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7. Ecological Study of Lonar Crater Lake

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Abstract

Geographically Lonar lake is an unique ecological system being the only meteoritic crater in basaltic rock in the world. The lake is a closed system without any inflow and the lake is unique due to its salinity, alkalinity and biodiversity. An attempt has been made to examine ecological changes in Lonar lake. Though the agricultural activity inside the Lonar Crater Lake is removed by under the rules of Ministry of Environment (1986) but the ejected cover extending outward from the craters rim has progressively been brought under cultivation. The lake's storage has declined sharply due to increasing several bore wells and excessive use of groundwater, with extensive diversion of water and human interference keep this ecological wonder away from scientific conservation. There are some of the problems requiring attention, alluvial and Colluvial fan after the agricultural activity; it is now occupied by thorny forest, which is unsuitable for Lonar Crater Lake environment or ecosystem.

Keywords: Changing Biodiversity, Environmental degradation, Ecology.

1. Introduction

Lonar crater Lake was identified as a unique geographical site by a British officer named C. J. E. Alexander in 1825. Geologists believe that it was formed due to a meteorite impact that occurred between 52,000 - 5000 years ago. It is a 1.88 km diameter crater located on the Deccan basaltic traps in India. Lonar Crater is a wet land which is important biodiversity sector. The lake supports typical microbial flora and fauna. It has significant value for scientists studying Morphology, Geology, and even other planets.

The ejected cover extending outward from the craters rim has progressively been brought under cultivation. Unfortunately this agricultural activity close to crater rim has destroyed many scientific evidences which are important for understanding the planet Mars.^[1]

2. AIMS and Objectives of the Present Study

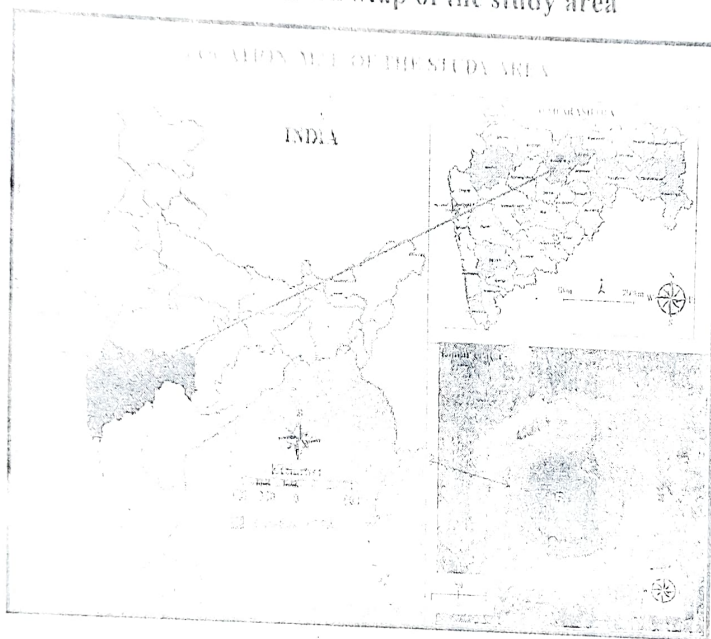
1. To assess the environmental and ecological balance of the lonar crater.
2. To provide the interpretative information of Lonar lake ecosystem.

3. Geographical Setting of the Study Area

3.1. Study Area

The study area is a unique water field, it situated near to the Loma city (a tribal place) of Balasore district. The Geographical location study area extends between $19^{\circ}57'30''$ North latitude to $20^{\circ}22'30''$ North latitude & $76^{\circ}27'30''$ East longitude to $76^{\circ}32'30''$ East longitude.

Fig.No.1. Location Map of the study area



4. Methodology

4.1. Data Acquisition

Data for the present study is acquired from the following sources;

4.1.1. Toposheet: SOI topographical map on 1:25000 scale was used as a base map. The study area falls in survey of India toposheet no. 55D/8/SE, 55 D /12/SW, 56A/5/NE and 56A/9/NW were used for analysis.

4.1.2. Field Work: In order to study environment field work is carried out frequently during pre-monsoon and post monsoon season.

4.1.3. GPS SURVEY: The important points of the study area were tracked by GPS.

4.1.4. ARTICLES AND PAPERS: A large collection of articles and research papers clippings used to write and research paper.

4.1.5. TRUOG OR QUICK BIRD SATELLITE IMAGE: The image was acquired from after maloi, 2008.

5. Result and Discussion

Lonar crater and the lake have been subject to degradation over the years. Lonar town almost directly abuts the crater and there are some slums along the northern part of the crater rim that are now being removed. There are several bore wells less than 100 meters from the crater's rim. Lonar crater is an eco-sensitive zone, but there are food joints and bore wells nearby. Collective impact of these activities is that water supply to the lake is decreasing. With extensive diversion of water, the lake's storage has declined sharply. The study found out that reduction in water level is a combined result of drying up of (nearby) percolation zone and the closure of streams (which flow) into the lake, the report said. Warning that "fluctuations and rapid changes" in Lonar Lake are harmful for biodiversity.

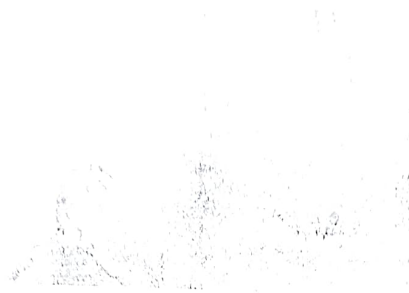
Lonar crater is having centripetal drainage pattern. All streams collect the silt at the foot of the hill or the rim. Thus, due to higher run off there is accelerated pace of erosion in the catchment areas of the seasonal tributaries of Lonar, resulting in the higher rate of sedimentation in the lakeside. Naturally, the silt deposited year after year in the lake bed reduces the water storage capacity, depth, water spread area, submergence area at lake level & even disturbs the ecosystem balance of the crater i.e. vegetation life, animal life, decomposers or micro-organisms & bird life.

Alluvial and Colluvial fan after the agricultural activity; it is now occupied by thorny forest, which is unsuitable for Lonar Crater Lake environment or ecosystem. Lonar city is established on the ejected blanket of Lonar crater. It has become a well known tahsil place of Buldhana district. It is well known weekly market place. Monday is the special day for Lonar's weekly market. City is established on the basis of Lonar lake therefore it is well known as Lonar city. The uncontrolled illegal cutting of trees from Crater through slope and Crater floor is causing tremendous damage ecosystem in the crater.

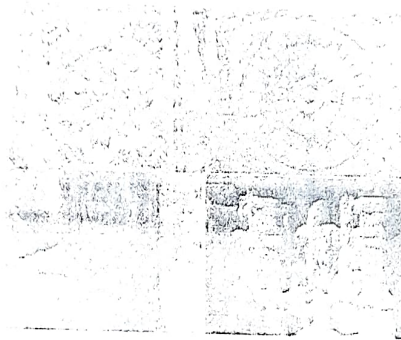
For all such activities many trees are felled and considerable damage is done to the vegetation inside the crater. The carrying capacity of the area is very limited. The poaching for animal's clearing of vegetation along with the tremendous rise in the pilgrim number, the acuteness of the impact is increasing.

The city development taking place is approaching towards the lake. Plastic wastes are thrown in the lake by people visiting the temples.

- Images showing the landscape of Lonar crater



- Images showing the present archaeological work from Lonar crater



6. Conclusion

Thus the Lonar crater, like most archaeological and environmental problems as; alluvial and Colluvial fan after the agricultural activity; it is now occupied by thorny forest, which is unsuitable for the water Lake environment or ecosystem. Deforestation is illegally carried out in the surrounding and cattle grazing inside or near the rim of crater creates fecal pollution, excavation activities are often carried out illegally thus disturbing the lake's underground water source. The government is unable to raise funds needed for preserving this crater and often tourist activities continue to cause environmental damage to nearby land.

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