

# 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 <u>accumulation and compaction of snow</u>, 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 <u>A-84 iceberg</u>, a <u>remotely operated submersible (ROV)</u> recently explored the newly exposed Antarctic seafloor.
- The team of scientists conducted <u>deep-sea exploration</u> at depths of up to <u>1,300 metres</u> 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 <u>unexpected as these deep-sea environments</u> 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 <u>150-metre-thick ice shelf</u> covering this area for centuries <u>blocked access</u> <u>to surface nutrients</u>, 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 <u>explore the</u> <u>world's least-studied marine environments.</u>
- 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

