Supplementary Material

Resumen (Spanish Abstract)

A medida que la crisis ambiental global crece en escala y complejidad, conservacionistas y agencias gubernamentales se enfrentan a la difícil tarea de tomar decisiones limitadas por altos niveles de incertidumbre, recursos restringidos e información insuficiente. Los esfuerzos globales para conservar la biodiversidad en áreas fuera de la jurisdicción nacional dependen de niveles sustanciales de cooperación y negociación internacional, las cuales están caracterizadas por situaciones inesperadas y gran incertidumbre. Nuestro estudio se basa en métodos de pronóstico, derivados de estudios en las áreas de predicción de peligros, evaluación de riesgo y análisis de inteligencia, para pronosticar la probabilidad de designación de áreas marinas protegidas (AMP) en el Océano Austral. Utilizamos el método Delphi para obtener pronósticos de expertos, utilizando cuestionarios, períodos de retroalimentación y rondas de discusiones. Durante este proceso, también obtuvimos información sobre los factores biofísicos, socioeconómicos, geopolíticos y científicos que informaron e influyeron los pronósticos de forma importante. Nuestros resultados indican que los expertos consideran que áreas más cercanas al norte, a lo largo de la Península Antártica Occidental, se consideran menos propensas a ser designadas que áreas más al sur. Asimismo, sugieren que factores geopolíticos, tales como eventos y políticas internacionales, y socioeconómicos, tales como la presencia de pesquerías, influyen de forma importante la probabilidad de que un área sea designada como AMP. El método de pronóstico utilizado en este estudio puede ser de gran utilidad para guiar el diseño, la negociación y la implementación de áreas protegidas, especialmente en situaciones politizadas y cuando se cuenta con información limitada. Por ejemplo, ayudando a identificar áreas prioritarias para la conservación, a canalizar recursos de manejo escasos y a pronosticar el éxito de diferentes configuraciones espaciales, tipos de intervenciones o estrategias de acción.

Supplement A: Questionnaire

Q1: Imagine that CCAMLR is considering designating or including the red area shown in the map above within a no-take (e.g., GPZ) marine protected area within the next eight years.

What is the highest probability that this area will be designated? _____

What is your best estimate of the probability that this area will be designated? _____

What is the lowest probability that this area will be designated? _____

Q2: What factors influenced your forecast of the likelihood that this particular geographic area is designated as or included within a no-take marine protected area?

Directions: Please select between one and five of the factors listed below.

- Sensitive or threatened wildlife populations
- Large or important wildlife aggregations (e.g. penguin colonies
- Important habitat areas (e.g. foraging grounds)
- Anticipated impacts from climate change
- Existing fisheries
- Potential/exploratory fisheries that could be established
- A lack of fisheries or interest in developing any
- Objections to proposed no-take areas (GPZs)
- Global political forces (i.e., foreign policy related)
- A lack of scientific data

The factors selected above are carried forward to the following question:

Q3: Please rank your selections from the previous question based on their importance in determining the likelihood of designating the South Orkney Islands as an MPA.
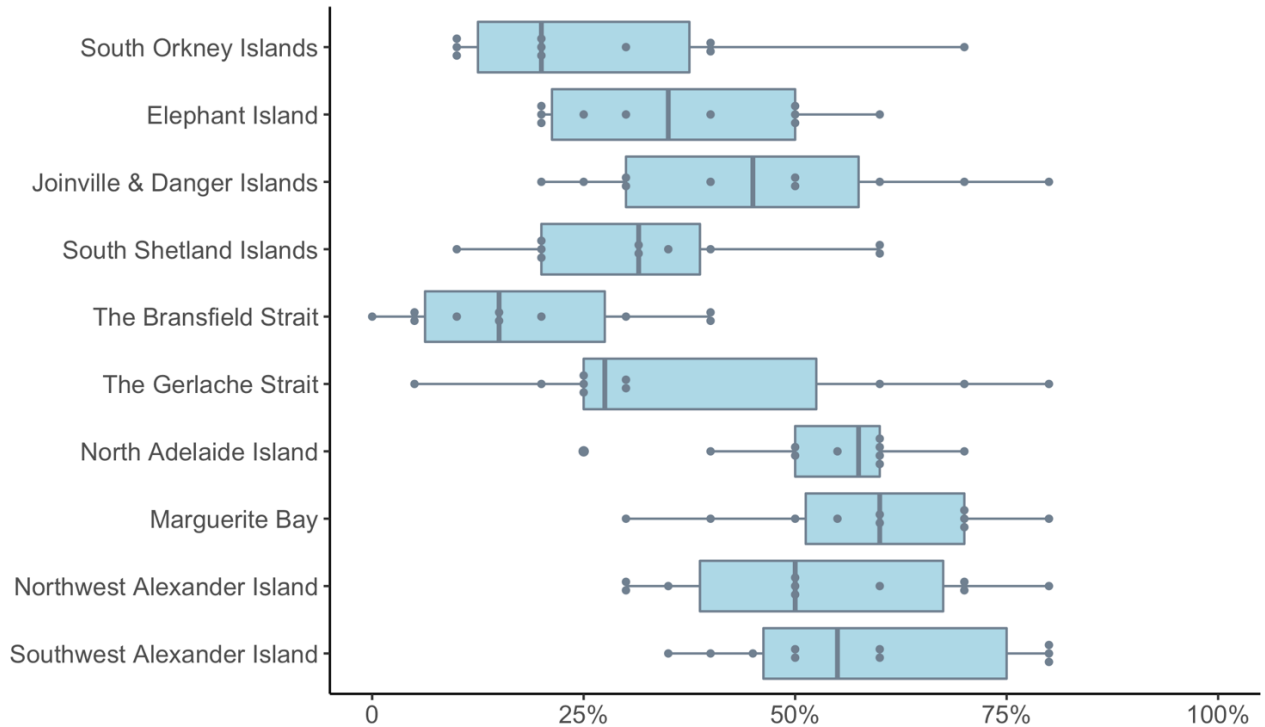
Q4: If you changed your estimates from the first round, can you please explain what caused you to do so? For example, did something in the group discussion lead you to reconsider?

Q5: Finally, please think about the biophysical, socioeconomic, geopolitical, or scientific factors that have shaped your forecasts and ultimately determine whether or not MPAs are designated. Which of them most shaped your forecasts? Why? What is their relative importance or strength?

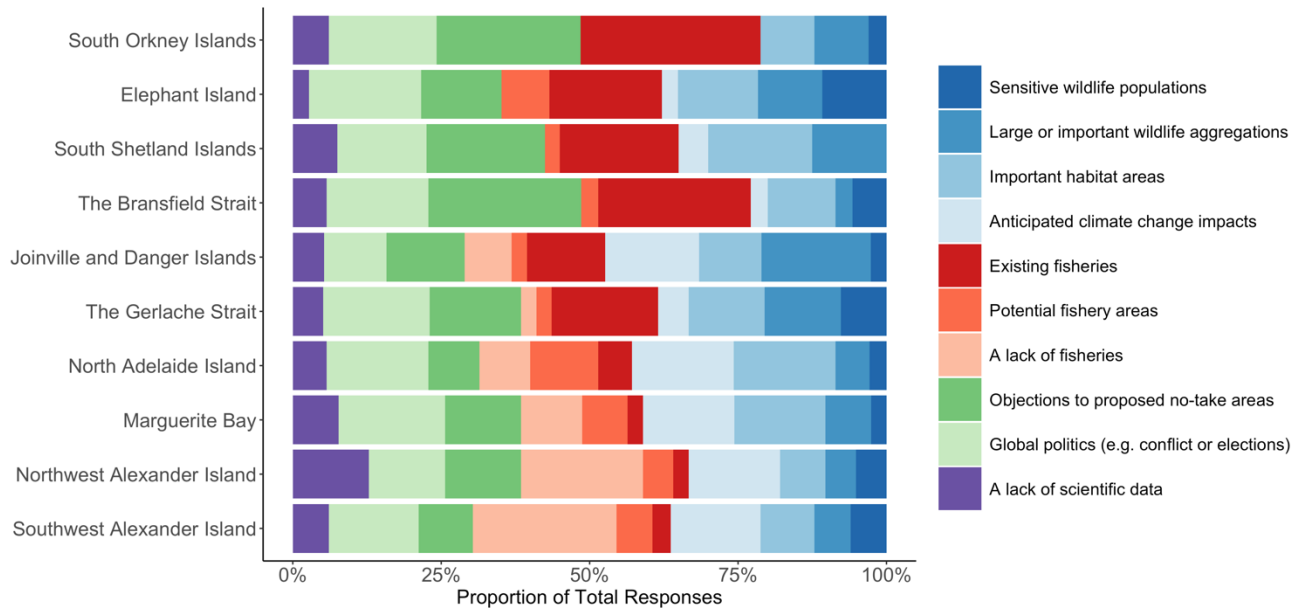# Supplement B: Coding Structure for Qualitative Data Analysis

1) Biophysical Factors
   a. Climate Impacts
   b. Geophysical Environment (e.g. Deception Island)
   c. Important Habitat Areas (e.g. key foraging grounds)
   d. Large Wildlife Aggregations (rookeries, colonies, etc.)
   e. Sensitive or Threatened Wildlife Populations (Adélie penguins, blue whales, etc.)
2) Socioeconomic Factors
   a. Existing Fisheries
   b. Markets (changes in the price of fish, external market pressure, etc.)
   c. No Fisheries
   d. Potential or Exploratory Fisheries
   e. Tourism (operations in a particular location)
3) Geopolitical Factors
   a. Domestic & Global Politics (e.g. international conflict, domestic elections, etc.)
   b. Global Conservation Pressure (international dialogues and norms toward establishing MPAs).
   c. Objections to MPAs (arguments suggesting they are unnecessary or ineffective mechanisms for achieving the objectives of the Convention)
   d. Territorial Claims
4) Scientific Factors
   a. Lack of Data (to underpin the design of an MPA proposal)
   b. Research Programs, ASPAs or ASMAs
5) Other Conflicting Uses
6) Important or Illustrative Quotes

Supplement C: Participants' 'Best' Forecasts

Supplementary Figure 1. This figure shows only the 'best' forecast data and the ten experts' individual forecasts (represented as dots) that compose the arithmetic mean shown as the central dot in Figure 4 of the main text. We have included this figure to show how dispersed or clustered the forecasts can be for each composite forecast. Each dot on the figure represents one individual's forecast of the likelihood that that specific site will be 'designated or included within a no-take (e.g. 'general protection zone') marine protected area within the next eight years.' The vertical line in the box represents the median forecast, and the ends of the box represent the first and third quartiles.

Supplement D: Factor Selection Frequency

Supplementary Figure 2. This figure shows the percent of times various factors were selected as being influential for each area under consideration. Factors selected by experts were summarized for each individual area to show their relative importance, selection frequency, and any patterns that were apparent, e.g. the decreased importance of existing fisheries further south along the peninsula, or the relatively stable contribution of global political forces as an influential factor. Blues refer to biophysical factors, reds to socioeconomic, greens to geopolitical, and purple to scientific.