Impact of Warming Waters on Marine Life

Why in News?

According to a recent analysis by Down To Earth (DTE), nearly 20% of species residing in UNESCO's World Heritage marine sites have lived in unsuitable warm waters.

- **Global sea surface temperature (SST)** – At present, it is *roughly 1 degrees Celsius higher than 140 years ago*, according to National Oceanic and Atmospheric Administration.
- The warmest future climate scenario or SSP 8.5 (best estimate *projected warming of 4.4°C* by the end of the century).
- **Impact** – Ocean heat content has *impacted all the 6 major oceans* since 1998.
- But the most significant warming has been in the southern oceans.
- **Induce migration** – Ocean warming is shifting marine species *into cooler and deeper waters* from their natural habitats.
    - Warming waters have compelled *white-beaked dolphins* found in cooler North Atlantic waters to move north-west from the southern areas during 1991-2017.
- **Impacts reproduction of mammals** – *Female sperm whales are unable to conceive* at their known rates due to warm waters.
- **Affect survival rates of mammals** – As species migrate for new suitable waters, they become more vulnerable to new pathogens.
- **Affect water movement** – It impacts oxygen levels between the surface waters and deeper waters that naturally circulates, providing nutrients to marine species.
- **Alter species behaviour** – For instance, bacteria which use oxygen as fuel has now *switched to nitrate*, eventually releasing nitrogen gas and impacting water and atmosphere characteristics.
- **Thermal limit breaching** – 881 of 4,406 species studied have breached their thermal limits includes.
- UNESCO's eDNA Expeditions inventoried 21 of 51 marine sites have exceeded their living thermal limits.

Location	Species living beyond their thermal limits
Coiba National Park, Panama	26.6%
Everglades National Park, US	24.4%
Banc d'Arguin National Park, Mauritania	23.9%
Sundarbans, Bay of Bengal	19.8%

> ***Environmental DNA*** ***(eDNA)*** *is an on-invasive sampling method developed by UNESCO, maps ocean life and create an inventory of marine biodiversity in 21 of its 51 World Heritage marine sites.*

References

1. Down to Earth| Impact of Warming Waters on Marine Life
2. UNESCO | World Heritage Marine
3. UNESCO| Environmental DNA Expeditions

