Agreement on the Conservation of Albatrosses and Petrels

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Electronic Monitoring of Seabird Captures in New Zealand Bottom Longline Fisheries

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SUMMARY

Commercial fishers and quota owners, together with the Ministry for Primary Industries (MPI), the Department of Conservation (DOC), and the Black Petrel Working Group (BPWG) have undertaken to further develop electronic monitoring (EM) of seabird captures in a 'proof of concept' project in 2016-2017.

This project is building on the results from a previous trial in 2015 that assessed the capacity for video observation to monitor seabird captures in the snapper (SNA) bottom longline (BLL) fishery in Fisheries Management Area (FMA) 1 (see SBWG7 Inf 18).

The overall purpose of the 2016-17 proof of concept project is: 'to assess the effectiveness of EM relative to human observation in detecting and recording seabird bycatch to species level.' Specifically this project aims to improve the accuracy of the estimates of total captures, and capture rates, of seabirds (particularly black petrel and flesh-footed shearwater) in FMA 1 BLL fisheries. If the EM component of this project is proven to be capable of collecting the data required to improve the accuracy of seabird capture estimates, the results from this project will help deliver the joint MPI and DOC commercial fisheries monitoring programme (Project INT 2016-01 in the 2016-17 Conservation Services Programme (CSP) plan), particularly the objectives relating to BLL North-East North Island SNA and BLL North-East North Island BNS fisheries. Additionally, outputs from this project can be used to inform the integration of EM into future seabird monitoring programmes in BLL fisheries and the wider IEMRS (integrated electronic monitoring and reporting system) programme (See SBWG8 Inf 29). The collaborative development of the project also adds transparency to the development of EM as a form of seabird bycatch monitoring, building public confidence in the system.

1. INTRODUCTION

Achieving adequate levels of observer coverage in inshore fisheries has traditionally been a challenge; current levels are not sufficient to allow the production of robust seabird capture

estimates, limiting the ability to demonstrate success of current mitigation measures and achievement of the NPOA objectives. Traditional observer programmes tend to be costly and not well-suited the capacity and operational practices of inshore fishing vessels and so require significant resources to implement. Looking for alternative, smart technological monitoring tools that complement the existing observer services programme and add confidence to fisher's self-reporting is an important step to accurately demonstrate the effect of commercial fishing and track progress against objectives contained in New Zealand's 'National Plan of Action – 2013 to reduce the incidental catch of seabirds in New Zealand Fisheries' (referred to hereafter as 'the NPOA')

Exploring alternative monitoring tools such as video observation is also in line with the second research and development objective in the NPOA, "new observation and monitoring methods, especially in relation to poorly observed fisheries, are researched, developed and implemented".

In all iterations of the New Zealand seabird risk assessment for commercial fisheries (for example, see SBWG7 Inf 21, **SBWG8 Inf 30**), black petrels were found to be the species most at risk from commercial fisheries, with bottom longline fisheries targeting snapper or bluenose contributing the greatest risk. A range of initiatives have been driven through the Black Petrel Working Group to address this risk, including education and awareness raising, development of vessel specific seabird management plans and electronic monitoring trials.

2. ASSESSING THE EFFECTIVENESS OF VIDEO OBSERVATION TO MONITOR SEABIRD BYCATCH IN BOTTOM LONGLINE FISHERIES

2.1. Initial trial

In 2015 an experimental assessment of video observation in an inshore bottom longline vessel, primarily targeting snapper, was funded by DOC and undertaken by Trident Systems under contract to Southern Seabirds Solutions Trust (SSST) with input from the Black Petrel Working Group. The key aim was to assess whether video observation is a valid approach for monitoring seabirds captured directly on hooks. The results are described in an information paper presented to the seventh meeting of the seabird bycatch working group (SBWG7 Inf 18).

Due to success of this trial, a more detailed 'proof of concept' project was proposed to further develop the use of video observation to monitor seabird captures to assess whether cameras can be as effective at monitoring seabird captures as human observers in bottom longline fisheries (BLL).

2.2. Proof of concept

2.2.1 Aim

The overall aim of the project is to assess the effectiveness of electronic monitoring (EM) relative to human observation in detecting and recording seabird bycatch to species level. The project will directly assess the ability for cameras to detect captures of both live and dead seabirds, during all seabird interaction events and identify captured seabirds to species level. On a wider scale the project will provide an assessment of camera utility over a wider range of vessels and in different environmental and operating conditions. Using both cameras and

observers will produce relative detection rates enabling direct comparison between the two, something not previously done for the BLL fishery.

If successful, the results from this project will help inform the integration of seabird EM objectives into the Ministry for Primary Industries wider digital monitoring programme (see **SBWG8 Inf 29**) and progress the use of EM as a complementary tool to the existing observer programme to improve overall monitoring of seabird captures in commercial BLL fisheries.

2.2.2. Objectives

The project has the following objectives to achieve the overall aim:

1. Provide a comparison of on-board observers and video observation in detecting seabird captures (to calibrate between these monitoring tools and recommend improvements to EM processes if needed).
2. Assess the capacity for video observation to identify captured seabirds to species level (essential to demonstrate objective 1).
3. Assess seabird capture data, collected by video observation under objectives 1 and 2, to determine its suitability for inclusion in 2016-17 seabird capture estimation in SNA and BNS BLL fisheries in Fisheries Management Area (FMA) 1.
4. Measure adherence to seabird management plans (SMPs) to the extent practicable.
5. Contribute to the development of standards and specifications for future electronic monitoring of seabird captures based on the technical specifications and on board procedures developed for this project.

2.2.3. Method

Monitoring occurred between November 2016 and May 2017 to coincide with the black petrel and flesh-footed shearwater breeding season.

A subset of vessels in the SNA and BNS bottom longline fisheries in FMA 1 were equipped with EM to collect footage that allowed shore based observers to subsequently detect seabird captures. Vessels were selected based on the level of participation in the fishery (number of hooks set). Factors such as the vessel operator's willingness to participate, the landing sites used by the vessels and the level of overlap with black petrel distribution were also considered when making the final selection.

During the trial period, a subset of the fishing days undertaken by these participating vessels were also monitored by human observers to provide an independent estimate of seabird captures. The seabird capture data from hauls that are observed by both video and human observers will be used to calculate relative rates of seabird capture detection.

Data from recent fishing years were used to assess the expected coverage and the spatial and temporal coverage likely to be achieved. Target coverage levels are described in table 1.

Table 1. Targeted observer coverage to achieve the objectives of the EM project. Target coverage associated with timeframe from November 2016 – May 2017.

	Target coverage levels for the project	
	SNA BLL	**BNS BLL**
Target EM coverage (% days)	30-35%	60-65%
Target human observer coverage (% days)*	6%	31%

*** Human observer coverage between November 2016 and May 2017 will only be on vessels with EM systems**

To facilitate the video observation process, the crews of participating vessels were instructed to ensure that any captured seabirds were clearly displayed to the on-board cameras (to the extent that this is compatible with the safe release of any seabirds captured alive).

2.2.4. Progress

Cameras were installed on 12 bottom longline vessels operating in FMA 1 (8 snapper vessels and 4 bluenose vessels) and observers were deployed on all but one of the vessels. Coverage achieved is described in table 2.

Table 2. EM and observer coverage achieved on participating SNA and BNS BLL vessels

	SNA BLL	**BNS BLL**
EM coverage (% effort)	36%	42%
Observer coverage (% effort)	6.5%	18.5%

Footage review has been partially completed. Results are expected to be finalised in October this year with a final report published in November.