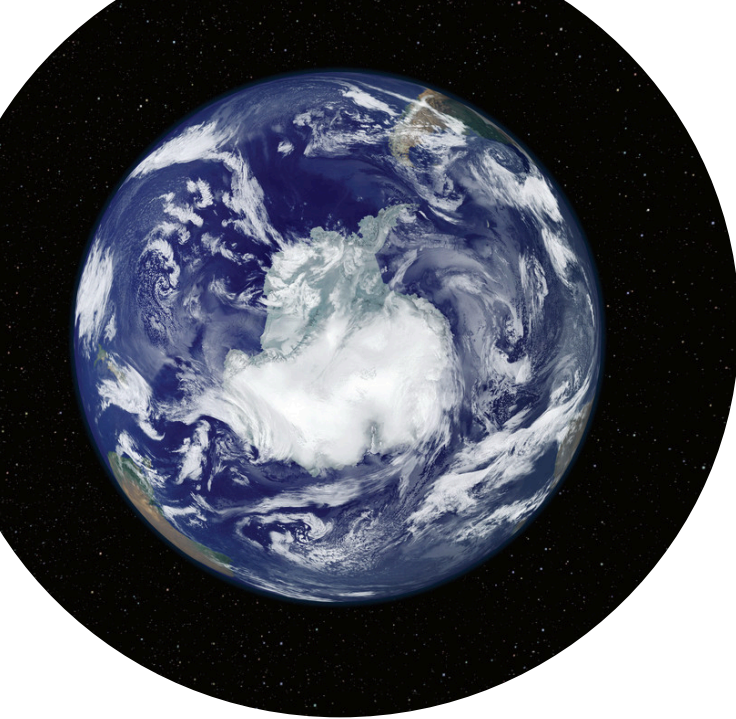


SPECIES-RICH ANTARCTICA



**What life can we find in
the iciest region of the
planet?**





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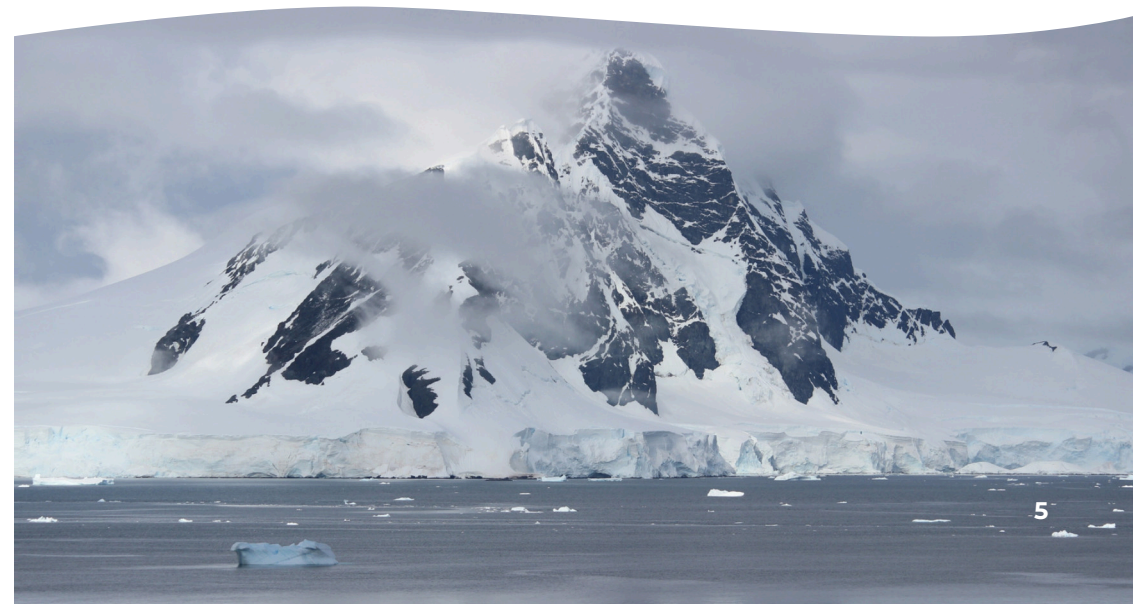
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The Southern Ocean covers around 10% of our planet's ocean surface and is home to almost 10,000 unique species of life, many of which can only be found there. The continent of Antarctica is surrounded by a powerful current - the Circumpolar Current. It is the largest ocean current in the world and can be up to 1500 kilometres wide in some places. Ocean currents play an important role in transporting heat around the globe. Warm currents coming from the tropics can transport heat to higher latitudes, while cold currents from the polar regions bring heat to the equatorial regions.

This heat transport influences the climate and temperatures on the coasts.

The Circumpolar Current around Antarctica plays a decisive role in the global circulation of the oceans. It connects the three major oceans - the Atlantic, Pacific and Indian Oceans - and ensures a constant exchange of water, heat and nutrients between these oceans. In this way, cold water and important nutrients reach regions north of the equator, where they serve as a food source for marine life and ultimately also for humans.



The powerful currents, cold temperatures and nutrient- and oxygen-rich waters make the Southern Ocean one of the most productive marine ecosystems on Earth.

The Southern Ocean also helps to regulate the global climate in another way. It absorbs large amounts of carbon dioxide (CO₂) from the atmosphere and plays a key role in the global carbon cycle. The ocean acts as a huge CO₂ storage and helps to mitigate the greenhouse effect.

However, it is not only the Southern Ocean that contributes to controlling the climate on the entire planet. The ice on the land and in the sea of Antarctica reflects the sun's rays back into space and thus absorbs less heat.

Antarctica acts like the world's refrigerator, producing more cold air than any other place in the world. The icy winds then sweep across Chile and Argentina as well as parts of Australia and New Zealand, making a significant contribution to the Earth's climate.

WHO LIVES IN ANTARCTICA AND THE SOUTHERN OCEAN?

As Antarctica is the windiest, coldest and driest area on the planet, its wildlife and vegetation is very unique. The number of animal species that live exclusively on the Antarctic mainland is relatively small and most of these are invertebrates. The largest of the animals living permanently on land is actually a species of flightless midge - *Belgica antarctica* - which grows to a size of just 12 mm. Otherwise, tiny tardigrades, mites, nematodes and springtails characterise the Antarctic fauna on land.

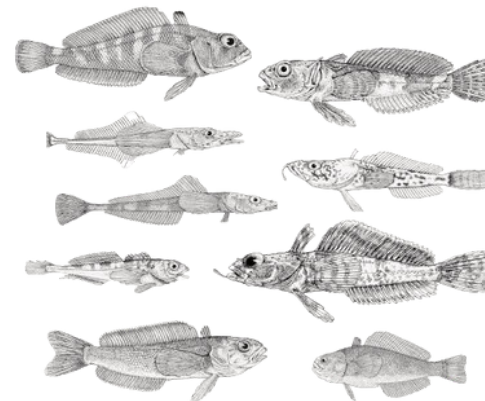
Most other species only live temporarily on the mainland and are otherwise at home in the Southern Ocean that surrounds Antarctica. There are thousands of species that are found nowhere else in the world: from giant squid and fish with "antifreeze" proteins in their blood to glowing worms



and colourful starfish. Sea squirts, sea cucumbers, brittle stars, sea urchins, sea spiders, bryozoans, mussels, sponges and corals can also be found there.

The sea is also home to millions of predators such as penguins, seals and whales, which rely on large swarms of krill. Krill are tiny, shrimp-like crustaceans that form the basis of the delicate Antarctic food web. The species richness of the Southern Ocean is not only important for regional biodiversity, but also has an impact on the marine ecology of the entire planet, as many species in this region are part of large oceanic food webs.

The Antarctic vegetation, on the other hand, is not particularly diverse. The living conditions on land - heavy ice cover, little light, dry, very salty soils and extremely short growing seasons make it difficult for plants to thrive.



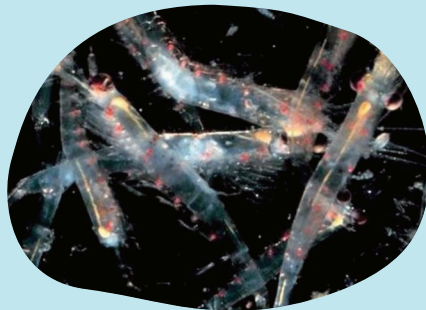


Nevertheless, two plant species and mosses have managed to develop the few ice-free areas as a habitat. The vegetation of the Antarctic also includes lichens, algae and fungi, of which a total of several thousand species are known.

ANTARCTIC KRILL

little superheroes of the Antarctic food web

Antarctic krill (*Euphausia superba*) is a key species in the unique ecosystem of the Southern Ocean and forms the food base for many species, such as penguins, seals, whales, seabirds and fish. Even species that do not eat krill feed on species that depend on krill. Krill are not only at the centre of the Antarctic food web, but also play an essential role in the nutrient cycle of the Southern Ocean and in the storage of carbon. By eating carbonaceous algae, they bind carbon and transport it into the



depths of the ocean through their excretions. The amount of carbon stored by krill in this way is equivalent to the annual emissions of 35 million cars. Krill thus contributes to the climate stability of our planet.

CLIMATE CRISIS

The polar regions are warming faster than the rest of the planet. During the second half of the 20th century, the Antarctic Peninsula and West Antarctica warmed more than twice as fast as the global average. Since 1978, winter sea ice, which is the key breeding ground for krill, has declined dramatically. Many other species, such as emperor penguins and seals, also depend on sea ice as a resting place and for breeding and raising their young. Several colonies of Adélie penguins have already disappeared, while many other colonies have decreased in size.

OVERFISHING

Several species unique to the Southern Ocean have been or are still commercially fished in the waters around Antarctica. Historically, Antarctic whales were hunted for their baleen and blubber, and fur seals were killed for their pelts. Today, there is a significant fishery for Antarctic krill, the key species in the Antarctic ecosystem. The particular problem with krill fishing is that it often takes place in areas where krill predators such as whales and penguins also forage. The trawlers then compete directly with the native animals for their food and pose an additional threat to the populations. The krill caught is processed into feed for fish in aquacultures and sold as food supplements or pet food in supermarkets.

TOURISM AND OTHER HUMAN ACTIVITIES

In addition to the climate crisis and fishing, the increasing number of tourists is also putting pressure on the fragile habitats of Antarctica and the Southern Ocean. The tourist season coincides with the Antarctic summer from November to March - the breeding and rearing season for birds and seals. This increases the pressure on the ecosystem, particularly in the much-visited areas of the Western Antarctic Peninsula. This is because pollution and the risk of non-native species being brought in or diseases such as bird flu spreading more widely are also increasing along with people. In the 2022/2023 season, more than 100,000 people visited Antarctica for the first time. More than 95% of tourists travel by cruise ship, which has an impact on the marine environment: the ships cause noise, produce wastewater and release large amounts of carbon dioxide and soot.

HIGHLIGHT EMPEROR PENGUIN

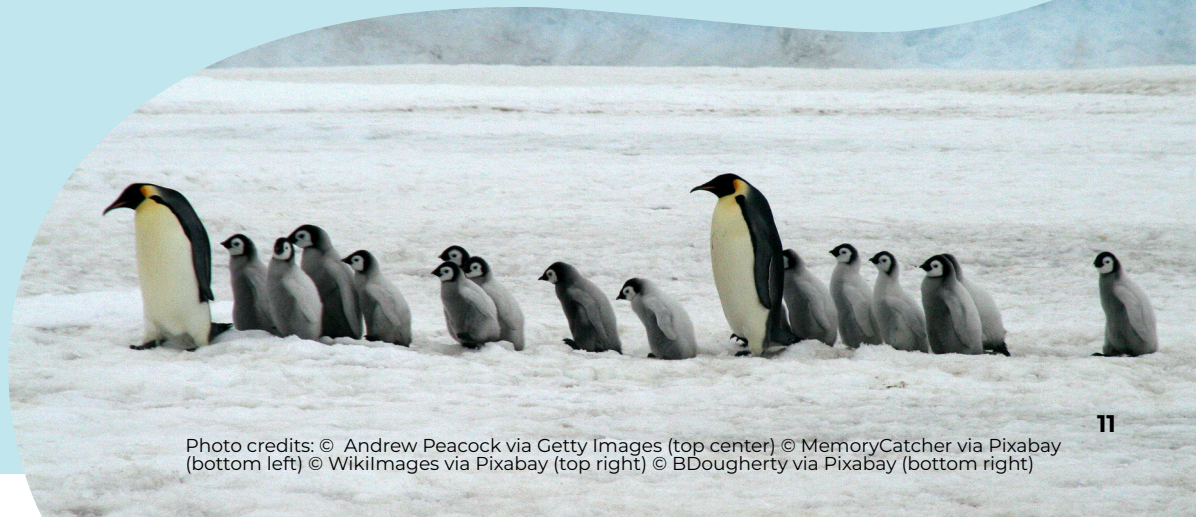
Emperor penguins are the largest and heaviest penguins of the 18 penguin species that exist in the world and live the furthest south of all penguin species. Emperor penguins can be recognised by their size, the yellow spots on their ears and their black and white plumage. And although they have wings and are birds, they cannot fly. They live in the icy Antarctic and reach a maximum speed of 15 kilometres per hour in the water with their streamlined body. They can stay underwater for up to 18 minutes and dive to depths of up to 500 metres while hunting. Despite this extreme lifestyle, they can live up to 20 years.

Emperor penguins have a simple but clever trick to combat the icy cold: they keep each other warm. To do this, the colony forms a large circle with a warm and cosy centre and the penguins take turns to be in the middle. Furthermore, emperor penguins always have cold feet. An ingenious heat exchange system in the blood vessels of their feet ensures that the birds cannot freeze to the cold ground.

For most of the year, from April to January, emperor penguins depend on stable fast ice (sea ice that is connected to the mainland or to ice shelf). They lay their eggs between May and June. It takes around 65 days for the chicks to hatch. However, they only fledge in December and January.



Due to the climate crisis, the ice that is essential for their survival is melting more and more and their habitat is becoming smaller and smaller. If the ice melts before the chicks are ready to fledge, they drown or freeze to death because they do not yet have waterproof plumage for the extreme temperatures. It has been predicted that around 90 % of emperor penguin colonies could be so small by 2100 that they will be practically extinct if we do not reduce our CO₂ emissions quickly.



WHO IS RESPONSIBLE FOR ANTARCTICA'S PROTECTION?

Unlike on all other continents, there is no indigenous population in Antarctica. Antarctica is a state-free territory and the protection and use of this icy continent by the various nations is governed by an international treaty system.

ANTARCTIC TREATY SYSTEM

The Antarctic Treaty forms the foundation for the protection of Antarctica. When the Antarctic Treaty was signed by 12 states in 1959, the signatories committed themselves to the permanent protection of Antarctica and the peaceful utilisation of the area south of 60° south latitude. The first signatories included Argentina, Australia, Chile, France, New Zealand, Norway and the United Kingdom, all of which had made territorial claims in Antarctica, as well as Belgium, Japan, South Africa, the United States and the former Soviet Union¹. However, the territorial claims were literally put on ice with the Antarctic Treaty.

¹ Belgium, Japan, South Africa, the former Soviet Union and the US have not made territorial claims, but do not recognise any claims either. In addition, the US and Russia maintain a "basis of claim".



The treaty also requires that the parties meet regularly to discuss Antarctic management issues and agree on measures to protect and conserve Antarctic ecosystems. The treaty established Antarctica as a region free of military activity and promotes cooperation, peaceful conflict resolution and the exchange of scientific information between nations.

In addition, the Protocol on Environmental Protection to the Antarctic Treaty (also known as the "Madrid Protocol") was adopted in Madrid in 1991. With the Madrid Protocol, the signatory parties prohibit the commercial extraction of natural resources in the Antarctic and pledge to protect Antarctic ecosystems and species (from the individual to the ecosystem level). The signatory parties commit to leaving Antarctica as a nature reserve and preserving it as such for future generations.

The parties to the Antarctic Treaty meet annually for an Antarctic Treaty Consultative Meeting (ATCM). Delegations from each party discuss matters relating to the Antarctic and share information about their recent activities in Antarctica.

They take unanimous decisions on topics such as scientific co-operation, tourism and environmental protection. The number of Treaty Parties has now grown to 56, including 29 so-called Consultative Parties (as of December 2023), which have demonstrated their strong commitment to the white continent through extensive

research and other contributions. Only the Consultative Parties have voting rights in the decision-making process. However, other participants, including the Scientific Committee, the International Association of Antarctica Tour Operators and NGOs (e.g. ASOC), can contribute to the discussions during the meetings.

CCAMLR

The Commission for the Conservation of Antarctic Marine Living Resources is responsible for the conservation of Antarctic marine ecosystems, which includes regulating fisheries and the designation and management of marine protected areas (MPAs) in the Southern Ocean. The Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) was adopted in May 1980 and came into force in 1982. CCAMLR is composed of 26 member countries and the European Union, which meet annually to make decisions on issues such as the closure and opening of Antarctic fishing areas, total allowable catches (TACs) and the designation of marine protected areas.

As an instrument within the Antarctic Treaty System, CCAMLR takes a precautionary, ecosystem-based approach to the management of Antarctic fisheries. CCAMLR has been working on the designation of marine protected areas since 2002. And in 2009, all members reached a formal agreement to create a representative system of MPAs around the Antarctic and to realise this network by 2012.





Despite the efforts of many members, their own deadline has long passed.

Two marine protected areas have been established so far. The first one is located on the southern shelf of the South Orkney Islands, the second one is located in the Ross Sea. The Ross Sea MPA was established in 2016 and is the largest marine protected area in the world to date, covering 2.02 million km². Nevertheless, three marine protected areas that should have been established at the same time are still outstanding: East Antarctica with 0.95 million km², the Weddell Sea - 2.18 million km²; the Antarctic Peninsula: of Argentina and Chile - about 0.65 million km².

Protecting these three large areas would protect almost 4 million km² of the Southern Ocean. That is slightly larger than the area of India and equates to 1% of the global ocean. Taken together, this would be the largest act of marine conservation in human history.

WHAT CAN WE DO TO PROTECT ANTARCTICA?

NETWORK OF PROTECTED AREAS ON LAND AND AT SEA

Protected areas preserve biodiversity by protecting the full range of habitats and species in an ecosystem. They provide refuges for species whose habitats may change drastically due to the climate crisis. They protect breeding sites and migration routes that allow species to adapt, evolve or change their habitat as the habitats shift. They create natural laboratories where researchers can study, for example, the effects of a warmer and more acidic ocean on ecosystems independent of impacts from fishing and other human activities.

Limiting fishing and other human activities (tourism, shipping, etc.) through marine protected areas would provide a buffer against the climate crisis for species at risk and strengthen their resilience to the consequences of the climate crisis and other stressors.

REDUCE GREENHOUSE GAS EMISSIONS

New ways to significantly reduce anthropogenic emissions (caused by human activities), such as CO₂ and methane, must be adopted as soon as possible in all areas of life in order to slow down the heating of the planet and the loss of our biodiversity due to the climate crisis. The goal of a maximum warming of 1.5 degrees Celsius can be achieved by consciously choosing local and organically grown food, avoiding plastic, promoting renewable energies and generally reducing consumption. All parts of society - individuals, organisations of all kinds, businesses and policymakers - have a role to play here.

SHARE KNOWLEDGE

Many people don't know how important Antarctica and the Southern Ocean are for our own well-being, climate stability and the health of our planet. And many also don't realise how dire the situation already is for species such as the emperor penguin. Only by sharing our knowledge about Antarctica, its fascinating inhabitants and the threats to them, can we get more people involved in protecting this unique continent and its flora and fauna.

LIVE IN HARMONY WITH NATURE

Humans need a healthy environment to thrive, but too often we think mostly about what nature can do for us rather than what we can do for nature. This is especially true when it comes to activities that are not essential for survival, such as fishing in remote locations like Antarctica. Furthermore, krill products are not essential for human health and it is advised to rather follow a plant-based diet, preferably locally sourced.

**THE PROTECTION OF ANTARCTICA AND THE SOUTHERN OCEAN IS IMPORTANT FOR THE ENTIRE PLANET AND CONCERNS US ALL!
WE CALL ON THE PARTIES TO THE ANTARCTIC TREATY TO STAND UP FOR ANTARCTICA AND ITS INHABITANTS NOW!**





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