

Do you know India's geoheritage sites of Jhamarkotra and Zawar?

By IAS Toppers | 2023-03-20 15:05:00



Do you know India's geoheritage sites of Jhamarkotra and Zawar?

Recently a group of geologists gathered to scout a **fossil park** at **Jhamarkotra** and the **metallurgical remains** at **Zawar** in Udaipur, Rajasthan.



[ref-the hindu]

About the geoheritage:

- **Geoheritage** are sites that offer **insights** into the **evolution of the earth** that can be used for **research, reference, and awareness**.
 - Instead, **Geodiversity** is the variety of rocks, fossils, minerals, and natural processes that shape the landscapes.

Geoheritage sites in India:

- Dinosaur fossils in **Bagh**, Madhya Pradesh, and in the **Kachchh region** of **Gujarat** focused on **Jurassic life** and **tectonic features**.
 - Both the states can offer **tourism, science, and education**.
- Landscapes across the **Indian subcontinent** bear signatures of many **geological events**, from the evolution of life to the cycles of **mass extinction** preserved in the **fossil records**.
- Important events include **meteorite impacts; volcanic eruptions** that laid down the **Deccan Traps**, the **collision of continents** that formed the **Himalaya** and rivers **Lakshadweep's coral atolls**.

- Important events also includes formation of fertile river valleys, massive deltas, and the world's largest mangrove forests.

Significance of Jhamarkotra:

- It is a fossil park near **Jhameshwar Mahadev pond** that hosts **stromatolites** dating back **1.8 billion years**.
 - It exhibits a variety of **textures** and **sizes**.
- The fossils are **phosphate-rich** as they trap **sediments** consisting mainly **phosphate minerals**.
 - This **phosphate** is mined for use as **agricultural fertilisers**.

About the stromatolite:

- A **stromatolite** is a **layered sedimentary rock** created by microorganisms.
- **Stromatolite fossils** preserve records of **cyanobacteria** or **blue-green algae** that was the **earliest** life on the planet.
- The **stromatolites** allowed their **colonies** to **expand** and **flourish** like microbial reefs.

About the Cyanobacteria:

- **Cyanobacteria** developed the ability to **photosynthesise** and make their own food.
- It pumps large **quantities** of **oxygen** into the atmosphere of **primaeval earth**.
 - This helped other life to **evolve** and flourish.
- They live in **shallow waters** and quests for **sunlight** and **photosynthesis**.
- This caused them to **trap sediments** and deposit them as **lens-like layers** creating **stromatolites**.

Significance of Zawar:

- It is the world's **oldest** (approx. **2,000 years**) old known **zinc-smelting** site located in **Udaipur**.
- It has numerous traces of **zinc mining** and **smelting** operations since ancient times, including open stopes, trenches, chambers, galleries, shafts, and open-pit mines.
- Discovery of **earthen materials** such as brinjal-shaped, long-necked vessels.
 - This suggests **Zawar** had a unique **zinc-smelting legacy**.
- Before the advent of **high-pressure technology**, extracting **zinc** was a considerable challenge.
- Zinc has **low boiling** and **melting points**, so heating it forms a **vapour**, which **oxidises** in contact with the **atmosphere**.
- The people of **Zawar** extracted **zinc** using a **distillation process** that required the use of a **retort** and an **external condenser**.
- In ancient time zinc was used in **medicine** and in **mediaeval weapons of war**.
- The people in this region also **traded** it with their counterparts in **China** and **Japan**.
- **UNESCO** has criteria for '**Global Geoparks**': sites with **geological heritage** of international value under which both **Jhamarkotra** and **Zawar** may qualify if they meet its conditions.

Key facts:

- India has **40** locations on the **UNESCO World Heritage List**.

