

Butterfly Gardening in India: An Introduction

Dr. Raju Kasambe

In last few years there has been a tremendous increase in the interest in developing butterfly gardens (parks) in India. Many private as well as government butterfly gardens are coming up at various places across India. It is a good sign, in the sense we have started appreciating the importance of butterflies as objects of aesthetic value, for conservation as well as to create sustainable livelihood options for many. A short visit to a butterfly garden gives us enormous pleasure. I have visited butterfly gardens in Singapore and London and in India. I was fascinated to see so many colourful butterflies in these gardens and also to see thousands of visitors enjoying the company of butterflies! Unfortunately, we do not have a butterfly park as beautiful as the one in Singapore (on Jenting Island) or in Kuala Lumpur.

Butterfly garden is a garden where you can see lot of butterflies belonging to different species at one place and in good numbers. An ideal butterfly garden is nothing but a miniature representation of the forest in the adjoining area where various plants and flowers are grown. The environment is made as conducive as possible for butterflies found in the area.

This article is an attempt to summarise the basics of butterfly gardening in India. These will hopefully answer most of the questions people ask us about butterfly gardening in India.

To set up a new butterfly garden what we need is a suitable piece of land at the right location, man power, working knowledge of landscaping, good knowledge about butterflies and their requirements, knowledge about plants and finances to run the garden. If you want to make it a public place, you need some advertisement or selling skills to attract people to visit the butterfly garden.

Understanding the laws of the land

Butterfly garden can be a closed one or an open one. A closed butterfly garden can be an entire garden covered with green nets. The butterflies are released into this enclosed area either as adult butterflies or are reared in the garden itself. In Singapore and London butterfly parks, they procure pupa (chrysalis) and keep them in small boxes till the butterflies emerge. As soon as the butterflies emerge they are released into the garden. In absence of any predators, the butterflies survive till they die naturally.

But the Indian Wildlife Protection Act (1972) considers butterflies as wild animals and it is illegal to keep any wild animal in an enclosure (or captivity, in the legal language). As soon as there is an enclosure, it becomes a zoo. And to run a zoo, permission is required from Central Zoo Authority of India and also it is mandatory to follow their guidelines for establishing and managing a zoo. Getting permission from this authority (though creating a butterfly park may be a good objective) is 'mission impossible' for a general citizen.

But permission can be taken by government zoos, if they want to set up "butterfly enclosures" in their zoos. Zoos in India have so much of land; they should actually prove that they can create butterfly parks in India.



Butterfly Garden enclosure at Changi Airport in Singapore (Photo: Dr. Raju Kasambe)

Hence, for private butterfly parks or gardens (owned by individual or a corporate), the only and best option is to set up an ‘open butterfly garden’ on your own land. Here the butterflies are free ranging and no butterfly is captured. Luckily, we don’t need any permission to create an open butterfly park in India. An excellent example is the ‘Ovalekar Wadi Butterfly Garden’ at Ovala Village near Thane city in Maharashtra. This was set up by Mr. Rajendra Ovalekar, an enthusiastic teacher and BNHS member. This garden is located on the fringe area of Sanjay Gandhi National Park in his farm. It now attracts more than 125 species of butterflies and hundreds of visitors on Sundays.

Understand the life cycle of butterflies

Before starting work on setting up a butterfly garden one must understand the life cycle of butterflies. Butterfly life cycle completes in four stages, egg, caterpillar (larva), pupa (chrysalis) and adult butterfly. Every butterfly lays its eggs on one few selected species of plants, which are called larval host plants. The caterpillars emerge from these eggs and feed voraciously on the leaves or these larval host plants. The caterpillar moults few times and stops eating after certain growth and gets metamorphosed into a pupa. After few days, an adult butterfly emerges from this pupa.

That means butterflies need the larval host plants on which their caterpillars will grow and food for the adult butterflies on which they will survive.



Butterfly Egg (Photo: Shyamal)



Caterpillar (Photo: Dr. Raju Kasambe)



Pupa (Photo: Dr. Raju Kasambe)

Landscaping for butterfly garden

It is important to have a good location for the butterfly garden, especially the open butterfly garden. The best location will be near a patch of forest, as the butterflies can be attracted to the garden by fulfilling the necessary requirements. However, it is not necessary to have big plot to attract butterflies to the garden. Even a small plot can be converted into a decent butterfly garden. It is better to avoid setting up a new butterfly garden in very dry areas or very cold areas, deserts, and in highly urbanized areas with not many butterfly species around.

Once the land is acquired, it is important to do landscaping of the plot as per the requirements of a butterfly garden. If it already has lot of tree, there is no need to cut the tree, but to ensure plantation of new plants at the right locations. Landscaping should be in such way that there are places which provide shade, lot of sunshine, and wet patches too.

How to attract butterflies

Once the location of the butterfly garden is decided, we need to know what are the requirements of butterflies or what are the things which attract them? As in India, we cannot have a closed butterfly garden, the only option we have is to attract the butterflies and make them stay around in the butterfly garden. They will surely stay, if we fulfil their requirements in the garden itself.

Larval Host Plants

As mentioned above the life cycle of a butterfly completes in four stages, and each butterfly species lays its eggs on a specific plant (or a choice of few species of plants). The larva (or caterpillars) feed on these plants and hence these plants are termed as larval host plants (LHP). For example the Common Rose butterfly lays its eggs on *Aristolochia indica*, Spot Swordtail, Common Jay and Tailed Jay lays their eggs on *Polyalthia longifolia*, Common Mormon lays its eggs on *Murraya koenigii* (Curry Leaf) and *Citrus aurantifolia* (Lime tree).

The caterpillar which feeds on the LHP metamorphoses into a pupa in due course of time. The pupa is generally well camouflaged and stays immobile till an adult butterfly emerges out of it (there is nothing like a ‘baby butterfly’).

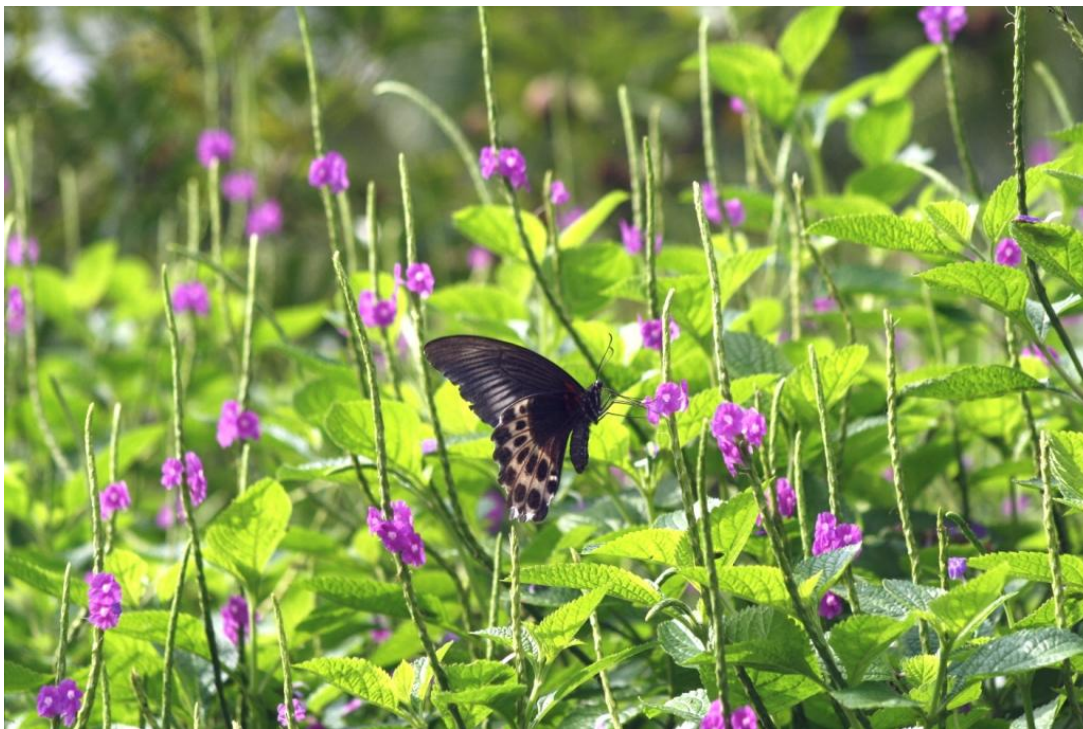
The more is the diversity of larval host plants in the butterfly garden the more number of butterfly species will start breeding in the garden. And there is more chance of the butterflies staying back in the area if they can fulfil all their requirements in the area. Hence, as a part of developing the butterfly garden, it is a continuous process to find out more and more larval host plants and plant or grow them in the garden. It is important to have better understanding

among the staff (at least the gardener) of the butterfly garden to prevent uprooting of the larval host plants, mistaking them to be useless weeds. This is important in view of the fact that some butterfly species lay their eggs on grasses.

Attracting ‘nectar-loving’ butterflies

As butterflies do not have teeth they cannot eat solid food. The butterflies can only sip liquid food with the help of a very thin tongue, called proboscis. And they do not grow once they are borne, they do not need a diversity of food for physical growth. What they need is liquid food which is rich in energy and acts like fuel for maintenance of their life activities. The best energy-rich food available around us is the nectar in flowers. The other source of liquid food is rotten fruits.

Many species of butterflies like the nectar of flowers. The butterflies are attracted to the flowers due to their bright colours. Hence it is necessary to plant plots of flowering plants in the garden. The flowering plants should be selected carefully in such a way that throughout the year the garden has some plants flowering. Some of the common plants which attract lot of butterfly species for nectaring are *Lantana* spp., Jamaican Blue *Stachytarpheta* spp., Cockscomb *Celosia* spp., wild *Xenia* spp. and *Ixora* species. A small herb *Tridax indica* attracts lot of blue (lycaenid) butterflies for nectaring.



Blue Mormon *Papilio polymnestor* on *Stachytarpheta indica* (Photo by Dr. Raju Kasambe)

Every butterfly has its own choice of flowers it visits, due to the fact that the length of their proboscis varies in different species. Butterflies with short proboscis may not be able to sip



Coxcomb bushes attract many butterflies like Pansies (Photo- Dr. Raju Kasambe)

nectar from flower with a long tubular corolla. Many large sized swallowtail butterflies are not able to sip nectar from very small flowers as the flowers cannot bear their weight. Hence some of the swallowtails do not land on the flower and keep fluttering while nectaring. Thus we need to have a variety of flowering plants in the garden to cater to the needs of the various species of butterflies.

Also while planting the flowering trees the trees should be planted keeping in mind their expected height to which it will grow. This will provide a vertical dimension to the garden. Small plots of flowering plants of a particular species should be planted, this adds to the aesthetic value of the butterfly garden, besides attracting hordes of butterflies.

Attracting the 'Non-nectar-loving' Butterflies

It is a wrong notion that all butterflies love nectar in flowers. There are many species of butterflies (many belong to the brush-footed and brown butterflies) which never visit a flower. These butterflies like to get their stock of food from rotten fruits, decaying fish, crabs, or prawns, the scat or dung or urine of wild animals and so on. These butterflies locate the food because of the strong smell. Some of the butterflies which are attracted to these include the Common Nawab *Polyura athamas*, Black *Charaxes solon* and Tawny Rajah *Charaxes bernardus*, Blue *Kallima horsfieldii* and Orange Oakleaf *Kallima inachus*, Common Baron *Euthalia aconthea*, Common Evening Brown *Melanitis leda*, Angled Castor *Ariadne ariadne*, Common Palmfly *Elymnias hypermnestra* and many bushbrowns. By the way, I strongly

smell a conspiracy in naming butterflies, which feed on urine and fecal matter and rotten things, as Rajahs and Nawabs!!



Butterflies are attracted to rotten and juicy flowers (Photo- Dr. Raju Kasambe)

Rotten fruits can be kept in feeding trays in the butterfly garden to attract these butterflies. These feeding trays with rotting fruits may attract ants, which in turn will disturb the butterflies. To manage this problem, each feeding tray should be kept in another slightly larger tray filled with water. This will prevent ants to reach the bowl with fruits, creating a moat-like situation like a. The feeding tray can also be kept hanging in trees at various locations in the garden.

Attracting ‘alkaloid-loving’ males

Males of some butterfly species need specific alkaloids for reproduction. These alkaloids are provided by plants like *Crotalaria*, *Heliotropium*, and *Eupatorium* species. The male butterflies flock these plants in huge numbers to suck these alkaloids and is a pleasant sight to see the butterflies engrossed in the activity. They need these chemicals to synthesize sex pheromones to attract females. Developing small plots of these plants ensure flocks of butterflies especially the tiger butterflies namely, Blue Tiger *Tirumala limniace*, Glassy Tiger *Parantica aplea*, Dark Blue Tiger *Tirumala septentrionis*, Plain Tiger *Danaus chrysippus*, Striped or Common Tiger *Danaus genutia*, and Nilgiri Tiger *Parantica nilgiriensis* and the crow butterflies namely, Common Indian Crow *Euploea core*, Brown King Crow *Euploea klugii*. These are also called brush-footed butterflies.



Butterflies like Tigers are attracted towards Crotalaria plants (Photo- Dr. Raju Kasambe)

Attracting 'mud-loving' butterflies

In the landscape of the butterfly garden, if there is natural depression it should be watered more often to create a muddy spot and a wet patch. Plastic sheets can be buried under this muddy spot to manage to moisture level. Fine sand should be spread along the fringe of his muddy place and rotten leaf litter be mixed in the soil from time to time. Many butterflies (especially males of many species) visit such damp and muddy places to get their daily dose of water, minerals and various chemicals needed for their physiological needs. This is known as 'mud-puddling'. Yellows of many species gather on mud for mud-puddling in huge numbers.

Also, before planting the plots of plants, a permanent arrangement for watering the plants should be done. This could be the sprinklers or other methods, which will save lot of manpower in future needed to water the entire garden nearly every day.



Many species of butterflies gather at wet muddy patches for mud-puddling (Photo- Dr. Raju Kasambe)

What should not be done

One of the most important rules to be followed in butterfly gardening is to strictly avoid the use of any insecticide, pesticide, weedicide or any similar chemicals to kill or control some pests. These will eventually kill the butterfly caterpillars (which are nothing but butterflies to be borne) and drive the butterflies away from your butterfly garden.

Another thing is avoiding plantation of rose plants. These are useless for butterflies and need spaying of insecticides to protect it from various moth caterpillars.

Avoid using chemical fertilizers. Instead, the garden can have a small place where natural fertilizers can be produced using the leaf litter, cattle dung and other garbage from the garden. This natural fertilizer should be used for the larval host plants for their healthy growth.



Insecticides and weedicides should not be sprayed in butterfly garden in any case

Landscaping

While setting up an open butterfly garden, it is necessary to have a plan of landscaping. But if there are trees already in place, the plan should be designed accordingly without cutting the existing trees. The plan should clearly describe the plots for flowering trees and take care of the needs of various species of trees as per their requirement and dependence on sunlight. There should be a small nursery totally enclosed to protect small saplings of various plants collected for the garden. Few saplings of each larval host plant (at least the rare once) should be protected here as genetic pool. Sometimes entire plants are finished by hordes of caterpillars. This stock will help replenish the plants in the garden again.

Landscaping should involve plan of narrow footpaths in the garden which allows access to most of the areas in the garden. These if planned well can prevent trampling of the plants by visitors, while trying to photograph some butterfly. These may not be of concrete, but of mall bricks to allow movement of caterpillars.

Sunshine is very important in the life of butterflies as they are cold blooded animals and need to bask in sunlight before they start their activities in the morning. They become active after basking in sunlight for some time. Hence the garden should have lot of flower beds with lot of sunshine.

While planting large trees in the garden, lot of planning and futuristic thinking is needed. When they grow, they should not create shadow in entire butterfly garden. If the garden is very big, the trees can be planted along the eastern edge or they should be planted along the western edge or forming a line running north-south in the middle of the garden. This will keep big areas with lot of sunlight.

A small shade for visitors with resting facilities, a tea and snacks kiosk and basic amenities like toilets ensure the comforts of the visitors.



Butterfly Garden landscaping should take into consideration many factors like parking space etc. (Photo- Dr. Raju Kasambe)

Manpower

To manage an open butterfly garden you need to hire at least one gardener, a plant expert, a butterfly expert and a person to manage the entire set up. Off course, you can play few roles out of these.

Money matters (Financial Management of the Garden)

You need some seeding money to start with butterfly gardening and there is no guarantee that it will earn you money. If you have the land needed to set up the butterfly garden available with you, the initial cost will be less. But there is recurring cost to maintain a butterfly garden which includes purchase of saplings, gardener, honorarium to butterfly and plant experts (many roles can be played by one person), electricity bills, and water bills and so on. Butterfly garden needs proper management and regular maintenance, otherwise the weeds overgrow the larval host plants and soon it loses the beauty of being a ‘butterfly garden’!

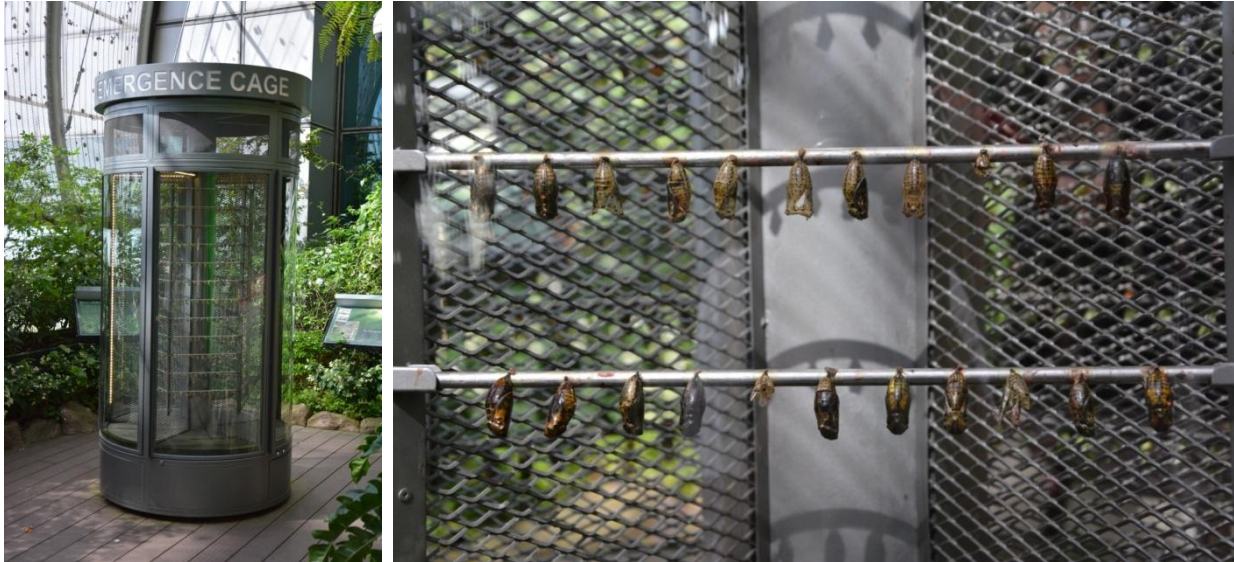
You can rear a butterfly in your house

Anybody can rear a butterfly in his house! That’s pretty simple. You can search for caterpillars on larval host plants of butterflies like a Lime tree *Citrus spp.* or a Curry Leaf tree *Murraya koenigii* may have caterpillars of Common Mormon *Papilio polytes* and Lime Butterflies *Papilio demoleus*. Pick that caterpillar and bring with it a stock of tender leaves to feed it on. Keep it in a transparent box. Keep some sticks in the box for the caterpillar to pupate. Clean the box everyday for the excreta. The caterpillar will get converted to a pupa one day. One fine morning you will notice that a beautiful butterfly has emerged from the pupa. Free it as soon as it is ready to fly....It’s your baby after all!

Future opportunities in India

In India, we can have small closed butterfly gardens at major International Airports and in

major zoos for recreation. For maintaining these gardens, we can start rearing butterflies of beautiful and colourful, not necessarily rare or those protected under Schedule-I of the Indian Wildlife Protection Act (1972), with the help of tribal communities and create thousands of jobs. The pupae reared from such centres can be supplied to butterfly parks around the country. This can very well be done in villages around Western Ghats and the Himalayas by setting up of big nurseries of local larval host plants in village lands or in private lands. What is needed is little flexibility in the Indian Wildlife Protection Act (1972).



Readymade butterfly pupae are brought and kept in special enclosure in closed butterfly gardens. The butterflies are released when they emerge from these pupae (Photo- Dr. Raju Kasambe).

Dr. Raju Kasambe
Important Bird and Biodiversities Programme Manager,
Bombay Natural History Society, Mumbai-400001
Maharashtra.
Research gate DOI: [10.13140/RG.2.1.4934.6164](https://doi.org/10.13140/RG.2.1.4934.6164).