

# Biodiversity Congress 2018: Butterfly-flower interactions and biodiversity in the changing environments

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## Abstract

Butterflies occupy a vital position in the ecosystem and are useful as indicators of environmental change. Their occurrence depends on the climatic dicta, the presence of suitable caterpillar foods and appropriate adult nectar sources or other food, suitable arenas for flight and courtship. These insects enhance the aesthetic value of the environments by their exquisite wing colors. Butterflies are the wild indicators of the ecosystem; these insects tell us everything about the healthier ecosystem. These are effective pollinators, butterflies visit the flower to eat nectar and this is often interdependent relationship. Some species of butterflies migrate over long distance; carry pollen to be shared across plants which are far aside from each other . This migration of pollens induces genetic variation in plants species and gives a better chance at survival against different disease. These insects also provide food for other organisms, for example; birds, reptiles amphibians and also acts as biological pest control. But the population of those insects decline rapidly thanks to human activities, habitat destruction, uses of pesticides and unawareness of individuals about the importance of flying flowers. They require a continuous supply of food sources, especially nectar sources from a number of plant species. In this context, floral morphological and nectar characteristics are important for visitation by butterflies. Nectar plays an important role in the nutrition of adult butterflies. Nectar is a highly enriched food resource consisting of carbohydrates, amino acids, lipids, antioxidants, alkaloids, proteins, vitamins, salts, etc. But, all these nutrient chemicals are not found in a single floral nectar source and hence flower-visiting butterflies should pay visits to different floral nectars to acquire all the required nutrients. The butterfly interactions with the flowers of certain plant species are going to be detailed. Plant species which facilitate foraging by butterflies show certain floral traits adapted for butterfly foraging activity and within the process both get benefited. With accelerated deforestation and changing ecology and subsequent change in the environment, the butterflies appear to be struggling to get the required levels of quality

nectar for survival during their adult life. The summer season is extremely crucial for butterflies since a couple of plants bloom during this era . The butterflies appear to be malnourished during adult life due to lack of enough nectar sources throughout the year due to changes in land use and climate. The butterfly plays a crucial role in ecosystems, acting as a pollinator, a food source and an indicator of the ecosystem's well-being. Butterflies play an enormous role in pollinating flowers that open during the day. Butterflies tend to favor big, colorful flowers that have a landing platform and gather pollen on their long, thin legs as they sip nectar from a flower. Butterflies are sensitive to climate change, such as pollination and habitat loss, and cause them to be more responsive. Therefore, an abundance of butterflies usually indicates a healthier ecosystem. Many butterfly species migrate over long distances as many as 3,000 miles. These migrations leave pollination across long distances and have increased human interest within the species. Butterflies contribute to ecosystem restoration because they provide pollination and a source of food. Increased butterfly populations may indicate a rise in plant diversity and other pollinator groups within restored areas. Butterflies are attractive addition to garden and more important insect than most of the people realize. As a wildlife indicator, butterflies tell us almost everything we'd like to understand about the health of an ecosystem Dobson, 2012. Swengel demonstrated that in ecosystem, plant and animal species sleep in sites with similar combinations of soil, topography, climate and geography. Some sorts of vegetation must be required for Butterfly species existence. Butterflies living especially place have particular habitat requirements. An interesting part of studying, localized butterflies is learning to find out the microhabitats they require. In ecosystem natural events either favor or reduce butterfly population's characteristics of microhabitats occurring therein ecosystem. Butterflies maintain the ecosystem by acting as pollinator, prey, biological pest control, induce genetic variation in plants, and enhance environmental beauty, reduce the extent of CO<sub>2</sub> in air. But butterfly population is decline rapidly and it's suggest that greater emphasis should be placed on management of habitat and better integration of

protected areas. Ecologists use butterflies as model organisms to study the impact of climate change, habitat loss.

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