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Conserving Rajid Populations in the Antarctic
(Elasmobranch Fisheries – Poster)

by

Mike Endicott and David Agnew

Renewable Resources Assessment Group (RRAG), Department of Environmental Science and Technology
Imperial College London, London, SW7 2BP
michael.endicott@ic.ac.uk d.agnew@ic.ac.uk

Abstract

A number of species of rays are taken as by-catch in the Antarctic longline fisheries for toothfish. Species identity, stock structure, stock size and population dynamics of rajids are virtually unknown for most areas of the Antarctic. In the face of this uncertainty, precautionary management strategies are in place while research into these topics is undertaken.

This paper describes the circumstances of ray by-catch in the fishery around South Georgia, the management measures that are in place to deal with it, and current research into sustainable yields for the various species affected

Introduction

A number of species of rays are taken as by-catch in the Antarctic longline fisheries for toothfish (the notothenid, *Dissostichus eleginoides*). Species identity, stock structure, stock size and population dynamics of rajids are virtually unknown for most areas of the Antarctic. In the face of this uncertainty, precautionary management strategies have been put in place by the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) while research into these topics is undertaken.

CCAMLR sub area 48.3 (South Georgia and Shag Rocks) is currently one of the most important fishing areas for toothfish in the Southern Ocean. Vessels do report their catch and discard of skate, and observers provide more detailed information on ray catch, but there are a number of problems with interpreting these data. Firstly, reliable information on species composition is lacking in logbook data. Even for observers identification of skate is difficult, and there is a high probability of encountering previously undescribed species. Secondly, catch and discard information is not a good estimate of skate mortality, because many skate are discarded prior to being brought on board the vessel, by knocking them off the line or cutting snoods. The proportion of these that die is unknown. The present research aims to establish whether the current capture rates of skate in the toothfish longline fishery around South Georgia are sustainable, and develop management measures which will ensure the sustainability of this fishery and the maintenance of rajid biodiversity in this important sub-Antarctic environment.

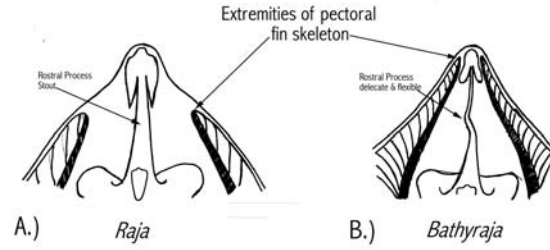
Skate Distribution Around Antarctica

In the sub-Antarctic waters around Antarctica, rajids are the dominant cartilaginous fishes. In Antarctic waters south of 60°S, rajids are thought to be the only chondrichthyan representatives (Gon and Heemstra, 1990).

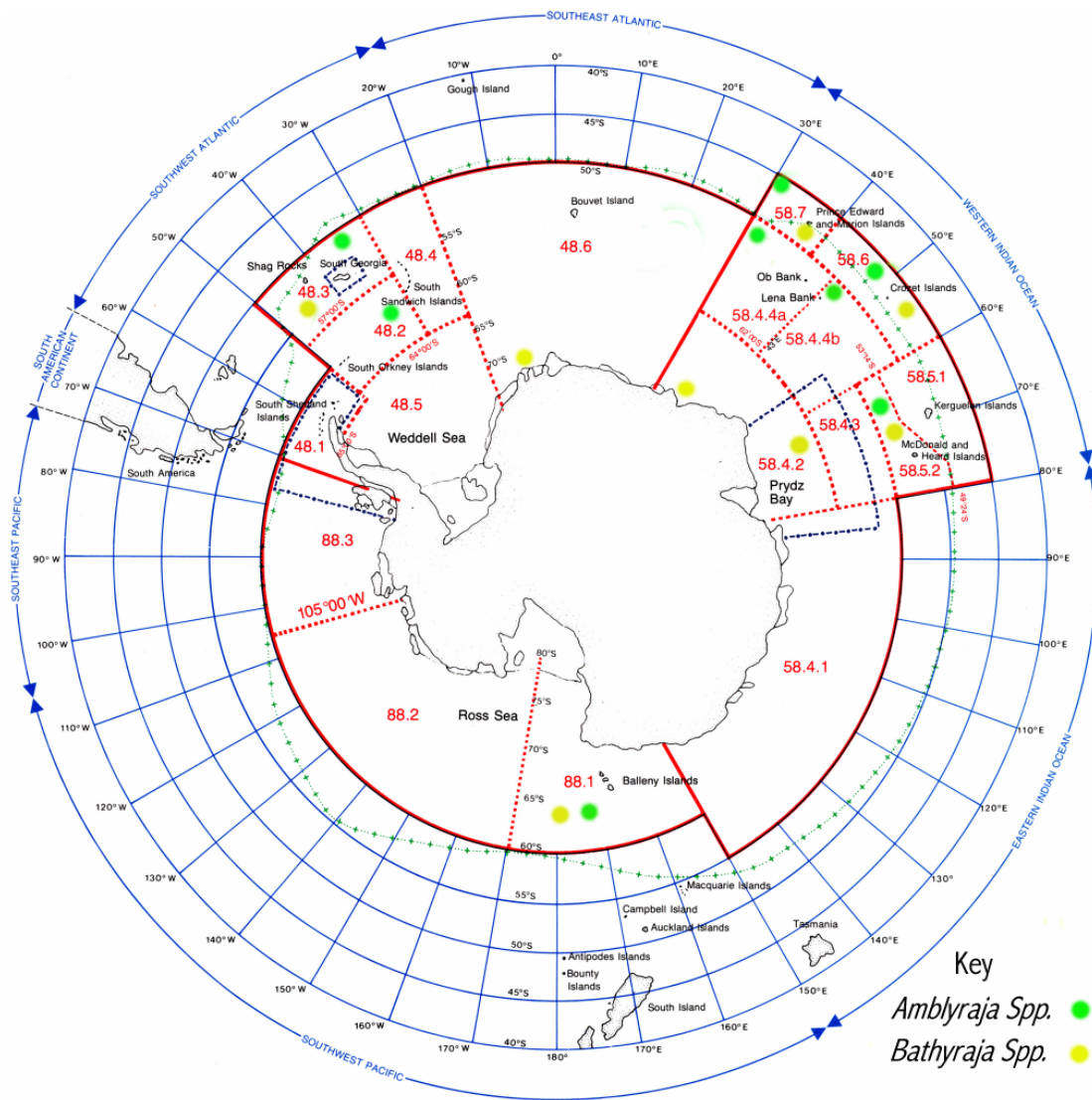
Genera Key

a) *Raja* Hard nose skate,
rostral process firm & stout.

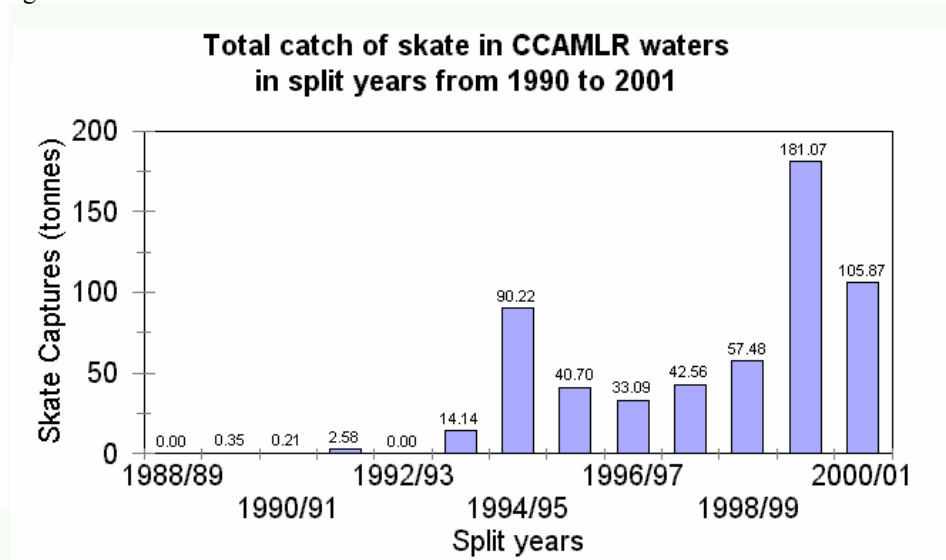
b) *Bathyraja* soft nose skate,
rostral process delicate & flexible.



Documented distribution of skate genera around Antarctica



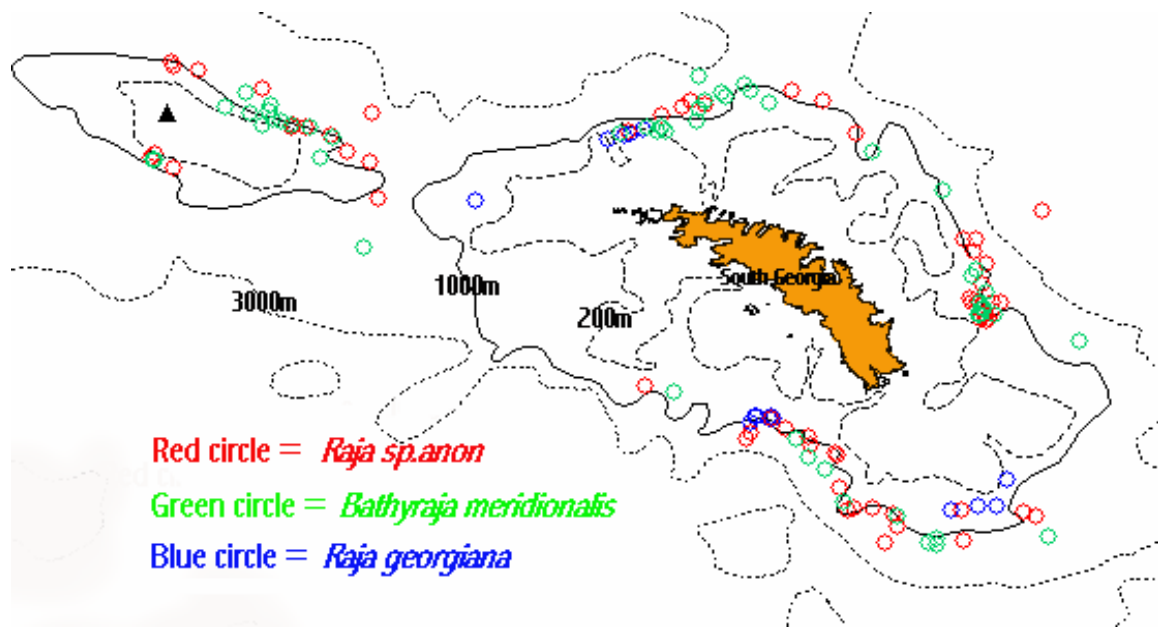
Development of new fisheries, in conjunction with the expansion of existing fisheries, has increased the knowledge of rajid distribution. But this has also led to increased rajid capture rates, through both directed and non-directed targeting



Skate species distribution around South Georgia

A skate research programme was instigated in the 1999 season. Observer data from this program have established the main species caught as by-catch in the longline fishery in Subarea 48.3, and their distribution.

From data collected in the toothfish longline fishery during seasons 2000 and 2001, two previously recorded species, *Raja georgiana* and *Bathyraja meridionalis* were observed in the by-catch. One further species could not be identified and was referred to as *Raja* sp. anon.



Distribution of skate species caught in the tooth fish longline fishery around South Georgia
Skate species currently caught as by-catch in the toothfish longline fishery around South Georgia



R. georgiana occurred in shallower water (85% between 300-400 m), and *Raja sp. anon.* in deeper waters (94% >1000 m). *B. meridionalis* was found to have a wide depth distribution pattern (400 to 1900 m), with a small increase in captures occurring around 1300 m.

Toothfish longlines are generally set in deeper waters (>800 m), *Raja sp. anon.* was found to be the largest constituent species (70%) of all the skate by-catch species.

To standardise observer data collection and increase confidence in data being collected in the 2002 toothfish longline season around South Georgia, new sampling protocols were developed and have been implemented for skate.

Species field identification and maturity guides have also been developed to reduce miss-identification of species and maturity.

Project Aims

The Aim of this research is to establish the effects of current fisheries on the skate populations around South Georgia, determining whether the current capture rates are sustainable and if not, how we can reduce captures to an acceptable level.

To achieve these goals, several issues will be examined throughout the course of this research:

What is the current mortality of each species caused by:

- Trawling
- Pot fishing
- Long-lining

What are sustainable mortality rates:

- Establish what species are being caught
- Examine the life history of captured species
- Estimate the population sizes

Evaluate possible future management and conservation measures which could be implemented to reduce skate by-catch

- Possible changes to current fishing methods
- Examining restricting fishing areas by:
 1. Time
 2. Area

CCAMLR Management Objectives

Paragraph 3 (b) of Article II of CCAMLR states that its objective is to “maintain the ecological relationships between harvested, dependent and related species”, and under 3 (c) to “prevent of changes in the ecosystem as a result of harvesting”. From these paragraphs stem approach.

In the mid-1990s there was an explosion of interest in developing new longline fisheries CCAMLR’s ‘ecosystem approach’ which is clearly aligned with ecosystem and biodiversity conservation. CCAMLR also implements the precautionary for toothfish around the Antarctic. Initially these took place without explicit regard for by-catch, but from 1999 a precautionary catch limit was imposed on macrourids caught in exploratory fisheries. From 2000 precautionary catch limits were imposed on rays in all new and exploratory fisheries. These limits are designed to limit the damage that might be caused to ray populations in the absence of any information about specific stocks.

In 2001 the UK imposed a limit on the catch around South Georgia, together with a move-on rule that forced vessels to relocate by 5 nm if they caught more than 1 tonne of rays in one place. This policy was adopted by CCAMLR in 2002. There is also now a by-catch limit of 291 tonnes of rays and 291 t of macrourids in fisheries around South Georgia.

Acknowledgements

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