Pitcher plant

<https://rb.gy/9q0ttw>



Drosera

<https://rb.gy/rpd8lt>



Psilotum

<https://rb.gy/w2qrmt>

3. Hunting & Poaching

Hunting: Capturing or killing wildlife for food/valuable natural resources.

Poaching: Illegal hunting or catching of wild animals/plants.



Elephant Ivory tusks

Source: <https://rb.gy/asdnav>



Rhino Poaching for horns
Source: <https://rb.gy/qrp1q>

4. Introduction of Exotic Species

- **Exotic species**- a species living outside its native area-arrived there by human action, directly, indirectly or accidentally.
- Some species show negative effect - **Invasive species**.
- Exotic Species introductions fail ---- Poor adaptation

4. Introduction of Exotic Species

Exotic/Invasive Species



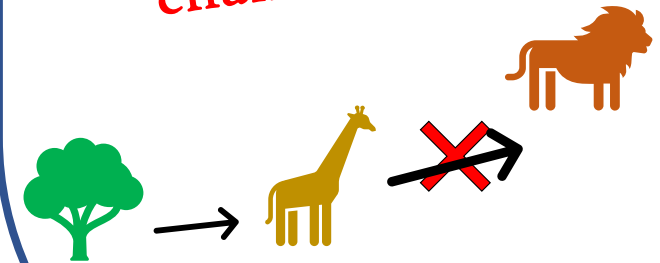
Compete with native species



Alters the natural ecosystem

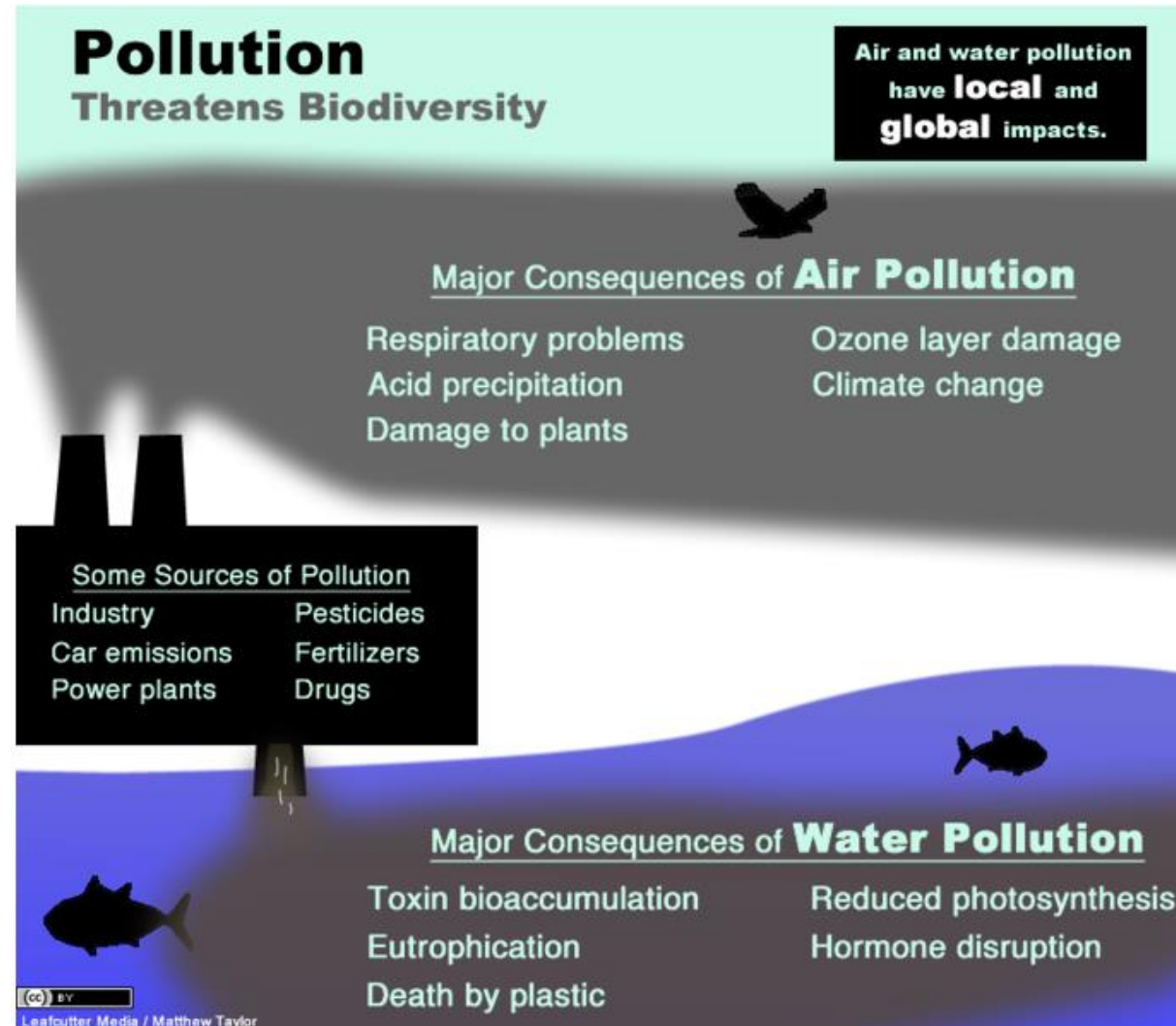


Disturbs food chain



5. Pollution

- **Pollution** -in any form-Major threat to biodiversity.



Source: https://commons.wikimedia.org/wiki/File:Pollution_Threatens_Biodiversity.png

5. Pollution

Pollutants

Direct
damage

E.g.: Lead

Indirect
damage

E.g.: CO₂

5. Pollution

Pollutants

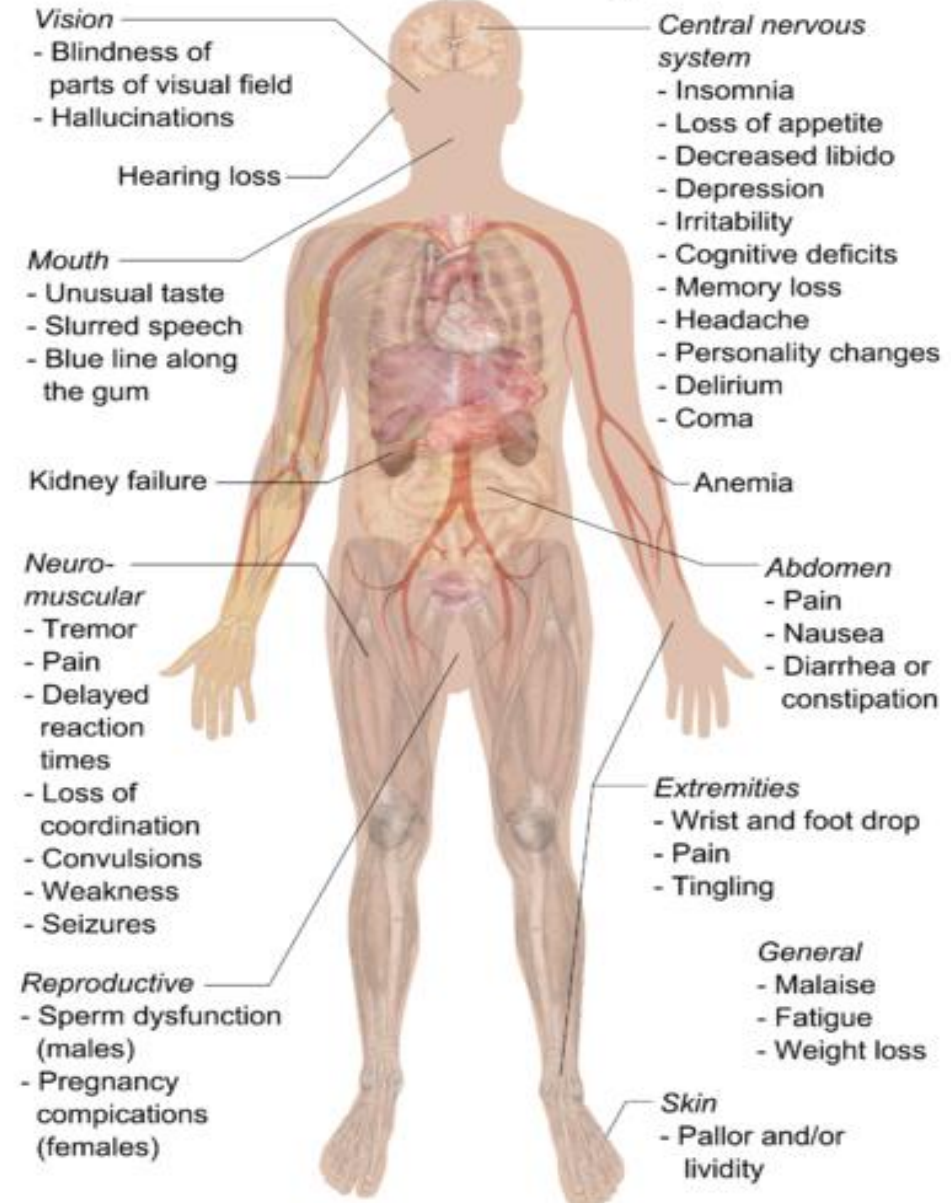
Direct damage

E.g.: Lead

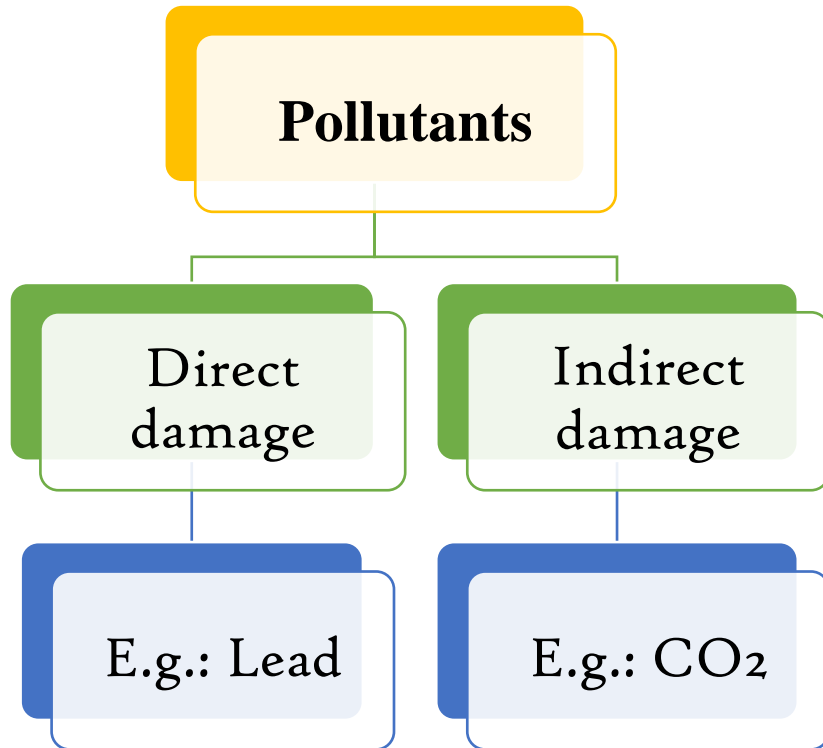
Indirect damage

E.g.: CO₂

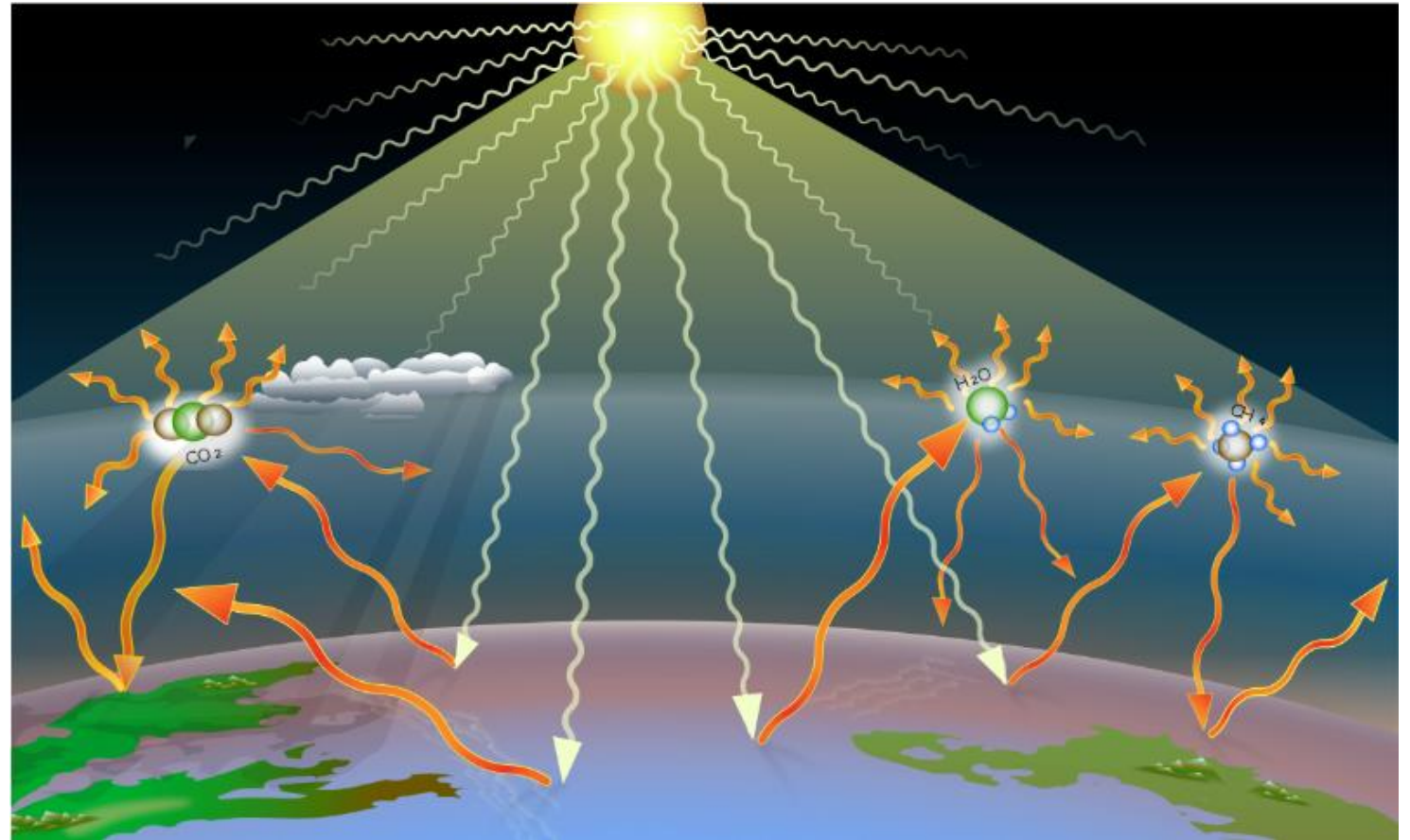
Symptoms of Lead poisoning



5. Pollution



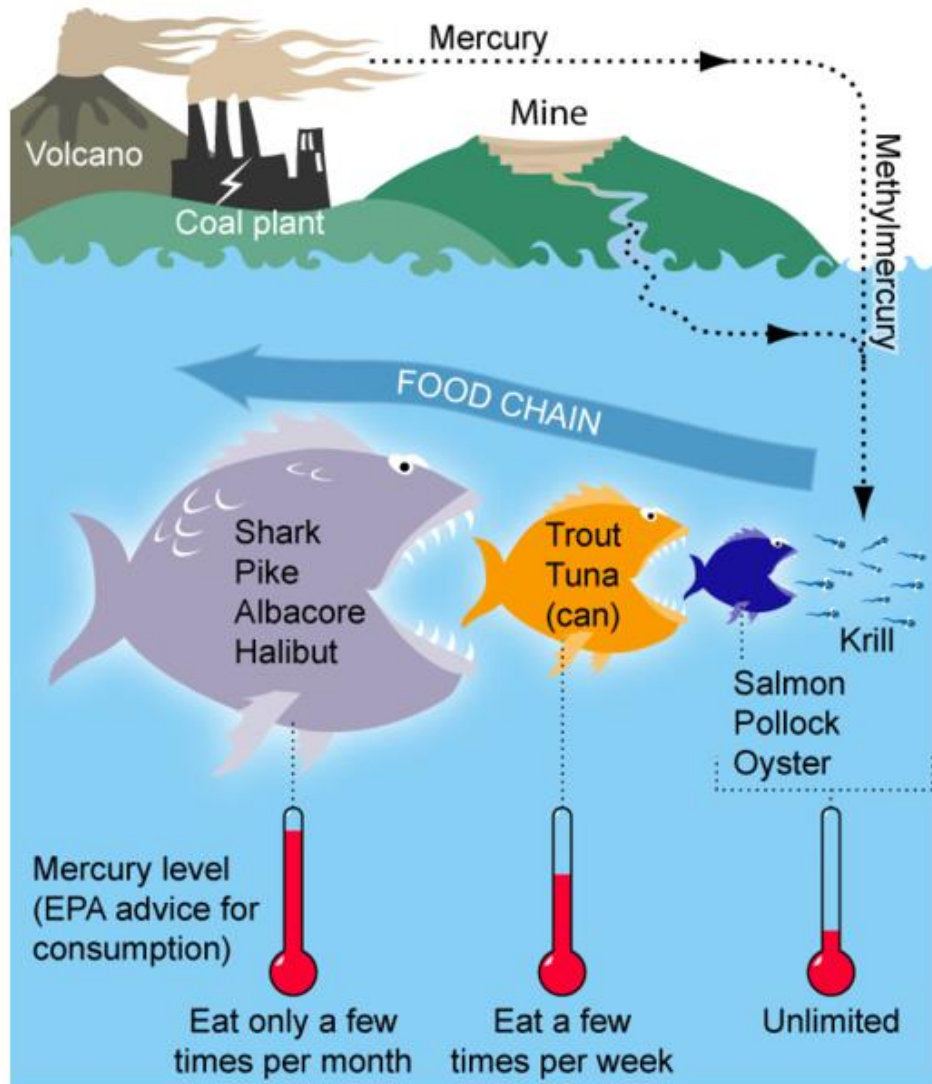
Global Warming



<https://rb.gy/w0gee2>

5. Pollution

Bio-accumulation of Heavy Metals



5. Pollution

Eutrophication: Greater accumulation of nitrates and phosphate in healthy water bodies can result in “algal blooms”.

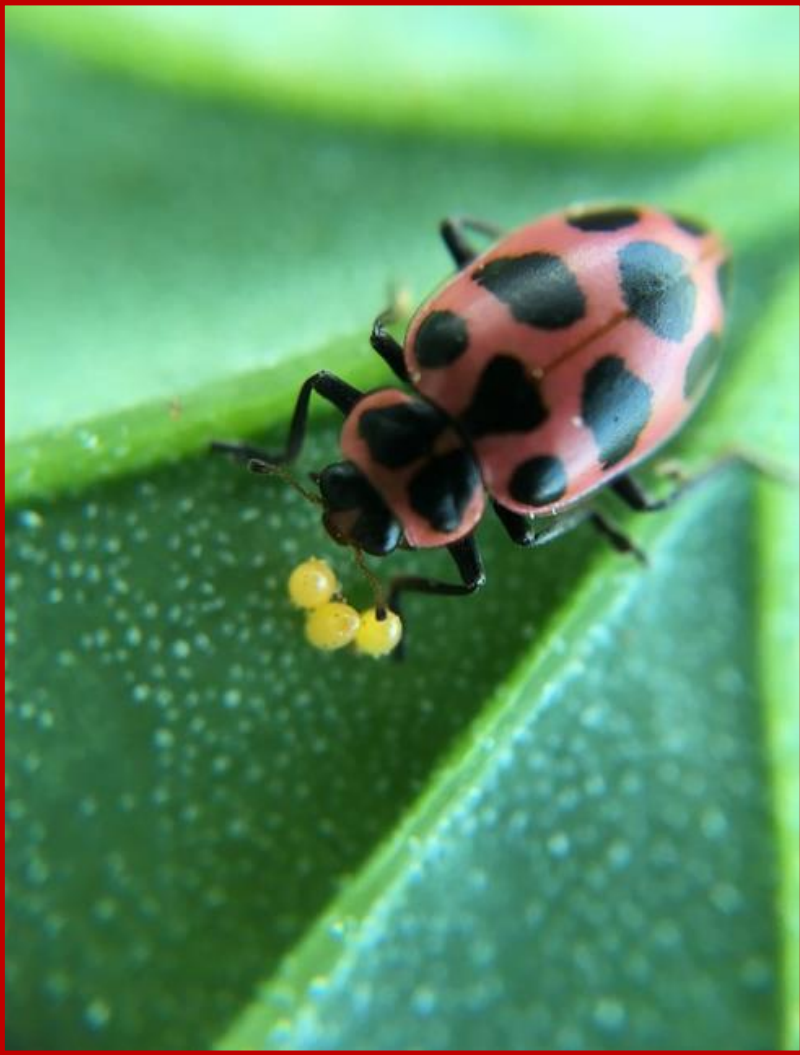


<https://rb.gy/qdcd9i>

6. Predator and Pest Control

- **Predators** are the biological control agents that lives by capturing and feeding on another species.
- They attack variety of pest species and helps in their control.
- E.g., **ladybird beetles** (controls scale insects, aphids etc.), **flower flies** (controls scale insects), **nematodes** (controls soilborne fungi, bacteria etc.) and **spiders** (controls leafhoppers) etc.

6. Predator and Pest Control



Lady beetle as Predator

Source: <https://rb.gy/kvhw1v>



Praying Mantis as Predator

© CC0 Public Domain

6. Predator and Pest Control

- Predators also threatens biodiversity.
- Through predation, parasitism, competition or other attacks on non-target species, they damage the ecosystem.
- An introduced biological control does not always aim pest species, it can also target native species.

Biodiversity

**Preservation of
biodiversity for
future generations
is our
responsibility**



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[Click Here](#) to watch animated video on Impact of biodiversity loss on Environment

(or)

Scan the QR code



[Click Here](#) to watch animated video on Pest Control



or

Scan the QR code

Acknowledgements



Sincere Thanks
to
APCCE