



Agreement on the Conservation of Albatrosses and Petrels

Second Meeting of Seabird Bycatch Working Group

Hermanus, South Africa, 17 – 18 August 2008

**Title: DRAFT - SEABIRD BY-CATCH MITIGATION IN
TRAWL FISHERIES: KEY RESEARCH QUESTIONS
REQUIRING FUNDING**

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Background

At the first meeting of the Seabird Bycatch Working Group to ACAP, held in Valdivia, Chile, in June 2007 discussions were held to develop a list of research priorities for pelagic longline fisheries. The meeting produced a table of research priorities, but did not rationalise funding requirements or seek expressions of interest from meeting participants in conducting research projects (these were not the objectives of the meeting). Following on from this, Graham Robertson (Australian Antarctic Division) drafted a detailed list of research questions that were considered a priority to reduce seabird bycatch in pelagic longline fisheries. These included estimated costs. Subsequent to the ACAP meeting these questions were endorsed by a large number of people who attended the meeting.

This document is based on Graham Robertson's version for pelagic longline fisheries. This is an initial draft of key research questions designed to rationalise and prioritise the importance of each question and assess funding requirements. Currently, the document provides only a list of potential key research questions for consideration, the relevance and detail of which will be discussed under Trawl Bycatch Mitigation at the Second Meeting of the SBWG at Hermanus, August 17 and 18.

Introduction

Seabird mortality in trawl fisheries can be broadly grouped into two categories: (1) birds colliding with trawl warps, netsonde and paravane cables, which particularly impacts larger birds such as albatrosses, and (2) birds becoming entangled in nets during shooting and hauling which more commonly affects the smaller of seabird species such as petrels. Typically, demersal fisheries, which often have higher levels of discharge than pelagic fisheries, often have higher level of mortality caused by warp strikes, and pelagic fisheries which have bigger nets with larger mesh sizes often have higher levels of net entanglement. In fisheries that experience mortality

from a combination of the two primary causes, warp cable strike usually causes higher levels of mortality.¹

Research Questions

1. What is the most effective and efficient method of discharge managing (offal and discards) to reduce seabird mortality

Rationale: Research to date has identified offal management as the most critical factor effecting seabird bycatch levels caused by warp strike². In the absence of offal at the stern of the vessel where the warps enter the water – seabird mortality is an extremely rare event. Research has been conducted into the most effective and efficient means of managing discharge to reduce seabird mortality³, but considerably more work is required to identify methods that are cost effective for industry, operationally practicable and effective at reducing seabird mortality.

Some issues for consideration include:

- The relationship between offal maceration and warp cable strikes i.e. does particle size influence strike rate?
- Is batching/storing of discharge for release when the warps are not in the water a practicable solution?
- Are meal plants a viable option in terms of operational expense and refit costs?
- Can discharge be released away from the side of the vessel in manner that prevents it from drifting astern to the warp/water interface?

This issue is likely to compose several high priority research questions.

Relevance: Very important, possible worldwide application.

¹ Watkins, B.P., Petersen, S.L. and Ryan, P.G. (2006). *Interactions between seabirds and deep water hake trawl gear: an assessment of impacts in South African waters 2004/05*. WG-FSA-06/41, SC-CAMLR XXV. CCAMLR, Hobart, Australia.

² Sullivan, B.J., Reid, T.A. and Bugoni, L. (2006b). Seabird mortality on factory trawlers in the Falkland Islands and beyond. *Biological Conservation* **131**: 495-504.

³ Munro, G.M. (2005). *Waste discard management in the Falkland Islands trawl fishery: A discussion document*. Falklands Conservation, Stanley, Falkland Islands. 62 pp.

Abraham, E.R., Pierre, J.P., Middleton, D.A.J., Cleal, J., Walker, N.A. and Waugh, S.M. (in prep-b). Effectiveness of fish waste management strategies in reducing seabird attendance at a trawl vessel.

Experimental approach:

Duration:

Funding required:

2. Can streamer line performance be improved by developing a more effective towed device

Rationale: Streamer lines have been shown to be highly effective at reducing seabird mortality caused by warp cable strike⁴. However, their effectiveness can be greatly reduced in cross-wind conditions when the lines are blown outboard of the vessel and the warp cables are exposed with no streamer coverage. Suggestions to date have included manipulating the road cone configuration⁵.

This research will be highly dependent on research currently being conducted by Dr. Ed Melvin (Washington Sea Grant) to identify optimum streamer line designs for pelagic longline fisheries. It is important that any similar work in trawl fisheries is closely linked with Ed's research.

Relevance: Very important, possible worldwide application.

Experimental approach:

Duration:

Funding required:

3. Can 'warp scarers' be made effective and safe for fishermen to use?

Rationale: Warp scarers are loosely defined as a device that is attached to the warp (i.e. does not act independently of the warp), and are therefore less effected by wind conditions. Currently, there are operational problems with warp scarers becoming entangled in heavy seas, and they can be dangerous for crew to set and retrieve.

Relevance: Very important. Current evidence indicates a Southern Ocean emphasis.

Experimental approach:

⁴ Sullivan, B.J., Reid, T.A. and Bugoni, L. (2006b). Seabird mortality on factory trawlers in the Falkland Islands and beyond. *Biological Conservation* **131**: 495-504.

⁵ Crofts, S. (2006a). *Environmental effects and practicality of paired tori-line performance: Testing buoys vs cones*. Falklands Conservation, Stanley, Falkland Islands. 23 pp.

Duration:

Funding required:

NB. It should be noted that the rode cone device developed in Argentina should be considered when designing warp scarer trails⁶.

4. How effective is net-binding in pelagic trawl fisheries outside CCAMLR waters?

Rationale: Anecdotal evidence indicates that net-binding has been very effective in reducing mortalities caused by entanglement during the shot in the CCAMLR ice fish trawl fishery. However, there is a lack of rigorous data to support the effectiveness of the measure. Research is required to test the applicability of the method in other fisheries with different operational characteristics. For example, is net-binding possible on vessel that use the net-rollers as opposed to fleeting the net on the deck, and how does it perform with different seabird assemblages.

Relevance: Relevant to all pelagic fisheries that interact with seabirds.

Experimental approach:

Duration:

Funding required:

5. What is the effect of seabird strikes on tori lines

Rationale: Research in New Zealand has highlighted seabird strikes with the mainline/backbone of streamer lines as being of potential concern.

Relevance: Potentially important, but given that streamer lines have been shown to reduce mortality by up to 90%, this is not considered the highest priority.

Experimental approach:

Duration:

Funding required:

⁶ González-Zevallos, D., Yorio, P. and Caille, G. (2007). Seabird mortality at trawler warp cables and a proposed mitigation measure: A case of study in Golfo San Jorge, Patagonia, Argentina. *Biological Conservation* **136**: 108-116.

6. What is the most effective measure(s) for reducing collisions between seabirds and net-sonde cables (third wire?)

Rationale: Net-sonde cables are prohibited in several Southern Ocean fisheries, but are still used in some locations and are more commonly used in the Northern Hemisphere. Washington Sea Grant has conducted research into potential options for preventing seabird interactions with net-sonde cables, and any research conducted in this area should be closely linked with this research.⁷

Relevance: Important, particularly with the potential inclusion of Northern Hemisphere albatross onto the ACAP species list.

Experimental approach:

Duration:

Funding required:

Other issues for consideration

- Evidence suggests that net cleaning prior to shooting and net-binding can reduce seabird mortality caused during the shot to negligible levels. However, there has been relatively little progress made on reducing entanglements during the haul. Streamer lines have been trialled but due to a lack of tension on the line it is usually not possible to maintain significant aerial extent. In addition, many nets, particularly pelagic nets with larger net sizes often surface several hundred metres behind the boat rendering streamer lines ineffective.
One of the key challenges to reducing seabird mortality in trawl fisheries is the identification of mitigation measures for reducing seabird entanglement during the haul. Even with best practice offal discharge measures in place and these are yet to identify - a net full of fish will attract seabirds and this leads to potential mortality events. This issue has not been addressed in the research priorities below, because it is a generic need that requires the identification of potential solutions before research questions can be identified.
- The Brady Baffler has been shown to be of limited use in many cases. However, a modified version of the device called a Burke Baffler has been developed in New Zealand. Once more detail becomes available it may be beneficial to test the effectiveness of this device at reducing warp cable strikes.

⁷ Dietrich, K.S. and Melvin, E. (2007). *Alaska Trawl Fisheries: Potential Interactions with North Pacific Albatrosses*. WSG-TR 07-01. Washington Sea Grant, Seattle, WA. 43 pp.

- Working with industry to encourage experimentation into net configuration to reduce the position and amount of mesh sizes that are dangerous to seabirds. Initial steps were taken in the CCAMLR ice fish fishery, but operational imperatives related to the catch of target species mean that this is potentially a very costly approach. Given the high cost of fuel currently, changes in net configuration are more likely to be driven by fuel efficiency (e.g. square mesh versus diamond mesh) than seabird bycatch issues.