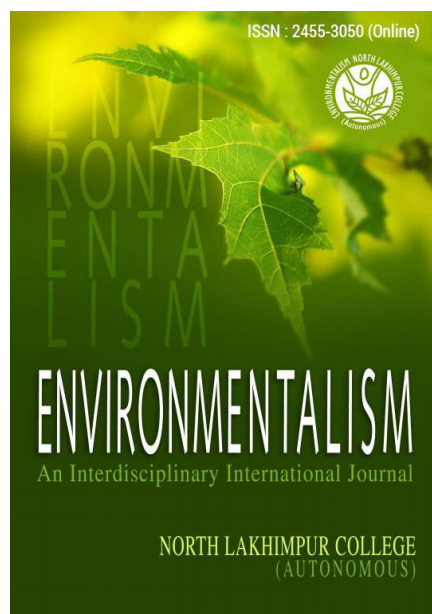


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HUMAN INTERVENTIONS ON ENDEMIC SPECIES OF ASSAM: A DESCRIPTIVE ANALYSIS

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Abstract

Endemic species are unique to a certain habitat, water body, place or region. Assam, a state in North-East India, is a biological hotspot with many rare and endemic plant and animal species. The species ecosystem got disturbed when human transformed itself from component to factor of the ecosystem. The paper attempts to make a descriptive analysis of human interventions on Endemic species in Assam.

Keywords: Endemic species, Human interventions, Descriptive analysis.

1 Introduction:

Endemic species are unique to a certain water body, place or region (Martens and Segers, 2009). Assam, a state in North-East India, makes it a biological hotspot with many rare and endemic plant and animal species. The species ecosystem got disturbed when human transformed itself from component to factor of the ecosystem. Unprecedented human interventions in natural processes led to species extinction causing severe blow to biodiversity. Here we attempt to make a descriptive analysis related to human interventions on Endemic species of Assam.

2 Materials and methods

2.1 Data Sources: Secondary data are utilized from the following sources-

- i. A -2 Decadal Variation In Population Since 1901, Registrar General & Census Commissioner, India,
- ii. Statistical Hand Book of Assam, 2016, Directorate of Economics and Statistics, Government of Assam, Guwahati-28
- iii. Statistical Hand Book of Assam, 2020, Directorate of Economics and Statistics, Government of Assam, Guwahati-28

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- iv. <https://en.wikipedia.org/wiki>
- v. <http://www.frienvic.nic.in/Database>

2.2 Methodology: Descriptive statistics supported by graphs were adopted to analyse the data.

3 Analysis and Discussion

Well known causes of bio-diversity loss in a eco-system are alarming population growth, un-planned and haphazard urbanization, deforestation, alien and invasive species, illegal wildlife trade etc. These are analysed and discussed in the following.

3.1 Population Growth

Assam’s population from a mere 33 lakhs at the beginning of the 19th century, our species now numbers more than

Table 1: Population Growth Trend of Assam

Year		Population	Decadal Growth Rate
1901	32,89,680		
1911	38,48,617	5,58,937	16.99
1921	46,36,980	7,88,363	20.48
1931	55,60,371	9,23,391	19.91
1941	66,94,790	11,34,419	20.4
1951	80,28,856	13,34,066	19.93
1961	1,08,37,329	28,08,473	34.98
1971	1,46,25,152	37,87,823	34.95
1981	1,80,41,248*	34,16,096	23.36
1991	2,24,14,322	43,73,074	24.24
2001	2,66,55,528	42,41,206	18.92
2011	3,12,05,576	45,50,048	17.07
<i>*Interpolated</i>		<i>Source: Registrar General & Census Commissioner</i>	

3 crore people. Increasing population growth and continuous economic development have caused serious environmental problems in the world (Table 1). However, the recent experience is that the pace of environmental depletion and degradation is much faster in developing countries like India than the developed countries. Due to this technological and scientific advancement, man has made rapid development in all the sectors of economy, but unfortunately in this process of development, there has been much disruption of the functioning of surrounding natural environment. (Kaushik, 2015). Although there is evidence that our population growth rate is beginning to slow down (Fig. 1), it is clear that the exploitation of natural resources is currently not sustainable.

3.2 Population Pressure and Forest Area Degradation

Forests constitute the largest ecosystem and habitat of valuable species of plants and animals on the earth surface. The increasing size of population combined with increasing diversity of human activities is continuously degrading

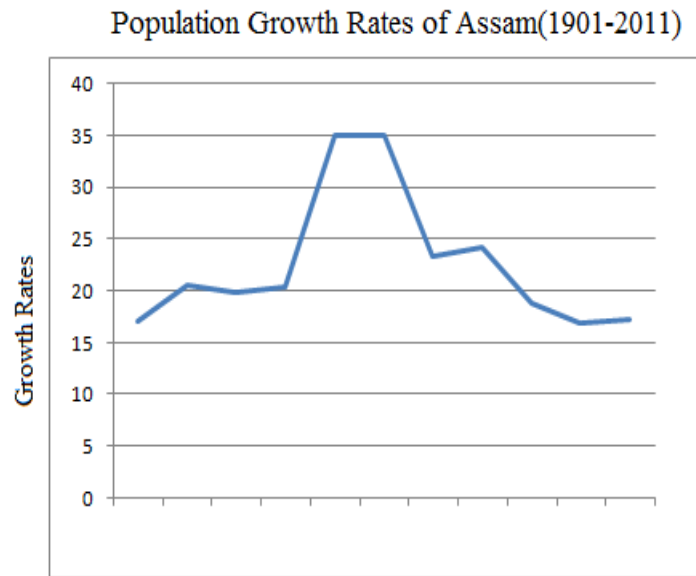


Fig. 1: Population growth rates of Assam (1901-2011)

Table 2: Forest Cover in Assam (Source:<http://www.frienviis.nic.in>)

Year	Area in Sq. Km.	Growth Rate
1989	24832	-1.3037
1991	24751	-0.3262
1993	24508	-0.9818
1995	24061	-1.8239
1997	23824	-0.9850
1999	23688	-0.5709
2001	27714	
2003	27826	0.4041
2005	27645	-0.6505
2007	27692	0.1700
2011	27673	-0.0686
2013	27671	-0.0072

the forest areas of the earth's surface causing great threat to it in respect of shrinkage of coverage, loss of biodiversity and disturbance in the ecological balance (Table 2). The intense depletion of forest cover in various parts has also brought about large-scale environmental changes including disappearance of many valuable floral and faunal species. (Medhi and Kar, 2016).

Forest conservation in Assam has been practiced since time immemorial. The traditional means as well as government policy towards conservation of forest to support and improve the quality of life was smooth till 1980s. But due to rapid growth in population, both indigenous and influx from neighbouring Bangladesh,

Table 3: Urban population in Assam

Year	Urban Population	Growth Rates
1951	380773	
1961	830565	118.13
1971	1352022	62.78
1991	2424025	79.29
2001	3439240	41.88
2011	4388756	27.61

Source: Registrar General & Census Commissioner

Figure 2
Forest Cover Growth In Assam (1987-1999)

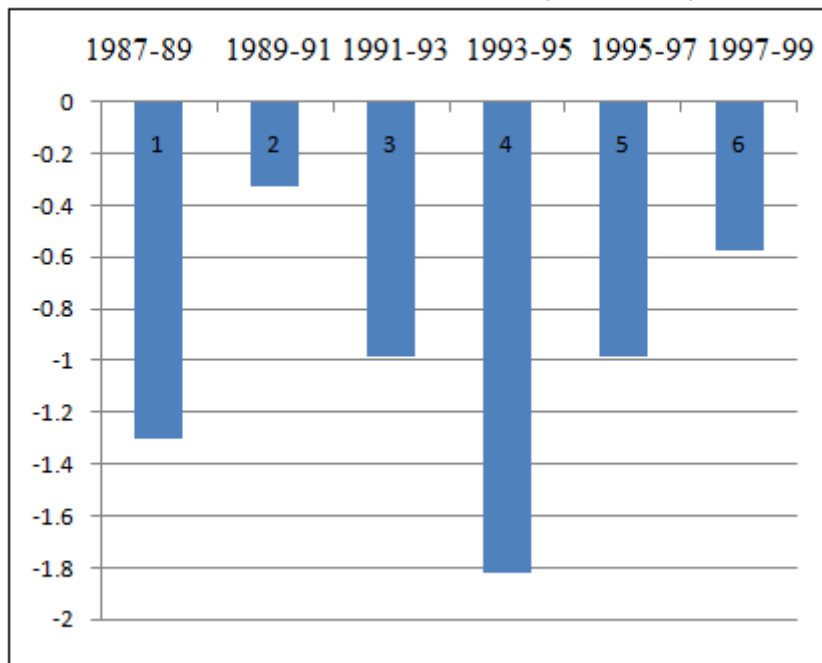


Fig. 2: Forest cover growth in Asam

Forest conservation in Assam has been practiced since time immemorial. The traditional means as well as government policy towards conservation of forest to support and improve the quality of life was smooth till 1980s. But due to rapid growth in population, both indigenous and influx from neighbouring Bangladesh, the traditional as well as government policy for forest conservation in past two decades proved futile as more than 25 percent of forest is under illegal encroachment, allowing currently to get their livelihood, but putting themselves occupying the encroached forests and their future generation into deep trouble and uncertainty from the point of view of improving

the quality of life. (Talukdar, 2003).

In their study done by Kushwaha et. al moist deciduous dense forest in parts of Assam and Arunachal Pradesh suffered the highest loss of 1531.21 km² , followed by moist deciduous open (254.07 km²), sal dense (190.66 km²), tropical semievergreen dense (150.88 km²) and tropical wet evergreen dense (147.17 km²) forest between 1975 and 2009 . In the same study it is predicted that an area equivalent to 670.55 km² of moist deciduous dense forest would deplete further by 2028. If the same rate of deforestation continues, it is expected that moist deciduous open, sal dense, tropical semi-evergreen dense and tropical wet evergreen dense will deplete further by 251.43, 66.86, 94.78 and 82.99 km² respectively. (Kushwaha et. al., 2018).

In the Table 3 and Figure 2 we have seen that Assam experienced a negative growth in forest cover till 2000. But from the beginning of the new century forest conservation starts giving positive results in increasing forest cover.

3.3 Urbanization

The growth of cities may cause biodiversity to decline by fragmenting or destroying large areas of natural habitat on which many species depend. The rising human population is driving the expansion of urban areas and increasing the demand for natural resources such as timber and fossil fuels. This inevitably leads to habitat destruction which has been called “the largest factor contributing to the current global extinction event” (Fahrig , 2001)

As had been evident with urbanization across the developing world, the city attracted or and continues to attract all classes of migrants who became its residents. On one end of that migration were the elite who arrived and

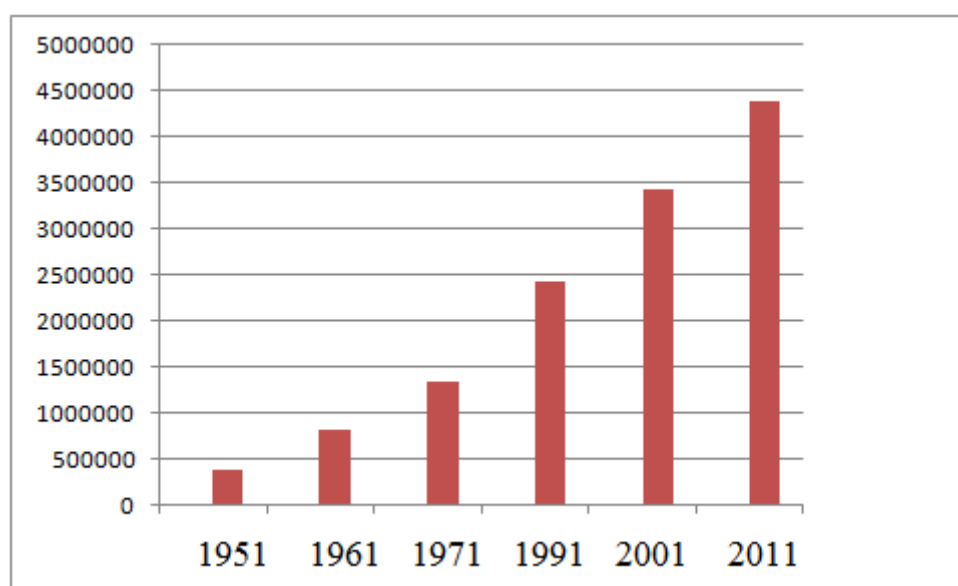


Fig.3 Urban population in Assam

rapaciously cornered the best residential and commercial spaces with scant regard to civic or environmental concerns, and even breaking or bending laws at will.

From the census figures it is evident that though growth rates of urban population has been declining but total population is on the rise.

The rapid urbanisation of Guwahati and the consequent boom in population and construction activities since the last couple of decades has pushed the city's fragile eco-system comprising its forested hills to the brink. (The Assam Tribune, 6 Nov, 2012).

3.4 Un-sustainable Fish Farming

Assam is endowed with vast bio-resources in the form of rivers, ponds, derelict water bodies, beels in addition to the two major river system viz. the Brahmaputra and the Barak with their tributaries. Again fish occupies an important place in the lives of the people of the State and fish farming has been one of the common activities in the rural areas. Thus the fishery sector is responsible for converting large number of natural wetlands for fish-farming.

Table 4: Fishery Sector of Assam

Serial No.	Fisheries	2015-2016	2019-2020
1	No. of Registered Beel Fisheries	1197	1903
2	Area under Registered Beel Fisheries (Hect.)	100815	61763
3	Ponds and Tanks (Nos.)	373501	475404
4	Area under Ponds and Tanks (Hect.)	61430	81346
5	Area under River Fisheries (Km.)	4820	164481.65
6	Area under Forest Fisheries (Hect.)	5017	4782
7	Area under Derelict Water Bodies/ Swamps(Hect.)	116444	91909
8	Reservoir Fisheries (Hect.)	2553	1813
9	Nos. of Hatcheries [Govt.+Private]	391	521

Source: Statistical Handbook of Assam 2015-16, 2019-20

Exotic species, often referred to as alien, nonnative, non-indigenous, or introduced species, are those that occur in areas outside of their natural geographic range (Minchin, 2001). These species become established in their new environment and spread unchecked, threatening the local biodiversity. In Assam African catfish(Thailand Magur), Bighead fish(B-carp), Tilapia(Japani Kaoi), Pirana(Rupchanda) etc are invasive species. These invasive species pose a great threat to endemic species of Assam.

3.5 Illegal Wildlife Trade

The international trade in wild plants and animals is enormous. Live animals are taken for the pet trade, or their

parts exported for medicines or food. Plants are also taken from the wild for their horticultural or medicinal value.

Table 5: Rhino Poaching in Assam (1962-2016)

Year Group	Rhino-poaching
1962-1966	17
1967-1271	40
1972-1976	16
1977-1981	77
1982-1986	289
1987-1991	225
1992-1996	202
1997-2001	51
2002-2006	43
2007-2011	76
2012-2016	117

Here we reproduce statistics of illegal rhino poaching that has been occurring since 1962. Wild life poaching and trading has been a major challenge for preserving the bio-diversity conservation.

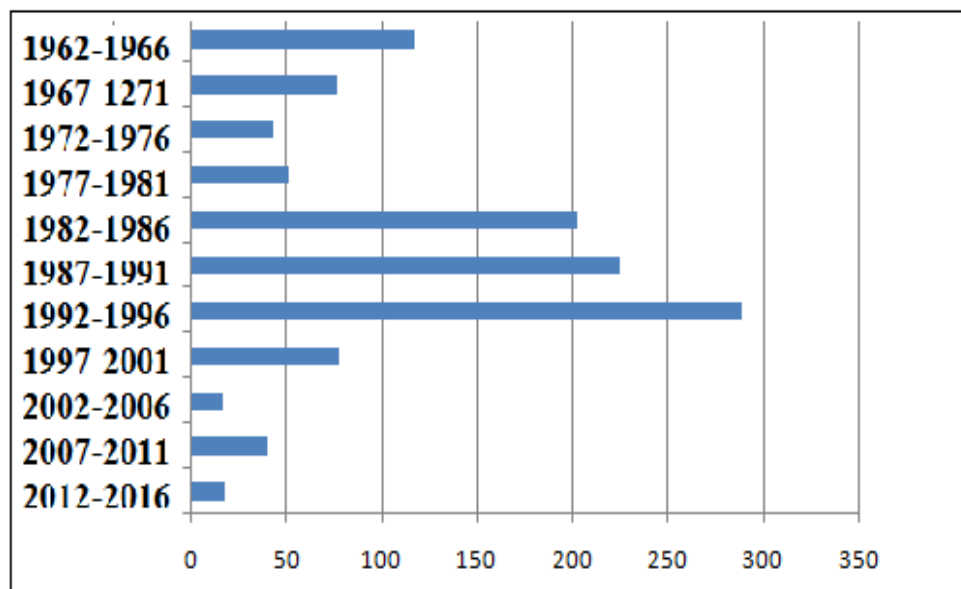


Fig. 4: Rhino Poaching in Assam (1962-2016)

4 Conclusion

The main cause of habitat loss of endemic species can be attributed to the influence of human beings on the world's ecosystem. In fact human beings have deeply altered the environment, and have modified the territory, exploiting the species directly, for example by fishing and hunting, changing the biogeochemical cycles and transferring species from one area to another of the planet, killing species by using chemical fertilizers and pesticides, etc. Need of the hour is to concentrate development in a sustainable manner.

References

- Fahrig, L. 2001. How Much Habitat is Enough? *Biol Conserv.* 100: 65-74.
- Gogoi, L. (2013): Degradation of Natural Resources and its Impact on Environment: a Study in Guwahati City, Assam, *International Journal of Scientific and Research Publications*, Volume 3, Issue 12, ISSN 2250-3153. http://www.frienviis.nic.in/Database/Forest-Cover-in-Indian-States-and-Union-Territories_1825.aspx.
https://en.wikipedia.org/wiki/Rhino_poaching_in_Assam.
- Kaushik D. 2015. Growth of Population in India and Its Impact on Natural Resources, *Paripex. Ind J Res.* 4(12): 101-103.
- Kushwaha SPS, Nandi S, Shah MA, Agarwal R, Mukhopadhyay S. 2018. Forest cover monitoring and prediction in a Lesser Himalayan elephant landscape, *Curr Sci.* 115(3): 510-516.
- Martens K, Segers H. 2009. Endemism in Aquatic Ecosystems *Encyclopedia of Inland Waters*.
- Medhi D. Kar B K. 2016. Depletion of forest cover and encroachment in Gonbina Reserved Forest in Goalpara district of Assam. *Space Cul Ind* 4(1): 40-50. <https://doi.org/10.20896/saci.v4i1.187>.
- Minchin D. 2001. *Encyclopedia of Ocean Science*.
- Registrar General & Census Commissioner, India, A-2 Decadal Variation In Population Since 1901.
- Statistical Hand Book of Assam. 2016. Directorate of economics and statistics, Government of Assam, Guwahati-28.
- Statistical Hand Book of Assam. 2020. Directorate of economics and statistics, Government of Assam, Guwahati-28.
- Talukdar B K. 2003. Status, trends and challenges of forest conservation in Assam, India, *World Forestry Congress*. The Assam Tribune, 6 Nov, 2012.