

## By the numbers: Penguin populations

By Valerie Clark, Published in [E Magazine](#) and online (3/1/12)



In 2011, National Geographic reported that vanishing krill populations may be threatening the existence of penguins. The threat of extinction is very real for at least five out of 17 penguin species, but the disappearing krill may not be entirely to blame. According to the International Union for Conservation of Nature's (IUCN) Red List, which reports population data and extinction risks for thousands of species, the most common threats for penguins are commercial fishing, shifts in prey populations (including krill) and habitat loss or degradation. Invasive species also pose problems.

A population viability analysis uses the Red List data to predict how much time is left before half of the entire penguin population is gone. At that point, the species is essentially committed to extinction. When the initial assessment was performed in 2006, they predicted that the already endangered penguin species would be committed to extinction in 200 years. Considering that penguins have been around since before the dinosaurs, a 200-year window is incredibly short. When the analysis was repeated in 2011, the results suggested endangered penguin species had just 150 years.

Certain species are on the rebound. The Humboldt penguin has been down-listed from critically endangered to vulnerable, and the Little penguin was also down-listed to the lowest concern (not vulnerable). But at the same time, the African and Northern Rockhopper penguins have joined the endangered list, which also includes the Erect-Crested, Yellow-Eyed and Galapagos penguins. The African and Northern Rockhopper penguins are both big krill consumers, though not all endangered penguins are affected by krill.

Penguins have diversified over the last 71 million years into 17 different species on four continents including Antarctica where they originated, South America, Africa and Australia. Each species has evolved to fit a specific temperature range or ecological niche

The effects of climate change might seem like an easy way to explain struggling penguin populations, but historical climate change events have not threatened penguins' survival which means that the current warming event is of a greater magnitude than any previous event and/or that there are new, perhaps human-based, factors affecting penguin survival. Penguin populations provide a valuable indicator of environmental change that scientists can use to monitor global warming and pollution effects.

Penguins are so diverse that a mass extinction is unlikely, but individual species may be lost if conservation efforts prove insufficient. Managing krill populations, commercial fishing, invasive species and mitigating climate change are all part of the solution.

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