

A Recent Discovery on Life under Antarctic Ice Shelf

Why is in News?

Scientists have discovered potential new species on the Antarctic seafloor exposed by the A-84 iceberg's (detached from the George VI Ice Shelf) breakaway.

- **Ice shelves**- These are floating tongues of ice that extend from grounded glaciers on land.
- **Formation** - They are formed by the accumulation and compaction of snow, which, over time, turns into ice.
- Ice shelves are **common around Antarctica**, and the largest ones are the Ronne-Filchner, Ross and McMurdo Ice Shelves.
- These are crucial for understanding climate change and sea level rise.
- **Role** - Ice shelves stabilize land-based glaciers, acting as a "**buttress**" against the ocean.

Key Highlights

- **Unveiling a Hidden Ecosystem** - Following the breakaway of the A-84 iceberg, a remotely operated submersible (ROV) recently explored the newly exposed Antarctic seafloor.
- The team of scientists conducted deep-sea exploration at depths of up to 1,300 metres beneath the ice.
- They discovered a thriving ecosystem with an abundance of marine species, including
 - Icefish and Octopi - Adapted to extreme Antarctic conditions.
 - Giant Sea Spiders - Deep-sea arthropods that have evolved in isolation.
 - Large Corals and Sponges - Supporting complex underwater habitats.
 - Giant Phantom Jelly - A rare jellyfish species that can grow up to one metre wide.
 - Vase-shaped Sponges - Some of these specimens could be hundreds of years old.

Scientific Significance

- The discovery was unexpected as these deep-sea environments were assumed to lack sufficient nutrients for complex ecosystems.
- Normally, deep-sea life relies on organic material from photosynthetic organisms falling from the ocean surface.
- However, the 150-metre-thick ice shelf covering this area for centuries blocked access to surface nutrients, making the existence of rich biodiversity surprising.
- Scientists speculate that essential nutrients might be transported by
 - Ocean Currents - Carrying organic matter from distant areas.
 - Glacial Meltwater - Potentially introducing nutrients trapped in ice.
 - Unknown Biological or Chemical Processes - Yet to be fully understood.

Global Research Initiative

- The expedition was part of *Challenger 150, a UNESCO-endorsed global deep-sea research initiative*.
- Conducted by an international team of scientists, the mission aimed to *explore the world's least-studied marine environments*.
- The research will provide *crucial insights into climate change*, ice shelf dynamics, and deep-sea ecosystem functioning.
- Previous signs of bottom-dwelling life under Antarctica's ice shelves were only *reported in 2021*, making this discovery a major advancement in marine science.

Reference

[The Indian Express - Life under Antarctic ice shelf](#)

