

Sustainable  
management of  
krill in the  
Southern ocean

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Vitafoods Europe 2011  
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# Sustainable management of krill in the Southern ocean

## WWF IN SHORT

**+100**

WWF is in over 100 countries, on 5 continents

**1961**

WWF was founded In 1961



**+5,000**

WWF has over 5,000 staff worldwide

**+5M**

WWF has over 5 million supporters

Photo: © NASA

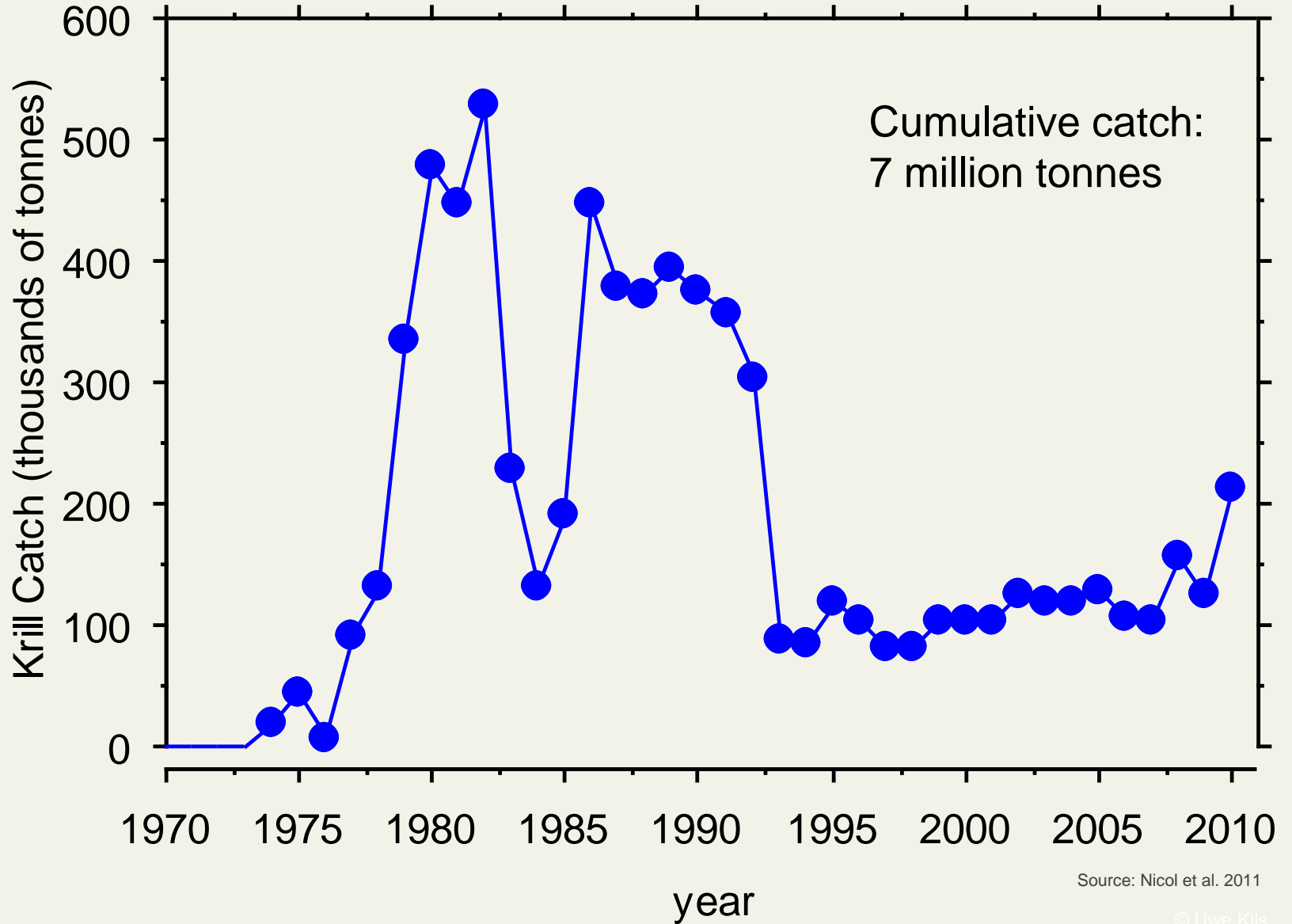


The Antarctic -  
home to the  
fabulous krill





# Annual catch of Antarctic krill



Source: Nicol et al. 2011

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## The Antarctic krill fishery

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- For over 35 years the Antarctic krill fishery has been the largest in the Antarctic Ocean (Russia, Japan, Chile, Korea, Ukraine, Poland and Norway major players)
- Krill can be worth millions of dollars and there is a growing interest in entering into the fishery
- From 1990 until today, ~100 000 tons of krill harvested annually
- Global biomass estimate of krill 133 million tons

## Recent developments

- Total catch limit 8.6 million tonnes
- One of the world's largest underexploited stocks
- **TAC = over 40 x the current annual catch (210 000 tons)**
- Currently operating exclusively in the South Atlantic
- Interim catch limit of 620 000 tonnes

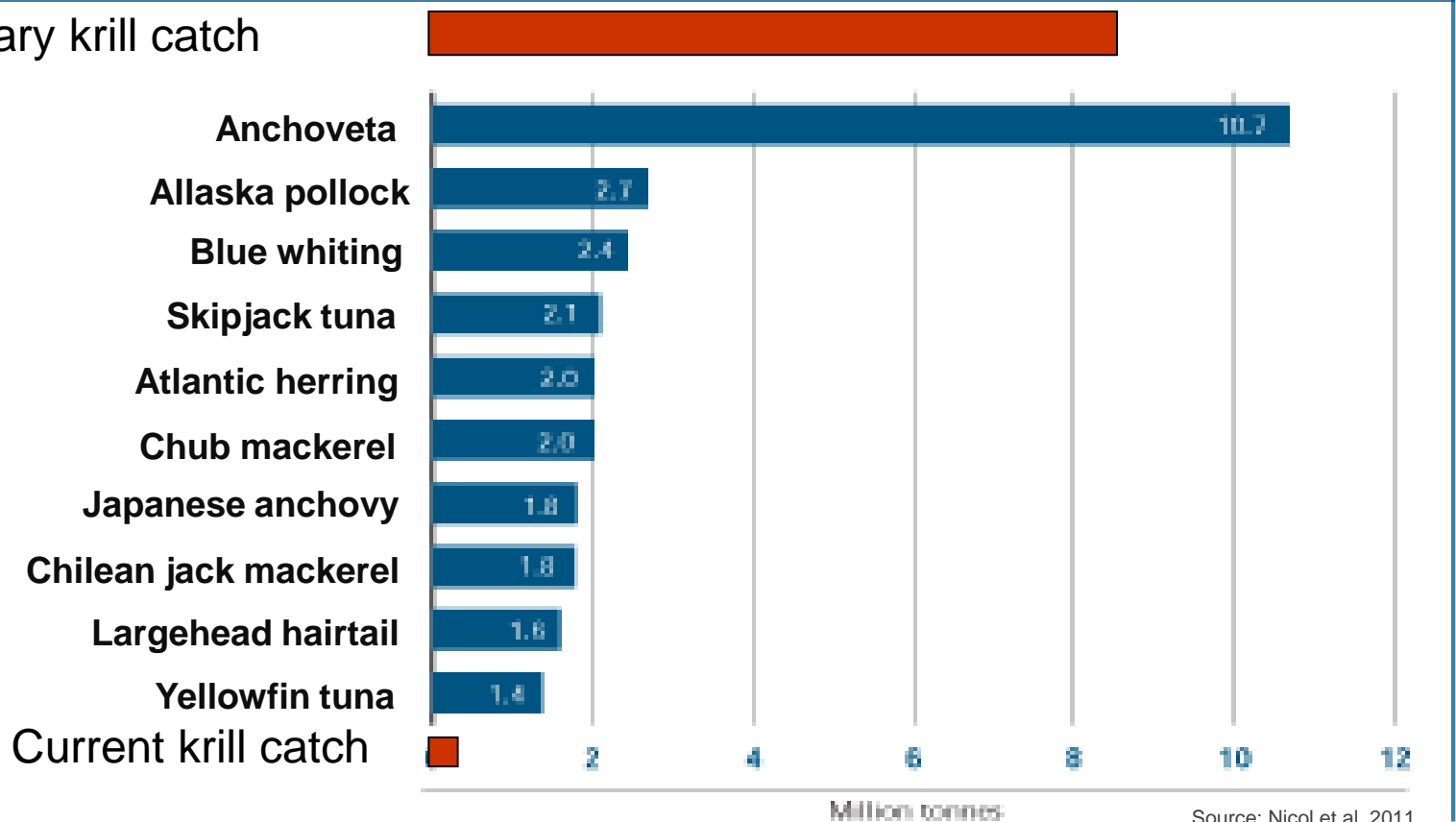


# A global perspective...

Figure 6

Marine capture fisheries production: top ten species in 2004

Precautionary krill catch



Source: Nicol et al. 2011

## The Aker BioMarine fishery

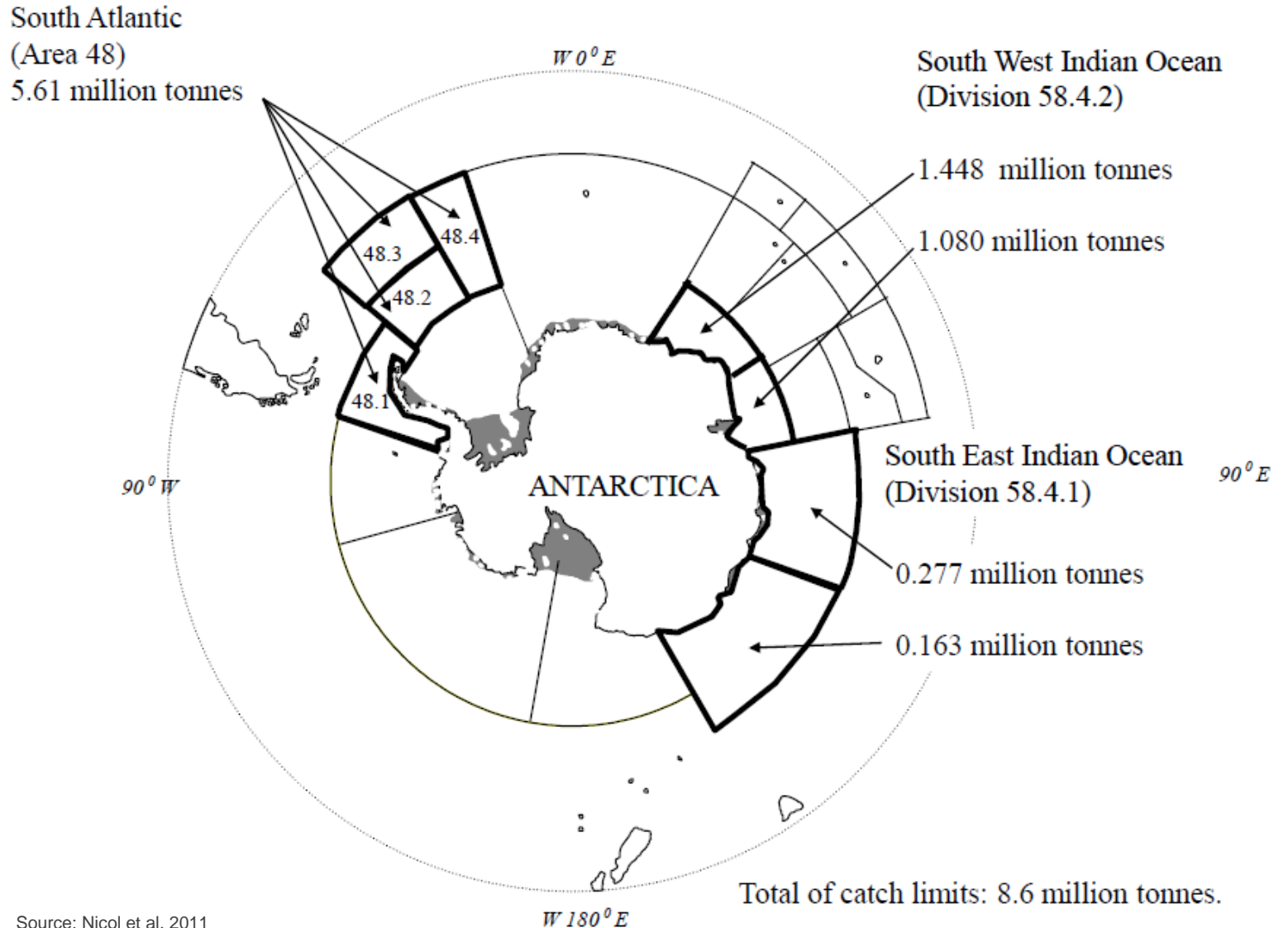


- The biggest operator in the area (2010 season appr.100 000 tons)
- Eco-harvesting
- Method highly efficient in avoiding bycatch of marine mammals and seabirds
- Concerns about potential bycatch of marine larvae and the potential for localized depletion of krill
- 100% observer coverage
- Contributing to science





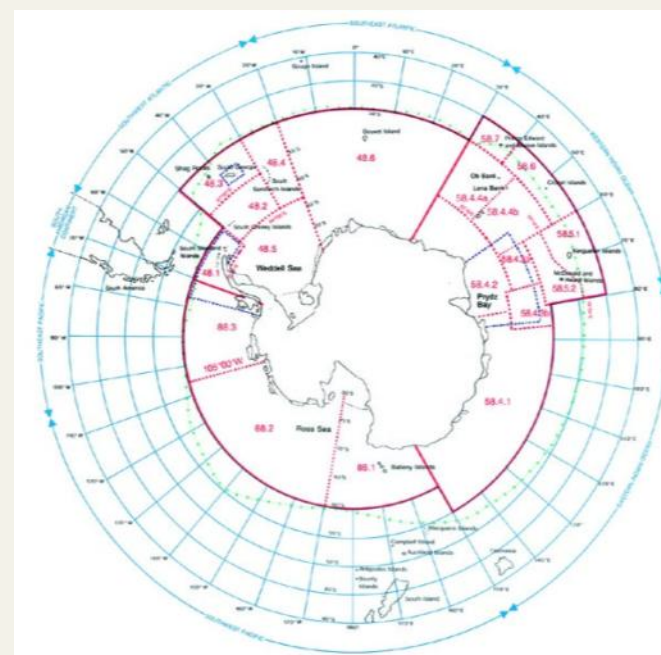
# Precautionary catch limits of krill



Source: Nicol et al. 2011

# CCAMLR

- Managed and regulated by CCAMLR (Convention for the Conservation of Antarctic Marine Living Resources)
- Founded in 1981
- Developed robust research programs and applied improved management practices and conservation measures
- 10% of world ocean area
- WWF has been working actively with CCAMLR for numerous years



## What are WWF's main concerns about the krill fishery?

- Catch Limits – Localized depletion
- Spatial division of catches (SSMU)
- Technology and bycatch
- Scientific Observers
- Research and monitoring
- Climate Change



# Krill Catches (1980-2006)

Metric Tons

- 0.00
- 0.01 - 10.00
- 10.01 - 100.00
- 100.01 - 500.00
- 500.01 - 5000.00
- 5000.01 - 50000.00
- > 50000



Predator foraging ranges represented by contours around colonies and species



Gentoo



Fur seal



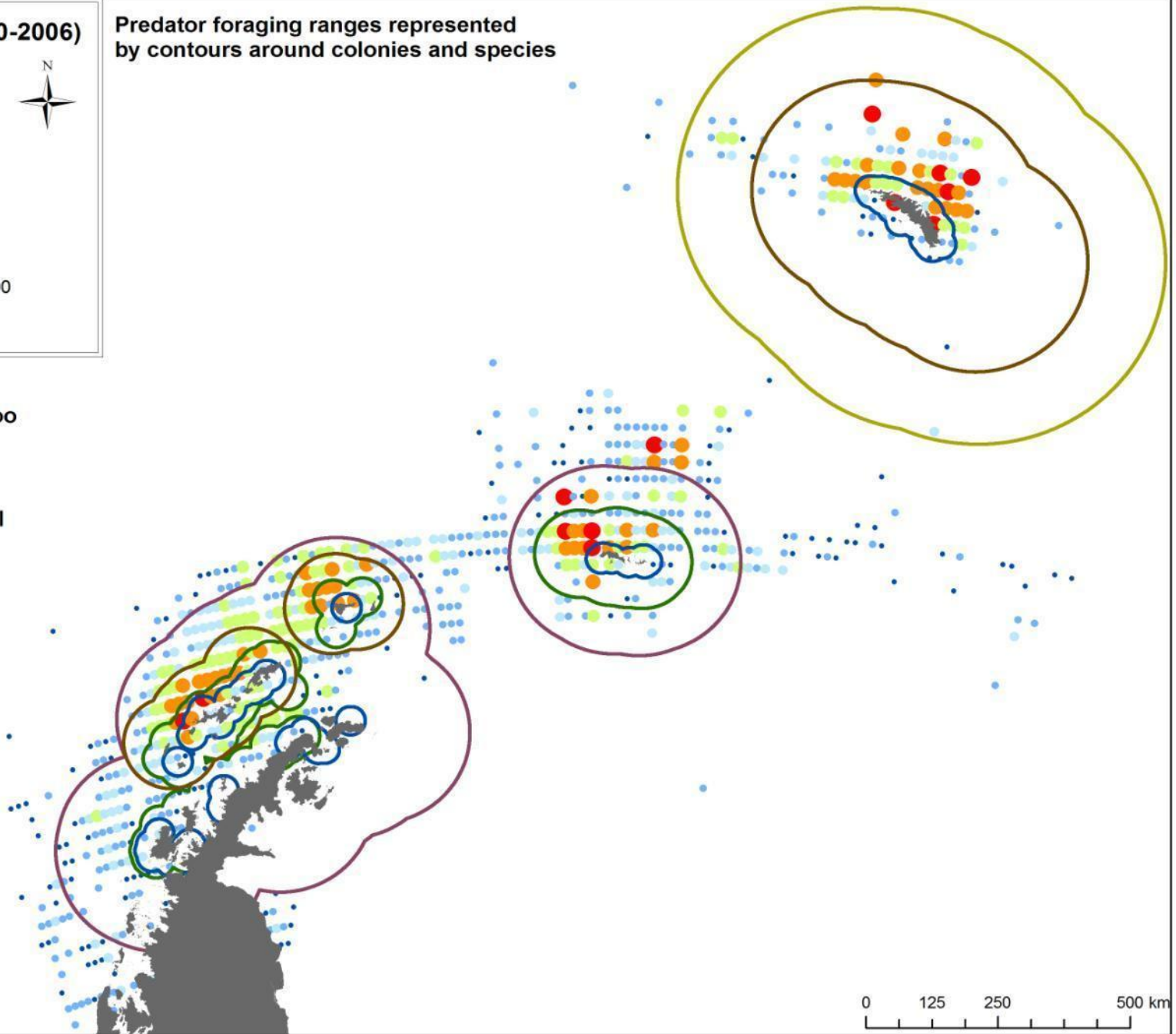
Macaroni



Adelie



Chinstrap



## Climate change

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- Mean air temperature has risen by 2.5°C in the last 50 years over the Antarctic Peninsula
- Consequences on krill populations are not yet well understood
- Reductions in sea-ice removes shelter (and food) + change dynamics
- Climate impacts can happen more quickly and at a greater scale than anticipated by models or scenarios
- Krill management must be adaptive and flexible to allow rapid adjustments

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## Way forward

- Increased research and monitoring:
  - Krill biomass and distribution
  - Predator distribution and ranges
  - Impacts of acidification and CC
- Spatial division of catches
- 100% Scientific Observation
- Documentation and reduction of bycatch
- Protection of key habitats





# Thank you

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[www.panda.org](http://www.panda.org)