

Conservation of Fauna of Seshachalam Biosphere Reserve – An Overview

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Abstract:- The Indian Government has established 18 Biosphere reserves in India which protect larger areas of natural habitat and often include one or more National parks. Seshachalam hills, the first Biosphere Reserve in Andhra Pradesh, is located in southern Eastern Ghats of Chittoor and Kadapa districts. It is the richest floristic hot spot harboring many endemic and rare plants. Five Gecko species were recorded in this reserve, out of that the Golden Gecko *Calodactyloides aureus* are rare and endemic species in the biosphere reserve. 12 species of lizards and 22 species of snakes are found Seshachalam Biosphere. The protection of habitat is an important aspect in the conservation of such species.

The biospheres are sites where protection is granted to the flora and fauna of the protected region. Each biosphere reserve is intended to fulfil 3 basic functions such as conservative, development and logistic functions. The Wildlife is a potential source of useful products of global interest. Wildlife is nature’s gift and its decline has an adverse effect on ecology and hence there is an urgent need to protect the Wildlife. An awareness should be developed among the general public about the proper management and the necessity of conservation of natural ecosystem and wild Communities of plants and animals they contain. To ensure this certain legal steps are to be taken up by the Government to regulate the exploitation of Wildlife.

Keywords: *Seshachalam Biosphere, Wildlife, Gecko, Ecosystem.*

Introduction

India has large geographical size and variety of climate and habitats. Wild animals constitute great national resources. Preservation and protection of wildlife is important from the ecological point of view. As per the UNESCO's Man and Biosphere program, the government of India has established the Seshachalam Biosphere Reserve on 20th September, 2010. The reserve is the first biosphere reserve in Andhra Pradesh and the 17th in India. By size, it is the 9th largest in India.

Biosphere reserves:

Biospheres are sites where protection is granted not only to the flora and fauna of the protected region, but also to the human communities who inhabit these regions, and their way of life. A biosphere reserve is an ecosystem with plants and animals of unusual scientific and natural interest. It is a label given by UNESCO to help protect the sites. The plan is to promote management, research and education in ecosystem conservation. This includes the 'sustainable use of natural resources'. The biospheres are sites where protection is granted to the flora and fauna of the protected region. Each biosphere reserve is intended to fulfil 3 basic functions such as conservative, development and logistic functions.

Seven of the fifteen biosphere reserves are a part of the World Network of Biosphere Reserve, based on the UNESCO man and the Biosphere programme (MAB) list.

Gulf of Mannar Biosphere Reserve, Nanda Devi Biosphere Reserve, Nilgiri Biosphere Reserve. Nokrek National Park, Pachmarhi Biosphere Reserve, Simlipal National Park and Sundarbans Biosphere Reserve,

The Indian government has established 18 Biosphere Reserves, which protect larger areas of natural habitat than a National Park or wildlife Sanctuary, and often include one or more National Parks and or preserves, along buffer zones that are open to some economic uses.

Biosphere Reserves of India

Sl. No	Year	Name	State	Type	Key Fauna
1	1986	Nilgiri Biosphere Reserve	Tamil Nadu, Kerala and Karnataka	Western Ghats	Nilgiri Tahr, Lion-tailed macaque
2	1988	Nanda Devi	Uttarakhand	Western Himalayas	NA
3	1988	Nokrek	Meghalaya	East Himalayas	Red Panda
4	1989	Gulf of Mannar	Tamil Nadu	Coasts	Dugong or Sea Cow
5	1989	Sundarbans	West Bengal	Gangetic Delta	Royal Bengal Tiger
6	1989	Manas	Assam	East Himalayas	Golden Langur, Red Panda
7	1989	Great Nicobar Biosphere Reserve	Andaman and Nicobar	Islands	Saltwater Crocodile

			Islands		
8	1994	Simlipal	Odisha	Deccan Peninsula	Gaur, Royal Bengal Tiger, Wild elephant
9	1997	Dibru-Saikhowa	Assam	East Himalayas	Golden Langur
10	1998	Dihang-Dibang	Arunachal Pradesh	Eastern Himalayas	NA
11	1999	Pachmarhi Biosphere Reserve	Madhya Pradesh	Semi-Arid	Giant Squirrel, Flying Squirrel
12	2000	Khangchendzonga	Sikkim	East Himalayas	Snow Leopard, Red Panda
13	2001	Agasthyamalai Biosphere Reserve	Kerala, Tamil Nadu	Western Ghats	NilgiriTahr, Elephants
14	2005	Achanakamar - Amarkantak	Madhya Pradesh, Chhattisgarh	Maikala Hills	NA
15	2008	Great Rann of Kutch	Gujarat	Desert	Indian Wild Ass
16	2009	Cold Desert	Himachal Pradesh	Western Himalayas	Snow Leopard
17	2010	Seshachalam Hills	Andhra Pradesh	Eastern Ghats	NA
18	2011	Panna	Madhya Pradesh	Ken River	Tiger, Chital, Chinkara, Sambharand Sloth bear

Great Rann of Kutch in Gujarat is the largest biosphere reserve in India. while Dibru Saikhowa is the smallest. Seshachalam hills is the latest (2010) entry in to the list of biosphere reserve ,while Nilgiri biosphere reserve is the first entry (1986)in the list.

Functions of biosphere reserve

Each biosphere reserve is intended to fulfil three basic functions, which are complementary and mutually reinforcing

Conservation function: To contribute to the conservation of landscapes, ecosystems, species and genetic variation

Development function: To foster economic and human development which is socio – culturally and ecologically sustainable

Logistic function: To provide support for research, monitoring, education and information exchange related to local, national and global issues of conservation and development(UNESCO, 2005).

Conservation: To ensure the conservation of landscapes, ecosystems, Species and genetic variations. To encourage the traditional resource use systems. To

understand the patterns and processes of functioning of ecosystems; to monitor the natural and human – caused changes on spatial and temporal scales.

Development: To promote, at the local level, economic development which is culturally, socially and ecologically sustainable ?. To develop the strategies leading to impartment and management of natural resources.

Logistics Support: To provide support for research, monitoring, education and information exchange related to local, national and global issues of conservation and development.

Sharing of knowledge generated by research through site specific training and education and development of community spirit in the management of natural resources.

Seshachalam Biosphere Reserve

Seshachalam hills, the first Biosphere Reserve in Andhra Pradesh, is located in southern Eastern Ghats of Chittoor and Kadapa districts. It is spread over 4755.99 Km. It is the richest floristic hot spot harboring many endemic and rare plants. The Seshachalam Hill ranges of the eastern ghats lie between 13°38” and 13°55” N latitudes and 79°07” and 79°24” E longitudes and spread over two districts - Chittoor and Kadapa of Southern Andhra Pradesh. Around 50% of the area of the biosphere reserve falls in the reserve forests of Chittoor East (WL), WLM Tirupati, WL Rajampet, Proddatur (WL) and Kadapa Divisions. As special effort, both the Union and State governments have declared habitats to conserve the exclusive species in particular areas. The Seshachalam Biosphere Reserve (SLBR), designated recently in 2011, is located in Seshachalam hills – ranges of Eastern Ghats in Southern Andhra Pradesh. The reserve intends to enhance the efforts of conseve.

The reserve aims to support the conservation of species in situ by supporting economic and social development. It is home to a number of endemic species including the famous Red Sanders and Slender Loris. Being close to the pilgrim areas of Tirupati, the reserve also has a number of temples and holy places to visit. The hilly terrain offers some spectacular trekking opportunities too. Many scientific studies have been and are being conducted in the reserve.



Seshachalam Biosphere Reserve, Andhra Pradesh



Flora and Fauna in Seshachalam Biosphere reserve

Flora

The reserve is a home for nearly 1756 species of flowering plants belonging to 879 genera and 176 families.

Endangered plants and critically endangered plants

An endangered species is defined as a population of a living being that is at the danger of becoming extinct because of several reasons. Either they are few in number or are threatened by the varying environmental parameters.

Endangered plants of the reserve mainly include; *Homallumzeylanicum*, *Buteamonosperma*, *Rhynchosiaheynel*, *Tephrosia* species. *Rauwolfia serpentine* and *Litsea glutinosa* are the critically endangered species in the biosphere reserve area.

Endemic plants

Out of the total seed bearing plants enumerated in the area, eleven species viz., *Shorea umbagala* (Dipterocarpaceae), *Boswellia ovalifoliolata* (Burseraceae), *Indigoferabarberi*, *Pterocarpussantalinus*, *Rhynchosia beddomei* and *Sophora interrupta* (Fabaceae), *Terminalia pallida* (Combretaceae), *Syzygium alternifolium* (Myrtaceae), *Pimpinella tirupatiensis* (Aplaceae), *Pimpinella tirupatiensis* (Apiaceae), *Leucas indicava*, *Nagalapuramiana* (Lamiaceae) and one gymnosperm *cycas beddomei* (Cycadaceae) represented endemic to the reserve.

Red Sanders, *Pterocarpussantalinus*

Pterocarpussantalinus, with the common names red sanders, red sandalwood, and saunderswood, is a species of Pterocarpus endemic to the southern Eastern Ghats mountain range of South India. This tree is valued for the rich red color of its wood. The wood is not aromatic.

Pterocarpussantalinus is a light-demanding small tree, growing to 8 metres. It is fastgrowing when young, reaching 5 metres (16 ft) tall in three years.

Medicinal values:

Pterocarpussantalinus is used in traditional herbal medicine as an antipyretic, anti-inflammatory, anthelmintic, tonic, hemorrhage, dysentery, aphrodisiac, anti-hyperglycaemic and diaphoretic.



Pterocarpussantalinus trees



Pterocarpussantalinus with inflorescence

Fauna

The faunal composition represents the Deccan Peninsular zone of bio-geographic classification of India. The great diversity of geo-morphology and vegetation give rise to multitude of habitats that support rich wildlife.

The wildlife belonging to schedule 1 2 3 & 4 occur in the area. The forests of the reserve harbor certain highly endangered wildlife species, like Slender Loris, Indian Giant squirrel, Mouse deer, Golden Gecko, etc. Tigers, leopard Elephants, Slothbear, Indian wolf, wild boar, chinkara, Four-horned antelope, chital and sambar, Ibex, pig, Bonnet monkey, Mongoose, Wild dogs Black, Bison, Jackal, Fox, Civetcat, Junglecat, Lizards are some of other animals commonly found roaming in this area. More than 150 species of birds are reported from this area. Pangolins, Pythons, Pea fowls, Jungle Fowl, Partridges, Quail, Crested Serpent Eagle, Ashy Crowned Finch Lark, Indian Roller, Kingfishers and White Bellied Woodpecker etc. are common. It is estimated that 137 species of birds are found in Seshachalam Forests. Yellow throated Bulbul, an endangered bird species, is found to exist in forests of Seshachalam Biosphere Reserve.

Jungle cat: The jungle cat is a large, long-legged cat; it is, in fact, the largest of the extant *Felis* species (Hunter 2015). The head-and-body length is typically between 59 and 76 centimetres (23 and 30 in). This cat stands nearly 36 centimetres (14 in) at shoulder and weighs 2–16 kilograms (4.4–35.3 lb) (Burnie and Wilson 2001 & Kingdom et al., 2013). A study showed that body (Mukherjee & Groves 2007). Size showed a decrease from west (Israel) to east (India); this was attributed to greater competition from small cats in the east; body size shows a similar decrease from the northern latitudes toward the tropics. Sexually dimorphic, females tend to be smaller and lighter than males. The face is long and narrow, with a white muzzle. The large, pointed ears, 4.5–8 centimetres (1.8–3.1 in) in length and reddish brown on the back, are set close together; a small tuft of black hairs, nearly 15 millimetres (0.59 in) long, emerges from the tip of both ears. The eyes have yellow irides and elliptical pupils; white lines can be seen around the eye. Dark lines run from the corner of the eyes down the sides of the nose and a dark patch marks the nose (Burnie and Wilson 2001; Kingdom et al., 2013; Sunquist, M and Sunquist 2002; Smith et al., 2010). The skull is fairly

broad in the region of the zygomatic arch; hence the head of this cat appears relatively rounder (Heptner et al., 1992)

Greater Mouse-deer: The Greater mouse-deer is solitary and nocturnal. It uses small trails through thick brush in the forest. When the male is ready to mate, he rubs a large gland on his lower jaw against the female to determine whether she is ready to mate. If she is not ready, she responds by walking away. The male is very territorial, marking his territory with feces, urine and secretions from the intermandibular gland under the chin. When angry, the male will beat the ground with his hooves at a rate of four times per second. They are rather trusting but delicate animals. They feed on fallen fruits, aquatic plants, buds, leaves, shrubs and grasses.

Golden Geckos: The Golden Geckos are distributed throughout the world and belong to the family Gekkonidae under the Genus *Calodactylodes*. The Genus *Calodactylodes* consists of two species namely, Indian Golden Gecko, *Calodactylodes aureus* (Beddome, 1870) and Sri Lankan Golden Gecko, *Calodactylodes Illingworthi* (Deraniyagala, 1953). The Indian Golden Gecko was discovered by Beddome, 1870 and Boulenger, 1890 and it was rediscovered after 115 years in Tirupati Hills, Chittoor District, Andhra Pradesh by Daniel and Bhusan (1985).

The Indian Golden Gecko is a protected species and included under Schedule I (part-II) of IWPA, 1972 and had long been considered rare and poorly studied. The Golden Gecko inhabits rocky area with deep stream valleys and has been found to occur at an elevations between 50 to 1000 meters. Present study reports current status along with its conservation, ecology, threats and recent distribution patterns in Eastern Ghats. The study was designed to throw light on (i) present status and population of Indian Golden Gecko and (ii) recent threat and distribution of Indian Golden Gecko in Eastern Ghats.

The Golden Gecko is active and in good number nearby deep stream valleys and rocky area. It always runs/skips to hide in between the rocks. Sometimes it enters between the rocks and makes it difficult to locate its presence. The Gecko found to lay eggs attached on the vertical and horizontal roof of caves and rock boulders. During the survey we recorded 42 egg deposition sites at different localities.



Najanaja



Russell's viper



Calotes versicolor



Indian golden gecko



Chamaeleon zeylanicus



Bonnet Monkeyss



Indian pythan



Kaloual



Poly PeatesSlender Loris



Wildbord



Indian Giant Squirrel



Leopard



Elephant



Mouse Deer



Jungle Cat



Indian wolf



Sambar



Mongoose



Jackal

Management plans to conserve wildlife in Seshachalam:

Habitat destruction

Some of the activities that are causing a destruction of habitat of flora and fauna are Destruction of forest land for agriculture and other purposes large tracts of forest land have been cleaned up for monoculture plantations like eucalyptus. This has led to the destruction of species that were dependent on the forest. This has adversely affected several species dependent on large tracts of scrub. The classic example is Great Indian Bustard (Sutirtha Dutta et al., 2013).

Mining operations: Clearing out of large areas of land will cause destruction to the species dependent on them. An example is the Kudremukh Iron Ore Company Limited which mined iron ore within the boundaries of the protected Kudremukh National Park. Due to the loss of habitat, more and more species of fauna have started to venture into human habitation causing a conflict between humans and fauna. Hence measures have to be taken for prevention of destruction of habitat.

Wildlife conservation is the practice of protecting endangered plant and animal species and their habitats

Biodiversity conservation is mostly based on in situ conservation and this involves the protection of wildlife habitats. Among the goals of wildlife conservation are to ensure that nature will be around for future generations to enjoy and to recognize the importance of wildlife and wilderness lands to humans. Many nations have government agencies dedicated to wildlife conservation, which help to implement policies designed to protect wildlife. The science of extinction is called Dirology.

Conclusion:

The sensitivity of reserve resources for various anthropogenic pressures deserve attention of various stakeholder groups. Further, the reserve being a recent creation, there are opportunities to design researches, developmental activities and management on par with contemporary happenings at international level. Optimum afforestation could help to stop degradation of environment and biodiversity, making the country a safe habitat for all. It is for the youths to take up this challenge to conserve the flora and fauna of protected areas and prevent science of extinction of wildlife i.e. Dirology. Seshachalam Biosphere Reserve, with its unique values and representative

features, has potential of becoming a model Biosphere Reserve to fulfil various functions of a reserve.

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