

Protecting the World's Penguins

Penguins, charismatic and quirky birds, have inspired films, books, comic strips, and sports teams. But despite their global popularity, many penguin populations are in trouble, and humans are largely to blame.

The Southern Hemisphere is home to 18 species of penguin that range in size and appearance, but all share common traits. From the 75-pound, 4-foot-tall emperor penguin of Antarctica to the 2-pound, 16-inch little (blue or fairy) penguin of Australia and New Zealand, their characteristics set them apart from all other birds. Though flightless, they are expert swimmers. Some can dive deeper than 500 meters (1,640 feet) and stay submerged for 20 minutes. They are known for waddling ambles on land, but some routinely scale sides of cliffs or migrate hundreds of miles each year, walking or tobogganing on icy landscapes. They are well suited for life on land and at sea. Their distinctive black-and-white coloring provides countershading to protect them from predators by blending their backs and bellies with the sea or the sky.

Over millions of years, penguins have adapted to difficult conditions and diverse ecosystems. But today, all populations—from the cold of Antarctica to the warmth of the Galápagos Islands—are feeling the effects of human activities, including pollution, poorly managed fisheries, and habitat degradation. The number one threat to penguins worldwide, however, is climate change. According to the International Union for Conservation of Nature, or IUCN, the majority of penguin populations are in decline. And the state of their well-being is a portent of larger environmental concerns: These birds are sentinels for the health of the entire sea. Changes to their populations can indicate trouble for other species that depend on these waters for survival.

Now is the time to protect these iconic birds and the ocean so critical to us all.

Threats to penguins

Climate change: Seasonal melting and dissipating ice, along with changing currents and weather patterns, are beginning to take a toll on many species of penguin. Ice plays a necessary part in the breeding process for several species of Antarctic penguin and also provides a place to rest and to avoid predators during long foraging trips. According to researchers at the Woods Hole Oceanographic Institution, by 2100, shrinking ice could drastically reduce the population of emperor penguins of Terre Adélie in East Antarctica.⁸ Climate change is also causing more intense storms and warmer temperatures in Punta Tombo, Argentina. Magellanic penguin chicks there are experiencing increased weather-related mortality.⁹

Food depletion: Overfishing and increasing demand for forage species such as Antarctic krill can make it more difficult for penguins to find nourishment for themselves and their chicks, especially when the fishing grounds overlap with the foraging grounds of penguins.

Habitat degradation: Tourism-related pressures, such as foot traffic and trash left behind, can encroach on penguin colonies and nesting sites. Oil spills have had severe effects on the health of individual colonies of penguins, as well as their foraging habitat, and several populations, including the southern rockhopper of the Falkland Islands, have declined in large part due to a history of egg collection by humans.¹⁰

Introduced predators and invasive disease: Humans also are responsible for introducing nonnative predators and subsequent diseases to penguin colonies. Several colonies of little penguins in New South Wales, Australia, for example, have been wiped out by nonindigenous dogs and foxes.¹¹ Galápagos penguins are particularly susceptible to illnesses caused by infectious pathogens.¹²

What we can do to help

Marine reserves: The creation of large-scale, fully protected marine reserves can serve to alleviate pressure on penguins in the face of climate change, overfishing, and habitat degradation. Although marine reserves do not stop climate change, they can help keep ecosystems resilient and food webs intact. That support would give penguins a chance to adapt to changing environments.

The Pew Charitable Trusts is advocating to establish a network of marine reserves in the Southern Ocean through the Commission for the Conservation of Antarctic Marine Living Resources, or CCAMLR. Action, though, requires the approval of all 24 member countries and the European Union. The commission is considering proposals for marine reserves for the Ross Sea and the waters off East Antarctica. Commission members also are discussing possible protections for the Weddell Sea and regions off the Antarctic Peninsula. Penguin populations on the peninsula have declined significantly, likely as a result of warming seas and localized krill fishing.

Pew is examining whether penguin colonies in the national waters of other countries would benefit from the creation of marine reserves that protect foraging areas and support healthy chick rearing.

Responsible fisheries management: Industrial fishing for forage species such as Antarctic krill can put stress on penguin populations. Pew advocates for responsible fisheries management, which takes into account the foraging needs of predator species such as penguins. This oversight includes ongoing monitoring of fish stocks, and efforts to shift fishing away from areas used by breeding and foraging penguins.

Safeguarding habitat and improved monitoring: Effective habitat management is critical to protecting penguins and encouraging healthy breeding behavior. Reducing the number of introduced predators and invasive species and instituting proper management measures to reduce the impact of tourism can help penguin colonies thrive. Improved monitoring also will help scientists identify potential causes of population declines.

Conclusion

Although the majority of penguin species are at risk, it isn't too late to reverse that trend. Smart ecosystem management at sea and on land can help offset the damage and create greater resilience in the face of a changing planet.

Penguins have been an essential part of the Southern Hemisphere's ecosystems for many thousands, and in some cases, millions of years. Protecting their populations and the waters they rely on will take a true global commitment. If countries can come together to conserve penguins and their habitats, we will leave a lasting environmental legacy for these iconic birds and people who value healthy ecosystems and oceans.

Endnotes

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- 2 Heather J. Lynch, "Gentoo Penguin (*Pygoscelis papua*)," in *Penguins: Natural History and Conservation*, eds. Pablo Garcia Borboroglu and P. Dee Boersma (Seattle: University of Washington Press, 2013), 74.
- 3 P. Dee Boersma et al., "Galápagos Penguin (*Spheniscus mendiculus*)," in *Penguins: Natural History and Conservation*, eds. Pablo Garcia Borboroglu and P. Dee Boersma (Seattle: University of Washington Press, 2013), 294.
- 4 Philip J. Seddon et al., "Yellow-Eyed Penguin (*Megadyptes antipodes*)," in *Penguins: Natural History and Conservation*, eds. Pablo Garcia Borboroglu and P. Dee Boersma (Seattle: University of Washington Press, 2013), 97-100.
- 5 Glenn T. Crossin et al., "Macaroni Penguin (*Eudyptes chrysolophus*) and Royal Penguin (*Eudyptes schlegeli*)," in *Penguins: Natural History and Conservation*, eds. Pablo Garcia Borboroglu and P. Dee Boersma (Seattle: University of Washington Press, 2013), 193.
- 6 Lloyd Spencer David, "Erect-Created Penguins (*Eudyptes sclateri*)," in *Penguins: Natural History and Conservation*, eds. Pablo Garcia Borboroglu and P. Dee Boersma (Seattle: University of Washington Press, 2013), 149.
- 7 Peter Dann, "Little Penguin (*Eudyptula minor*)," in *Penguins: Natural History and Conservation*, eds. Pablo Garcia Borboroglu and P. Dee Boersma (Seattle: University of Washington Press, 2013), 310.
- 8 David Levin, "The Decline and Fall of the Emperor Penguin?" *Oceanus Magazine* 50, no. 2 (2013), accessed March 11, 2014, <http://www.who.edu/oceanus/feature/the-decline-and-fall-of-the-emperor-penguin>.
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- 12 Martin Wikelski et al., "Galápagos Birds and Diseases: Invasive Pathogens as Threats for Island Species," *Ecology and Society* 9, no. 1 (2004): 5, <http://www.ecologyandsociety.org/vol9/iss1/art5/>.

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Penguin Populations and Trends

Antarctic and Subantarctic

① **Emperor** (*Aptenodytes forsteri*)

Population: 238,000 breeding pairs*
Threats: Climate change and diminished and dispersed prey
IUCN status: Near threatened

② **King** (*Aptenodytes patagonicus*)

Population: 1.6 million breeding pairs¹
Threats: Fisheries pressure
IUCN status: Least concern

③ **Gentoo** (*Pygoscelis papua*)

Population: 387,000 breeding pairs²
Threats: Fisheries pressure and overfishing
IUCN status: Near threatened

④ **Chinstrap** (*Pygoscelis antarctica*)

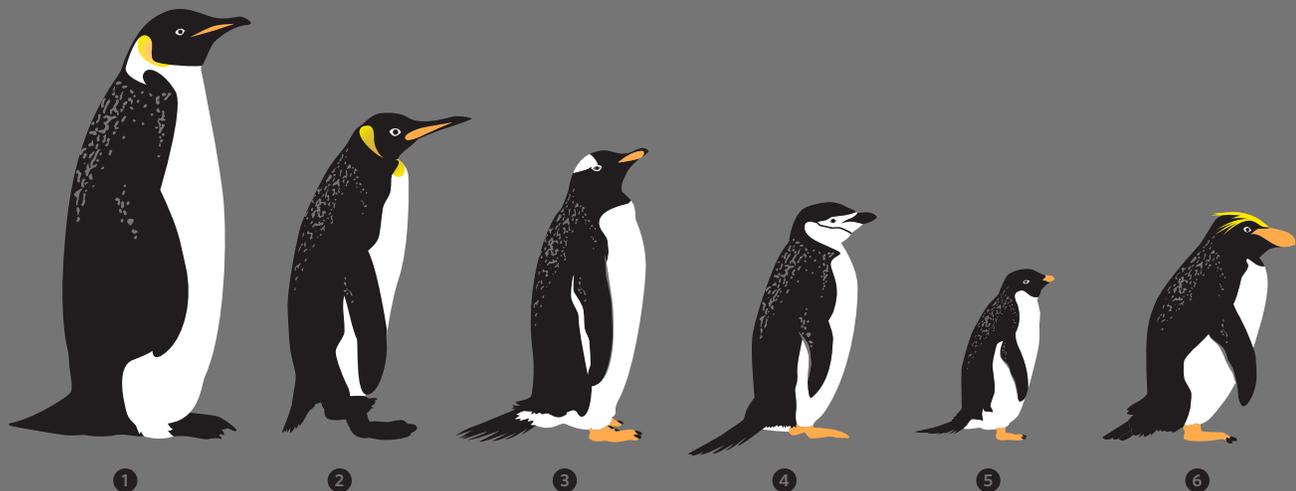
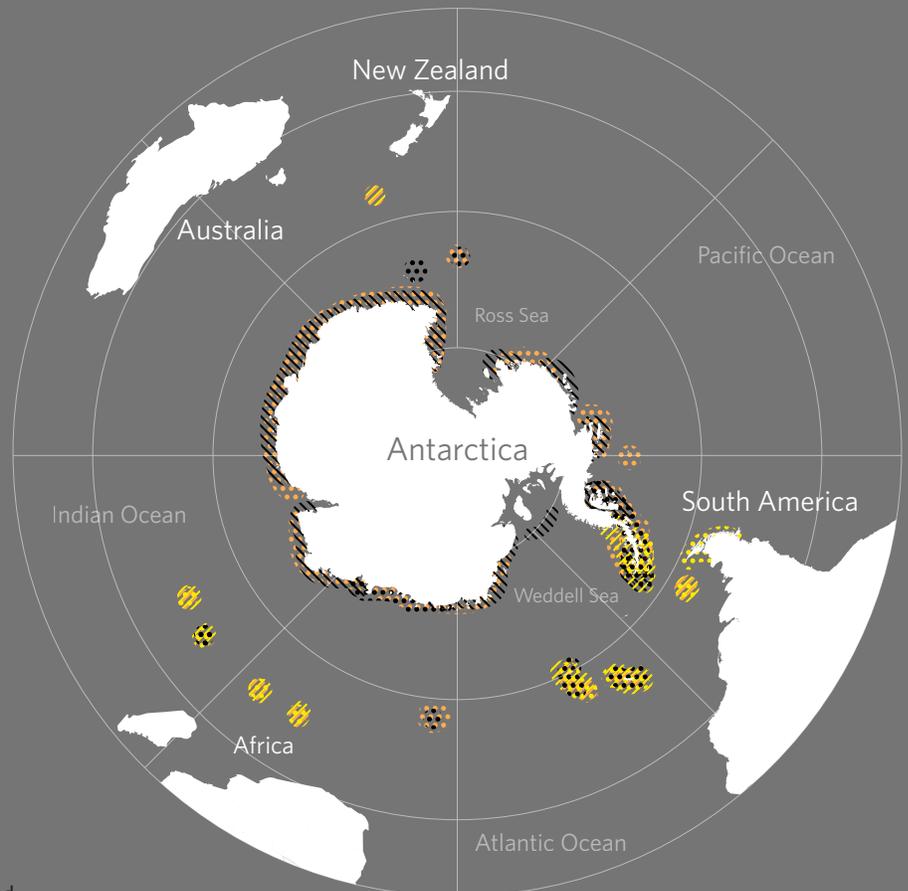
Population: 4 million breeding pairs*
Threats: Climate change
IUCN status: Least concern

⑤ **Adelie** (*Pygoscelis adeliae*)

Population: 2.37 million breeding pairs*
Threats: Climate change
IUCN status: Near threatened

⑥ **Macaroni** (*Eudyptes chrysolophus*)

Population: 6.3 million breeding pairs*
Threats: Climate change, introduced predators, and disease
IUCN status: Vulnerable



*International Union for Conservation of Nature, Red List of Threatened Species, accessed March 14, 2014, <http://www.iucnredlist.org>. IUCN Red List information for specific penguin species can be obtained by entering the scientific name in the search field "Enter Red List search term(s)."

South America, Southern Africa, and New Zealand

① **Northern Rockhopper** (*Eudyptes moseleyi*)

Population: 265,000 breeding pairs*

Threats: Habitat degradation

IUCN status: Endangered

② **Southern Rockhopper** (*Eudyptes chrysocome*)

Population: 1.2 million breeding pairs*

Threats: Climate change, pollution, and habitat degradation

IUCN status: Vulnerable

③ **Galapagos** (*Spheniscus mendiculus*)

Population: 1,500-4,700 breeding pairs³

Threats: Climate change and introduced predators.

IUCN status: Endangered

④ **Humboldt** (*Spheniscus humboldti*)

Population: 1,520-5,000 breeding pairs*

Threats: Fisheries pressure, overfishing, climate change, and habitat degradation

IUCN status: Vulnerable

⑤ **African** (*Spheniscus demersus*)

Population: 26,000 breeding pairs*

Threats: Climate change, fisheries pressure and overfishing, and pollution

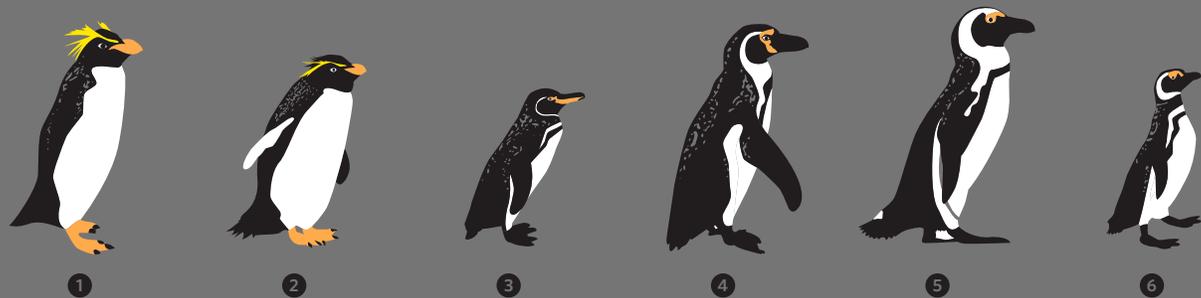
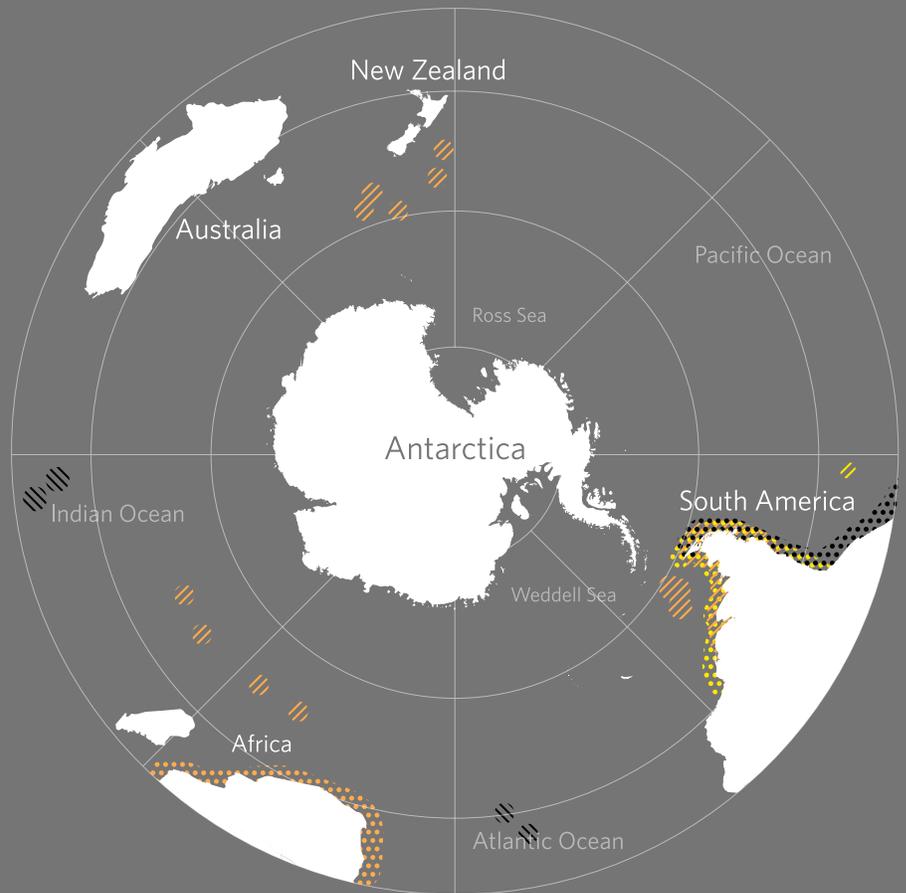
IUCN status: Endangered

⑥ **Magellanic** (*Spheniscus magellanicus*)

Population: 1.3 million breeding pairs*

Threats: Climate change, fisheries pressure and overfishing, and pollution

IUCN status: Near Threatened



Australia and New Zealand

① **Yellow-eyed** (*Megadyptes antipodes*)

Population: About 1,700 breeding pairs⁴

Threats: Habitat degradation and invasive predators

IUCN status: Endangered

② **Royal** (*Eudyptes schlegeli*)

Population: 500,00 breeding pairs⁵

Threats: Climate change, pollution, and introduced predators

IUCN status: Vulnerable

③ **Snares** (*Eudyptes robustus*)

Population: 26,000-31,000 breeding pairs*

Threats: Climate change, fisheries pressure and overfishing, and pollution

IUCN status: Vulnerable

④ **Erect-Crested** (*Eudyptes sclateri*)

Population: 80,000 breeding pairs⁶

Threats: Fisheries pressure and overfishing, pollution, and habitat degradation

IUCN status: Endangered

⑤ **Fiordland** (*Eudyptes pachyrhynchus*)

Population: 2,500-3,000 breeding pairs*

Threats: Introduced predators

IUCN status: Vulnerable

⑥ **Little/Blue** (*Eudyptula minor*)

Population: 300,000 breeding pairs⁷

Threats: Introduced predators, pollution, and habitat degradation

IUCN status: Least concern



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