International Journal of Multidisciplinary Research and Development
Online ISSN: 2349-4182, Print ISSN: 2349-5979
Impact Factor: RJIF 5.72
Received: 04-04-2018; Accepted: 12-05-2018
www.allsubjectjournal.com
Volume 5, Issue 5; May 2018; Page No. 254-256

Spatio - Temporal analysis of land Use pattern of Bhindawas Wetland

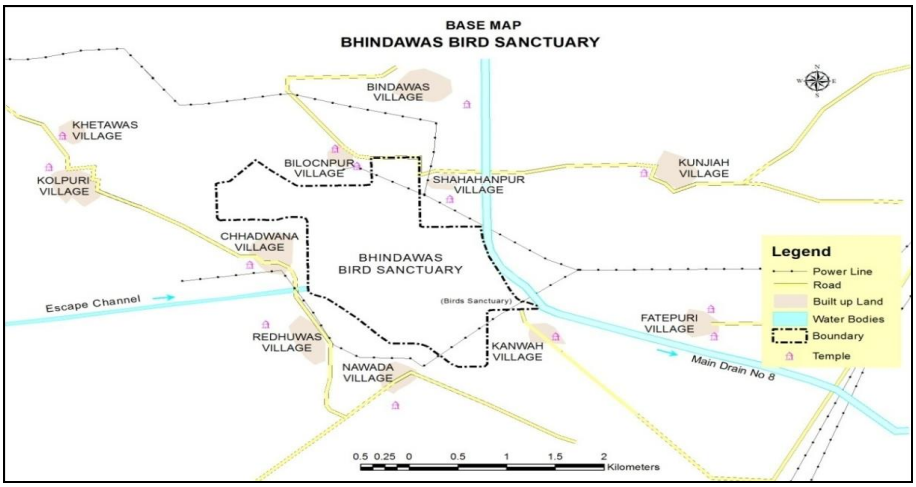
Dr. Ravinder Kumar
Assistant Professor, of Geography, Govt. PG College, Panchkula, Haryana, India

Abstract
The wetland of Bhindawas is characterized by marshes. In this wetland, riparian vegetation is very noticeable. Wetlands are special aquatic ecosystems that are home to a variety of wildlife, plants, and birds. The amount of water on Earth doesn't change much. The quantity and quality of plants and animals, as well as the overall human development of the local population, are all impacted by the way we use water as it flows through wetlands. In order to comprehend the function of direct and indirect causes in the wetland region, as well as the link between local populations' dependents, a wetland land use study is conducted. In wetland environments, land use change is a regular and ongoing process.

Keywords: Landsat, categories, classification, semi arid, embankments

Introduction
Wetlands, which include bogs, marshes, and swamps, are regions that are in between land and water. Because they filter nutrients and sediments from surface water, they have been referred to as the "kidneys" of the landscape. Because of their variety and vast food webs, wetlands are frequently referred to as "biological supermarkets" [1]. They promote hunting, fishing, and other recreational activities, assist maintain ecological balance, improve water quality, lessen flood and storm damage, help control water levels within watersheds, and provide habitat for significant fish and wildlife [2]. Wetlands are among the planet's most biologically diverse and productive environments, and they are widely acknowledged as crucial animal habitats. They sustain restricted plant species and specialized plant assemblages. They provide food for a wide variety of creatures, including fish, birds, mammals, reptiles, microorganisms, and invertebrates, both directly and indirectly. The Ministry of Environment and Forests (MoEF) produced the Wetlands Directory in 1990 after employing a questionnaire survey to identify 65,253 artificial freshwater wetlands covering 2.6 million hectares and 2167 natural freshwater wetlands covering 1.5 million hectares. Using remote sensing methods, Space Applications a Center found 27,403 coastal and inland wetlands in India that span 7.6 million hectares [3]. Numerous efforts have been undertaken to address the ways in which invasive species impact ecosystem processes. Since its launch in 1997, IUCN has been a partner in the Global Invasive Species Programme (GISP). With a global mandate to address and advise on invasive species issues across IUCN programs, commissions, members, and partners, particularly the Secretariat of the Convention on Biological Diversity, the Global Invasive Species Initiative was launched in 2007 and is run out of the IUCN Eastern and Southern Africa Regional Office in Nairobi, Kenya [4].

Study Area
According to the Ministry of Environment and Forests, the Bhindawas wetland is classified as a bird sanctuary and is located in an eco-sensitive area. The major wetland water body, which spans 2506.77 hectares, is situated in the Jhajjar region of Haryana between latitudes 28° 32' 47" N and 28° 31' 57" N and longitudes 76° 31' 54" E and 76° 34' 10" E. It is a freshwater marsh that has a canal for drainage. The outlying embankments are artificial. The climate of both wetlands is semi-arid. Both permanent and migratory birds and animals use the wetland areas.

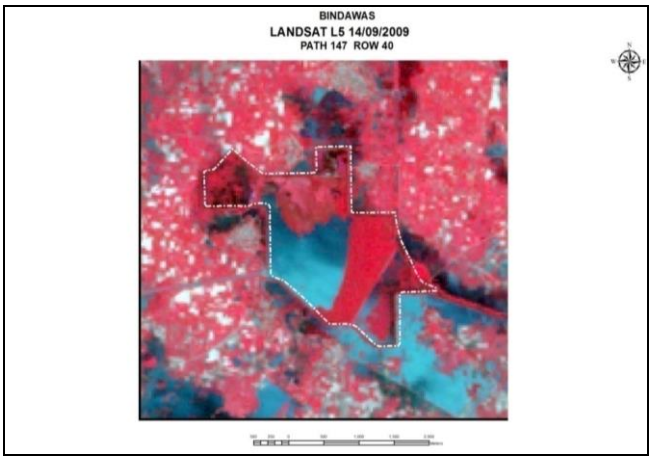


Objectives: To identify land use categories and measure area under various land use categories in the wetland area of Bhindawas.

Hypothesis: The wetland fall in semi arid area of Haryana dominated by agriculture and land use categories are influenced by the adjoining catchment area.

Research Methodology

The National Remote Sensing Agency's satellite photography provided the spatial data for the Bhinadawas wetland and watershed area in 2009. On September 14, 2009, the satellite imagery was downloaded and seen at the http://glcfapp.glcf.umd.edu/data/landsat website. For the Bhindawas wetland, the satellite's path and row were 147 and 40. The image has a spatial resolution of 30 meters. Toposheets numbered H 43W/6 and H 43W/10, which were updated in 2004-2005, were used to create base maps of the research region. These maps were compared to the escape channel from the Survey of India office in Chandigarh for the Bhindawas wetland. The topographical sheets from the Survey of India had a scale of 1:50,000 and the contour interval for the Bhindavas wetland was 10 meters. With the use of Garmin Company's GPS, the outer boundary, drain intake, drain outlet, watching towers, and imbankments are precisely located. During the fieldwork, GPS is also used to mark the rest house and other built-up areas within the main wetland, such as the core region, buffer zone, and transition zone.



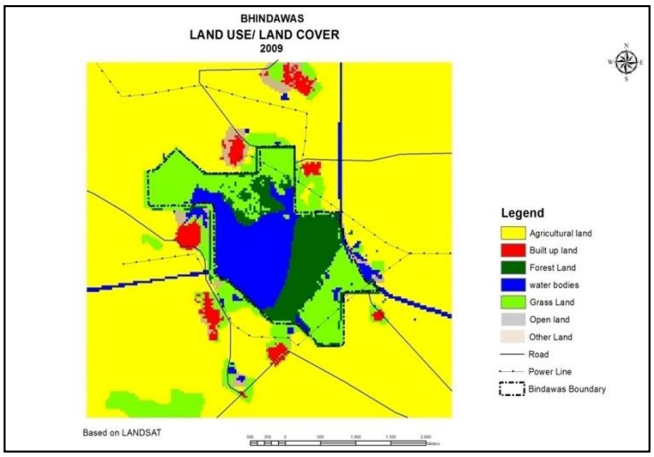
Results and Discussion

The use of land by humans for its intended purposes is referred to as land use. The management and transformation of a wilderness or natural landscape into a constructed environment is known as land use. Land usage includes the goods and/or advantages that come from using the land as well as the land management practices that people do for their own gain. The pattern of land use is altered by human activity, especially in wetland areas. The evaluation of landscape change in this study was mostly conducted from 2000 to 2009. The research area's land usage falls into six categories. According to the table, these land use groups mostly consist of agricultural land, built-up land, water bodies, forest land, grassland, and open land [5].

Land Use Categories of Bhindawas Wetland (2009)

Sr. No.	Category	Area in Hectare	Percentage of Area
1.	Agricultural Land	1805.85	72.03%
2.	Built up Land	49.68	1.98%
3.	Forest Land	130.5	5.20%
4.	Water Bodies	177.93	7.19%
5.	Grass Land	305.82	12.12%
6.	Open Land	36.99	1.48%
		2506.77	100%

According to the assessment's findings, the largest land categories in 2009 were agricultural, grassland, and forest land, while the agricultural sector was the primary land user. 1805.85 hectares of land were still classified as agricultural land. In 2009, there were 177.93 hectares of water bodies, including watershed areas. About 49.68 hectares of the wetland are included in the built-up area category. In 2009, there were 130.5 hectares of forest land. Acacia Arabica, Acacia nilotica, and Eucalyptus trees are found in the forest land area. In the picture, 72.63 hectares of water bodies were transformed into forested regions, whereas 70.11 hectares of water areas in the primary wetland area were transformed into forest land [6].



In addition, 305.82 hectares area comes under grassland, this includes catchment area also. The category under open land are open patches find in the wetland and mostly used for basking, nesting and hatching by birds during different seasons. This category covers around 36.99 hectare area in Bhindawas wetland.

Conclusion

The Bhindawas wetland area exhibits both shrinkage and fragmentation in its land use pattern. Since agriculture is the primary activity of the people living in the catchment area, the satellite image's land use category is dominated by agricultural patterns. Canal water is used for agriculture, and during the dry and wet seasons, drain number 8 serves as the region's reverse osmosis system. In wetland areas, water hyacinth is an alien species that has taken over native species and transformed into grassland [7]. Wetlands rely on water bodies for their primary functioning, and all other ecosystems are reliant on the water supply. The catchment area's built-up land is growing as a result of the construction of homes, warehouses, and other structures.

References

1. Mitsch WJ. Ecological Engineering: Approaches to Sustainability and Biodiversity in the US and China, In: Costanza R, editor, Ecological Economics: the Science and Management of Sustainability, NY: Columbia University Press,1991:428–448.
2. Mitsch WJ, Gosselink JG. Wetlands, 3rd edn, John Wiley and Sons Inc., New York, 2000.
3. Anon. A Directory of wetlands in India, Ministry of Environment, Govt. of India, New Delhi, 1990.
4. Shine C, de Klemm C. Wetlands, water and the law-using law to advance wetland conservation and wise use, IUCN Environmental Policy and Law Paper, 1999, 38.
5. Patil MB, Desai CG, Umrikar BN. Image Classification Tool for Land Use / Land Cover Analysis: A Comparative Study of Maximum Likelihood And Minimum Distance Method, International Journal of Geology, Earth and Environmental Sciences,2012:2(3):189–196.
6. Reddy SU, Rao PV. Influence Of Land Use Practices On The Quality Of Receiving Water Body - A Case Study of Hussain Sagar Lake, International Journal of Geology, Earth and Environmental Sciences,2013:3(1):83–89.
7. Douglas MM, O'Connor RA. Effects of the exotic macrophyte, para grass (*Urochloa mutica*), on benthic and epiphytic macroinvertebrates of a tropical floodplain, Freshwater Biology,1999:48:962–971.