



AFRICAN PENGUINS AND CLIMATE CHANGE

The African Penguin and its habitat are threatened by the effects of climate change – Photo: African Penguins © Bernard Dupont

ABOUT THE AFRICAN PENGUIN

Names:

Scientific: *Spheniscus demersus*

English: African Penguin

French: Manchot du Cap

Spanish: Pingüino del Cabo

Spheniscus demersus is the only penguin species found on the African continent. It breeds in South Africa and Namibia and vagrant individuals occur as far as Congo and Gabon in the Atlantic Ocean and Mozambique in the Indian Ocean. The birds are usually found within 40-60 km of the coastal areas and their total population is approximately 19,800 mature individuals. They are medium-sized penguins that are on average 60-70 cm long and adults typically weigh around three kg. They are black on the back and white with black markings on the breast and belly. Additionally, they are

These penguins generally nest in colonies (though independent nesters have also been observed) and each pair returns to the same site every year. At the nest sites, the parents take turns incubating the eggs for a total duration of about 40 days. After the eggs hatch, adults stay with their chicks for approximately 30 days, feeding them by regurgitating food that they hunted in the ocean. Following this stage, both adults need to forage to find enough food for the growing chicks, which can be left alone for two to three days at a time. Once the fledglings have grown their waterproof plumage, they leave the nest, abandon land and head towards the sea. The African Penguin's diet consists of fish such as sardines (*Sardinops sagax*), anchovies (*Engraulis encrasicolus*) and round herrings (*Etrumeus whiteheadi*).

Threats due to climate change

African Penguins face several challenges caused by human activities. In the past, over exploitation of their eggs and the destruction of their terrestrial habitat due to guano collection caused massive impacts. Today, excessive fishing of the Penguins' prey, oil pollution and entanglement in fishing gear are some of the threats they face. In fact, the total population of the African Penguin has fallen by more than 85 per cent since 1979. Although overfishing of the African Penguin's prey has played a large role in the species' decline, scientists are starting to understand how the effects of climate change are also having an impact on these fish species and their habitat.

The productive ecosystem off the west coast of South Africa and Namibia is driven by upwelling, the process by which deep, cold water rises towards the surface to replace surface waters pushed away by strong offshore winds. This cold water brings with it nutrients from the ocean depths. This process results in an abundance of nutrients and therefore plankton that attract shoals of pelagic fish, such as sardines and anchovies, providing a valuable feeding ground for African Penguins.

Historically, the west coast of the African Cape contained high concentrations of these resources for the penguins to feed on. These delicate ecological processes have recently been disturbed due to rising ocean water temperatures, a common effect of climate change that has been observed around the planet, as well as changes in salinity. The spawning locations of sardine and anchovy have mirrored changes in ocean temperature, with anchovy seeming to prefer slightly warmer waters for spawning than sardine. Since the mid-1990s, both sardine and anchovy have spawned and been more abundant on the southeastern coast of South Africa, instead of the west coast. This is thought to have been driven by the changing temperatures combined with high fishing pressure on the west coast. The shift has meant that penguins breeding on the west coast need to swim much further from their colonies to find food.

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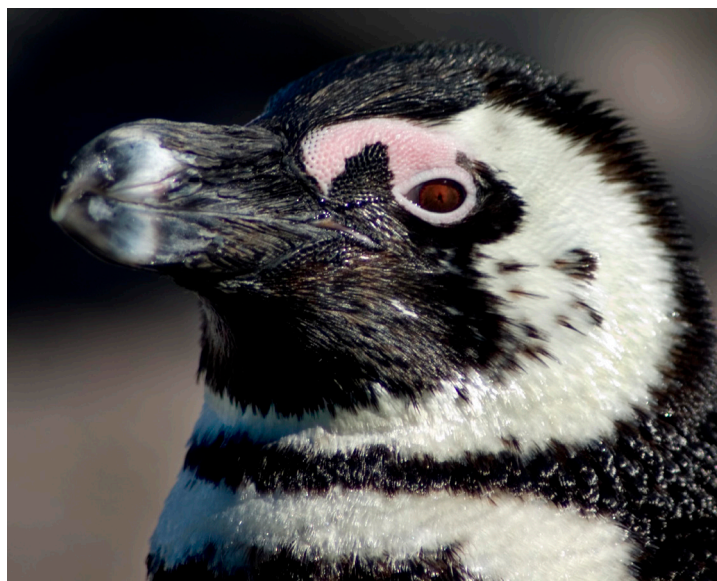
Threats due to climate change

The changes have also affected juvenile penguins. Once they are old enough to leave the nest, they depart the colony for the first time, usually to swim north for thousands of kilometres to the traditional regions of upwelling and food. They follow the biological signs their species has always followed: low ocean temperatures and high chlorophyll-a. Both signs indicate high levels of plankton and, therefore, should indicate flourishing numbers of pelagic fish. However, though the plankton is still present; the fish are not. The Penguins arrive at the hunting grounds and, upon discovering little or no food, either starve or are weakened due to a poor diet. Instead of changing their feeding grounds, African Penguins persist in returning to these areas that contain low concentrations of prey. Their instincts lead take them into what has been recently termed an 'ecological trap'.

Additional effects of rising ocean water temperatures include the increased occurrence of harmful algal blooms. Algae grow rapidly and accumulate into dense patches near the ocean surface, promoting the absorption of solar radiation, exacerbating warming. Climate change is also causing a shift in phytoplankton community structure from diatoms to dinoflagellates. It is the latter group of phytoplankton that can be fatal to pelagic fish such as sardines and anchovies.

Species Listing

Spheniscus demersus was placed on Appendix II of the Convention on the Conservation of Migratory Species of Wild Animals (CMS) in 1997. It is considered 'Critically Endangered' by the International Union for Conservation of Nature (IUCN). The species is also listed in Annex 2 of the Agreement on the Conservation of African Eurasian Migratory Waterbirds (AEWA) and is covered by its International Multi-species Action Plan for the Conservation of Benguela Current Upwelling System Coastal Seabirds. The African Penguin is also included in Appendix II of the Convention of the International Trade in Endangered Species of Wild Fauna and Flora (CITES).



Photos: African Penguins Colony © Pe_Wu; African Penguin © Selbe Lynn

About CMS

An environmental treaty of the United Nations, the Convention on the Conservation of Migratory Species of Wild Animals (CMS) provides a global platform for the conservation and sustainable use of migratory animals and their habitats. This unique treaty brings governments and wildlife experts together to address the conservation needs of terrestrial, aquatic, and avian migratory species and their habitats around the world.

About AEWA

The Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA) is an inter-governmental treaty dedicated to the conservation of migratory waterbirds that migrate along the African-Eurasian Flyways. The Agreement covers 255 species of birds ecologically dependent on wetlands for at least part of their annual cycle.

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