

THE ALARMING IMPACT OF ENVIRONMENTAL POLLUTION ON BUTTERFLIES

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Introduction

- Butterflies are one of the most beautiful creatures and most studied among insect groups.
- Butterflies serve as a valuable ecological indicator, effectively reflecting the overall health of the environment (Macri *et al.*, 2023)
- Butterflies are sensitive and directly affected by any interference in their habitats, atmosphere, local weather and climate (Manzoor *et al.*, 2013).
- They are notably sensitive to variations in temperature, humidity, and light intensity, often as a consequence of habitat modifications (Das and Parida 2015).
- Butterflies serve as vital agents of pollination for a variety of major crops with economic significance on a global scale such as *Mangifera indica* and *Fagopyrum esculentum*.
- Specific butterfly larvae contribute to biological pest control by consuming pests such as *Spalgis epius*, a Lycaenid butterfly fed on mealybug (Dinesh *et al.*, 2010).

Causes of Environmental Pollution Affecting Butterflies

Air pollution

- Emissions from vehicles, factories and power plants release harmful gases and particulate matter, degrading the air quality and impacting butterflies' respiratory systems.

Pesticide Contamination

- The widespread use of pesticides and herbicides in agriculture can poison and kill butterflies, disrupting their life cycles and food sources.

Habitat Destruction

- Urban expansion, deforestation, and land-use changes are destroying the natural habitats where butterflies thrive, forcing them to adapt or perish.

The Decline of Butterfly Populations Due to Pollution

Habitat Loss

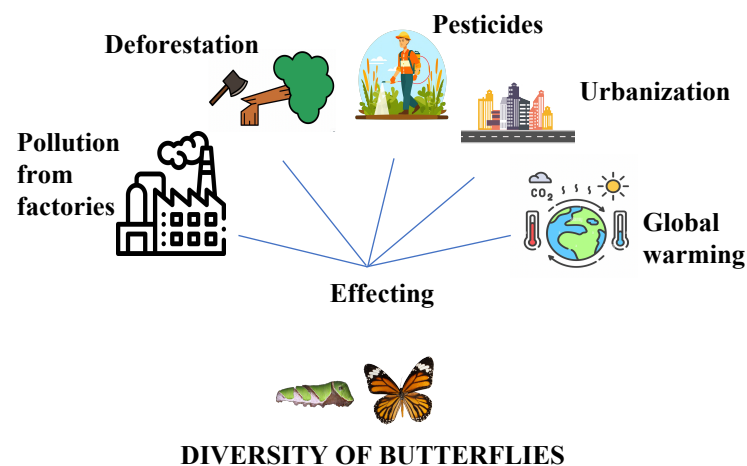
- Butterflies are losing their breeding grounds and food sources due to habitat destruction caused by human activities.

Toxic Exposure

- Pesticides, heavy metals, and other pollutants are poisoning butterflies, leading to their weakened immune systems and reduced reproductive success.

Climate Change

- Rising temperatures and unpredictable weather patterns are disrupting the delicate life cycles and migration patterns of butterflies.



Efforts to Mitigate Environment Pollution and Conserve Butterflies

Habitat Restoration

- Planting native flora and creating protected butterfly sanctuaries can help rebuild and preserve critical habitats.

Organic Farming

- Transitioning to sustainable, pesticide-free agricultural practices can create safer environments for butterflies and other pollinators.

Reducing Pollution

- Implementing stricter regulations, promoting sustainable practices, and raising public awareness can help mitigate the sources of pollution.

Public Awareness

- Educating the public about the importance of butterflies and the threats they face can inspire community-driven conservation efforts.

Policy Interventions

- Advocating for strict regulations on pollution, land use, and pesticide use can help mitigate the impact on butterfly populations.

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