

Marine heat waves

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What's in today's article?

- **Why in news?**
- **What are marine heat waves (MHWs)?**
- **What is the impact of marine heat waves?**
- **How is global warming affecting marine heat waves and oceans?**

Why in news?

- While the previous month was the planet's hottest June ever on record, July is likely to become the warmest month in hundreds, if not thousands of years.
- However, it is not just on the land that the mercury has soared – the average daily global sea surface temperature is off the charts too.
- Since 2016, the ocean temperatures have remained at record-high levels, giving rise to marine heat waves (MHWs) around the globe.

What are marine heat waves (MHWs)?

- **About**

- A marine heat wave is an extreme weather event.
- It occurs when the surface temperature of a particular region of the sea rises to 3 or 4 degree Celsius above the average temperature for at least five days.
- MHWs can last for weeks, months or even years, according to the US government's agency National Oceanic and Atmospheric Administration (NOAA).

- **Current status**

- According to a recent forecast by an organisation Mercator Ocean International, at present, MHWs have gripped:
 - the north-east Pacific,
 - the southern hemisphere in the southern Indian Ocean and the Pacific,
 - the north-east Atlantic, tropical North Atlantic, and the Mediterranean.

Image caption: Present marine heatwaves across the world

What is the impact of marine heat waves?

- **On weather pattern**

- Higher ocean temperatures, which are associated with MHWs, can make storms like hurricanes and tropical cyclones stronger.
- With warmer temperatures, the rate of evaporation escalates and so does the transfer of heat from the oceans to the air.
- What is more, these disastrous consequences are set to become even worse as the world continues to get warmer, making MHWs more intense and longer.

- **On ocean life**

- MHWs can lead to coral bleaching.
- They may cause the deaths of several marine species, alter their migration patterns.
 - MHWs along the Western Australian coast during the summer of 2010 and 2011 caused some devastating fish kills.
 - A different study revealed that the same MHWs destroyed kelp forests and fundamentally altered the ecosystem of the coast.
 - Kelps usually grow in cooler waters, providing habitat and food for many marine animals.
 - Another example is when high ocean temperatures in the tropical Atlantic and Caribbean in 2005 led to a massive coral bleaching event.
- MHWs also fuel the **growth of invasive alien species**, which can be destructive to marine food webs.

- Additionally, they force species to change their behaviour in a way that puts wildlife at increased risk of harm.
 - MHWs have been linked to whale entanglements in fishing gear, according to a report by the IUCN.

- **On humans**

- When storms travel across hot oceans, they gather more water vapour and heat.
- This results in more powerful winds, heavier rainfall and more flooding when storms reach the land — meaning heightened devastation for humans.
- The IUCN report pointed out that MHWs have profound socio-economic impacts for coastal communities.
- E.g., in 2012, an MHW over the northwest Atlantic Ocean caused marine species that like warm water to move northwards and migrate earlier than they usually did, affecting fisheries targeting those species in the United States.

How is global warming affecting marine heat waves and oceans?

- A 2018 study showed that with the soaring global temperatures, MHWs have become longer-lasting, more frequent and intense in the past few decades.
- Research suggests that the oceans have absorbed 90 per cent of the additional heat caused by the release of greenhouse gases into the atmosphere from burning fossil fuels and deforestation in recent decades.
- This has increased the global mean sea surface temperature by close to 0.9 degree Celsius since 1850.
- Therefore, as global air temperatures increase, so will ocean temperatures, leading to more MHWs.
- To make matters worse, El Nino conditions have set in for the first time in seven years.
 - El Nino is a weather pattern that refers to an abnormal warming of surface waters in the equatorial Pacific Ocean.
- Scientists and experts suggest that El Nino will trigger extreme heat and increase the likelihood of breaking more temperature records in different regions of the world.

Q1) What is International Union for Conservation of Nature (IUCN)?

The International Union for Conservation of Nature (IUCN) is an international organization that works towards the conservation and sustainable use of natural resources. It is the world's oldest and largest global environmental organization, with a history dating back to 1948. The IUCN brings together governments, NGOs, scientists, and various stakeholders to address pressing environmental issues and promote conservation efforts on a global scale.

Q2) What are invasive alien species?

Invasive alien species, often referred to simply as invasive species, are non-native plants, animals, fungi, or microorganisms that are introduced to an ecosystem outside of their natural range and have negative impacts on the environment, economy, or human health. These species are usually introduced intentionally or accidentally by human activities, such as trade, travel, or horticulture.

Source: [What are marine heat waves, which have gripped parts of the world's oceans this summer?](https://vajiramandravi.com/current-affairs/marine-heat-waves/)

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