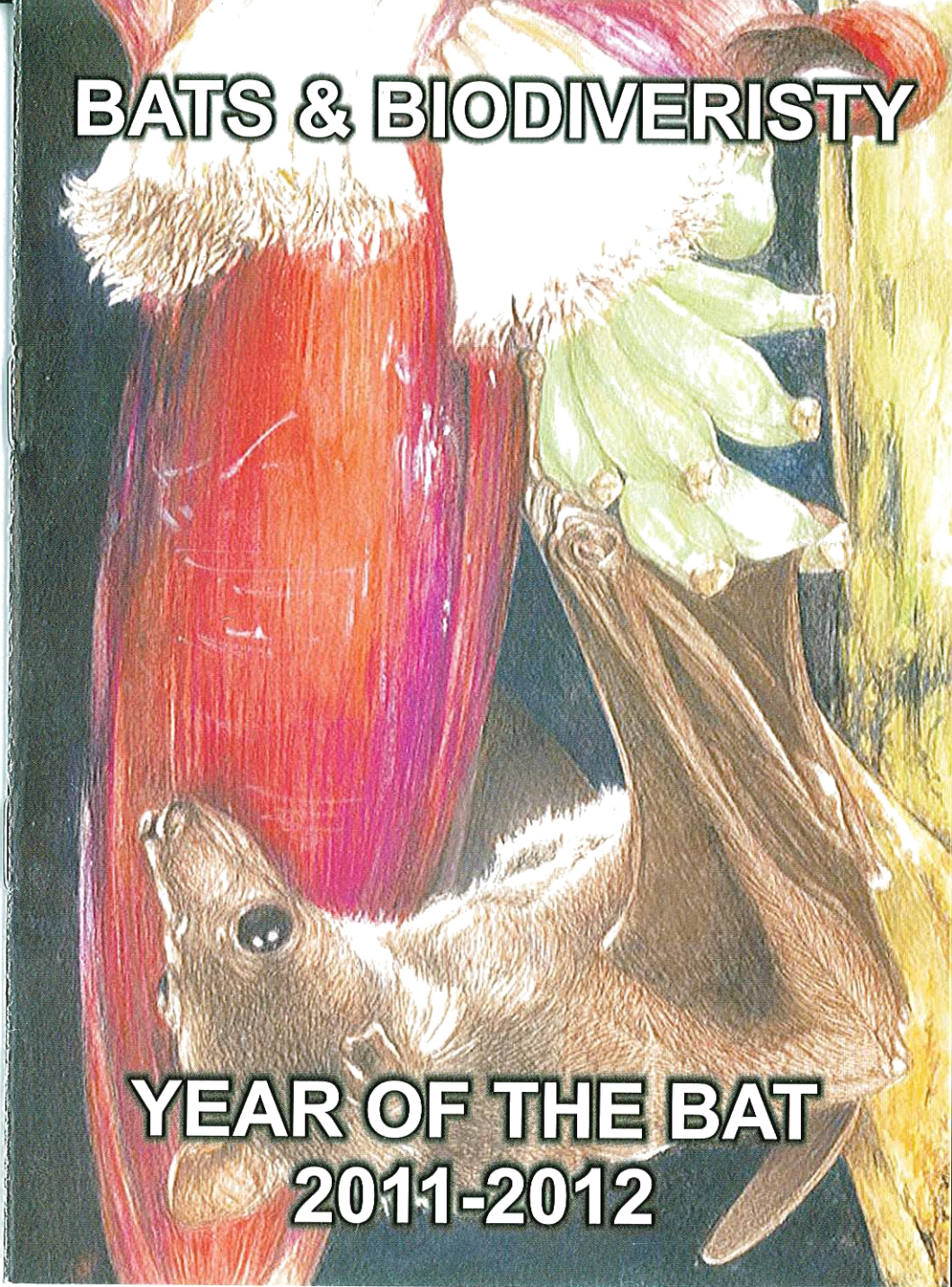
# BATS & BIODIVERISTY



# YEAR OF THE BAT
# 2011-2012

*This booklet is devoted to the*

# UN Decade on Biodiversity

United Nations Decade on Biodiversity

*in the*

# UN International Year of Forests

INTERNATIONAL YEAR OF FORESTS • 2011

*and the*

# Year of the Bat!

Year of the Bat
2011-2012

# Introduction to
# UN Decade on Biodiversity, 2011-2020
# UN International Year of Forests 2011
# & International Year of the Bat 2011-2012

It is rare that there are so many commemorative events related to zoos, wildlife and environment at one time. It is a like being a kid in a candy store, unable to decide which treat to take up.

The UN Decade of Biodiversity, 2011-2020 was declared after the Year of Biodiversity 2010, when it had to be said that we as a wildlife and environmental community had failed to slow, much less stop, the destruction of biodiversity. Some progress was made in developing new and environmentally friendly items and habits, but it is not enough to keep us save and comfortable. Hence the CDB and related organisations put up the UN Decade on biodiversity so that a good block of time, a decade, could be devoted to efforts to slow the rate of attrition of the Earth's biodiversity. Bats are part of biodiversity ... a big part. The Order Chiroptera, all bats, is one of the largests mammal Orders. There are more than 1150 species of bats in Order Chiroptera and in the world...and counting, as new species and subspecies are discovered from time to time. Every species and subspecies is different ... diverse ... it is this diversity that makes up bio or biological diversity. Diversity is key to the strength of the Earth's ecosystems.

Although we see plenty of bats in cities and town, the real home of bats is the Forest. We celebrate our Forests as they support almost all the elements which make up the earth. In the forest, bats are never considered pests as they often are in agricultural fields and in the city. In fact bats do more good than harm both to agricultural fields and to human living areas by spreading pollen and seeds, thereby promoting growth of certain vegetation. In the International Year of Forests bats are one of the best representatives of how Ecosystems work ... bats give back more than they take.

It may be the first time there has been an International Year or global campaign devoted to bats. This campaign is backed by the United National Environment Programme. It is a joint campaign led by the UN's Convention of Conservation of Migratory Species of Wild Animals (CMS) and EUROBATS. The 1100 species of bats mentioned earlier make up one quarter of the global mammal populations, surpassed only by rodents and insectivores!

Despite their numbers and gifts to ecosystems, bats have been misunderstood and unpopular animals for the most part. Even rats and mice have attracted roles as cartoon characters in different parts of the world, e.g. Micky and Mini Mouse in Disney cartoons and other characters played by rats or mice in legends and stories.

Year of the Bat promotes conservation, research and education on these unique, flying mammals. Their role in providing benefits for human beings is enormous as they help control insect populations and pollinate vast areas with pollen and seeds, sustaining rainforests and increasing food supply. Even though farmers claim bats are destructive to their crops, studies show that bats prefer over-ripe fruit which cannot be used for sale in the markets.

In this booklet are many facts about bats. Read and be amazed. Go out and see them, if you are fortunate enough to have them visiting your area. Think what we would lose if we didn't have bats. Bat in fact are declining in numbers due to habitat loss, human disturbance, industrialization, urbanisation and even disease. Over half of the bat species are classified as Threatened or Near Threatened by the IUCN Red List.


So make friends with bats. Be a student of bats. Become a promotor and an educator about the goodness and utility of bats. In this booklet you will learn enough begin to **"go to bat for bats!".**

# All about bats

**What are bats?**
Bats are mammals. Mammals have hair or fur on their bodies. They are warm-blooded, unlike snakes and frogs. Bats are the only mammals that can fly.

**Where do bats come from?**
Bats come from both tropical (hot) and temperate (cool or cold) places in the world (but NOT from North Pole, South Pole and some small islands).

**How do they look?**
Bats have fur for protection against bad weather. They have angular wings, strange looking faces. Some look like foxes or dogs (E.g. Short-nosed fruit bat) and others look like goblins (e.g. Noctule). Bats that live in crevices and bamboo have flatter heads.

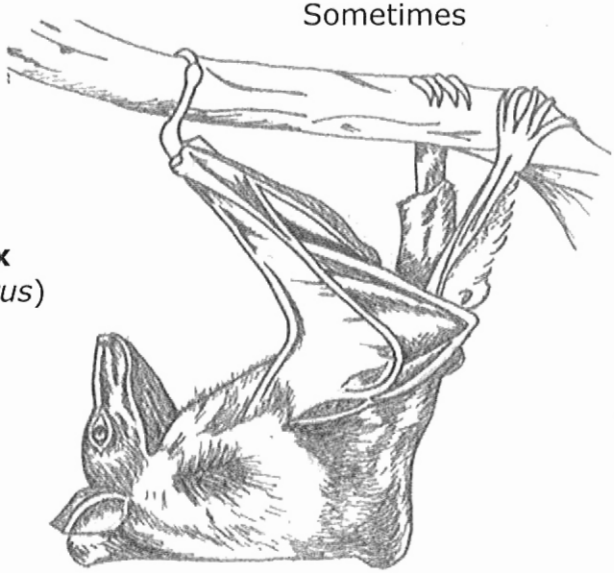
**How do they fly?**
They have wings. The scientific name for bats is Chiroptera....Latin for "hand wing". Their wing bones are like the hand and arm of a person but they have skin stretched between the inner "finger" bones and their body. This makes their shape like a kite or parachute - which helps them fly.

**How big?**
The world's biggest bat is the Giant Flying Fox *(Pteropus vampyrus)* - see picture on the next page. Its wings stretch up to 6 feet (as wide as your father is tall). You can see this bat in India if you go to Nicobar islands.

**How small?**
The smallest bat in the world is the Hog-nosed bat (or the bumblebee bat). They live in South and Southeast Asia. They weigh just 2 grams. Their wings spread just 6 inches. When they rest, they can fit into a match box. The smallest bat in South Asia is the Indian pygmy bat that measures approximately 2-4 grams only. South Asia includes Afghanistan, Bhutan, Bangladesh, India, Maldives, Nepal, Pakistan, and Sri Lanka.

**What colour?**
Mostly black or brown, but they can also be in bright orange, yellow, silver, white or grey and some have spots and stripes on their body or wings.

**Home of bats**
A bat's home-place is called a "roost". They do not make "nests" like a bird or "burrow" like a snake. Bats are nocturnal animals as they are active at night. During the day, they hang from tree branches or cracks of caves, often in great numbers. Sometimes hundreds in big trees and thousands inside caves!



**Giant Flying Fox**
*(Pteropus vampyrus)*

**How do bats see?**
"He's blind as a bat!" Have you ever heard that? Not all bats are blind. Fruit bats have good eyesight.

**How do bats hear?**
Bats have a special way to detect their prey. As they fly, they screech - these are high-pitched sounds that we can't even hear. When these sounds echo off cave walls, trees etc. it helps the bats find their way and prey. This method is called "echolocation" – locating things by their echoes.

**Snooo...ooze**
Some bats that live on insects hibernate in winter. Some bears, bats hibernate because in cold weather there are not many insects.

**Holiday**
Bats move to other places in search of food, good homes (roost sites), more comfortable climate, or girlfriends or boyfriends. E.g. Indian False Vampire. When they do this we call it migration. When we do it, we call it a holiday!

**Baby bats**
Baby bats are called "pups" - Yeh! just like dog babies. Unlike dogs, bats usually have only one pup!

Mothers leave their pups hanging together in the roost to keep them warm, when they go in search of food. They come back and find their own pup by the smell even though all bat pups look alike and it is dark inside the cave.

# Kinds of bats

There are two kinds of bats: we call them families. They are (1) fruit bats, which feed on fruit and other plant parts, and (2) insect bats, which eat insects.

The fruit bat family is called Megachiroptera. "Mega" means large and fruit bats are larger than other bats. That strange name is just a name - like the Rao's or the Singh's or the Khan's. There are 14 kinds of fruit bats in South Asia alone. Fruit bats are also called "flying foxes".

The insectivorous bat family is called Microchiroptera. "Micro" means small - these bats are smaller than fruit bats. They eat insects. They can also eat small rodents, birds, reptiles, amphibians, fish and even other bats. They echolocate to navigate and so have modified ears.

| | **Fruit bats** | **Insect bats** |
|---|---|---|
| **Food** | Fruit and other plant small stuff | Insects and other live animals |
| **Number** | 14 kinds in South Asia | 107 kinds |
| **Ears** | Simple small ears | Large, modified ears |
| **Size** | Large body | Small body |
| **Sight** | Good eyesight | Poor or no eyesight |

**Endemic bats**

Some bats are found only in India and nowhere else in the world. Such animals and plants are called ENDEMICS. E.g. One kind of Leaf-nosed bat is found only in Karnataka in India in the whole world!

**Importance of bats**

Have you studied Ecology in school? Ecology describes how the natural world works. Different animals are like parts of a "forest machine".

# Bats Help People and Forests

**How do bats help people?**
Many of these bats can eat upto 1000 bugs an hour! How may bugs can you eat? How many chocolates? Bats eat mosquitoes which we all hate and also destroy crop-eating pests.

**Bats help forests**
Fruit bats play an important role in forest ecology - they help forests survive. They do this by eating seeds and pooping them all over the forest after digesting the fruit. These are called bat droppings. These seeds take root and grow up into trees.

Fruit bats also help forests with pollination, like bees for example. Three kinds of bats alone help to pollinate 114 species of plants in India. **More on pollination next page.**

Insect bats help forests by feeding other animals that is, being food for other large animals themselves! Some bats even feed on other bats.

When one animal eats another and that animal eats yet another and so on, we call it "food chain".

Bat dropping have another use besides spreading seeds - it piles up and makes a home for many small animals. The many animals and plants that grow in bat droppings are an ecosystem in itself.

Bat droppings also form a good fertiliser. Substances from bat droppings are used to make laundry soap and other such products.

Scientists have extracted substances from the saliva of Vampire bats that are used to treat heart patients. This shows that even Vampire bats are useful.

## Bats are helpful to all as Pollinators

How many people know that you don't have to be a bee or a butterfly to be a pollinator. There are many invertebrate (no backbone) pollinators, like bees and butterflies ... we usually think of these are we've seen them hovering over flowers and other vegetation many times.

Actually there are many vertebrate pollinators including birds, mammals and reptiles. Of the mammals, we are interested in bats because this book is about bats, but in fact, there are many mammal pollinators. The biggest mammal pollinator is the ruffed lemur, a primate. Other vertebrates, monkeys, possums, rodents, etc. also pollinate plants. Hummingbirds, honey eaters, sunbirds and others are pollinators, and even lizards. There are a documented 37 lizard species that visit flowers and pollinate them. And of course bats ... bats do double duty by pollinating, or carrying pollen from place to place on their wings and feet and by pooping seeds from fruits in fields and forest. In fact one researcher has proven that the seeds which have gone through a bat's digestive system are more fertile and effective that seeds which have not!

All that is great news. The more pollinators, the better. The bad news is that pollinators of all kinds are in decline. In fact the CBD Convention of Biological Diversity brought out the Sao Paulo Declaration (1999) on Pollinators, praising their support of the earth's productivity and pointing out their challenges. Now, it is know that there have been serious declines to pollinators. This poses a severe threat to biodiversity, food webs and even human health. It is said that at least 80% of the world's crop species require pollination to set seed.

So bats as pollinators must be taken seriously, as all animals that pollinate fields and crops and secure our food for the future.

# International Year of Forests - 2011

The United Nations has declared 2011 International Year of Forests. India is the international host. The slogan or tagline for the campaign is "Forests: Nature at Your Service". This slogan was omnipresent during W.E.D. and it is still good, still true.

Forests perform vital services for man, animal, plant and earth. Forests make it possible for man and animal and plants to serve one another. It is estimated that forests provide work for 1.6 billion people. Forests help make the planet cooler. Forests are Forests are the helpmate and partner of rivers, soil, animals, plants, and even industry although that can be a bad thing if human beings exploit this service. Forests are habitats to over half the land animal and plant species. Forests are the most biologically diverse of all land ecosystems.

Forests are key to supplying water for almost half of the largest cities. Forests are nature's industry giving sanctuary and work to many forest dwellers. Forests are like the lungs of the Earth and keep billions of people alive and healthy..

Despite this, mankind is destroying the very forests needed for life and breath, food and water.

Global deforestation is at a rate which cannot continue without threatening our quality of life and our very survival. Thirteen million ha. forests are destroyed annually and as a result people and animals suffer. Destruction of habitat causes species extinction. It is said that it is not too late to reverse this trend but people everywhere have to work towards that end. Forest services provide everything we hold good in life. In order to keep our good life and help the forest animals, like bats, that we find so charming, we all have to work together.

# How do bats get into trouble?

Bats are disappearing because of several reasons - these reasons are called THREATS. Threats may be natural or caused by people.

Natural threats
Bats produce only one pup a year so their numbers grow very slowly.
They have to compete for food or living areas with other animals.
They have to escape being eaten by other species.
Sometimes natural disasters kill bats - floods, forest fires etc.

Threats from people
Destroying their roosts
Cutting trees around caves and in forests
Chopping branches of trees
Building houses, dams, bridges and roads in forests
Breaking down old buildings with roosts
Disturbing bats in trees, caves and buildings
Killing them for food and medicine E.g. Giant flying fox
Visiting caves for fun (tourism) E.g. Wroughton's free-tailed bat
Sealing off caves so that bats cannot enter inside
Pollution, pesticides, war, electric wires etc.

**Hunting and trade**
Bats are hunted for food and/or medicine. Some people believe that bat meat is good medicine but it may not be true.

Nearly 20 kinds of South Asian bats are hunted for their meat.

## Myths about bats

| Lies | Truth |
|---|---|
| Bats attack people | No! Bats are shy animals. They will attack only when you touch them |
| All bats have rabies | All bats are not carriers rabies. When they get rabies they themselves quickly die. |
| All bats drink blood | Only three kinds of bats drink blood blood (Vampire bats). They are found ONLY in South and Central America. They prefer only cattle blood |
| Bats are blind | All bats can see, but they can hear better. All fruit bats can see well. |
| Bats are dirty | Bats are clean animals. They clean even their young ones many times a day |
| Bats are considered unlucky | Bats do more good than bad. In some parts of and as evil Asia, they are considered very lucky and in India, they are thought to live in areas where wealth is found. |
| Bats eat away fruits | Bats feed on fruits that are too ripe to sell. Such orchards damage too is very small. |

### Bats as pets

You should never keep a bat as your pet. Even if a bat enters your room, switch off the fan as quickly as possible because the bat can get hurt while flying. Keep all windows open for it to fly out. Never try to catch it.

### Bat Bites

Bats will bite if you touch them even without knowing, only because they want to escape from you. If you find a bat, just leave it alone. All wild animals will bite only when they feel afraid. It ever a bat bites you, tell your parents to take you to the doctor immediately.

## What can I do to protect bats ?

### Protect forests by doing the suggestions below

√ Do not disturb trees, caves, buildings that have bats

√ Do not cut down trees that have roosts

√ Identify bat colonies in your school and observe without disturbing them

√ Observe bats in temples and other sacred places and encourage your friends and relatives to appreciate them

√ Start bat clubs in your school

√ Avoid using chemicals for your garden. Some insecticides may harm bats that get rid of pest insects that trouble us.

## So now you know!

## Bats are gooooooood animals ! Protect them and appreciate them in Year of Bat (YOB) and forever !

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United Nations Decade on Biodiversity

# Celebrate the World's Forests

## Bats need Forests, People need forests, all of Biodiversity needs forests

INTERNATIONAL YEAR OF FORESTS • 2011

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