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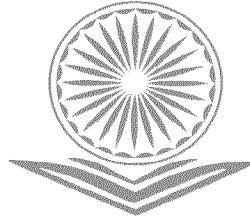
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15. Change Detection Analysis of land use land cover in Chandoli National Park, Kolhapur

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Abstract

The land resource is important indicator of development in an area. The present study address the status of forest land cover mapping and analytical findings of practical conservation for sustainable development of forested area. Remote sensing and GIS technique are known for reminders special analysis. Chandoli forest area presented the biodiversity and it is essential for ecosystem. There are tropical evergreen, moist deciduous forests. It is including in Sahyadri tiger reserve. The study highlighted that forests are has degraded in small scale but it is the problem for sustainable ecosystem in this National park forest area. There should be some remedies for controlling the degradation by road network and settlement due to human activities. The fragmentation of agricultural land, settlements and road network also affects the land use and forest cover. The present research an attempt has been made to explain changing land use pattern in Chandoli national park of Kolhapur district.

Key Words: Remote Sensing, GIS, Land Use Land Cover

Introduction

Land use pattern is dynamic concept as it changes over space and time. Land use and land cover pattern changes according to changing need of human being. Forest ecosystem plays very important role in global ecological balance and natural environment. Forest provides a valuable timber for domestic and commercial use many industries like paper mills, mat making, plywood, sports goods and furniture at directly based on raw materials derived from forest. Forest employment to about 4 million people to earn their livelihood in forest based applications. Forest as the treasures of earth have as much important as they satisfy needs of the living beings and because of their significant role in the environmental harmony.

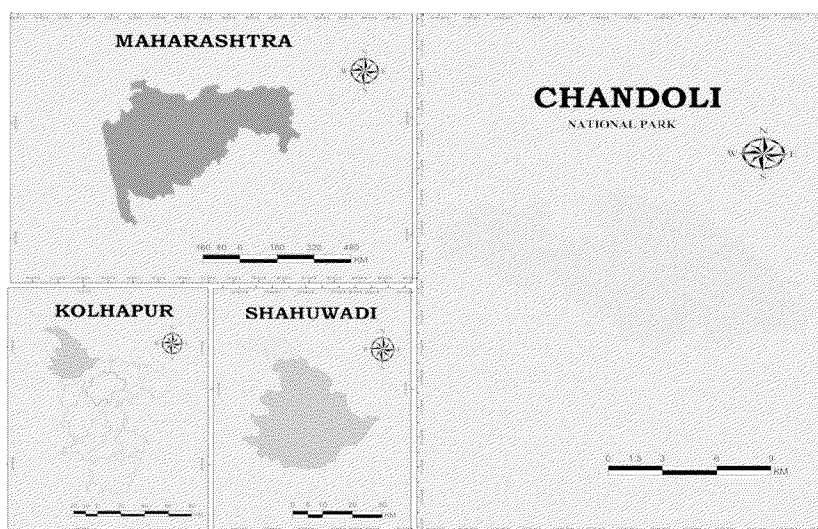
Recent decades the problem of deforestation in world had raised considerable international in interest due to the industrial revolution as well as human activities. The rapid development of GIS and remote sensing techniques have provided a reliable effective and practical way to characterized terrestrial ecosystem properties and used in planning for sustainable development as well as conservation of natural resources. According to United

Nations study about forest, the total area of the world in 1900 was nearly 7000 million hectares and by 1975 it was reduced to 2890 million hectares. In the context of India according to recent state of the forest report the forest cover in India is 67.5 million hectores and it constitutes 20.5 percent of geographical area represented by 41.68 million hectares of dense forest and 25.87 million hectares a open forest. The biodiversity is essential for ecosystem that is present in the Chandoli forest. There are most of the florans and fauna recent plays a vital role in the forest ecosystem. Due to the human activities there are fundamentally attaining the diversity of live and resulted in measure theory of species are currently declining.

Study Region

The study area is not part of Kolhapur district. It is lies between $17^{\circ} 00' 00''$ to $17^{\circ} 17' 00''$ North latitude and $73^{\circ} 41' 33''$ to $73^{\circ} 53' 30''$ East longitude. It is located entire in the Western Ghat. The study region covers about 317 square km of geographical area the average height of above mean sea level from 600 to 800 m it is comprises Northern Sahyadri mountainous region in Shahuwadi tehsil. It is consists a semi evergreen an evergreen vegetation mixed with grassland 50 supporting to the variety of endemic plant and animal species Nearly 23 species of mammals, 122 species of birds, 20 species of amphibians and reptiles are known to be resident in the forest. Chandoli the total population is 1939 according to 2011 census.

Chandoli National Park: Location Map



Source: Based on SRTM Data

Objectives

1. To assess the land use and land cover pattern of the study region.
2. To assess the changes in forest cover.

Methodology

Satellite imagery of IRS of 1999 and 2015 satellite data have imported in address imagine software and Geo-rectified with image to image registration using UTM wgs84 projection the satellite data for land use and land cover are GIS software or have used for processing analysis and integration of spatial data simple statistical methods have used for data analysis cartographic technique used to draw the diagram.

Results and Discussion

Chandoli National park is the most important for the research of forest cover and its current status. After creating the layer and its processing we have analyzed following results.

Land Use and Land Cover

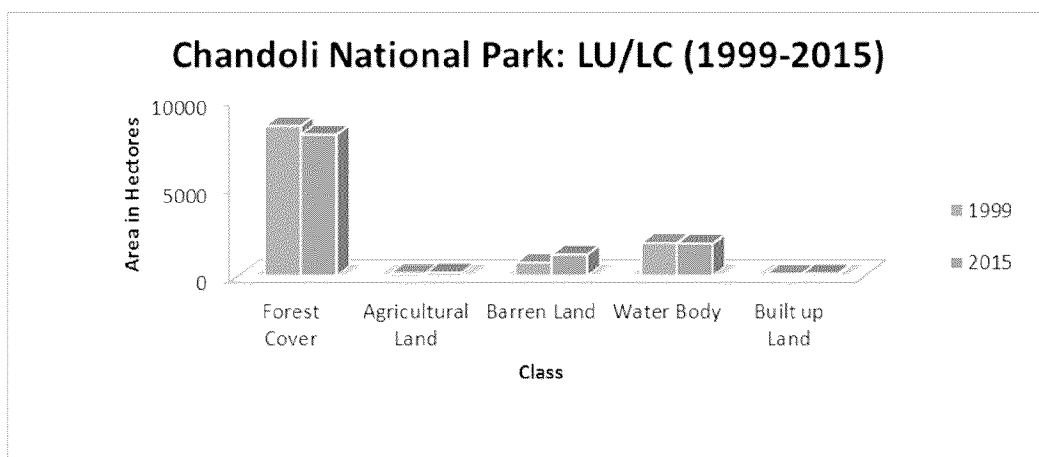
Land use and Land cover pattern is to understand geographical adjustment of land resource.

Table: Chandoli National Park: LU/LC Pattern (1999 -2015)

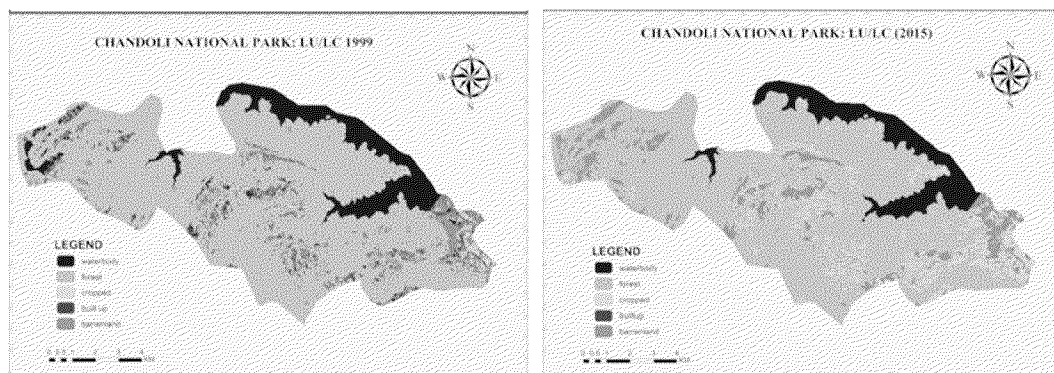
Name of Class	Year 1999		Year 2015		Change in Percent
	Area in H.	Area in %	Area in H.	Area in %	
Forest Cover	8479	75.03	7985	70.76	-6.18
Agricultural Land	136.37	1.2	175.57	1.55	39.2
Barren Land	731.91	6.47	1200.08	10.62	63.96
Water Body	1858.35	16.44	1816.84	16.07	-2.24
Built up Land	93.96	0.83	122.10	1.08	29.94
Total Area	11299.59	100	11299.59	100	

Source: Satellite Imageries 1999 and 2015

Figure: Chandoli National Park: LU/LC Pattern (1999 -2015)



Source: Satellite Imageries 1999 and 2015

Map: Chandoli National Park: LU/LC Pattern (1999 -2015)

Source: Satellite Imageries 1999 and 2015

Above figure reveals that, what type of land use and land cover pattern existing in the study region. The maximum proportion of the land cover presented from forest cover and minimum proportion is represented from the built up land. Near about 70 per cent of the area occupied by forest during the year 1999 and it is reduced in the year 2015 and presented only 70.66 percent. It is reduced by 6.18 percent during this period. The area under water body has slightly decreased from 16.44 per cent in 1999 to 16.07 per cent in 2015. It is decreased by 2.24 percent. Area under Barren land has increased by 468 hectares, it was 6.47 percent in 1999 and 10.62 percent in the year of 2015. In the year 1999 the area under agriculture was 1.2 percent. It is also increased in year 2015 (1.55 per cent), it is increased by 39 percent. Area under built up land was 93.96 sq. ha (0.83 per cent) and 122.8 sq. ha (1.08 per cent) in the year 2015.

Degradation Factors Analysis

Present study indicates that, there are two factors also affected to degradation of forest area which are settlements and road network. We have prepared the map of buffer zone about settlements and road network which are affects to natural vegetation. There are more road network affects to forest less than settlements. We have created five buffer zones by 100 meter scale. Most of the area covered by cart road with is also affected to the natural vegetation and wildlife; it is the best method for environmental conservation and its management in the ecosystem Eco sensitive zone.

Conclusion

Chandoli forest are experienced and slightly degradation in the proportion of the forest area. The study has reveals, there are more than 70 percent land is occupied by forest land due to heavy rainfall and physiographic condition. The study area presented the Barren land increased by 63% due to the deforestation existing in that area. There are agricultural land is increased with less rate, due to the growth of population and people are interested to practice of agricultural in

this area. Study area experienced the increasing pattern in built up land due to the increasing population. Water bodies of the area are slightly decreased. Most degradation factors affect the forest land such as road network and settlements. The Chandoli national parks should be establishment of a forestation in a barren land and hill slopes. The human activities such as deforestation, grazing of live stock should be avoided in this area. Present study has highlighted that most advanced technique that is remote sensing and GIS provide a powerful tools for mapping and detecting changes current studies in forest distribution.

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