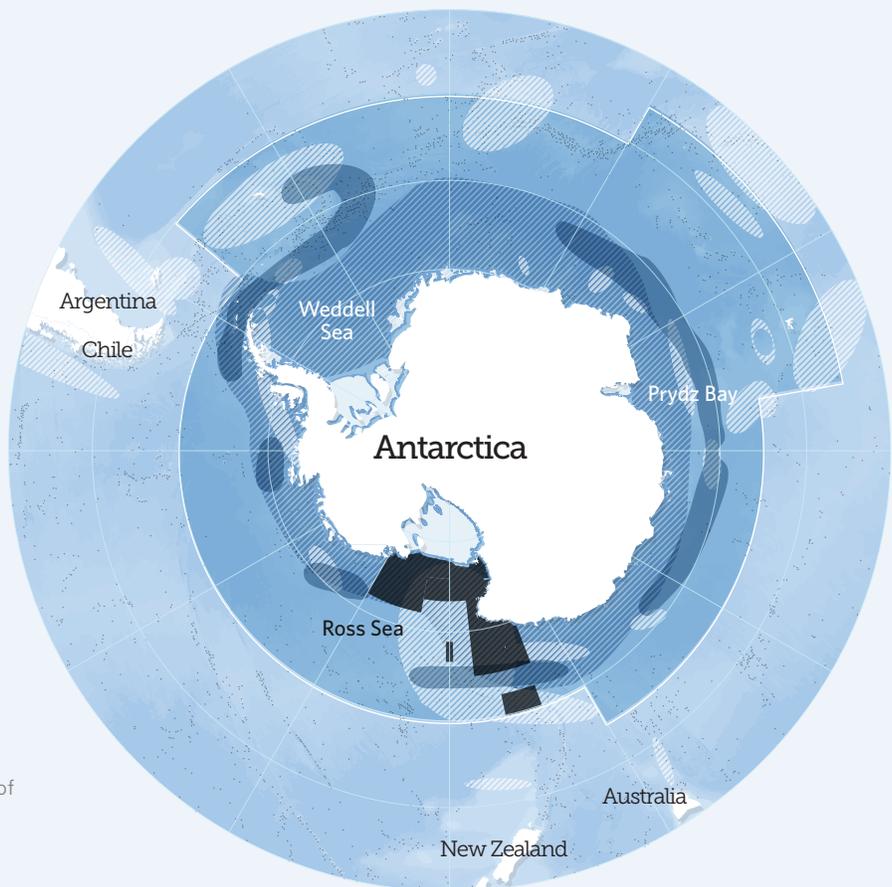




Ross Sea Proposal and Key Species Distribution

- CCAMLR management area
- Ross Sea proposal
- Emperor penguin range
- Toothfish distribution
- Krill distribution
- Ice shelf
- ⋄ Seamounts



Sources: International Union for Conservation of Nature; Yesson et al. 2011

© 2014 The Pew Charitable Trusts

Protecting the Ross Sea

Antarctica's Ross Sea is one of the most hauntingly beautiful and pristine marine regions in the world. The sea, whose surface is frozen solid for much of the year, covers 3.6 million square kilometers (1.4 million square miles) in a horseshoe-shaped embayment that clings to the Antarctic coast south of New Zealand.¹ Its waters support a biologically diverse ecosystem of species that thrive essentially as they have for millennia.²

More than 500 scientists worldwide have expressed support for protection of the Ross Sea because of its environmental and scientific value.³ The Pew Charitable Trusts is urging the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) to designate the Ross Sea as a large-scale, fully protected marine reserve. Such a designation would alleviate pressure on penguins and other species facing the effects of climate change, overfishing, and habitat degradation. A marine reserve in the Ross Sea would not stop climate change, but it would help keep ecosystems resilient and food webs intact, giving animals a chance to adapt to changing environments. It also would provide a vital global reference area for observing the impacts of climate change.

The Ross Sea Is Home to the Highest Global Percentages of Several Species



50%

Killer whale



45%

Weddell seals



38%

Adélie penguins



26%

Emperor penguins

Vital to species and science

A 2011 study published in the journal *Biological Conservation* called the Ross Sea “the least altered marine ecosystem on Earth,” with unusually large and closely interacting populations of several marine bird and mammal species. The study found that nine predators in the region—including emperor and Adélie penguins, minke whales, crabeater seals, and snow petrels—use the entire continental shelf and slope in such a way that large populations of these species can coexist.⁴

The Ross Sea also provides habitat for the Antarctic toothfish, a crucial predator in the region’s food web.⁵ These fish, which are marketed in some parts of the world as Chilean sea bass, are highly prized by the commercial fishing industry, whose operations are disrupting the ecological balance in these waters. According to a 2012 study published in *Aquatic Mammals*, the average size of Antarctic toothfish is dropping, a possible indication that many adults of the slow-to-mature species have already been caught. That makes the toothfish harder to find, so populations of species that prey on toothfish are falling, while those of predator species that compete with them for food are rising.⁶ Such ecosystem changes in the Ross Sea can have a significant impact on penguins and other predator species by throwing predator-prey relationships off balance and altering food availability.



Antarctic toothfish and Weddell seal.



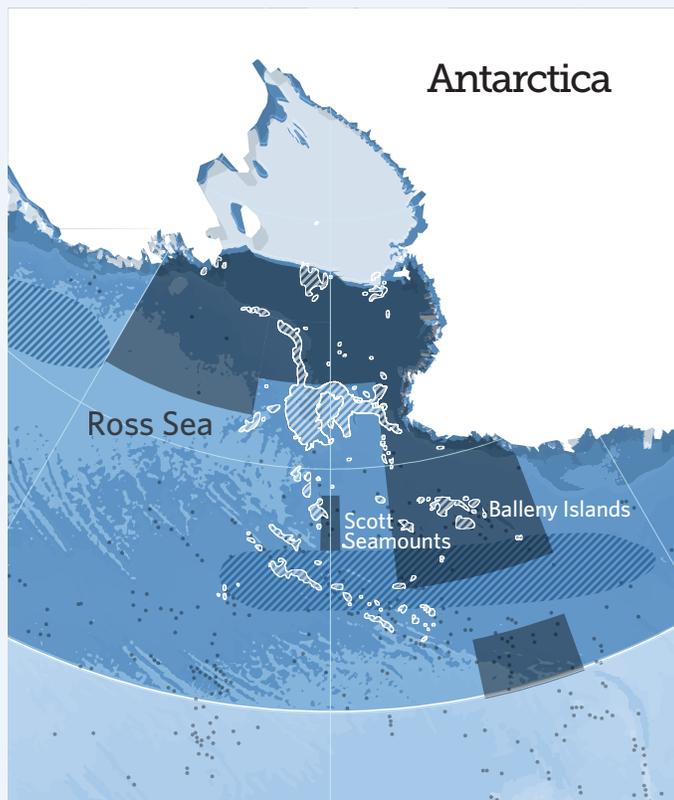
Diver with Antarctic toothfish.

Ross Sea Proposal and Sensitive Areas

- CCAMLR management area
- Ross Sea proposal
- Continental shelf
- Continental slope
- ▨ Krill distribution
- ▨ Historic toothfish catch
- Ice shelf
- ⋯ Seamounts

Sources: National Institute of Water and Atmospheric Research, Yesson et al. 2011, Everson 2000

© 2014 The Pew Charitable Trusts



The marine reserve proposal

The near-term fate of the Ross Sea lies with CCAMLR, the 25-member international body established in 1982 to sustainably use and conserve Antarctic marine life. All member governments must agree by consensus before any decision goes into force.

The first proposal for a Ross Sea marine reserve was submitted for debate and designation to CCAMLR in 2012, but ultimately failed to gain the needed support. As negotiations have continued, the size of the areas proposed for protection has decreased dramatically, although the proposed area would still be one of the world's largest marine reserves. Deliberations continue on the boundaries and on the question of whether the protections would be permanent.

The current proposal, sponsored by the United States and New Zealand, would create a marine protected area of 1.34 million square kilometers (about 517,000 square miles) in the Ross Sea. It would set aside 1.25 million square kilometers (about 483,000 square miles) as a fully protected marine reserve off-limits to fishing.⁷ The proposal would allow a limited Antarctic toothfish catch in certain areas. It also would create a "special research zone" over the continental shelf and slope where limited research fishing would be allowed.

The United States-New Zealand proposal would allow management of the area to be adjusted if necessary, an approach supported by the International Union for Conservation of Nature. The proposed review period would be every 10 years, after which CCAMLR could assess changes in management measures. It also would allow scientific endeavors to collect data that underpin crucial research, including studies of the impact of climate change.

Recommendations

Pew urges CCAMLR to bar further concessions on the size of the proposed protected area, and particularly to ensure that the sensitive shelf and slope areas are fully protected to make good on its promise to protect the Ross Sea and its unique biodiversity.

Scale: Pew supports meaningful protections in the Ross Sea that preserve large-scale ecosystem processes in their entirety and maintain crucial predator-prey relationships. Fully protected areas must be very large in scale and include biodiversity hot spots, such as the Ross Sea continental shelf and slope, the Balleny Islands, and the Scott Seamounts.

Duration: To be effective, a Ross Sea marine reserve must be permanent. In lieu of a sunset clause, or proposed expiration date, the proposal should contain standard language providing for reviews to ensure that effective monitoring and management measures are in place and that adjustments to conservation measures can be made upon review.

What you can do to help

Visit pewtrusts.org/penguins to become an advocate for the penguins of the Ross Sea. There you can sign our petition to protect the Ross Sea and join the global effort to protect Antarctica's Southern Ocean.

Tell CCAMLR that the time for action is now.

Endnotes

- 1 Grant Ballard et al., "Coexistence of Mesopredators in an Intact Polar Ocean Ecosystem: The Basis for Defining a Ross Sea Marine Protected Area," *Biological Conservation* 156 (2012): 72-82, <http://www.sciencedirect.com/science/article/pii/S0006320711004356>.
- 2 Benjamin S. Halpern et al., "A Global Map of Human Impact on Marine Ecosystems," *Science* 319 (2008): 948-951, <http://www.sciencemag.org/content/319/5865/948>.
- 3 "Antarctic Ocean Legacy: A Marine Reserve for the Ross Sea," Antarctic Ocean Alliance (2013), http://www.ats.aq/documents/ATCM35/att/ATCM35_att070_e.pdf.
- 4 Ballard et al., "Coexistence of Mesopredators."
- 5 S.J. Bury et al., "Trophic Study of Ross Sea Antarctic Toothfish (*Dissostichus mawsoni*) Using Carbon and Nitrogen Stable Isotopes," Convention for the Conservation of Antarctic Marine Living Resources, Document WG-EMM-08/27 (2008), <https://www.ccamlr.org/en/wg-emm-08/27>.
- 6 David G. Ainley and Grant Ballard, "Trophic Interactions and Population Trends of Killer Whales (*Orcinus orca*) in the Southern Ross Sea," *Aquatic Mammals* 38 no. 2 (2012), 153-160, http://www.aquaticmammalsjournal.org/index.php?option=com_content&view=article&id=590:trophic-interactions-and-population-trends-of-killer-whales-orcinus-orca-in-the-southern-ross-sea&catid=41:volume-38-issue-2&Itemid=126.
- 7 "Ross Sea Region Marine Protected Area," New Zealand Foreign Affairs and Trade, accessed Aug. 15, 2014, <http://www.mfat.govt.nz/ross-sea-mpa/tabs/proposal.php>.

Contact: Andrea Kavanagh, director, global penguin conservation
Email: akavanagh@pewtrusts.org
Project website: pewtrusts.org/penguins

The Pew Charitable Trusts is driven by the power of knowledge to solve today's most challenging problems. Pew applies a rigorous, analytical approach to improve public policy, inform the public, and invigorate civic life.