



Lonar Lake

Published On: 27-01-2026

In News: A recent study has warned that **Lonar Lake** is facing ecological stress due to an **unprecedented influx of fresh water**, threatening its unique **saline–alkaline ecosystem**.

Reasons for Freshwater Influx

- **Above-normal rainfall** in the region
- **Proliferation of borewells** around the crater
- Borewell drilling has likely **breached the impermeable basaltic rock layers**, allowing freshwater to enter the lake basin

About Lonar Lake

Location

- **Buldhana district**, Maharashtra
- A closed-basin **crater lake** (lagoon-type)

Uniqueness

- **World's only known hyper-velocity impact crater formed entirely in basaltic rock**
- Contains **saline and alkaline water** simultaneously
- Hosts **extremophile microorganisms**, making it valuable for astrobiological studies

Formation

- Formed about **52,000 years ago**
- Caused by a **meteorite impact** on the Deccan basalt plateau
- The impact energy created a near-circular crater with raised rims

Ecological Significance

- Supports unique microbial life adapted to extreme salinity and alkalinity
- Acts as a **natural laboratory** for studying:
 - Impact craters
 - Extremophiles
 - Climate–hydrology interactions

Conservation Status

- **Ramsar Site** (designated in 2020)
- Declared a **National Geo-heritage Monument** by the Geological Survey of India (GSI)

Environmental Concern

- Influx of freshwater can:

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- Alter lake chemistry
- Disrupt microbial balance
- Threaten endemic biodiversity
- Highlights the impact of **unsustainable groundwater extraction** on fragile geo-ecosystems