# Importance of conservation of Butterflies and Moths

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**Abstract:**Butterflies and moths are the diverse group of insects belonging to the order Lepidoptera. Butterflies conjure up images of sunshine, the warmth and colour of flowery meadows, and summer gardens teaming with life. Moths are one of the most diverse groups of insects on earth, ranging from spectacular Hawk-moths to small, intricately patterned Footman moths. Butterflies play an important role in pollination after honeybees by pollinating a major portion of economically important crop, 3/4 part of staple crop in world, and more than 75% of flowering plants etc. The oldest fibre industry that is silk industry is also dependent on these Lepidoptera. Butterflies are also an indicator of environmental health and the ecosystem service providers from the starting level. Around hundred species of butterflies are at the verge of extinction in India. If the butterfly population decline then it will directly affect the agriculture industry.

There are many reasons why butterflies and moths are important, both in their own right but also as quality of life indicators. The following attributes form the rationale for conserving butterflies and moths around the world. In the present article some measure and ways are to be discussed for importance of conservation of Butterflies and Moths.

**Key words:*Butterflies, Lepidoptera, Insects, Hawk-moth, Footman moth***

**Introduction:**Butterflies are a diverse group of insects, containing around 20,000 different species. Butterflies are aesthetically pleasing and few species cause any damage to commercial plants. Butterflies contribute to thriving ecosystems and can indicate the state of an ecosystem's health. Butterflies play an important role in pollination after honeybees by pollinating a major portion of economically important crop, 3/4 part of staple crop in world, and more than 75% of flowering plants etc. The 1000 years old silk industry is also dependent on these Lepidoptera. Butterflies are also an indicator of environmental health and the ecosystem service providers from the starting level. Around hundred species of butterflies are at the verge of extinction in India. If the butterfly population decline then it will directly affect the agriculture industry. India must take lesson from USA where most of the butterflies have extinct or are endangered that is not all the host plants also have dwindled or have vanished due to depletion in forest cover along with butterflies and now USA is importing live butterflies and rehabilitating them in the country for pollination.

These indispensable pollinators play vital role in agriculture are heading towards extinction unnoticed from our country. Delhi alone has around 80 species of butterflies, which is much more than 56 species of whole of United Kingdom.

The life cycle of butterfly completes in four stages from laying eggs in a host plant from the eggs emerges larvae called caterpillars which vigorously feeds upon host plant and transforms into pupa and now development takes place inside and then comes adult butterfly the development from pupa to adult butterfly is called metamorphosis. Life of an adult butterfly is very short like two weeks and during this period it has to find a mate and host plant for propagation of species.

Butterflies, apart from nectar of flowers feed upon decaying fruits, dead animals and can be seen basking on rocks and on mud puddles near any water body; sometimes they can be seen sucking minerals from bird dropping or any other source of decaying plant.

Butterflies are particularly sensitive to climate change. Scientists monitor butterflies as a method of watching for warning signs of the more widespread effects of climate change. One example of these studies involves monitoring Edith's checker spot butterflies in North America. According to the National Academy of Sciences, the distribution of these butterflies has shifted further north and to higher elevations as the result of an increase in temperature.

**Why butterflies and moths are important?**

There are many reasons why butterflies and moths are important, both in their own right but also as quality of life indicators. The following attributes form the rationale for conserving butterflies and moths throughout the world.

**Aesthetic value:** Butterflies and moths are part of our natural heritage and have been studied for over 300 years. Butterflies and moths are beautiful, with many being iconic and popular. There are many references to butterflies and moths in literature, from the Bible through Shakespeare to modern day literature, and from poetry to musical lyrics. Butterflies are used by advertisers and illustrators the world over as way of indicating that something is environmentally friendly. Butterflies are often portrayed as the essence of nature or as representing freedom, beauty or peace.

**Ecosystem value:** Butterflies and moths are indicators of a healthy environment and healthy ecosystems. They indicate a wide range of other invertebrates, which comprise over two-thirds of all species. Areas rich in butterflies and moths are rich in other invertebrates. These collectively provide a wide range of environmental benefits, including pollination and natural pest control. Moths and butterflies are an important element of the food chain and are prey for birds, bats and other insectivorous animals. Butterflies and moths support a range of other

predators and parasites, many of which are specific to individual species, or groups of species. Butterflies have been widely used by ecologists as model organisms to study the impact of habitat loss and fragmentation, and climate change.

**Educational value:** Butterflies and moths have fascinating life-cycles that are used in many countries to teach children about the natural world. The transformation from egg to caterpillar to chrysalis is one of the wonders of nature. Other educational aspects include the intricate wing patterns and iridescence, and as examples of insect migration.

**Economic value:**Thousands of people travel abroad each year looking for butterflies and moths. Eco-tours bring income to many European countries and developing countries around the world (e.g. the valley of the butterflies in Rhodes and the Monarch roost in Mexico). Every butterfly and moth has developed its own suite of chemicals to deter predators and parasites, find a mate, and overcome the chemical defenses of its host plant. Each of these chemicals has a potential value and could be exploited economically. For example, powerful antibiotics have been found in the Meadow Brown, one of our commonest and most widespread species.

**Intrinsic value:** Butterflies and moths have a right to exist, as much as any other species on the planet. Butterflies and moths have been around for at least 50 million years and probably evolved some 150 million years ago. They are part of Life on Earth and an important component of its rich biodiversity. Butterflies and moths are a highly diverse group comprising over 250,000 species and make up around one quarter of all named species. Butterflies are flagship species for conservation in general and in particular for invertebrates

**Scientific value:** Butterflies (and moths to a lesser extent) are an extremely important group of 'model' organisms used, for centuries, to investigate many areas of biological research, including such diverse fields as navigation, pest control, embryology, mimicry, evolution, genetics, population dynamics and biodiversity conservation. The long history and popularity of butterfly study have provided a unique data resource on an insect group unmatched in geographical scale and timescale anywhere in the world. This has proved extremely important for scientific research on climate change.

**Threat to Butterflies:** India is home to about 1500 species of butterflies which constitute 65% of total Indian fauna. The largest butterfly with a wing span of 190mm is the Southern Birdwing and the tiniest is the Grass Jewel with a 15mm wingspan. Northeast India, Kerala, Bangalore, Arunachal Pradesh, Himalayas, Nilgiri Hills, Rohtang pass, Tiger Hills in J&K, Western Ghats and Assam are the prominent areas in the country harboring maximum species. Various ecosystems of our country support different species of butterflies. The

Western Ghats alone supports 330 species, out of which 48 are endemic to Nilgiris Biosphere Reserve.

Nilgiri Biosphere Reserve **(NBR)** has listed 41 butterflies as protected under wild life protection act 1972. The list includes **8**species under **schedule I**, **26** species in **schedule II and 7** species in **schedule IV**. **300** species have already included in **red data book** as endangered species, which is very alarming Large-scale poaching and international nexus of smugglers is the biggest threat to Himalayan butterflies like Apollo and Swallowtail butterflies which are most threatened species. Smugglers engage locals specially children in Arunachal Pradesh, Kerala, Rohtang Pass, Assam and Western Ghats and pay them 30 –50 rupees for every butterfly they catch for them. Depending upon the species these are sold in the international market, sometimes for even as high as 2500—3500 dollars. China and South East Asia along with Thailand are the main hubs of international butterfly smuggling from India. Poachers come to India on student visas and they collect rare butterflies carry them in envelops , matchboxes and use many more criminal methods for their transportation and not only that they throw away all those beautiful butterflies whose wings are damaged during catch and this number may even touch to thousand some times.

Lack of expertise in the identification of butterflies poached help poachers to have an easy escape; there are many reported incidences where international smugglers were released from police custody due to lack of information on identification.

These Lepidoptera are killed, dried and used for greeting cards, and for other ornamental and decoration purposes.

**Action Plan for Protection of Butterflies and Moths:**

1. Habitat destruction of forest cover especially for species –specific host plants should be reviewed time to time.
2. Increased vigilance on poaching of butterflies from the areas where they are found in abundance.
3. Educate school children from primary level by introducing butterfly chapters in science books about their importance in various fields related to human life.
4. Recognize and reward those experts who are already engaged in butterfly conservation programmes and are working on their own as field guides in their area locally.
5. Sponsored symposia and seminars in every academic institute for updating information on butterfly status in the country should be encouraged through government funding.

6. A data bank at national level should be created where information related to butterflies and their conservation is maintained with all details including regional nomenclature of all butterflies.
7. Academic institutions should discourage students for submitting annual projects on butterfly collection and their albums.
8. Discourage use of over dose of pesticides in crop fields and avoid overgrazing .They kill eggs, and larvae of butterflies.
9. Farmers should be made aware about crop rotation and monoculture plantation should be reduced. A study conducted in Assam Tea Estates shows that butterfly density was low in tea gardens because of monoculture as compared to other green forests.

**References:**


1. Bhardwaj M, Uniyal VP, Sanyal AK, Singh AP. Butterfly communities along an elevational gradient in the Tons valley, Western Himalayas: Implications of rapid assessment for insect conservation. Journal of Asia-Pacific Entomology. 2012; 15:207-217.
2. Basset Y, Barrios H, Segar S, Srygley RB, Aiello A, Warren AD *et al*. The Butterflies of Barro Colorado Island, Panama: Local Extinction since the 1930s. PLoS One. 2015; 10(8):1-22. doi:10.1371/journal.pone.0136623
3. Botham MS, Fernandez-Ploquin EC, Brereton T, Harrower CA, Roy DB, Heard M (2015) Lepidoptera communities across an agricultural gradient: how important are habitat area and habitat diversity in supporting high diversity? J Insect Conserv. Doi: 10. 1007/s10841-015-9760-y
4. Curtis RJ, Isaac NJB (2015) The effect of temperature and habitat quality on abundance of the Glanville fritillary on the Isle of Wight; implications for conservation management in a warming climate. J Insect Conserv. doi:10.1007/s10841-014-9738-1
5. Evans WH. The identification of Indian butterflies, 2nd ed., Bombay Natural History Society, Bombay. 1932, 454.
6. Hindle BJ, Kerr CL, Richards SA, Willis SG (2015) Topographical variation reduces phenological mismatch between a butterfly and its nectar source. J Insect Conserv. doi:10.1007/s10841-014- 9713-x
7. IUCN (International Union for the Conservation of Nature). IUCN Red List of threatened species. Version 2016.1. Accessed at http://www.iucnredlist.org/search (accessed January – July 2016).
8. Kunte K. The Wildlife (Protection) Act and conservation prioritization of butterflies of the Western Ghats, southwestern India. Current Science. 2008; 94(6):729-735.

9. Qureshi AA, Bhagat RC, Bhat DM. Diversity of butterflies (Lepidoptera: Papilionoidea and Hesperoidea) of Dachigam National Park, Jammu and Kashmir, India. Journal of Threatened Taxa. 2014; 6(1):5389-5392.
10. Roy DB, Ploquin EF, Randle Z, Risely K, Botham MS, Middlebrook I, Noble D, Cruickshanks K, Freeman SN, Brereton TM (2015) Comparison of trends in butterfly populations between monitoring schemes. J Insect Conserv. doi:10.1007/s10841-014-9739-0
11. Singh AP. New Forest, Dehra Dun, India: a unique man-made habitat for butterflies in the lower Western Himalayas. Indian Forester. 1999; 125:913-922.
12. Wilson RJ, Bennie J, Lawson CR, Pearson D, Ortu´zar-Ugarte G, Gutie´rrez D (2015) Population turnover, habitat use and microclimate at the contracting range margin of a butterfly. J Insect Conserv. Doi:10.1007/s10841-014-9710-0

**Some Butterflies and Moths Found At Faizpur**