

Evolution of Biodiversity Hotspots in India

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Review Article

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ABSTRACT

India is one of the richest countries in the world in terms of biodiversity and natural resources. This natural variation in life is also reflected in the demography of the land. Although the reason behind the demographic diversity and biodiversity are different, the exploiting human population of the land has depended on the biodiversity in many ways since a long time. It is became a threat to the biodiversity now a days and the survival of flora and fauna. Thus, it is important to know and appreciate the diversities of flora and fauna along with the human biodiversity. According to the assessment of IUCN in 1994, Indian geographical areas contained 172, or 2.9% of IUCN-designated threatened species. These include the Bengal tiger, Asiatic lion, and the Indian white-rumped vulture, which suffered a near-extinction from ingesting the dead bodies of diclofenac-treated cattle. In recent decades, human encroachment has posed a threat to India's wildlife. Considering the seriousness of the matter new national parks and protected areas are created in 1935. The wildlife protection Act and Project Tiger was enacted in 1972 for the protections and safe guard of the wildlife and also federal protections were promulgated in the 1980s. Along with from one end to the other 500 wildlife sanctuaries, India forthwith hosts 15 biosphere reserves, four of which are object of the World Network of Biosphere Reserves; 25 wetlands are signed up under the Ramsar Convention.

INTRODUCTION

A biodiversity hotspot is a demographic region with significant levels of species that is under threat from humans. The criteria for the biodiversity [hotspot](#) must meet two strict conditions: It has to have lost 70% of its primary vegetation and should contain at least 0.5% or 1500 species of vascular plants as endemics [1-10]. Myers originally recognized 25 hotspots but recently the [Conservation International](#) has added 9 more biodiversity hotspots which make the present number to 34 [11-14]. These areas support nearly 60% of the world's plant, bird, mammal, reptile, and amphibian species, with a very high share of those species as endemics. [Open access journals](#) provide more visibility and accessibility to the readers in gaining the required information [14-16]. The ongoing researches all over the world, which are being exhibited through open access journals, serve as the main source of information in various fields [17-19].

In order to create awareness among the people, group of country unite to form a [society](#) or an organization. The main aim of these societies is to counsel and create awareness among the people and the importance of the biodiversity hotspot [20-26]. Major societies like [United States Department of Agriculture](#) aims to improve public awareness in forest management, and the advancement of quality standards to enhance the agriculture. The society enables the understanding of the loss and effects by creating awareness among the global communities [34].

INDIAN DEMOGRAPHY & CULTURE

India is a remarkably diverse country with 1.2 billion people speaking 1652 languages and dialects, spread out over more than two thousand ethnicities and over every major religion. The demographics of India are remarkably

diverse. India is the second most populous country in the world containing 17.31% of the world's population. This demographic diversity of India has its pros and cons [35-42]. The threat is the excessive human population put the effects on the natural resources and the best part is the human diversity has in believes on the customs, traditions and ritual context of the native species and the plants and animals are considered sacred (e.g., *Ocimum tenuiflorum* or Tulsi) or find mentions in mythological stories (e.g., *Elephas maximus indicus* or Indian Elephant) or are used in religious rituals (e.g., *Nelumbo nucifera* or Indian Lotus). This Unique believe and the deep associations between the culture and biodiversity creates a unique dimensions for their conservation [41-49].

INDIAN BIODIVERSITY HOTSPOT

The species diversity in India is huge, with several of the species being endemic to the native ranges in India. As per the Indira Gandhi Conservation Monitoring Centre (IGCMC), New Delhi the following table show the percentage of species contains in India [50-56].

Table 1: Species availability with percentage to world species

Group	Number	% of world species
Mammals	350	7.6%
Birds	1224	12.6%
Amphibians	197	4.4%
Reptiles	408	6.2%
Fishes	2546	11.7%
Flowering plants	15000	6%

There are 4 major hotspots in India which are The Western Ghats and Sri Lanka, The Eastern Himalayas, Indo-Burma and Sunderland. In [4th International Conference on Biodiversity](#) which is going to be held from June 15-17, 2015 at Las Vegas, USA. The objective & aim of our conference is to bring global institutions together involved in biodiversity conservation to share and develop the future strategies and to make alliance for endangered species [57-63]. In [5th International Conference on Biodiversity](#) held in March 2016 in Spain, was a global platform to discuss and learn about Ecology and its associated fields, Evolution of Species, Plant & Animal Biodiversity, Biodiversity Management, Fauna & Flora, Biodiversity & Food Security, Conservation of Endangered Species, Marine Biodiversity, Forestry and Sustainable Development [64-72].

The Western Ghats and Sri Lanka

About the area

The Western Ghats are a chain of slopes that keep running along the western edge of peninsular India. Their closeness to the sea and through orographic impact, they get high precipitation. These locales have sodden deciduous backwoods and rain timberland. The locale indicates high species differences and in addition elevated amounts of endemism. Almost 77% of the creatures of land and water and 62% of the reptile species found here are discovered no place else. Sri Lanka, which deceives the south of India, is likewise a nation rich in animal varieties assorted qualities. It has been associated with India through a few past glaciation occasions by a land connect very nearly 140 km wide [73-83].

How the biodiversity of Western Ghats began is a still a perplex. The locale demonstrates biogeographical affinities to the Malayan district. Later phylogeographic contemplates have endeavored to concentrate the cause of Western Ghats utilizing atomic methodologies. There are additionally contrasts in taxa which are subject to time of disparity and geographical history. Alongside Sri Lanka, this district additionally demonstrates some faunal similitudes with the Madagascan locale particularly in the reptiles and creatures of land and water. Cases incorporate the Sibynophis snakes, the Purple Frog and Sri Lankan reptile sort Nessia which seems like the Madagascan class Acontias. Various flower connections to the Madagascan locale likewise exist. Another speculation that these taxa may have initially developed out-of-India has likewise been proposed. Bio land

eccentricities exist with some taxa of Malayan source happening in Sri Lanka yet truant in the Western Ghats. These incorporate creepy crawlies gatherings, for example, the zoraptera and plants, for example, those of the variety *Nepenthes* [84-94].

Biodiversity

There are more than 6000 vascular plants having a place with more than 2500 genera in this hotspot, of which more than 3000 are endemic. A significant part of the world's flavors, for example, dark pepper and cardamom have their causes in the Western Ghats. The most noteworthy convergence of species in the Western Ghats is accepted to be the Agasthyamalai Hills in the outrageous south. The locale likewise harbors more than 450 fowl species, around 140 mammalian species, 260 reptiles and 175 creatures of land and water. More than 60% of the reptiles and creatures of land and water are totally endemic to the hotspot. Exceptional as this assorted qualities seems to be, it is seriously debilitated today. The vegetation in this hotspot initially stretched out more than 190,000 square km. Today, it's been diminished to only 43,000 sq. km. In Sri Lanka, just 1.5% of the first woodland cover still remains [95-105].

The Eastern Himalayas

About the district

The Eastern Himalayas is the area including Bhutan, northeastern India, and southern, focal, and eastern Nepal. The district is topographically youthful and demonstrates high altitudinal variety. Together, the Himalayan mountain framework is the world's most elevated, and home to the world's most astounding pinnacles, which incorporate Mount Everest and K2. To appreciate the tremendous size of this mountain go, consider that Aconcagua, in the Andes, at 6962 meters is the most elevated top outside Asia, though the Himalayan framework incorporates more than 100 mountains surpassing 7200 meters. A portion of the world's significant waterway frameworks emerge in the Himalayas, and their consolidated seepage bowl is home to somewhere in the range of 3 billion individuals (half of Earth's populace) in 18 nations. The Himalayas have significantly formed the way of life of South Asia; numerous Himalayan pinnacles are holy in Hinduism, Buddhism and Sikhism [106-116].

Geographically, the source of the Himalayas is the effect of the Indian structural plate voyaging northward at 15 cm every year to affect the Eurasian mainland, around 40-50 million years back. The development of the Himalayan curve came about since the lighter shake of the seabeds of that time were effectively elevated into mountains. A regularly referred to actuality used to represent this procedure is that the summit of Mount Everest is made of marine limestone [117-122].

Biodiversity

The Eastern Himalayan hotspot has almost 163 all inclusive debilitated species including the One-horned (Rhinoceros unicornis), the Wild Asian Water bison (*Bubalus bubalis* (Arnee)) and in every one of the 45 warm blooded creatures, 50 flying creatures, 17 reptiles, 12 creatures of land and water, 3 invertebrate and 36 plant species. The Relict Dragonfly (*Epiophlebia laidlawi*) is a jeopardized species found here with the main different species in the class being found in Japan. The area is likewise home to the Himalayan Newt (*Tylototriton verrucosus*), the main lizard species found inside Indian limits [123-128].

There are an expected 10,000 types of plants in the Himalayas, of which 33% are endemic and discovered no place else on the planet. Five families - Tetracentraceae, Hamamelidaceae, Circaesteraceae, Butomaceae and Stachyuraceae - are totally endemic to this district. Many plant species are found even in the most astounding compasses of the Himalayan Mountains. For instance, a plant species *Ermania himalayensis* was found at an elevation of 6300 meters in northwestern Himalayas. A couple undermined endemic fledgling species, for example, the Himalayan Quail, Cheer fowl, Western tragopan are found here, along with some of Asia's biggest and most jeopardized winged creatures, for example, the Himalayan vulture and White-bellied heron.

The Saola, a cow-like, is one of the world's rarest well evolved creatures. It was found in Vietnam just in 1992

The Himalayas are home to more than 300 types of well evolved creatures, twelve of which are endemic. Warm blooded animals like the Golden langur, The Himalayan tahr, the dwarf hoard, Langurs, Asiatic wild pooches, sloth bears, Gaurs, Muntjac, Sambar, Snow panther, Black bear, Blue sheep, Takin, the Gangetic dolphin, wild water bison, overwhelm deer call the Himalayan went their home. The main endemic variety in the hotspot is the *Namadapha* flying squirrel which is basically jeopardized and is depicted just from a solitary example from *Namadapha* National Park [129-134].

Indo-Burma

About the locality

The Indo-Burma area envelops a few nations. It is spread out from Eastern Bangladesh to Malaysia and incorporates North-Eastern India south of Brahmaputra stream, Myanmar, the southern piece of China's Yunnan territory, Lao People's Democratic Republic, Cambodia, Vietnam and Thailand. The Indo-Burma district is spread more than 2 million sq. km of tropical Asia. Since this hotspot is spread over such an extensive region and over a few noteworthy landforms, there is a wide differing qualities of atmosphere and natural surroundings designs in this locale [135-140].

Biodiversity

Much of this locale is still a wild, yet has been crumbling quickly in the previous couple of decades. As of late, six types of expansive warm blooded creatures have been found here: Large-antlered muntjac, Annamite muntjac, Gray-shanked douc, Annamite striped rabbit, Leaf deer, and the Saola. This locale is home to a few primate animal groups, for example, monkeys, langurs and gibbons with populaces numbering just in the hundreds. A significant number of the species, particularly some freshwater turtle species, are endemic. Very nearly 1,300 flying creature species exist in this area including the undermined white-eared night-heron, the dark delegated crocias, and the orange-necked partridge. It is evaluated that there are around 13,500 plant species in this hotspot, with over portion of them endemic. Ginger, for instance, is local to this district [141-143].

Sundaland

Sundaland is a district in South-East Asia that covers the western part of the Indo-Malayan archipelago. It incorporates Thailand, Malaysia, Singapore, Brunei and Indonesia. India is spoken to by the Nicobar Islands. The United Nations proclaimed the islands a World Biosphere Reserve in 2013. The islands have a rich earthly and marine biological community that incorporates mangroves, coral reefs and ocean grass beds. The marine biodiversity incorporates a few animal categories, for example, whales, dolphins, dugong, turtles, crocodiles, anguilles, prawns, lobsters, corals and ocean shells. The essential risk to this biodiversity originates from over misuse of marine assets. Moreover, the backwoods on the island likewise should be ensured [144-146].

Biodiversity Loss in Hotspot

Natural surroundings annihilation: as of late as 30 years prior, the majority of the areas in these biodiversity hotspots were blocked off and remote. Presently, because of better foundation, contact of these zones with people has expanded. Exercises, for example, logging of wood, expanded agribusiness, expanded human residence has prompted to pulverization of timberlands and contamination of waterways. These elements are bringing about species extents to decrease and living spaces to end up distinctly rough. The administration wanted to build up natural surroundings halls, yet these arrangements have not yet appeared in many zones. Exercises, for example, mining, development of expansive dams, interstate development has additionally brought about huge pulverization of natural surroundings [147-150].

Asset fumble: Increased tourism without appropriate direction has prompted to contamination and natural corruption. Prime case are journey goals like Rishikesh and slope stations like Dehradun. These spots, once settled in the flawless scopes of the Himalayas, are presently grimy business goals. Places like Dehradun are notwithstanding encountering a development blast so vast that unlawful settlers from Bangladesh are additionally rushing there. Religious goals in the Himalayas, where fans rush in millions now, are likewise hot goals for therapeutic plant exchange, which has undermined vegetation in the region [151-155].

Poaching: Large warm blooded animals, for example, the tiger, rhinoceros and the elephant once confronted the unmistakable probability of finish elimination because of wild chasing and poaching. Be that as it may, endeavors by traditionalists since the 1970s has settled and develop these populaces. Still, the exchange tiger conceal, elephant tusks, tiger teeth, rhinoceros horn stays gainful and widespread [156-160].

Environmental change: Although desperate IPCC expectations of Himalayan icy masses liquefying by 2035 have been withdrawn, there is doubtlessly a few Himalayan icy masses are melting. In the Western Ghats, considers have demonstrated that the deciduous and the evergreen timberlands of Karnataka are the most at risk. Environmental change may essentially influence the temperatures, rainfalls and water tables in the Western Ghats, as indicated by an appraisal by the Government of India [161-165].

[Journal of Biodiversity & Endangered Species](#) an Open Access Journal studies improve the knowledge and provide cutting-edge research strategies for the development of new strategy and effects of biodiversity loss.

[Journal of Biodiversity Management & Forestry](#) is a leading provider of information on biodiversity management and forest and wildlife management to the scientific community. The above mentioned journals on biodiversity and forestry are the peer-reviewed journals that maintain the quality and standard of the journal content, reviewer's agreement and respective editor's acceptance in order to publish an article. These journals ensures the barrier-free distribution of its content through online open access and thus helps in improving the citations for authors and attaining good journal impact factors [166-170].

CONCLUSION

The misuse of land and timberland assets by people alongside chasing and catching for sustenance and game has prompted to the annihilation of numerous species in India as of late. These species incorporate warm blooded animals, for example, the Indian/Asiatic Cheetah, Javan Rhinoceros and Sumatran Rhinoceros. While some of these vast warm blooded [animal species](#) are affirmed wiped out, there have been numerous littler creature and plant species whose status is harder to decide. Numerous species have not been seen since their depiction. Hubbardia heptaneuron, a types of grass that developed in the shower zone of the Jog Falls before the development of the Linganamakki repository, was thought to be wiped out yet a couple were rediscovered close Kolhapur in Maharashtra. A few types of feathered creatures have become terminated as of late, including the Pink-headed Duck (*Rhodonessa caryophyllacea*) and the Himalayan Quail (*Ophrysia superciliosa*). Types of lark, *Acrocephalus orinus*, known prior from a solitary example gathered by Allan Octavian Hume from close Rampur in Himachal Pradesh was rediscovered following 139 years in Thailand.

Common variety is in charge of the energetic and complex indigenous [habitat](#) that we call [Earth](#). Without biodiversity, a solitary torment or outrageous climate occasion could wipe out whole populaces inside a biome. Moving atmosphere administrations can put comparable weight on species. With expanded biodiversity, comes an improved probability that a bit of the animal categories will survive, adjust, and repopulate. In any case, with mass annihilations brought about by territory obliteration, contamination, obtrusive species, and environmental change, regular variety is debilitated. [Biodiversity](#) is yet another motivation behind why human culture needs to reassess its current usual way of doing things, or hazard the irreversible pulverization of a huge number of animal groups—the full effect of which we may never know. The uplifting news is that there are preservation endeavors in progress, and there is promise for species protection and reintroduction, we simply need to begin making it a top need on a worldwide scale.

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