



Fourth Global Mass Coral Bleaching Event

[Source: DTE](#)

Coral Reef Watch (CRW) of the United States and the International Coral Reef Initiative (ICRI) have confirmed the **fourth global mass coral bleaching** event in 2023-2024.

- This is the **second such event in the last 10 years** and comes at a time when global oceans have also recorded **unprecedented heat** in 2023 and 2024.
- The **[El Niño conditions](#)** in the equatorial Pacific Ocean **added** onto the general trend of **warming** over land and oceans.
 - During El Niño events, warm ocean currents from the central and eastern Pacific Ocean move towards the western Pacific, causing sea surface temperatures to rise in many regions.
- Among long-term patterns, ocean heating and mass **[coral bleaching](#)** are closely tied to the occurrence of **El Niño events**.
 - This warming effect of El Niño contributes to ocean heating, which stresses coral reefs.
- The various **factors responsible** for coral bleaching are **increasing sea surface temperatures, extensive [marine heatwaves](#), [ocean acidification](#) and pollution**.
- When sea surface temperatures and ocean heat in general rise, the **algae on the hard corals die off**. This makes the corals white.
- This process is known as **[‘coral bleaching’](#)**. Once bleached, the corals can become vulnerable to diseases and eventually die.

Coral Reefs

(Rainforests of the seas)



About

- ✦ **Large underwater structures** – made of skeletons of **colonial marine invertebrates** ‘coral’ – individually called **polyp**
- ✦ **Symbiotic Relationship with algae** ‘**zooxanthellae**’ (responsible for beautiful colours of corals)
- ✦ Support over 25% of marine biodiversity

Hard Corals vs Soft Corals

- ✦ **Hard Corals** - Rigid skeleton made of **CaCO₃** - **reef-building** corals
- ✦ **Soft Corals** - Non reef-building

Great Barrier Reef (Australia)

- ✦ Largest Coral Reef in the World
- ✦ World Heritage Site (1981)
- ✦ Endures Mass Coral Bleaching



Corals in India

- ✦ Present in the areas of Gulf of Kutch, Gulf of Mannar, Andaman & Nicobar, Lakshadweep Islands and Malvan



Significance

- ✦ Coral reefs **protect coastlines from storms/erosion**, provide jobs, offer opportunities for recreation
- ✦ Source of **food/medicines**

Threats

- ✦ **Natural:** Temperature, Sediment Deposition, Salinity, pH, etc.
- ✦ **Anthropogenic:** Mining, Bottom Fishing, Tourism, pollution, etc.

Coral Bleaching

- ✦ Corals under stress - expel algae – thus turning white (bleached)
- ✦ Bleached corals - not dead – but, more risk of starvation/disease



Initiatives to Protect Corals

Technology

- ✦ **Cyromesh:** Storage of the coral larvae at (-196°C) - Can be later reintroduced to the wild
- ✦ **Biorock:** Creating artificial reefs on which coral can grow rapidly



Global

- ✦ International Coral Reef Initiative
- ✦ The Global Coral Reef R&D Accelerator Platform

Indian

National Coastal Mission Programme

Read more: [Coral Bleaching in Great Barrier Reef](#)

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