

ROSS SEA

The Ross Sea is one of the most pristine and scientifically important marine regions on Earth. Known as “the Last Ocean,” it lies in the Southern Ocean along Antarctica's coastline and is among the least disturbed marine ecosystems globally.

Located in the Southern Ocean south of New Zealand, Victoria Land borders it to the west and Marie Byrd Land to the east. The Ross Ice Shelf, a massive formation to the south, is a prominent feature. It is named after British explorer James Clark Ross, who discovered it in 1841.

Key Features

Key features of the Ross Ice Shelf include:

- The largest ice shelf in Antarctica
- Approximately the size of France.
- Floats on the Ross Sea
- Serves as a primary source of cold, dense Antarctic bottom water.

Physical Characteristics

- The area covers approximately 9,60,000 square kilometres.
- Depth refers to the continental shelf, which ranges from 500 to 800 meters, whereas deep basins extend to depths beyond 3,000 meters.
- The temperature refers to surface waters, ranging from 1.8 °C (the freezing point of seawater) to 2 °C.
- Sea ice extent changes with the seasons, showing extensive coverage in winter and notable melting during summer, leading to polynyas—areas of open water.

The Ross Sea is significant in oceanography because it is essential for global ocean circulation. Antarctic Bottom Water (AABW) is very cold, salty water that sinks in this area, then flows north into the world's oceans. It helps regulate the Earth's climate and oxygen levels, effectively functioning as one of the deep ocean's main drivers.

The Ross Sea is among the most productive polar ecosystems. Its keystone species include the Antarctic toothfish (a top predator, sometimes called Chilean sea bass), Antarctic krill, and silverfish. Bird populations consist of large numbers of Adelie penguins, emperor

penguins, snow petrels, and skuas. Marine mammals such as Weddell seals, leopard seals, minke whales, and orcas are also present. Unlike many other oceans, the Ross Sea's food web remains largely intact because industrial fishing arrived relatively late.

The Ross Sea is crucial for climate change research, sea level rise studies, ice–ocean interactions, marine ecosystem baselines, and paleoclimate reconstructions. Key nearby research stations are McMurdo Station (USA) and Scott Base (New Zealand).

Environmental Protection – Marine Protected Area (MPA)

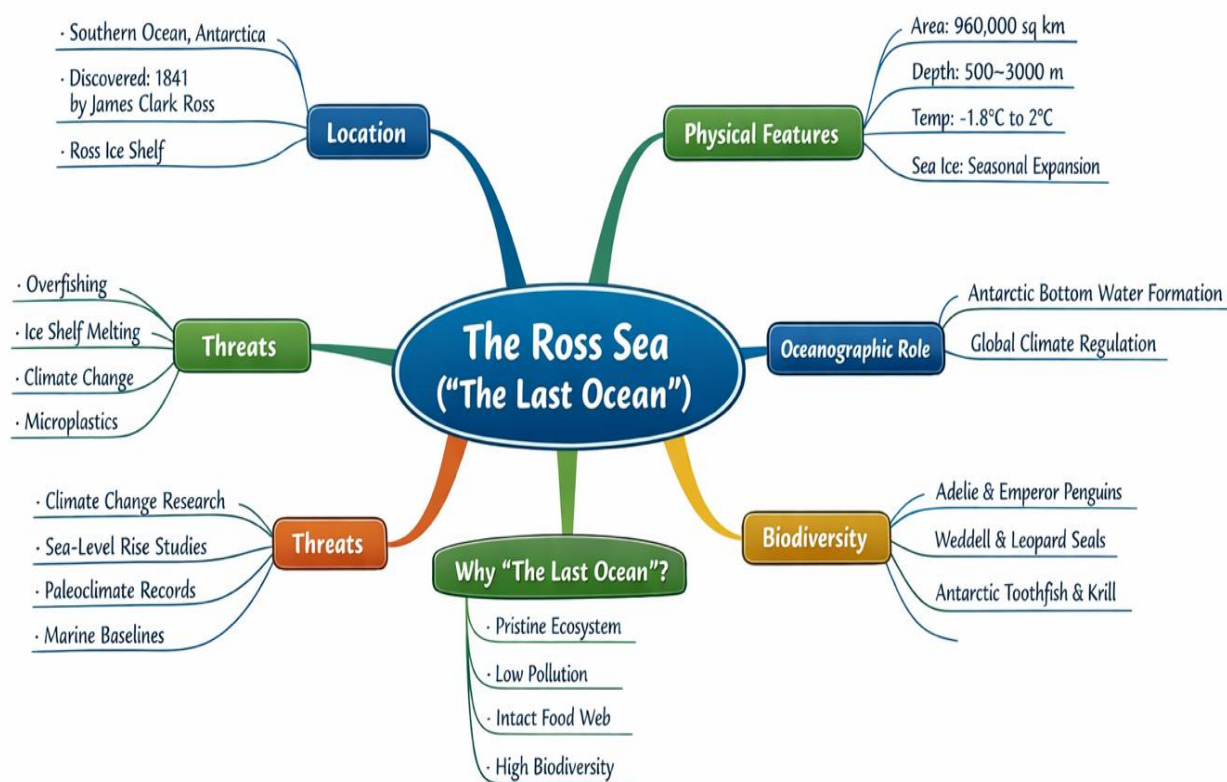
In 2016, the Commission for the Conservation of Antarctic Marine Living Resources created the Ross Sea region marine protected area, which at the time was the largest in the world, covering about 1.55 million sq km. It includes fully protected zones, research areas, and a restricted fishing zone. This move marked an important milestone in conservation within the Antarctic Treaty System.

Threats and Concerns

Although it is remote, the risks involve commercial fishing—particularly toothfish—climate change, melting ice shelves, ocean warming and acidification, and microplastics, which are increasingly present even here. The Ross Sea serves as a “control site” for comparing more heavily impacted oceans.

In Brief

The Ross Sea is known as “The Last Ocean” due to its limited industrial impact, low pollution, preserved predator-prey relationships, and high biodiversity in extreme conditions. Very few marine ecosystems globally still exist in such a pristine state.



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