



*Championing UK's most special species:
the wildlife of UK's Overseas Territories (UKOTs) and
Crown Dependencies (CDs)*

FACT-SHEET ON:

Penguins

UK Overseas Territory: British Antarctic Territory (BAT)

UK, through its Overseas Territories, is home to more penguins than is any other state. The Falkland Islands support 5 species and most of the world's Southern Rockhoppers. Tristan da Cunha supports >90% of Northern Rockhoppers. South Georgia and the South Sandwich Islands hold the world's largest colonies of Kings and Chinstraps. However, here we concentrate on the unique environment of Antarctica and particularly the British Antarctic Territory.

All penguins are flightless, with streamlined bodies, and wings stiffened and flattened into flippers for swimming. Diets consist primarily of fish, but also includes crustaceans, such as krill, and cephalopods, such as squid. Adult penguins are preyed upon by leopard seals and orcas. South Polar Skuas, Giant Petrels, Kelp Gulls and Snowy Sheathbills prey on chicks and eggs.

A major threat to all species is climate-change. Other threats include: susceptibility to pollution due to flightlessness; disturbance from researchers and tourists at a minority of sites; construction of new science facilities; and harvesting of Antarctic Silverfish *Pleuragramma antarcticum* and krill, if management does not adequately take into account the needs of species that feed upon these species. Protection of habitat on land and at sea remains important, with the designation of appropriate protection for transit, foraging and rafting areas at sea.

Adélie Penguin *Pygoscelis adeliae* Near Threatened

The Adélie Penguins (46-71 cm tall and 3.6-6.0 kg) breed from October to February along the entire coast of the Antarctic continent, which is its only habitat. It is the most southerly distributed of all penguins. They build rough nests of stones. Two eggs are laid; these are incubated for 32 to 34 days by the parents taking shifts typically lasting for 12 days. The chicks remain in the nest for 22 days before joining crèches. The chicks moult into their juvenile plumage and go out to sea after 50 to 60 days. Adélie penguins usually swim at around 8 km/h; they are able to leap 3 metres out of the water to land on rocks or ice.

The current global population is exhibiting a net increase, while that portion in the northern Antarctic Peninsula is beginning to stabilize after decades of significant decrease. Computer modelling work suggests that net population change may reverse if climate change continues on its current track, and all colonies north of 67-68°S could be lost by the time that Earth's average temperature reaches 2°C above pre-industrial levels, with negative impacts on all colonies north of 70°S, despite limited growth south of 73°S. This state could be reached within 20 years. Colonies experiencing novel conditions due to increased sea-surface temperature were found to be declining or to have an unknown trend, strongly supporting ongoing environmental changes as a driver of population decline in the species. Furthermore, annual migration and winter survival may be negatively affected by decreases in sea-ice coverage at northern latitudes. During the summer, nesting habitat could be affected by an increase in the incidence of severe snowfall. The species has previously suffered mortality from oiling, with the 1989 *Bahia Paraiso* oil-spill near Palmer estimated to have killed 16% of local penguins.

Emperor Penguin *Aptenodytes forsteri* Near Treated.

The tallest and heaviest of all living penguin species and endemic to Antarctica, male and female are similar in plumage and size, reaching 122 cm long and 22-45 kg. While hunting, the species can remain submerged around 20 minutes, diving to a depth of 535 m. It has several adaptations to facilitate this, including an unusually structured haemoglobin



Top: Adélie Penguins in a late autumn snow fall before leaving the colony at Brown Bluff, Antarctic Peninsula, BAT. © Dr Mike Pienkowski, UKOTCF.

Above: Adélie Penguins return to the sea. © Michael Gore FRPS.

Below: Adults and chick Emperor Penguins, Snow Hill Island, BAT. CC BY 2.0: Ian Duffy/ Snowmanradio



to allow it to function at low oxygen levels, solid bones to reduce barotrauma, and the ability to reduce its metabolism and shut down non-essential organ functions.

The only penguin species that breeds during the Antarctic winter, Emperor Penguins trek 50–120 km over the ice-shelves to breeding colonies which can contain up to several thousand individuals. The single egg is incubated for just over two months by the male while the female returns to the sea to feed; parents subsequently take turns foraging at sea and caring for their chick in the colony. The lifespan is typically 20 years in the wild, although observations suggest that some individuals may live to 50 years of age.

The species is threatened by the effects of projected climate change, primarily through ongoing and future decreases in sea-ice concentration and thickness. The decrease of a colony on Emperor Island, BAT, from c.150 pairs in the 1970s to fewer than 20 pairs by 1999 (at which time it occurred on land), with the apparent disappearance of the colony by 2009, has been linked to a decline in seasonal sea-ice duration, particularly in seasonal stable ice suitable for nesting. In 1994–2003, the loss of ice from ice shelves around the continent was estimated to occur at a rate of 25 ± 64 km³/yr. From 2003 to 2012, ice-loss increased to 310 ± 74 km³/yr and in West Antarctica, the fastest warming part of Antarctica, ice-loss increased by 70%. In the much longer term, Emperor Penguin habitat is likely to deteriorate to a point where suitable locations occur only in restricted refugia or, in the worst case scenario, may be completely unavailable.

Gentoo Penguin *Pygoscelis papua*

Gentooos, at 51–90 cm tall and 4.5–8.5 kg, are the third-largest species of penguin, after the Emperor and King. They are the fastest underwater swimmers of all penguins, reaching speeds of up to 36 km/h. Breeding colonies are located on ice-free surfaces, on the shoreline or (elsewhere in their range, north to the Falklands) can be located considerably inland.

In addition to other threats, interactions with fisheries may pose a threat to the species through incidental capture in fishing nets and resource competition. Harmful algal blooms were attributed as the cause of the paralytic shellfish poisoning incident that resulted in a major Gentoo Penguin mortality event in 2002, from which the population took several years to recover.



Gentoo penguins “porpoising” between ice-floes in Errera Channel as they return from feeding areas to their colony on the Antarctic Peninsula, BAT. © Dr Mike Pienkowski, UKOTCF

Chinstrap Penguin *Pygoscelis antarcticus*

They build circular nests from stones, and lay two eggs, which are incubated by both the male and the female for shifts around 6 days each. Chicks hatch after around 37 days, and stay in the nest for 20–30 days before they go to join other chicks in a crèche. Around 50–60 days old, they moult, gaining their adult feathers and go to sea.

Climate change is thought to impact reproductive success through incurring changes in abundance and distribution of krill, driving rapid declines at a number of colonies, for instance, a 50% decline in just under 50 years to 2019 on Elephant Island, BAT. Volcanic activity during the 2016 moulting season at Zavodovski and Bristol in the South Sandwich Islands could have had severe impacts on the large colonies there. If large numbers are found to have been killed by the volcanic event, and if declines elsewhere on the Antarctic Peninsula continue, the species may warrant Vulnerable status.



Above: Chinstrap Penguins display on a breeding colony at Half Moon Island, South Shetland Islands, BAT.

© Dr Mike Pienkowski, UKOTCF.

Below: Macaroni Penguin, Cooper Bay, South Georgia.

© Andrew Shiva/ Wikipedia

Macaroni Penguin *Eudyptes chysolophus*

With about 18 million individuals breeding from Antarctica to Falklands and eastward to the Indian Ocean, Macaroni Penguins are the most numerous penguin species and have been estimated to consume more marine life annually than any other seabird species. However, widespread declines in populations have been recorded since the mid-1970s and their conservation status is classified as Vulnerable. There was a 50% reduction in South Georgia between the mid-1970s to mid-1990s. The birds may be being impacted by commercial fishing and marine pollution. A 2008 study suggests the abilities of female penguins to reproduce may be negatively affected by climate- and fishing-induced reductions in krill density. After spending the summer breeding, marked penguins from Kerguelen (S Indian Ocean) travelled over 10,000 km during the 6- to 7-month study period and spent their time largely within a zone 47–49°S and 70–110°E. These birds moult once a year, spending about three to four weeks ashore, before returning to the sea.

