



9th Annual Meeting of the Scientific Committee (SC9)

Bangkok, Thailand, 18–27 March 2024

SC-09-22

Seabird interactions and mitigation measures in SIOFA compared with other RFMOs and outstanding ACAP advice

The ACAP Secretariat and the SIOFA Secretariat

Document type	working paper <input checked="" type="checkbox"/> information paper <input type="checkbox"/>
Distribution	Public <input checked="" type="checkbox"/> Restricted ¹ <input type="checkbox"/> Closed session document ² <input type="checkbox"/>
Abstract	
<p>The work of the SIOFA Scientific Committee to ensure that SIOFA seabird bycatch mitigation measures are effective and efficient started in 2021 and has not been completed to date. SC8 noted that SC7 had planned to hold a workshop for discussing seabird data collection and bycatch mitigation in the intersessional period, but had been unable to fit the workshop into its 2022 schedule. The SC8 agreed (SC8 report, paragraph 268) to include a focused agenda item on seabird data collection and bycatch mitigation measures at SC9.</p> <p>The SC also requested the Secretariat to prepare and present a paper summarising available information about SIOFA seabird bycatch mitigation measures and seabird interactions. This paper thus aims to summarize:</p> <ul style="list-style-type: none">- Seabird interactions recorded in SIOFA- Current seabird bycatch mitigation measures in force in SIOFA- Refer to current seabird bycatch mitigation measures in force in adjacent and overlapping RFMOs, CCAMLR and tuna RFMOs- Still outstanding ACAP advice	

¹ Restricted documents may contain confidential information. Please do not distribute restricted documents in any form without the explicit permission of the SIOFA Secretariat and the data owner(s)/provider(s).

² Documents available only to members invited to closed sessions.

Recommendations

The ACAP Secretariat and the SIOFA Secretariat recommend that the SIOFA SC:

- **considers** the information provided in this paper, during its focused agenda item on seabird data collection and bycatch mitigation measures at SC9.
- **identifies** as it considers needed, potential amendments to [CMM 13\(2022\)](#) and [CMM 02\(2023\)](#) to ensure the effectiveness of SIOFA management measures to reduce the impact of relevant fisheries on seabirds and ensure that essential data to investigate seabird bycatch is collected.
- **discusses** how best to present these amendments to the following SIOFA Meeting of the Parties.

Introduction

The SIOFA Eighth Meeting of the Parties ([MoP8 report](#), paragraph 114) endorsed the sixth annual SIOFA Scientific Committee meeting (SC6) recommendation ([SC6 report](#), paragraph 133) and tasked the SC with reviewing, by the seventh annual meeting of the SIOFA Scientific Committee (SC7), the seabird data collection measures defined in [CMM 2019/02](#) (Data Standards, now [CMM 02\(2023\)](#)) and the seabird bycatch mitigation measures stipulated in [CMM 2019/13](#) (Mitigation of Seabirds Bycatch, now [CMM 13\(2022\)](#)) against the Agreement on the Conservation of Albatrosses and Petrels (ACAP) best practices, while taking into consideration SC-03-06.2 (05) (Vessel Seabird Management Plan, Cook Islands) to ensure that SIOFA seabird bycatch mitigation measures are effective and efficient.

At the SC7, ACAP presented paper [SC-07-INFO-09 rev1](#), offering such a review, and identifying a number of proposed amendments to the relevant SIOFA CMMs to achieve more complete alignment to ACAP advice.

Since then, SIOFA aligned its CMM with [IOTC Resolution 12/06](#) on reducing the incidental bycatch of seabirds in longline fisheries, but has yet to adopt some of the other best practices recommended by ACAP.

Furthermore, SC8 noted that SC7 had planned to hold a workshop for discussing seabird data collection and bycatch mitigation in the intersessional period, but had been unable to fit the workshop into its 2022 schedule.

The SC8 agreed ([SC8 report](#), paragraph 268) to include a focused agenda item on seabird data collection and bycatch mitigation measures at SC9. The SC8 also agreed that it would be useful to invite vessel operators and other appropriate parties, such as Southern Seabirds Trust, to participate in the discussions under that focused agenda item and share their experience.

The SIOFA SC also requested the SIOFA Secretariat to prepare and present a paper summarising available information about SIOFA seabird bycatch mitigation measures and seabird interactions. The SIOFA Secretariat, in accordance with the SC Chair and in collaboration with the ACAP Secretariat, expanded the focus of this paper to include a wider array of information that could aid the SIOFA SC in its considerations.

This paper thus aims to summarize:

- Seabird interactions recorded in SIOFA
- Current seabird bycatch mitigation measures in force in SIOFA
- Refer to current seabird bycatch mitigation measures in force in adjacent and overlapping RFMOs, CCAMLR and tuna RFMOs
- Still outstanding ACAP advice

Methods

This paper was composed using different data and methods.

The introduction included a history of discussions on this topic within SIOFA, as recorded in meeting reports and papers presented to the SIOFA SC, including summarising outstanding ACAP advice.

Seabird interactions in SIOFA were recorded in the SIOFA Observer database 2013-2022. These data were analysed by the SIOFA Science Officer using R code to create a reproducible summary, which is

also included as a section of the SIOFA Ecosystem Summary 2024. The analysis was limited to the creation of summary tables (using the `dplyr` and `tidyverse` packages). Detailed code for these analyses is publicly available at the [SIOFA GitHub repository](#), as part of the SIOFA Ecosystem Summary code.

Additionally, a review of the current seabird bycatch mitigation measures in force in SIOFA was included. Where possible, text was edited and measures were summarized for the benefit and ease of the SIOFA SC consideration, without altering their meaning and scope of the CMM. Links to the original text of each measure included in this paper were provided for each case, and those original texts remain the only valid ones.

For the sake of brevity, references were retrieved and provided only on measures currently in place in adjacent and overlapping RFMOs, CCAMLR and tuna RFMOs as described in the published CMMs, and a table was included to compare measures across them.

This paper uses official FAO taxonomic nomenclature (i.e. common and scientific names) for seabirds, but please note that this might not always correspond to the nomenclature used e.g. by ACAP.

Results

1. Seabird interactions in SIOFA

a. Incidental captures

Only a small number of seabird captures have been reported in SIOFA fisheries.

From 2007-2022 there have been 15 seabird captures reported by Scientific Observers in the SIOFA Area as summarised below in Table 1.

Table 1 – Incidental captures of seabirds for which interactions have been reported (source: SIOFA Observer database 2012–2022). Species nomenclature follows FAO ASFIS codes and might not correspond to other conventions (e.g. ACAP nomenclature).

Year	Common name	Scientific name	Captures	Status at release	Gear
2009	Wedge-tailed shearwater	<i>Puffinus pacificus</i>	1	Dead	Single boat midwater otter trawls
2012	Hall's giant petrel	<i>Macronectes halli</i>	1	Dead	Single boat bottom otter trawls
2013	White-chinned petrel	<i>Procellaria aequinoctialis</i>	1	Unknown	Single boat midwater otter trawls
2014	White-faced storm petrel	<i>Pelagodroma marina</i>	1	Alive	Single boat midwater otter trawls
2016	White-chinned petrel	<i>Procellaria aequinoctialis</i>	1	Unknown	Set longlines
2019	Antarctic giant petrel	<i>Macronectes giganteus</i>	2	Unknown	Set longlines
2020	Black-browed albatross	<i>Thalassarche melanophrys</i>	1	Dead	Set longlines
2020	White-chinned petrel	<i>Procellaria aequinoctialis</i>	2	Dead	Set longlines
2021	Black-browed albatross	<i>Thalassarche melanophrys</i>	1	Dead	Midwater trawls (nei)
2021	White-chinned petrel	<i>Procellaria aequinoctialis</i>	4	Unknown	Set longlines

b. Seabird abundance observed around fishing operations

The abundance and species of seabirds around fishing operations has been recorded on individual fishing events by Scientific Observers starting from 2007. Table 2 shows the total numbers of seabirds recorded by Scientific Observers, per species, across all fishing events of each year.

Note that there are 2523 records of seabirds observations without any information on species names in the SIOFA Observers database 2019–2022. These represent observations of seabirds around fishing vessel without species identification and are therefore not listed in Table 5.

These results show that the presence of a range of seabird species was recorded around vessels using different fishing gears, including endangered ACAP-listed species such as the Indian Yellow-nosed Albatross, the Grey-headed Albatross and the Sooty Albatross. The variability in the number of reported seabirds per each observation event, and the lack of species identification in many cases, limit the ability to further distinguish patterns of occurrence.

Table 2 - Numbers of seabirds observed around fishing operations per species and year (source: SIOFA Observer database 2012–2022). Species nomenclature follows FAO ASFIS codes and might not correspond to other conventions (e.g. ACAP nomenclature).

Year	Common name	Scientific name	Fishing gear	Abundance
2007	Atlant. yellow-nosed albatross	<i>Thalassarche chlororhynchos</i>	Single boat bottom otter trawls	4
2007	Black-browed albatross	<i>Thalassarche melanophris</i>	Single boat bottom otter trawls	2
2007	Wandering albatross	<i>Diomedea exulans</i>	Single boat bottom otter trawls	10
2007	White-chinned petrel	<i>Procellaria aequinoctialis</i>	Single boat bottom otter trawls	13
2008	Albatrosses nei	<i>Diomedidae</i>	Single boat bottom otter trawls	3
2008	Atlant. yellow-nosed albatross	<i>Thalassarche chlororhynchos</i>	Single boat bottom otter trawls	2
2008	B/W bellied storm petrels nei	<i>Fregetta spp</i>	Single boat bottom otter trawls	1
2008	Black-browed albatross	<i>Thalassarche melanophris</i>	Single boat bottom otter trawls	4
2008	Cape petrel	<i>Daption capense</i>	Single boat bottom otter trawls	3
2008	Giant petrels nei	<i>Macronectes spp</i>	Single boat bottom otter trawls	4
2008	Grey petrel	<i>Procellaria cinerea</i>	Single boat bottom otter trawls	2
2008	Light-mantled sooty albatross	<i>Phoebetria palpebrata</i>	Single boat bottom otter trawls	2
2008	Shy albatross	<i>Thalassarche cauta</i>	Single boat bottom otter trawls	4
2008	Sooty albatross	<i>Phoebetria fusca</i>	Single boat bottom otter trawls	1
2008	Wandering albatross	<i>Diomedea exulans</i>	Single boat bottom otter trawls	1
2008	White-chinned petrel	<i>Procellaria aequinoctialis</i>	Single boat bottom otter trawls	2
2010	Albatrosses nei	<i>Diomedidae</i>	Single boat bottom otter trawls	12
2010	Atlant. yellow-nosed albatross	<i>Thalassarche chlororhynchos</i>	Single boat bottom otter trawls	34
2010	Hall's giant petrel	<i>Macronectes halli</i>	Single boat bottom otter trawls	3
2010	Petrels nei	<i>Procellaria spp</i>	Single boat bottom otter trawls	45
2010	Wandering albatross	<i>Diomedea exulans</i>	Single boat bottom otter trawls	33
2010	White-chinned petrel	<i>Procellaria aequinoctialis</i>	Single boat bottom otter trawls	1
2011	Albatrosses nei	<i>Diomedidae</i>	Single boat bottom otter trawls	2
2011	Antarctic giant petrel	<i>Macronectes giganteus</i>	Single boat bottom otter trawls	3
2011	Atlant. yellow-nosed albatross	<i>Thalassarche chlororhynchos</i>	Single boat bottom otter trawls	12
2011	Cape petrel	<i>Daption capense</i>	Single boat bottom otter trawls	13
2011	Giant petrels nei	<i>Macronectes spp</i>	Single boat bottom otter trawls	9
2011	Grey petrel	<i>Procellaria cinerea</i>	Single boat bottom otter trawls	2
2011	Shy albatross	<i>Thalassarche cauta</i>	Single boat bottom otter trawls	9
2011	Wandering albatross	<i>Diomedea exulans</i>	Single boat bottom otter trawls	10

Year	Common name	Scientific name	Fishing gear	Abundance
2011	White-chinned petrel	<i>Procellaria aequinoctialis</i>	Single boat bottom otter trawls	34
2011	Wilson's storm petrel	<i>Oceanites oceanicus</i>	Single boat bottom otter trawls	1
2019	Antarctic giant petrel	<i>Macronectes giganteus</i>	Set longlines	166
2019	Black-browed albatross	<i>Thalassarche melanophris</i>	Set longlines	36
2019	Cape petrel	<i>Daption capense</i>	Set longlines	183
2019	Hall's giant petrel	<i>Macronectes halli</i>	Set longlines	35
2019	Indian yellow-nosed albatross	<i>Thalassarche carteri</i>	Set longlines	10
2019	Prions nei	<i>Pachyptila spp</i>	Set longlines	2
2019	Seabirds nei		Set longlines	24
2019	Shy albatross	<i>Thalassarche cauta</i>	Set longlines	116
2019	Southern royal albatross	<i>Diomedea epomophora</i>	Set longlines	1
2019	Wandering albatross	<i>Diomedea exulans</i>	Set longlines	151
2019	White-chinned petrel	<i>Procellaria aequinoctialis</i>	Set longlines	88
2019	Wilson's storm petrel	<i>Oceanites oceanicus</i>	Set longlines	4
2020	Albatrosses nei	<i>Diomedeidae</i>	Set longlines	2
2020	Antarctic giant petrel	<i>Macronectes giganteus</i>	Set longlines	38
2020	Antarctic petrel	<i>Thalassoica antarctica</i>	Set longlines	3
2020	Atlant. yellow-nosed albatross	<i>Thalassarche chlororhynchos</i>	Set longlines	1
2020	Black-bellied storm petrel	<i>Fregetta tropica</i>	Set longlines	57
2020	Black-browed albatross	<i>Thalassarche melanophris</i>	Set longlines	135
2020	Brown skua	<i>Stercorarius antarcticus</i>	Set longlines	2
2020	Buller's albatross	<i>Thalassarche bulleri</i>	Vertical lines	2
2020	Cape petrel	<i>Daption capense</i>	Set longlines	126
2020	Giant petrels nei	<i>Macronectes spp</i>	Set longlines	13
2020	Great shearwater	<i>Puffinus gravis</i>	Set longlines	1
2020	Great skua	<i>Catharacta skua</i>	Set longlines	2
2020	Grey-headed albatross	<i>Thalassarche chrysostoma</i>	Set longlines	1
2020	Grey petrel	<i>Procellaria cinerea</i>	Set longlines	48
2020	Hall's giant petrel	<i>Macronectes halli</i>	Set longlines	210
2020	Indian yellow-nosed albatross	<i>Thalassarche carteri</i>	Set longlines	44
2020	Light-mantled sooty albatross	<i>Phoebetria palpebrata</i>	Set longlines	20
2020	Prions nei	<i>Pachyptila spp</i>	Set longlines	37
2020	Seabirds nei		Set longlines	33
2020	Seabirds nei		Trawls (nei)	294
2020	Shy albatross	<i>Thalassarche cauta</i>	Set longlines	142
2020	Sooty albatross	<i>Phoebetria fusca</i>	Set longlines	11
2020	Southern fulmar	<i>Fulmarus glacialisoides</i>	Set longlines	4
2020	Wandering albatross	<i>Diomedea exulans</i>	Set longlines	264
2020	Wandering albatross	<i>Diomedea exulans</i>	Vertical lines	2
2020	White-chinned petrel	<i>Procellaria aequinoctialis</i>	Set longlines	255
2020	White-chinned petrel	<i>Procellaria aequinoctialis</i>	Vertical lines	2
2020	Wilson's storm petrel	<i>Oceanites oceanicus</i>	Set longlines	26
2021	Albatrosses nei	<i>Diomedeidae</i>	Set longlines	4
2021	Albatrosses nei	<i>Diomedeidae</i>	Single boat bottom otter trawls	2
2021	Amsterdam Island albatross	<i>Diomedea amsterdamensis</i>	Set longlines	9
2021	Antarctic giant petrel	<i>Macronectes giganteus</i>	Drifting longlines	4
2021	Antarctic giant petrel	<i>Macronectes giganteus</i>	Set longlines	44
2021	Atlant. yellow-nosed albatross	<i>Thalassarche chlororhynchos</i>	Single boat bottom otter trawls	5

Year	Common name	Scientific name	Fishing gear	Abundance
2021	Black-browed albatross	<i>Thalassarche melanophris</i>	Set longlines	120
2021	Black-browed albatross	<i>Thalassarche melanophris</i>	Single boat bottom otter trawls	3
2021	Blue petrel	<i>Halobaena caerulea</i>	Set longlines	8
2021	Buller's albatross	<i>Thalassarche bulleri</i>	Set longlines	7
2021	Cape petrel	<i>Daption capense</i>	Drifting longlines	6
2021	Cape petrel	<i>Daption capense</i>	Set longlines	43
2021	Fairy prion	<i>Pachyptila turtur</i>	Set longlines	4
2021	Giant petrels nei	<i>Macronectes spp</i>	Set longlines	13
2021	Grey-headed albatross	<i>Thalassarche chrysostoma</i>	Set longlines	1
2021	Hall's giant petrel	<i>Macronectes halli</i>	Set longlines	77
2021	Indian yellow-nosed albatross	<i>Thalassarche carteri</i>	Drifting longlines	13
2021	Indian yellow-nosed albatross	<i>Thalassarche carteri</i>	Set longlines	102
2021	Light-mantled sooty albatross	<i>Phoebetria palpebrata</i>	Drifting longlines	1
2021	Light-mantled sooty albatross	<i>Phoebetria palpebrata</i>	Set longlines	3
2021	Parkinson's petrel	<i>Procellaria parkinsoni</i>	Set longlines	15
2021	Seabirds nei		Set longlines	2
2021	Shy albatross	<i>Thalassarche cauta</i>	Set longlines	8
2021	Sooty albatross	<i>Phoebetria fusca</i>	Drifting longlines	3
2021	Sooty albatross	<i>Phoebetria fusca</i>	Set longlines	1
2021	Sooty shearwater	<i>Puffinus griseus</i>	Set longlines	2
2021	Southern royal albatross	<i>Diomedea epomophora</i>	Set longlines	81
2021	Wandering albatross	<i>Diomedea exulans</i>	Drifting longlines	4
2021	Wandering albatross	<i>Diomedea exulans</i>	Set longlines	119
2021	Wandering albatross	<i>Diomedea exulans</i>	Single boat bottom otter trawls	9
2021	White-chinned petrel	<i>Procellaria aequinoctialis</i>	Drifting longlines	10
2021	White-chinned petrel	<i>Procellaria aequinoctialis</i>	Set longlines	212
2021	White-chinned petrel	<i>Procellaria aequinoctialis</i>	Single boat bottom otter trawls	9
2021	Wilson's storm petrel	<i>Oceanites oceanicus</i>	Set longlines	1
2022	Antarctic giant petrel	<i>Macronectes giganteus</i>	Drifting longlines	1
2022	Antarctic giant petrel	<i>Macronectes giganteus</i>	Set longlines	151
2022	Atlant. yellow-nosed albatross	<i>Thalassarche chlororhynchos</i>	Set longlines	1
2022	Black-browed albatross	<i>Thalassarche melanophris</i>	Demersal longlines	18
2022	Black-browed albatross	<i>Thalassarche melanophris</i>	Drifting longlines	5
2022	Black-browed albatross	<i>Thalassarche melanophris</i>	Set longlines	93
2022	Boobies and gannets nei	<i>Sulidae</i>	Drifting longlines	2
2022	Cape petrel	<i>Daption capense</i>	Demersal longlines	18
2022	Cape petrel	<i>Daption capense</i>	Drifting longlines	11
2022	Cape petrel	<i>Daption capense</i>	Set longlines	72
2022	Cape petrel	<i>Daption capense</i>	Trawls (nei)	17
2022	Flesh-footed shearwater	<i>Puffinus carneipes</i>	Drifting longlines	2
2022	Giant petrels nei	<i>Macronectes spp</i>	Demersal longlines	20
2022	Giant petrels nei	<i>Macronectes spp</i>	Set longlines	5
2022	Great-winged petrel	<i>Pterodroma macroptera</i>	Trawls (nei)	13
2022	Grey-headed albatross	<i>Thalassarche chrysostoma</i>	Demersal longlines	2
2022	Grey petrel	<i>Procellaria cinerea</i>	Set longlines	1
2022	Grey petrel	<i>Procellaria cinerea</i>	Trawls (nei)	21
2022	Hall's giant petrel	<i>Macronectes halli</i>	Set longlines	26
2022	Hall's giant petrel	<i>Macronectes halli</i>	Trawls (nei)	21

Year	Common name	Scientific name	Fishing gear	Abundance
2022	Indian yellow-nosed albatross	<i>Thalassarche carteri</i>	Drifting longlines	86
2022	Indian yellow-nosed albatross	<i>Thalassarche carteri</i>	Set longlines	136
2022	Indian yellow-nosed albatross	<i>Thalassarche carteri</i>	Trawls (nei)	1
2022	Leach's storm-petrel	<i>Oceanodroma leucorhoa</i>	Drifting longlines	1
2022	Light-mantled sooty albatross	<i>Phoebastria palpebrata</i>	Demersal longlines	11
2022	Parkinson's petrel	<i>Procellaria parkinsoni</i>	Set longlines	8
2022	Prions nei	<i>Pachyptila spp</i>	Demersal longlines	12
2022	Prions nei	<i>Pachyptila spp</i>	Set longlines	5
2022	Prions nei	<i>Pachyptila spp</i>	Trawls (nei)	5
2022	Salvin's albatross	<i>Thalassarche salvini</i>	Drifting longlines	6
2022	Seabirds nei		Demersal longlines	2
2022	Seabirds nei		Set longlines	5
2022	Seabirds nei		Trawls (nei)	90
2022	Shearwaters nei	<i>Puffinus spp</i>	Set longlines	13
2022	Shy albatross	<i>Thalassarche cauta</i>	Set longlines	83
2022	Shy albatross	<i>Thalassarche cauta</i>	Trawls (nei)	17
2022	Sooty albatross	<i>Phoebastria fusca</i>	Drifting longlines	1
2022	Southern fulmar	<i>Fulmarus glacialisoides</i>	Demersal longlines	4
2022	Southern royal albatross	<i>Diomedea epomophora</i>	Set longlines	72
2022	Wandering albatross	<i>Diomedea exulans</i>	Demersal longlines	18
2022	Wandering albatross	<i>Diomedea exulans</i>	Drifting longlines	72
2022	Wandering albatross	<i>Diomedea exulans</i>	Set longlines	147
2022	Wandering albatross	<i>Diomedea exulans</i>	Trawls (nei)	22
2022	White-capped albatross	<i>Thalassarche steadi</i>	Drifting longlines	2
2022	White-chinned petrel	<i>Procellaria aequinoctialis</i>	Demersal longlines	20
2022	White-chinned petrel	<i>Procellaria aequinoctialis</i>	Drifting longlines	90
2022	White-chinned petrel	<i>Procellaria aequinoctialis</i>	Set longlines	229

Table 3 summarizes the number of records where observers did not report seabirds around fishing operations (0 detection events), grouped by type of fishing gear. Due to the missing linkages between the CatchEffort and the Observer database it is impossible to determine the share of fishing events observed for seabirds presence on the total of fishing events. These results show that seabirds were detected in the vast majority of longline events observed for seabird presence, and that none of the observed handline and hand-operated pole-and-line events observed for seabirds presence had seabirds reported. Furthermore, for trawls the results were mixed across gear types and years.

Table 3 - Records where observers did not report seabirds around fishing operations (0 detection events) in 2020–2022, by gear (source: SIOFA Observer database 2012–2022).

Year	Fishing gear	Fishing events observed with no seabirds reported	Fishing events observed with seabirds reported	Share of events observed with no seabirds reported (%)
2020	Handlines and hand-operated pole-and-lines	134	0	100
2020	Set longlines	88	1475	5.6
2020	Single boat bottom otter trawls	464	0	100
2020	Trawls (nei)	0	294	0
2020	Vertical lines	6	6	50
2021	Drifting longlines	0	41	0
2021	Set longlines	65	876	6.9
2021	Single boat bottom otter trawls	3	28	9.7
2022	Bottom trawls (nei)	984	0	100
2022	Demersal longlines	0	125	0
2022	Drifting longlines	0	279	0
2022	Set longlines	8	1047	0.8
2022	Trawls (nei)	2	207	1

Not all fishing events were observed for seabirds presence, and Table 4 summarizes the total number of events that were not observed per each year. Due to the missing linkages between the CatchEffort and the Observer database it is impossible to determine the share of fishing events not observed for seabirds presence on the total of fishing events.

Table 4 - Fishing events that were not observed for seabird presence around fishing operations in 2020–2022 (source: SIOFA Observer database 2012–2022).

Year	Fishing gear	Fishing events not observed for seabirds presence
2020	Set longlines	68
2021	Set longlines	160
2022	Set longlines	91

2. Current seabird bycatch mitigation measures in force in SIOFA

Current measures are contained in [CMM 13\(2022\)](#) and apply to all CCP vessels fishing south of 25°S within the SIOFA Area fishing with longlines, traps or pots.

a. Measures for vessels fishing with demersal longlines

All demersal longliners are requested to comply with the following measures:

- a. any vessel catching a total of three (3) seabirds in a single season shall immediately change to night setting only (i.e. setting only during the hours of darkness between the times of nautical twilight);
- b. vessels are encouraged to use white colour lines, to increase visibility which decreases the bycatches of birds;
- c. at least one bird scaring line (in accordance with Annex 1) shall be deployed when setting longlines and at least one bird exclusion device (BED, in accordance with Annex 2) shall be used to prevent birds entering the hauling area, to the extent allowed by prevailing weather;
- d. there shall be no discharging of offal or discards immediately prior to and during the deployment or retrieval of fishing gear;
- e. fishing vessels using autoline systems shall add weights to the hookline or use integrated weight (IW) hooklines while deploying longlines. IW longlines of a minimum of 50 g/m or attachment to non-IW longlines of 5 kg weights at 50 to 60 m intervals are recommended;
- f. fishing vessels using the Spanish method of longline fishing shall release weights before line tension occurs; traditional weights (made of rocks or concrete) of at least 8.5 kg mass shall be used, spaced at intervals of no more than 40 m, or traditional weights of at least 6 kg mass shall be used, spaced at intervals of no more than 20 m, or solid steel weights of at least 5 kg mass shall be used, spaced at intervals of no more than 40 m;
- g. fishing vessels using the trotline system exclusively (not a mix of trotlines and the Spanish system within the same longline) shall deploy weights only at the distal end of the droppers in the trotline. Weights shall be traditional weights of at least 6 kg or solid steel weights of at least 5 kg; and
- h. fishing vessels alternating between the use of the Spanish system and trotline method shall use:
(i) for the Spanish system: line weighting shall conform to the provisions in paragraph 3 f; (ii) for the trotline method: line weighting shall be either 8.5 kg traditional weights or 5 kg steel weights attached on the hook-end of all droppers in the trotline at no more than 80 m intervals.

Special measures apply to demersal longliners of less than 25 m, which must comply with at least one of the following measures:

- a. at least one bird scaring line (in accordance with Annex 1) shall be deployed when setting lines, and at least one bird exclusion device (BED, see specifications in Annex 2), shall be used to prevent birds entering the hauling area, to the extent allowed by prevailing weather;
- b. fishing vessels using autoline systems shall add weights to the hookline or use integrated weight (IW) hooklines while deploying longlines. IW longlines shall have a minimum of 50 g/m or a weight of a minimum of 5 kg attached to non-IW longlines at 50 to 60 m intervals; and

c. lines shall be set only at night (i.e. during the hours of darkness between the times of nautical twilight). The exact times of nautical twilight are set forth in the Nautical almanac tables for the relevant latitude, local time and date.

b. Measures for vessels fishing with demersal traps and pots

Paragraph 5 of [CMM 13\(2022\)](#) requires to ensure the cleanliness of the traps and pots with the aim to not attract birds, and ensure that buoy lines shall not be left floating at the surface.

c. Measures for pelagic longliners

Use at least two of the three mitigation measures outlined in Annex 3 (Night setting with minimum deck lighting, Bird-scaring lines (Tori lines) and Line weighting), which are in line with [IOTC Resolution 12/06](#).

d. Current reporting on the application of mitigation measures

SIOFA CCPs are required by CMM 02 (see e.g. CMM 20(2023)) to report on the application of some of the seabird bycatch mitigations measures included in [CMM 13\(2022\)](#). Specifically, they are required to report on the deployment of bird scaring streamers/(tori) lines/bird bafflers for demersal longlines and trawls.

Table 5 summarizes the currently available data reported by SIOFA Scientific Observers. Note that the observer collection under CMM 02 came into force in 2018 (binding October 2018) and that CMM 13 (mitigation of seabirds bycatch) came into force for the first time in 2019 (binding October 2019). Also note that the use of tori lines and bafflers is not mandatory for pots and trawl.

These data show high levels of streamer line use reported for set longlines, partial use in drifting longlines and very few reported data for other fishing methods.

Table 5 – Summary of Scientific Observer reported application of seabird bycatch mitigation measures (source: SIOFA Observer database 2012–2022). Note that the use of tori lines and bafflers is not mandatory for pots and trawl.

Year	Gear	Streamer reported deployed	Streamer not reported deployed	Total observed
2020	Handlines and hand-operated pole-and-lines	0	0	134
2020	Midwater trawls (nei)	0	0	199
2020	Set longlines	595	0	595
2020	Single boat bottom otter trawls	0	0	464
2020	Trawls (nei)	0	0	1216
2020	Vertical lines	8	0	8
2021	Drifting longlines	231	174	405
2021	Handlines and hand-operated pole-and-lines	0	0	52
2021	Midwater trawls (nei)	0	0	287
2021	Pots	0	0	19
2021	Set longlines	494	0	615
2021	Single boat bottom otter trawls	0	0	1017
2022	Bottom trawls (nei)	0	0	995
2022	Demersal longlines	20	0	20
2022	Drifting longlines	172	102	274

Year	Gear	Streamer reported deployed	Streamer not reported deployed	Total observed
2022	Handlines and hand-operated pole-and-lines	0	0	49
2022	Midwater trawls (nei)	0	0	428
2022	Set longlines	298	0	298
2022	Trawls (nei)	0	0	811

3. Current seabird bycatch mitigation measures in force in adjacent RFMOs, CCAMLR and overlapping tuna RFMOs

a. Indian Ocean Tuna Commission (IOTC)

The current seabird bycatch mitigation measures in force in IOTC are contained in [IOTC Resolution 12/06](#). They essentially consist in night setting with minimum deck lighting, bird-scaring lines (Tori lines) and line weighting.

b. Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR)

CCAMLR has two specific conservation measures providing guidance on longlines and trawl fisheries.

[CCAMLR Conservation Measure 25-02 \(2018\)](#) Minimisation of the incidental mortality of seabirds in the course of longline fishing or longline fishing research in the Convention Area.

[Conservation Measure 25-03 \(2022\)](#) Minimisation of the incidental mortality of seabirds and marine mammals in the course of trawl fishing in the Convention Area.

c. South Pacific Regional Fisheries Management Organisation (SPRFMO)

[SPRFMO CMM 09-2017](#) Minimising Bycatch of Seabirds in the SPRFMO Convention Area provides measures to minimize interactions with seabirds in demersal longlines, and trawl fisheries, in the SPRFMO Area.

d. South East Atlantic Fisheries Organisation (SEAFO)

[SEAFO Conservation Measure 25/12](#) On Reducing Incidental By-catch of Seabirds in the SEAFO Convention Area (in force since 6 February 2013), specifies mitigation measures for both longline and trawl vessels, sets out schemes and descriptions of bird scaring devices and protocols to reduce lighting on the vessels.

Measures for longline vessels apply to all vessels fishing south of 30°S.

4. Summary of seabird bycatch mitigation measures in SIOFA and adjacent non-tuna RFMOs and CCAMLR

Baker et al. (2024) recently undertook a review of current seabird conservation measures across RFMOs and CCAMLR to assess their alignment with ACAP best practice mitigation advice. Table 6 summarizes their findings across SIOFA, its adjacent RFMOs and CCAMLR for demersal longline and trawl methods. This shows that, whilst there is generally good consistency in the mitigation measures required for demersal longlines, SIOFA clearly differs in not having required measures for trawls.

It is also worth noting that SPRFMO is currently undertaking a review of its seabird conservation and management measure against the latest ACAP best practice advice, through an intersessional process ahead of SPRFMO SC12 in September 2024 ([SPRFMO SC11 Report 2023](#)). In order to achieve greater alignment between RFMOs, it may be useful to consider the findings of the outcomes of the SPRFMO 2024 review at SIOFA SC10 in 2025.

Table 6 – ACAP's Best Practice Advice (BPA) for demersal longline and trawl fisheries, and the elements of it that were adopted by SIOFA, its adjacent RFMOs and CCAMLR. Grey shaded cells indicate where the measure(s) adopted strictly complied with ACAP's BPA. Adapted from Baker et al. (2024).

Mitigation measure	ACAP BPA	SPRFMO	SEAFO	SIOFA	CCAMLR
Demersal longline					
Area closures where appropriate	yes	no	no	yes	yes
Line weighting					
—autoline IWL	yes	yes	yes	yes	yes
—autoline external weights to non-IWL longlines	yes	yes	yes	yes	yes
—Spanish system mainline weighting	yes	yes	yes	yes	yes
—Trotline system weighting of distal end of droplines	yes	yes	yes	yes	yes
Night setting (NS) of longlines mandatory	yes	yes	yes	yes	no
Bird Scaring Lines (BSL)					
—single BSL	yes	yes	yes	yes	yes
—double BSL	yes		encouraged		encouraged
Combined use of line weighting, BSL & NS	yes	yes	no		no
Bird Excluder Device around haul area	yes	optional		yes	some areas
Cachalotera nets used on trotlines (Chilean method)	yes	yes	encouraged		
Waste management					
—Retention during setting	yes	yes	yes	yes	yes
—Retention during hauling	yes	yes	encouraged	yes	encouraged
—Discharge on opposite side to hauling	yes		encouraged		yes
—removal of fish hooks from offal prior to discharge	yes		yes		yes
Area of application			S of 30°S		
Trawl					
Area closures where appropriate	yes				yes
Waste management					
—Retention during shooting & hauling	yes	yes	yes	n/a	yes
—Mealing & retention	yes	yes		n/a	
—Batching	yes	yes		n/a	yes
—Mincing	yes			n/a	

Mitigation measure		ACAP BPA	SPRFMO	SEAFO	SIOFA	CCAMLR
	Bird Scaring Lines or bafflers to reduce cable strikes					
	—Trawl warps	yes	yes	yes	n/a	under trial
	—Net monitoring cable	yes			n/a	under trial
	—bird baffler	yes	yes		n/a	
	Net sonde monitoring cable ban	yes			n/a	yes
	Net entanglement mitigation					
	—net cleaning & removal of stickers	yes	encouraged	yes	n/a	yes
	—minimise time net is on surface	yes	encouraged	yes	n/a	yes
	—net binding to larger meshes	yes			n/a	
	—incorporate weight into net belly before setting (pelagic trawl)	yes		encouraged	n/a	encouraged

5. Outstanding Agreement on the Conservation of Albatrosses and Petrels (ACAP) advice to SIOFA on mitigation and data collection measures

a. For all vessels, ACAP advised (SC-07-INFO-09 rev1) the SIOFA SC to:

- a. amend paragraph 2 of SIOFA CMM 13 regarding general seabird bycatch mitigation provisions, so that it applies to all vessels.
- b. require vessels to follow the National Light Pollution Guidelines for Wildlife, including Marine Turtles, Seabirds and Migratory Shorebirds developed by Australia
- c. require the crew to follow ACAP seabird handling advice as relevant to the fishing method used.

b. For demersal longline vessels, ACAP advised (SC-07-INFO-09 rev1) the SIOFA SC to:

- d. amend paragraph 3a of SIOFA CMM 13 to require all demersal longlines to be set at night.
- e. amend paragraph 3c of SIOFA CMM 13 to require two (paired) bird scaring lines to be used simultaneously on large vessels (≥ 24 m in length) and one or two (paired) bird scaring lines used on small vessels (< 24 m in length). Alternatively, this amendment can be included in Annex 1 of SIOFA CMM 13.
- f. Amend paragraph 3e of SIOFA CMM 13 to stipulate a minimum of 5 kg at no more than 40 m intervals for non-IW longlines
- g. Revoke paragraph 4 of SIOFA CMM 13 (noting that different specifications for bird scaring lines used by small vessel can be included in paragraph 3c and Annex 1 of SIOFA CMM 13).

e. For trawl vessels, ACAP advised (SC-07-INFO-09 rev1) the SIOFA SC to:

- h. amend SIOFA CMM 13 to include seabird bycatch mitigation requirements for trawl vessels based on ACAP best practice advice, specifically measures to reduce general attractiveness to seabirds, reduce cable strikes and reduce net entanglement, and encourage development of vessels plans, similar to the plan provided in SC-03-06.2(05).

- f. For pelagic longline vessels, ACAP advised (SC-07-INFO-09 rev1) the SIOFA SC to:
- i. amend SIOFA CMM 13 to include seabird bycatch mitigation requirements for pelagic longline fishing based on ACAP best practice advice, i.e. all 3 requirements outlined in Annex 3 of SIOFA CMM 13.
- g. For the Data Standards CMM (SIOFA CMM 02), ACAP advised (SC-07-INFO-09 rev1) the SIOFA SC to:
- j. amend SIOFA CMM 02 to include variables listed below (those in bold being identified by ACAP as critical for assessing seabird bycatch):

General/all methods:

- **Vessel length**
- **Other mitigation measures used (provide details)**
- Sea state (Beaufort Scale)
- Moon phase (note, this can be calculated by date)
- Wind strength and direction
- Cloud cover

Longline:

- Depth fished for pelagic longline
- Number of hooks between floats
- Whether any offal dumped during haul was on the opposite side to the hauling bay
- Composition of bait used (%)
- Bait status (live/fresh/frozen/thawed/whole/cut)

Trawl:

- Location of trawl turns
- Number of codends
- **Net monitoring cable (yes/no)**. If used, where does the cable enter the water in relation to warps.
- Side of bird scaring line deployment (port or starboard or both)
- **Number of bird scaring lines used**
- Length of bird scaring line (m)
- **Aerial coverage achieved (m)** Are all warps and net monitoring cables covered?
- Attachment height (m above water line)
- Number of streamers
- Distance between streamers
- How is any dumping of offal managed (e.g. full retention of waste during fishing activities, mealing or batching).
- Deck lighting astern of the vessel (yes/no)

These are variables that ACAP considers essential to investigate seabird bycatch.

- k. append detailed and standardised protocols for seabird abundance and warp strike observers to SIOFA CMM 02 based on those recommended by ACAP.

Discussion

There is some room to align SIOFA mitigation measures with IOTC and other RFMOs/CCAMLR measures, and the ACAP advice provides some guidance for the areas where the alignment could be made.

However, the scope of this paper was not to offer solutions or guidance, but to rather provide the necessary information for the SIOFA SC to consider during its focused agenda item on seabird data collection and bycatch mitigation measures at SC9.

Acknowledgments

The SIOFA Secretariat wishes to kindly acknowledge the constructive cooperation with the ACAP Secretariat in the preparation of this paper.

References

Baker, GB; Komyakova, V; Wellbelove, A; Beynon, N; Haward, M. 2024. The implementation of ACAP Best Practice Advice to mitigate seabird bycatch in fisheries: Issues and options. *Marine Policy* Volume 160. <https://doi.org/10.1016/j.marpol.2023.105879>.