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Report of the

EXPERT CONSULTATION ON BEST PRACTICE TECHNICAL GUIDELINES FOR IPOA/NPOA–SEABIRDS

Bergen, Norway, 2–5 September 2008

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Bergen, Norway, 2–5 September 2008

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
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PREPARATION OF THIS DOCUMENT

This is the report of the Expert Consultation on Best Practice Technical Guidelines for IPOA/NPOA – Seabirds adopted on 5 September 2008 in Bergen, Norway.

Financial support of the Government of Norway, the Government of the United States of America, the David and Lucile Packard Foundation (through BirdLife International), the Agreement on the Conservation of Albatrosses and Petrels (ACAP), the Western Pacific Regional Fishery Management Council and the Blue Ocean Institute is acknowledged with thanks.

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ABSTRACT

This is the report of the Expert Consultation on Best Practice Technical Guidelines for IPOA/NPOA–Seabirds [International Plan of Action/National Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries], held in Bergen, Norway, from 2 to 5 September 2008. The guidelines have been prepared to: (i) assist countries in preparing and implementing more effective NPOA–Seabirds; (ii) provide regional fisheries management organizations with guidance on implementing IPOA–Seabirds within a regional framework; and (iii) address incidental mortality of seabirds from relevant fishing gear. The guidelines emphasize the importance of a cyclical framework of data collection, research and monitoring to quantify and reduce the incidental mortality of seabirds in an adaptive manner.

The guidelines cover the following topics: (i) Relevant fishing gears; (ii) Uptake of seabird measures by RFMO/As [Arrangements]; (iii) Defining an incidental catch problem; (iv) Mitigation measures and related standards; (v) Mitigation research; (vi) Education, training and outreach; (vii) Observer programme; (viii) Seabird incidental catch reduction objectives; (ix) Monitoring and reporting framework for NPOA–Seabirds and regional plans; and (x) Periodic performance review.

CONTENTS

ABBREVIATIONS AND ACRONYMS

ACAP	Agreement on the Conservation of Albatrosses and Petrels
BPTG	Best Practice Technical Guidelines
CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
CCRF	Code of Conduct for Responsible Fisheries
CCSBT	Commission for the Conservation of Southern Bluefin Tuna
COFI	Committee on Fisheries
EEZ	Exclusive economic zone
FAO	Food and Agriculture Organization of the United Nations
IATTC	Inter–American Tropical Tuna Commission
ICCAT	International Commission for the Conservation of Atlantic Tunas
IGO	Intergovernmental Organization
IMAF	Incidental mortality arising from fishing
IOTC	Indian Ocean Tuna Commission
IPHC	International Pacific Halibut Commission
IPOA–Seabirds	International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries
IPOA–IUU	International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing
IUCN	International Union for Conservation of Nature
NGO	Non-governmental organization
NPOA–Seabirds	National Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries
RFB	Regional fishery body
RFMOs	Regional fishery management organizations
RFMO/As	Regional fishery management organizations and arrangements
SEAFO	South East Atlantic Fisheries Organization
UNFSA	Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks
WCPFC	Western and Central Pacific Fisheries Commission

OPENING OF THE MEETING AND ARRANGEMENTS FOR THE SESSION

1. The Expert Consultation on Best Practice Technical Guidelines for IPOA/NPOA–Seabirds was held in Bergen, Norway, from 2 to 5 September 2008.

2. The Consultation was attended by nine experts in their personal capacity and two resource persons. A list of the experts and resource persons is attached as Appendix B. The documents placed before the Consultation are listed in Appendix C.

3. The Expert Consultation was hosted by the Government of Norway and funded by the FAO Regular Programme, the Government of Norway, the Government of the United States of America, the David and Lucile Packard Foundation (through BirdLife International), the Agreement on the Conservation of Albatrosses and Petrels (ACAP), the Western Pacific Regional Fishery Management Council and the Blue Ocean Institute.

4. The meeting was opened by the Technical Secretary, Mr Francis Chopin, Senior Fishery Industry Officer, Fishing Technology Service, Fish Products and Industry Division, FAO Fisheries and Aquaculture Department. He welcomed the participants to the Consultation and delivered the opening statement on behalf of Mr Ichiro Nomura, Assistant Director-General of the Fisheries and Aquaculture Department, FAO, Rome. The text of his statement is reproduced in Appendix D. Mr Arill Engås welcomed the participants on behalf of the Institute of Marine Research (IMR), Bergen, Norway.

5. Mr Chopin called the Expert Consultation to order. He noted that each expert was participating in his or her personal capacity. He recalled that the FAO Committee on Fisheries (COFI) during its twenty-seventh session in March 2007 acknowledged the need to: (i) broaden the range of fishing gears covered by IPOA–Seabirds from longlines to other relevant gears; and (ii) to develop best practice guidelines to assist countries and RFMO/As in implementing the IPOA–Seabirds. He pointed out that participants would review systematically and methodically the structure, form and contents of a draft text titled *Best Practice Technical Guidelines IPOA/NPOA–Seabirds* that would be forwarded to the twenty-eighth session of COFI in 2009 for its consideration.

ELECTION OF THE CHAIRPERSON

6. Ms Kimberly Rivera was elected Chairperson of the Expert Consultation. She expressed her gratitude to the Experts for their confidence in electing her to the Chair. She outlined arrangements for the Consultation noting that its role was to review systematically and methodically the structure, form and contents of a draft text titled *Best Practice Technical Guidelines IPOA/NPOA–Seabirds* that would be forwarded to the twenty-eighth session of COFI in 2009 for its consideration.

ADOPTION OF THE AGENDA

7. The agenda shown in Appendix A was adopted by the Expert Consultation. The Chairperson then outlined the timetable of work for the Consultation.

REVIEW OF DOCUMENTS

8. The Chairperson brought the attention of experts to the list of documents prepared for the Expert Consultation requesting them to consider the draft paper titled *Seabird mitigation measures* (EC:BPTGS/2008/4) and invited Mr Ben Sullivan, FAO resource person, to introduce the FAO draft paper titled *Best Practice Technical Guidelines* (EC:BPTGS/2008/3) prepared as a starting point and as a basis for discussion by the experts.

RECOMMENDATIONS

9. The Expert Consultation recommended that:

   (i) FAO publish and disseminate the IPOA/NPOA–Seabirds Best Practice Technical Guidelines (Appendix E) prepared during the Expert Consultation as soon as practicable;

   (ii) FAO be tasked with all non-technical editing prior to publishing of the draft text;

   (iii) FAO publish Seabirds mitigation measures EC:BPTGS/2008/4 after minor revisions and updating of the text.

10. The Expert Consultation suggested that FAO:

   (i) consider the establishment of a multilingual Web site promoting commercially-adopted technologies to reduce the incidental catch of seabirds and other forms of bycatch;

   (ii) elaborate and implement programmes of technical assistance to facilitate human resource development and institutional strengthening, including legal and technological assistance, in developing countries so as to promote the full and effective implementation of IPOA–Seabirds;

   (iii) convene an Expert Consultation addressing the impacts of fishing on the marine environment giving special attention to research and development of fishing gears and fishing practices that can contribute to reductions of bycatch, discards and habitat destruction.

ANY OTHER MATTERS

11. There were no other matters.

ADOPTION OF THE REPORT

12. The report of the Expert Consultation was adopted on 5 September 2008.

APPENDIX A

Agenda

1. Opening of the Session
2. Welcome to the Institute of Marine Research (IMR), Bergen (Arill Engås)
3. Welcome and introductions
4. Background and context of the Consultation
5. Election of Chair
6. Adoption of agenda
7. Introduction of the FAO Draft text on Best Practice Technical Guidelines (EC:BPTGS/2008/3)
   - FAO draft text on Seabird mitigation measures (EC:BPTGS/2008/4)
8. Development of Best Practice Technical Guidelines
9. Adoption of the report

APPENDIX B

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APPENDIX C

List of documents

EC:BPTGS/2008/1	Provisional Agenda
EC:BPTGS/2008/2	Prospectus
EC:BPTGS/2008/3	Best Practice Technical Guidelines
EC:BPTGS/2008/4	Seabird mitigation measures
EC:BPTGS/2008/Inf.1	List of documents
EC:BPTGS/2008/Inf.2	List of participants
EC:BPTGS/2008/Inf.3	NPOA Uruguay
EC:BPTGS/2008/Inf.4	NPOA United States of America
EC:BPTGS/2008/Inf.5	NPOA Republic of South Africa
EC:BPTGS/2008/Inf.6	NPOA Japan
EC:BPTGS/2008/Inf.7	NPOA Chile
EC:BPTGS/2008/Inf. 8	NPOA Canada
EC:BPTGS/2008/Inf. 9	NPOA Brazil
EC:BPTGS/2008/Inf. 10	NPOA Australia
EC:BPTGS/2008/Inf. 11	Bull seabird mitigation review
EC:BPTGS/2008/Inf. 12	ACAP Trawl Bycatch Mitigation Review
EC:BPTGS/2008/Inf. 13	FAO Fisheries Circular No. 1025. Review of measures taken by intergovernmental organizations to address sea turtle and seabird interactions in marine capture fisheries
EC:BPTGS/2008/Inf. 14	FAO Fisheries Circular No. 937. The incidental catch of seabirds by longline fisheries: worldwide review and technical guidelines for mitigation
EC:BPTGS/2008/Inf. 15	ACAP seabird bycatch
EC:BPTGS/2008/Inf. 16	IPOA–Seabirds

APPENDIX D

Opening statement
read by
Mr Francis Chopin, Senior Fishery Industry Officer, Fishing Technology Service, Fish Products and Industry Division, FAO Fisheries and Aquaculture Department

Distinguished Experts, Resource persons and colleagues:

On behalf of the Assistant Director-General Mr Ichiro Nomura, of the Fisheries and Aquaculture Department, it gives me much pleasure to welcome you to this Expert Consultation to Draft a text titled Best Practice Technical Guidelines for IPOA/NPOA–Seabirds. This Expert Consultation is held with a view to assisting countries and RFMO/As with implementation of the IPOA–Seabirds.

I have followed closely the preparations for the meeting and I am delighted that FAO has been able to assemble such an impressive group of Experts and Resource persons. As you know, each Expert here today, in his or her personal capacity, has been chosen because of the unique professional and geographical experience he or she would bring to the Consultation.

Turning immediately to the issues of substance before the Expert Consultation, we are all aware that the incidental capture of seabirds by some fishing gears can have significant consequences for some seabird populations. Until and unless we are able to reduce the impacts of fishing on seabirds we will not be in a position to ensure that fisheries are exploited in a responsible and long-term sustainable manner and that they are consistent with an ecosystem approach to fisheries.

It is primarily for this reason that the COFI Members have resolved to address the issue of the incidental capture of seabirds by fishing gears.

It was against this backdrop that the FAO Committee on Fisheries (COFI) during its twenty-seventh session in March 2007 acknowledged the need to (i) broaden the range of fishing gears covered by IPOA–Seabirds from longlines to other relevant gears, and (ii) to strengthen the implementation of the IPOA–Seabirds by developing best practice guidelines to support the elaboration of NPOA–Seabirds.

During the discussions, many Members of the Committee expressed the view that the Commission for the Conservation of Antarctic Living Marine Resource (CCAMLR), the Agreement on the Conservation of Albatrosses and Petrels (ACAP) and BirdLife International were the most relevant organizations in this context.

The main objective of this Expert Consultation that is starting today is to develop best practice technical guidelines as called for by COFI. To facilitate this task, the Secretariat has prepared a first draft, as a starting point and as a basis for discussion. The draft text that will emerge from the work done during this week will be submitted to the 2009 session of COFI for their consideration.

Regarding the work to be done this week, it is expected that participants in this consultation will review systematically and methodically the structure, form and contents of the draft text.

I would urge that, in this endeavour, every effort be made to ensure that the draft text is not overly complex and that it is practical to implement.

We must not forget that the people who will use these guidelines to assist in the preparation of NPOA–Seabirds and those who must comply with the requirements contained therein will not be lawyers and barristers of the court.

We recognize that the time that you have available to do the job is very short. However, FAO has in the past worked with many of you and I know that you are accustomed to working to tight deadlines. I am therefore confident that it should be possible to achieve the goal that has been set for the Expert Consultation.

I also wish to recall briefly that, in keeping with FAO practice for an Expert Consultation of this nature, the report of the meeting will be essentially an administrative one with the text of the draft best practice technical guidelines attached.

Last but not least, I would like to acknowledge the financial support provided by the Government of Norway, the Government of the United States of America, the David and Lucile Packard Foundation (through BirdLife International), the Agreement on the Conservation of Albatrosses and Petrels (ACAP), the Western Pacific Regional Fishery Management Council and the Blue Ocean Institute for this meeting and, at the same time, thank the Government of Norway for its willingness to host the Consultation.

I wish you well for a fruitful and successful meeting.

Thank you very much.

Ichiro Nomura

APPENDIX E

DRAFT BEST PRACTICE TECHNICAL GUIDELINES IPOA/NPOA–SEABIRDS

BACKGROUND

1. The FAO Code of Conduct for Responsible Fisheries (CCRF) calls for the minimization of waste, catch of non-target species, both fish and non-fish species, and impacts on associated or dependent species in aquatic ecosystems. Further, the CCRF calls on States and Regional Fishery Management Organizations/Arrangements (RFMO/As) to promote the development and use of selective, environmentally safe and cost effective gear and techniques. The CCRF also promotes the maintenance, safeguarding and conservation of biodiversity by minimizing fisheries impacts on non-target species and the ecosystem in general.

2. Incidental mortality in commercial fisheries around the world is an immediate and pervasive threat to seabirds and is causing declines in many breeding populations (Croxall *et al.*, 1998; Baker *et al.*, 2002; Nell and Taylor, 2003). Incidental catch[1] of seabirds may also have an adverse impact on fishing productivity and profitability. Governments, non-governmental organizations, and commercial fishery associations are seeking solutions to reduce the incidental catch of seabirds in fisheries.

3. A worldwide review of the incidental catch of seabirds by longline fisheries published by the Food and Agriculture Organization of the United Nations (FAO) in 1999 showed that the mortality of albatrosses (family Diomedeidae), giant petrels (*Macronectes* spp.) and petrels (*Procellaria* spp.) was high, and such mortality has been linked to associated population declines.[2] Albatrosses and closely related petrels that are susceptible to incidental catch in fisheries are long-lived species, characterized by naturally high levels of adult survivorship and late onset of breeding, a low reproductive rate and a long breeding cycle. Increased adult mortality in species with these life history traits can result in severe and unsustainable effects on breeding populations.

4. In response to these concerns, FAO called for an expert consultation on the issue of global seabird bycatch in longline fisheries (twenty-second session of the Committee on Fisheries). At the twenty-third session of the Committee on Fisheries in 1999, the International Plan of Action for Reducing the Incidental Catch of Seabirds in Longline Fisheries (IPOA–Seabirds) was unanimously adopted. The IPOA–Seabirds applies to States in whose waters longline fishing is being conducted by their own or foreign vessels, and to States that conduct longline fishing on the high seas and in the exclusive economic zones (EEZs) of other States. The IPOA–Seabirds is a voluntary instrument that calls on States to: (1) assess the degree of seabird bycatch in their longline fisheries; (2) develop individual National Plans of Action (NPOA) to reduce seabird bycatch in longline fisheries that have a seabird bycatch problem; and (3) develop a course of future research and action to reduce seabird bycatch. The IPOA–Seabirds is to be implemented consistent with the CCRF and all applicable rules of international law, and in conjunction with relevant international organizations.

5. In the nine year period following unanimous adoption of the IPOA–Seabirds at the twenty-second session of COFI, only ten NPOA–Seabirds were developed including Brazil, Canada, Chile, Japan, New Zealand, Uruguay, Namibia, South Africa, United States of America and Australia. Others are in draft stage or awaiting government implementation,

6. A review of measures taken by intergovernmental organizations (Gilman, Moth-Poulsen and Bianchi, 2007) to address sea turtle and seabird interactions in marine capture fisheries noted that;

- the standard and scope of assessing the incidental capture of seabirds varied considerably between States;
- measures adopted by States to reduce incidental capture of seabirds varied greatly; and,

[1] Incidental catch includes seabirds that are injured or die as a result of encountering the fishing gear or vessel during fishing operations. For a detailed explanation of catch (see Coordinating Working Party on Atlantic Fishery Statistics Handbook of Fishery Statistical Standards, Annex B1)

[2] While illegal, unreported and unregulated (IUU) fishing is considered to be a significant threat to seabird populations, measures to eliminate such fishing is the only practicable way to reduce seabird mortality in IUU fisheries.

- there are fewer conservation measures or resolutions adopted by intergovernmental organizations (IGOs) to address seabird interactions with fishing gear such as gillnets and trawls.

7. At the twenty-seventh session of COFI in 2007, attention was focused on the IPOA–Seabirds[3] in relation to the ecosystem approach to fisheries. Specifically COFI:

- reported that best practice technical guidelines to support the elaboration of NPOA–Seabirds should be developed through continuing joint work between FAO and relevant bodies and organizations or an expert consultation;
- agreed that FAO should, in cooperation with relevant bodies, develop best practice technical guidelines to assist countries RFMOs in implementation of the IPOA–Seabirds;
- agreed that the guidelines should be extended to other relevant fishing gear; and
- noted that many Members expressed the view that the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), the Agreement on the Conservation of Albatrosses and Petrels (ACAP) and BirdLife International as relevant bodies in that context.

8. In response to the directions from COFI, FAO planned and organized an Expert Consultation to develop Best Practice Technical Guidelines supporting the effective implementation of IPOA–Seabirds and elaboration of NPOA–Seabirds in Bergen, Norway, in September 2008. These Technical Guidelines have been prepared in response to these directions.

[3] Report of the twenty-seventh session of the Committee on Fisheries (COFI) (FAO, 2007):
para. 14. In relation to the implementation of the ecosystem approach to fisheries (EAF) and on the matter of bycatch, the Committee focussed considerable attention on the IPOAs for seabirds and sharks and the sea turtle guidelines. Several Members advised the Committee on their progress to develop or implement their national plans of action (NPOAs) for seabirds. Many Members were of the view that FAO, in collaboration with BirdLife International, should seek to strengthen the implementation of the IPOA–Seabirds by developing best practice technical guidelines to support the elaboration of NPOAs. The Committee agreed that depending on cost and related considerations the guidelines would be developed through continuing joint work between FAO and relevant bodies and organizations or an expert consultation.
para. 80. Bycatch was recognized by COFI as being a serious concern in many fisheries. It was agreed that FAO should, in cooperation with relevant bodies, develop best practice guidelines to assist countries and RFMOs in implementation of the IPOA–Seabirds and that the best practice guidelines should be extended to other relevant fishing gears. Many Members expressed the view that the Commission for the Conservation of Antartic Marine Living Resources (CCAMLR), the Agreement on the Conservation of Albatrosses and Petrels (ACAP) and BirdLife International were the most relevant bodies in that context.

INTRODUCTION

9. In 2008, 18 of the 22 species of albatross were threatened with extinction with six species listed by IUCN[4] as endangered and three as critically endangered. Mortality associated with fishing is listed as a threatening process to all 18 species of threatened albatrosses. The International Union for Conservation of Nature (IUCN) defines albatrosses as one of the most threatened family of birds in the world. In addition, four out of five Procellaria petrels are threatened by longline fishing.

10. These Best Practice Technical Guidelines (BPTG) are developed to support the effective implementation of the IPOA–Seabirds and the CCRF.

11. The guidelines provide additional information on types of fisheries and fishing gear[5] where the incidental mortality of seabirds is a concern, summaries of appropriate mitigation measures, and further elaboration of best practices to assist States and regional fishery management organizations/arrangements (RFMO/As) in developing effective NPOA–Seabirds and regional plans.

12. Where a seabird bycatch problem has been identified and where industry has been a partner in a comprehensive bycatch mitigation strategy, dramatic reductions in seabird mortality were achieved.

Problem statement

13. Despite international efforts in recent years to reduce the incidental mortality of seabirds in longline fisheries, populations of many affected species continue to decline. Currently, the number of NPOA–Seabirds adopted, their limited implementation, and the varying quality of existing plans, including RFMO/As actions, has limited the effective implementation of IPOA–Seabirds. The development and implementation of a more robust and widespread suite of NPOA–Seabirds would assist in reducing the incidental catch of seabirds. Given the existing data that highlight the scale of mortality in trawl and gillnet fisheries (which are not addressed by the IPOA–Seabirds), it is important that all relevant gear types are covered by NPOA–Seabirds and regional plans.

Purpose statement

14. The objective of these Best Practice Technical Guidelines is to provide guidance to States and RFMO/As on effective implementation of the IPOA–Seabirds and thereby reduce the incidental catch of seabirds by longline and other relevant fisheries.

15. Fisheries vary widely according to geographical area, target species, fishing gear, vessels and fishing practices. Accordingly, the use of any or all Best Practice Technical Guidelines should be fishery specific.

Structure and content of this document

16. This document is the [Xth] in the series FAO Technical Guidelines for Responsible Fisheries and is thus structured similarly to previously published guidelines in this series. More specifically, these guidelines elaborate the types of information, methodologies and reporting arrangements for States and RFMO/As in preparing and implementing robust NPOA–Seabirds and regional plans.

17. The structure of these guidelines is to elaborate the important sections of texts within the IPOA–Seabirds followed by explanatory text in support of best practices and a statement of the best practice technical guideline.

Fundamental principles

18. The following fundamental principles support these technical guidelines:

(i) Broadening the scope and effectiveness of IPOA–Seabirds by developing NPOA–Seabirds that reduce the incidental catch of seabirds in relevant fisheries.

[4] The World Conservation Union (IUCN) Red List of threatened species is widely considered an objective and authoritative system for classifying species in terms of the risk of extinction.

[5] For information on fishing gear classification see FAO Fisheries Technical Paper No. 222, Rev. 1.

(ii) Ensuring the effective application by States and RFMO/As of IPOA–Seabirds within a regional framework, including the adoption of technical and institutional measures required to adopt effective mitigation measures by RFMO/As to provide consistent implementation through a regional plan.
(iii) Adopting scientifically proven, practical, and cost-effective mitigation measures, or combinations of mitigation measures.
(iv) Conducting collaborative research into the development and testing of mitigation measures.
(v) Designing and implementing education, training and outreach programmes to reduce the incidental catch of seabirds
(vi) Using data collection programmes (including observer programmes) and reporting frameworks designed and implemented to provide representative data on the incidental catch of seabirds.

SPECIAL REQUIREMENTS OF DEVELOPING COUNTRIES

19. States and RFMO/As should strengthen international cooperation with the aim of supporting developing countries in implementing the IPOA–Seabirds and these Best Practice Technical Guidelines (see Annex 1).

INSTRUMENTS SUPPORTING IPOA–SEABIRDS

20. Several instruments support the IPOA–Seabirds and should be considered (Annex 2)

ENHANCING IPOA–SEABIRDS: A NEED FOR BEST PRACTICE TECHNICAL GUIDELINES

Review of early NPOA–Seabirds

21. In the nine years following adoption of the IPOA–Seabirds in 1999, only ten NPOA–Seabirds were developed. In addition, several countries have advanced drafts that are nearing completion or awaiting implementation.

22. Although the IPOA–Seabirds contains an overview of the steps taken to conduct an assessment of the need for a NPOA–Seabirds, and brief technical guidelines on the components that a plan should include, the first generation NPOA–Seabirds varied widely in their objectives, content, and effectiveness.

23. Of the NPOA–Seabirds available at the time of publication, the assessment process has taken one of the following four approaches:

(i) An assessment was conducted followed by the drafting of an NPOA–Seabirds.
(ii) An assessment and NPOA–Seabirds were conducted as one exercise.
(iii) The State adopted an NPOA–Seabirds with an assessment planned to follow at a later date.
(iv) The State adopted a NPOA–Seabirds without a published assessment.

24. Mitigation measures proposed to reduce the incidental catch of seabirds included: (i) prescriptive requirements for the mandatory use of mitigation measures for all, or sections of their fishing fleet; (ii) measures to follow post NPOA–Seabirds assessments; or (iii) voluntary codes of conduct, designed to enable the fishing industry to retain ownership of the problem and the solutions.

25. The use of observers to collect independent information at sea as a monitoring tool for seabird mortality varied significantly among the adopted NPOA–Seabirds.

26. The degree of seabird incidental catch monitoring varied considerably with several NPOA–Seabirds lacking clearly stated incidental catch objectives.

27. There was considerable variation between States in the interpretation of what constitutes a "problem" in terms of the incidental catch of seabirds, and when to begin to address this through the development of an NPOA–Seabirds.

Other relevant fisheries

28. The objective of the IPOA–Seabirds to reduce the incidental catch of seabirds is based upon tenets in the CCRF which does not limit applicability solely to longline gear. To consider this broader applicability when implementing the IPOA–Seabirds, international effort is also required to reduce incidental catch of seabirds in non-longline fisheries. This is because the range of fisheries affecting seabirds and driving the declines of many albatrosses and petrels populations is broader than initial evaluations. For example, the growing body of literature that highlights the severity of seabird mortality in trawl fisheries (Sullivan, Reid and Bugoni, 2006; Watkins, Petersen and Ryan, 2006; Baker *et al.*, 2007). 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 affect smaller seabirds. There is considerable potential for underestimating incidental mortality because an unknown proportion of birds that are killed by warp strikes are not recovered.

29. In addition, there is some evidence of high levels of seabird incidental mortality in gillnet fisheries (DeGange and Day, 1991; Uhlmann, Flecther and Moller, 2005). Coastal diving seabirds species such as alcids, penguins, sea ducks, shearwaters, cormorants and gannets (Sulids) are susceptible to entanglement. However, in the absence of data on specific fisheries it is not possible to determine the magnitude of mortality or the impact gillnet fisheries may have on these seabird populations. This lack of data has also affected the level of research applied to developing suitable mitigation measures in gillnet fisheries (Melvin, Parrish and Conquest, 1999) and remains a fishing gear of concern. Accordingly, while these technical Guidelines do not provide the same level of technical detail for gillnet fisheries as they do for longline and trawl fisheries, many of the recommended processes and structures are relevant to those fisheries where gillnets are used and where problems exist with the incidental catch of seabirds by these fishing gear types.

Drivers of change to reduce seabird incidental catch

30. There are a range of factors that influence the interests, motivations and actions of fishers to alter fishing practices to reduce the incidental catch of seabirds. The factors that have contributed to reducing the incidental catch of seabirds to low levels include:

(i) incentives – economic (positive and negative), operational and political;
(ii) innovation – usually technical solutions driven by incentive;
(iii) leadership – industry, government, scientists, non-governmental organizations (NGOs);
(iv) science – rigourous defensible science, supported by monitoring/observers;
(v) conservation goals – stakeholders driven by a conservation ethic; and
(vi) collaboration – the overarching common thread that is essential to the drivers of change coalescing into action.

31. In all cases, fisheries that have successfully reduced the incidental catch of seabirds have captured the input of a range of stakeholders and generated a structure, be it a working group or something less formal, that allows differing views and opinions to be aired, discussed and where appropriate, implemented. Such a structure/process is considered essential to reducing the incidental catch of seabirds in fisheries and should be an integral part of all NPOA–Seabirds and regional plans.

32. As an example of how these different elements have been combined, the CCAMLR demersal longline fishery for Patagonian toothfish is provided as a case study in Annex 3.

Enhanced collaboration between States preparing NPOA–Seabirds and RFMO/As

33. Seabirds cross national boundaries and spend the majority of their lives migrating and foraging in waters distant from their breeding grounds. Mitigating risk to their populations is therefore an issue that traverses national and international boundaries. Many species susceptible to incidental mortality spend a considerable time on high seas. These areas are outside national jurisdiction, but may fall

under areas managed by RFMO/As. BirdLife International (2004) manages a database of remote tracking data for albatross and petrels (*Tracking Ocean Wanderers: the global distribution of albatrosses and petrels*(z)) on behalf of a global collaboration of data holders. The analysis of these data has been widely used in RFMOS (e.g. CCAMLR, Commission for the Conservation of Southern Bluefin tuna [CCSBT], Inter-American Tropical Tuna Commission [IATTC], International Commission for the Conservation of Atlantic Tunas [ICCAT], Indian Ocean Tuna Commission [IOTC] and Western and Central Pacific Fisheries Commission [WCPFC]), and in a range of coastal State fisheries to highlight the spatial and temporal distribution of seabirds and their overlap with fishing effort. This has been a critical step in the process toward addressing the incidental catch of seabirds in these fisheries.

34. RFMO/As are the intergovernmental organizations or arrangements through which States collaborate to conserve and manage straddling and highly migratory fish stocks. RFMO/As can act as the link between international policy and regional implementation of best practice for reducing the incidental catch of non-target species.

35. The role that RFMOs play in reducing incidental mortality of non-target species was identified as a priority action at the Joint Meeting of Tuna RFMOs (Kobe, Japan, 2007).

36. Recent steps taken in the RFMOs (see Table 1 in Annex 4) highlight the progress made in relation to addressing the incidental catch of seabirds. At the twenty-seventh session of COFI, seven regional fishery bodies (RFBs) listed their efforts to assist in the implementation of IPOA–Seabirds.[6] These steps included measures requiring the use of seabird incidental catch mitigation measures by longline vessels in areas overlapping with high albatross and petrel distribution, and recommendations on data collection and dissemination of educational materials.

37. Measures considered as important in reducing the incidental catch of seabirds have in varying degrees been implemented by RFMOs such as WCPFC, ICCAT, CCAMLR, CCSBT, IOTC and the South East Atlantic Fisheries Organization (SEAFO). The list of measures includes:

- resolutions identifying the incidental catch of seabirds as a problem requiring management;
- specialist Working Groups to assess incidental catch and ecosystem issues;
- recommended voluntary mitigation measures and or mandatory measures;
- ecological risk assessment processes;
- monitoring of incidental catch;
- carcass recovery programmes for species identification;
- reporting of incidental catch and target catch and effort information;
- education and outreach programmes for fishers on mitigation and mandatory measures;
- review of performance at vessel level, and fine-scaled reporting of incidental catch.

38. The instruments and technical measures that States apply to reduce the incidental catch of seabirds may be directly applicable (e.g. mitigation measures, data requirements, measures of performance) or could be adapted (e.g. use of conservation and management measures rather than national-level regulations for mandatory measures) for use within RFMOs. The presence of scientific committees, specialist working groups and compliance review groups within RFMO/As can all contribute towards reductions in the incidental catch of seabirds.

PREPARATION OF IPOA/NPOA–SEABIRDS BEST PRACTICE TECHNICAL GUIDELINES

39. These guidelines are designed to assist:

(i) States assessing the need for, or drafting a new, NPOA–Seabirds
(ii) RFMO/As developing regional action plans to reduce the incidental catch of seabirds, and
(iii) States undergoing a review process of current NPOA–Seabirds

[6] CCAMLR, CCSBT, IATTC, ICCAT, IPHC, SEAFO and WCPFC

40. States with longline, trawl and gillnet fisheries should conduct an assessment of these fisheries to determine if a problem exists with respect to incidental catch of seabirds. If a problem exists and its nature and magnitude warrants further action, States should adopt a NPOA–Seabirds for reducing the incidental catch of seabirds in these fisheries (NPOA–Seabirds).

41. When developing the NPOA–Seabirds, States should review the presence of fisheries in areas adjacent to their EEZs and determine whether birds overlap with vessels fishing in areas in national jurisdictions and adjacent areas managed by RFMOs/As. If so and a potential for interactions with seabirds exists in these adjacent areas, then the State's NPOA–Seabirds should consider these RFMOs/As.

42. States which determine that an NPOA–Seabirds is not necessary should review that decision on a regular basis, taking into account *inter alia*: (i) changes in their fisheries, such as the expansion of effort or changes in gear types; (ii) the development of new fisheries; (iii) improved knowledge of, or changes in, foraging distributions of seabirds. If, based on a subsequent assessment, States determine that a problem exists, they should follow the procedures outlined in Paragraph 12 of the IPOA–Seabirds, and develop and implement a NPOA–Seabirds within two years.

43. The schematic representation of the effective implementation of IPOA–Seabirds using these Best Practice Technical Guidelines are set out in Figure 1.

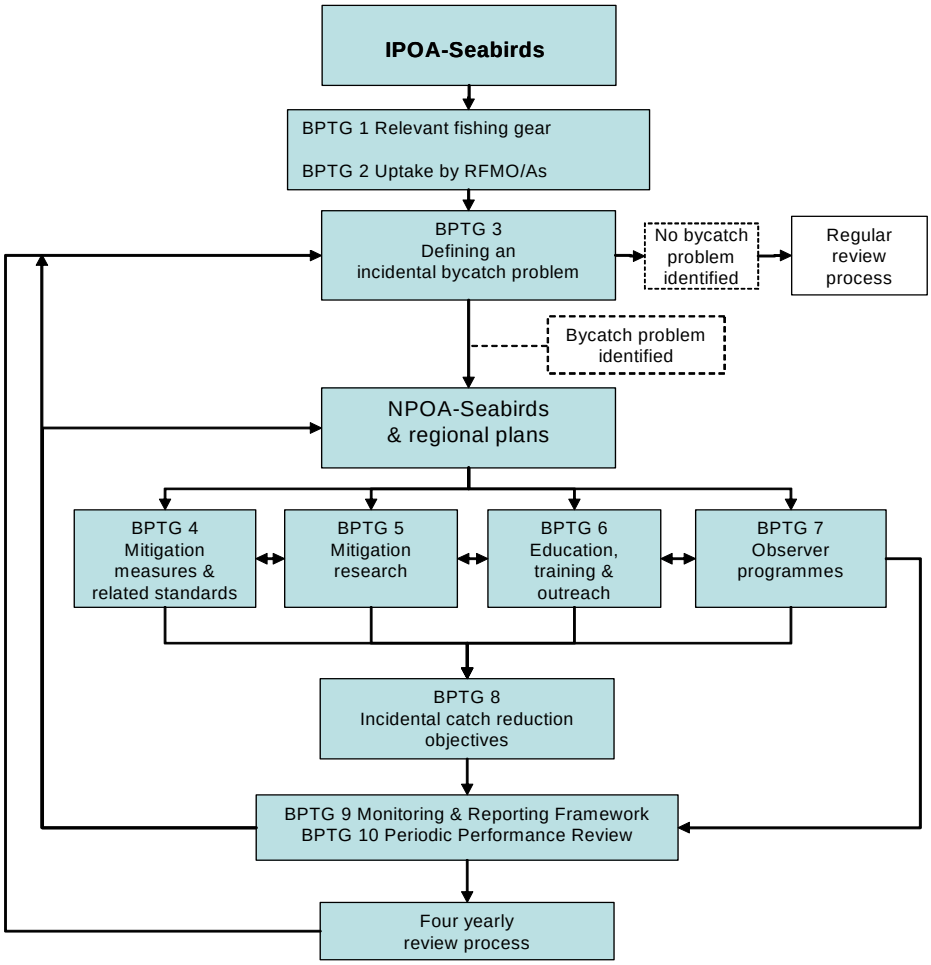


Figure 1. Decision-making and process framework and for IPOA/NPOA–Seabirds and regional plans. BPTG 4-7 reflect the 4 original recommended elements for NPOA–Seabirds contained in the IPOA–Seabirds

BEST PRACTICE TECHNICAL GUIDELINES

Box 1

Best Practice Technical Guidelines

1) Extend the IPOA–Seabirds to other relevant fishing gear including trawls and gillnets
2) Uptake of seabird measures by RFMO/As
3) Defining an incidental catch problem
4) Mitigation measures and related standards
5) Mitigation research
6) Education, training and outreach
7) Observer programme
8) Seabird incidental catch reduction objectives
9) Monitoring and reporting framework for NPOA–Seabirds and regional plans
10) Periodic performance review

Best Practice Technical Guideline No. 1 – Extend the IPOA–Seabirds to other relevant fishing gear including trawls and gillnets

States and RFMO/As should consider the potential for incidental catch problems in a range of fisheries including those using longlines, trawls and gillnets

Best Practice Technical Guideline No. 2 – Uptake of Seabird measures by RFMO/As

Where actions taken by States through an NPOA–Seabirds would be more effective if extended to areas under the jurisdiction of RFMO/As, the following measures should be considered as contributing to improving the effectiveness of the NPOA–Seabirds and implementation of IPOA–Seabirds.

(i) States should advise RFMO/AS to adopt complementary measures to those contained in their NPOA–Seabirds, including mitigation measures, where their fisheries and/or seabirds overlap (see Table 1).

(ii) Seabird experts should be included as members of State delegations to participate in scientific meetings of RFMO/As that address seabird incidental catch (e.g. bycatch working group, ecosystem working group).

(iii) Measures listed in (i) and (ii) are relevant in the situation when RFMO/As are considering developing a regional plans to reduce seabird incidental catch.

Defining an incidental catch problem

44. The list of assessment components provided in IPOA–Seabirds gives a sound framework for identifying the nature and characteristics of a seabird incidental catch problem and therefore the need for a NPOA–Seabirds. An assessment should be based on all available data including *Inter alia*, incidental catch data collected by at-sea observers, seabird data and, anecdotal information. Reports of sporadic captures from fishermen or observers outside of formal observer programmes addressing seabird incidental mortality may be the first sign of a more generalized problem.

45. Given the operational and environmental variability associated with fisheries globally it was not feasible in the IPOA–Seabirds to define what constitutes a “problem” in a generic context. The criteria used to define what constitutes a ‘problem’ should be explicitly defined, and developed for specific States/fisheries.

Best Practice Technical Guideline No.3 – Defining an incidental catch problem

When defining a seabird incidental catch problem, States and RFMO/As should consider the following:

(i) Defining the rationale for determining if a problem does, or does not, exist. The rationale should be based on: (a) the magnitude of seabird bycatch (rate or number); (b) species that are incidentally caught, and their conservation status; and (c) spatial and temporal overlap of fishing effort with seabirds.

(ii) Reviewing available data relevant to the incidental mortality of seabirds.

(iii) Validating sources of information and where appropriate follow up with more detailed investigations.

(iv) Adopting a precautionary approach where information is lacking or uncertain.

Mitigation measures and related standards

46. Information on the mitigation measures that have been proven to be most effective and a summary of the latest emerging measures in demersal and pelagic longline fisheries, trawl and gillnet fisheries are available in Brothers, Cooper and Løkkeborg (1999); Bull (2007) and Løkkeborg (2008). The work of the ACAP Seabird Bycatch Working Group is recommended as an appropriate means of remaining current with on-going research into emerging mitigation measures and the refinement of best practice suites of mitigation measures, including fishery specific recommendations. Mitigation measures in longline fisheries are more advanced than for other fisheries.

47. Tables 1 to 3 in Annex 4 summarize the mitigation measures which have been adopted for relevant gear types by different States and RFMOs. In some cases objective decisions were made based on experimental research, and/or effectiveness based on broad-based implementation in fisheries. In other cases there is only anecdotal evidence to categorize the efficacy of specific mitigation measures.

Longline fisheries

48. For longline fisheries, a number of mitigation measures have been tested since the early 1990s. The measures available are typically either technical or operational in nature.

49. Løkkeborg (2008) defines a mitigation measure as a modification to gear design or fishing operation that reduces the likelihood of catching seabirds. Mitigation measures for longline fishing have been classified somewhat differently, but can be divided into four main categories:

(i) Avoid fishing in areas and at times when seabird interactions are most intense (night setting, area and seasonal closures).

(ii) Limit bird access to baited hooks (e.g. underwater setting chute, weighted lines, thawed bait, side-setting).

(iii) Deter birds from taking baited hooks (e.g. streamer (bird-scaring) lines).

(iv) Reduce the attractiveness or visibility of the baited hooks (e.g. retention of or strategic dumping of offal, artificial baits, blue-dyed bait.

50. Since the drafting of IPOA–Seabirds, considerable research has been conducted into the effectiveness of various mitigation measures both in isolation and in combination. There is no single solution to mitigate incidental seabird catch across all longline fisheries as the efficiency of a measure is specific to each fishery. However, a considerable body of evidence shows that there is potential for reducing seabird mortality to negligible levels using mitigation measures. Using a suite of measures is the best way to avoid or reduce seabird mortality in most cases, although a single measure has proved to virtually eliminate seabird incidental catch in a few longline fisheries.

Trawl fisheries

51. Seabird interactions with trawl vessels fall into two broad categories: 1) interactions with trawl warps/netsonde cables, and 2) interactions with trawlnetting. For reducing seabird strikes on

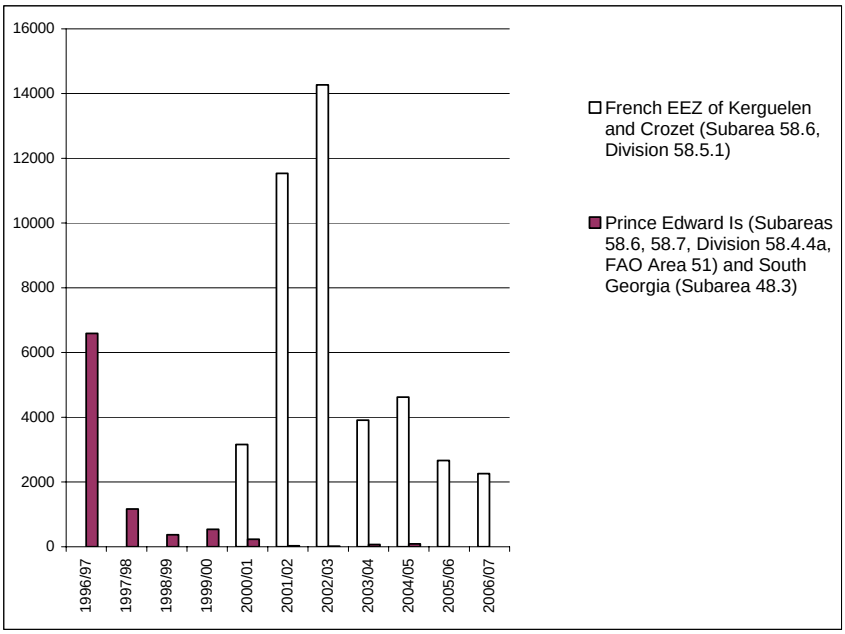
trawl warps and netsonde cables the use of bird-scaring lines has been proven to be the most effective mitigation measure. However, the retention or strategic management of fish waste (offal and discards) is the most likely long-term solution to reducing seabird incidental catch in trawl fisheries. Effective fish waste management combined with operational measures such as cleaning the net prior to shooting and reducing the time the net is on the surface at shooting and hauling are the best practice measures available for reducing seabird net entanglements.

Box 2

CCAMLR Fisheries example of mitigation measures

The Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) has prescribed a set of conservation measures to minimize seabird bycatch in its demersal longline fisheries targeting Patagonian toothfish (*Dissostichus eleginoides*) and Antarctic toothfish (*D. mawsoni*). These include streamer-lines, specified line-sink rates, strict prohibition on discharge of fisheries waste during setting operations and seasonal closure of certain high-risk areas for seabird interactions. Information on fishery performance, implementation of mitigation measures, new and developing mitigation measures, and seabird population and distribution information is reviewed annually by a group of experts in the ad hoc Working Group on Incidental Mortality Associated with Fishing. In 1996 an estimated 6 500 birds were killed, excluding Kerguelen and Crozet in the French EEZ. This had been reduced to fewer than 100 birds since 2002, two birds in 2006 and zero in 2007.

While the success of the approach adopted by CCAMLR in demersal longline fisheries may serve as a good model for some other fisheries management bodies, it should be noted that these fisheries operate with a closed season of up to eight months. This period coincides with at risk seabird breeding season, when seabird interactions are at their highest level, and in itself is a very effective mitigation measure that may not be applicable or acceptable in other fisheries.



Incidental mortality of seabirds in the demersal longlining CCAMLR fisheries (vertical axis) for *Dissostichus* spp. in the Southern Ocean around Antarctica, between the period when management interventions commenced (1996/97) and the most recent year (2006/07, horizontal axis). Two rapid decreases in seabird captures are documented. The first decrease, after 1996, followed the implementation of mandatory mitigation measures in high-risk areas for the incidental catch of seabirds in the Atlantic (Subarea 48.3) and Indian Oceans (Subareas 58.6 and 58.7) sectors. The second, in 2003, followed the introduction of mandatory measures in the high risk areas of the French EEZ in the Indian Ocean sector of the CCAMLR zone (Division 58.5.1 and Subarea 58.6). Monitoring in these latter areas began in 2001.

Gillnet fisheries

52. There are few mitigation measures for gillnet fisheries. Mandatory gillnet mitigation measures are required in two US fisheries. In the Puget Sound, Washington drift gillnet fishery for sockeye salmon, non-treaty fishers are required to use visual barriers in the top of their nets and are precluded from areas where sensitive seabird species are most common. In central California, set gillnets are limited to depths beyond where seabirds and other marine wildlife are most common.

Mitigation measures

53. Advances in some fisheries have been achieved through review and analysis of relevant data by a technical working group. For example, in demersal longline fisheries in the CCAMLR region, the ad hoc Working Group on Incidental Mortality Arising from Fishing (IMAF) has been influential in the development of new mitigation standards, review of the effectiveness of measures and research around them. This has led to a clear set of effective measures for CCAMLR fisheries.

54. On the other hand, in pelagic longline fisheries, there is still considerable debate about the most effective mitigation measures. There are however, several promising mitigation measures that when used in combination, and with appropriate training, offer the potential to achieve rapid and extensive reduction in seabird mortality in these types of fisheries.

55. In trawl fisheries streamer lines and offal management are widely recognized as effective means of reducing seabird strikes on trawl warps. Netbinding, net-cleaning, net-weighting and good deck practice to minimize the time the trawl is on the surface can be effective in minimising entanglement of seabirds in nets.

56. There are currently no best practice mitigation measures identified for minimizing seabird incidental catch in gillnet fisheries.

57. In fisheries where single or multiple mitigation measures are known to be effective, they should be prescribed. Technical specifications for their design, construction and performance should be prescribed to optimize their effectiveness. Such specifications may also contribute to assessing compliance with required measures.

58. There are advantages in having a combination of mandatory and voluntary measures. The flexibility provided by additional voluntary measures can provide opportunities for innovation and improvements in the effectiveness of mitigation measures.

Best Practice Technical Guideline No. 4 – Mitigation measures and related standards

States and RFMO/As should consider:

(i) Prescribing appropriate mitigation methods that are proven to be effective, practical and cost effective for the fishing industry.

(ii) Combining mitigation measures or devices to maximize their effectiveness.

(iii) Providing information for fishers and others that explain the operational aspects of the mitigation devices and their precise operational configuration (e.g. Løkkeborg (2008).

(iv) Regularly reviewing the implementation and performance of mitigation measures, such as by a technical working group.

(v) Prescribing technical specifications for their design, construction and performance to optimize their effectiveness.

(vi) Ensuring that plans retain flexibility to allow fishers to use effective combinations of multiple mitigation measures.

Mitigation research

Adoption of new technologies developed through research

59. All research conducted should recognize that fishers are more likely to employ measures that are low-cost and operationally practicable for their fishery, regardless of whether these measures are mandatory or voluntary.

60. Mitigation research can be characterized as an iterative process. The first step in the development of new mitigation measures is innovation. This can occur through observation and modification of gear by fishermen, observers or scientists/engineers. The development of new measures is then followed by observations at-sea and the analysis of preliminary available data. This is followed by controlled experiments either as part of a commercial fishing operations or onboard a charter/research vessel. Where controlled experiments are not done in the context of commercial fishing operations, the final step would include such trials to ensure adoption.

61. When considering a research plan it is important to consider how to most effectively convert the results of such studies into fleet based uptake of mitigation measures.

Research and development methodologies

62. One of the keys to effective mitigation research is to have a clear objective of the outcomes. There has been lively debate amongst conservationists and scientists about the need to conduct lethal experiments with a control treatment of no deterrent that results in the death of seabirds. From a scientific perspective, a control treatment is required to enable robust statistical analysis and for unequivocal management recommendations to be made. There are ethical issues to be considered when conducting lethal research. In most cases where a control with no deterrent has been incorporated into research protocols there has been a threshold mortality level established, beyond which the control treatment is removed from the trial. When considering the need for experimental trials that could result in seabird mortality it is important that researchers consider seabird provenance, and communicate and/or collaborate with colleagues from areas where seabirds that may be impacted breed. It is also important that political and practical issues be considered when conducting lethal experiments and not simply meeting scientific objectives.

63. Defining information needs is essential to ensure that effective mitigation measures are implemented. NPOA–Seabirds and regional plans should outline the information required to facilitate research into the identification of fishery specific suites of effective mitigation measures.

Best Practice Technical Guideline No. 5 – Mitigation research

States and RFMO/As should:

(i) Encourage innovation through collaboration of fishing industry, scientists and resource managers. This should include investigating the operational characteristics of new measures as an initial research step.

(ii) Ensure that plans provide the opportunity for research to test the effectiveness of new mitigation measures and to facilitate the continued refinement of existing mitigation measures.

(iii) Support controlled experiments that investigate the effectiveness of single or combined mitigation measures under commercial fishing conditions.

(iv) Identify and develop new measures to enable adaptation to changing fishing practices.

(v) Encourage collaborative research between countries with fisheries that overlap with the distribution of seabirds that forage in distant waters.

Box 3

Research and development of mitigation measures

Experimental work was conducted in the New Zealand ling *Genypterus blacodes* longline (autoline) fishery in 2002–2003 to examine the effectiveness of measures at reducing bird catch and effect on the fishery operation of Integrated Weight Line (IWL). This method replaces the mainline with a line containing additional weights (in this case, lead), to achieve greater sink rates. The experimental outcomes showed not only that line weighting resulted in faster sink rates and a more even sink profile (avoiding lofting between hand-placed weights), but also resulted in increased efficiency (10–20 percent more hooks fished per day) and a highly significant reduction in seabird captures. Eighty four seabirds were caught on control (unweighted line with external weights added) sets while only one was caught on IWL sets. Longer soak times, seabird catch reductions and improved ease of handling for fishers were documented. The use of this technique has been adopted across the ling autoline fleet.

This method has subsequently been adopted in fisheries for toothfish *Dissostichus* spp. in CCAMLR waters. The information gathered during experimental testing showed that the IWL met the technical standards prescribed in CCAMLR fisheries for line-sink rates. Direct implementation with minimal additional testing was possible in CCAMLR fisheries due to the high quality of information available about the study outcomes and prescription for device characteristics and aversion to using attached weights.

Education, training and outreach

64. The NPOA–Seabirds and regional plans should establish a programme to raise awareness among fishers, fishing associations and other relevant groups about the need to reduce the incidental catch of seabirds in fisheries. This programme could include educational materials for school groups, the public as well as the fishing community. For a list of education and outreach material, see Annex 4.

65. Regional and international networks and organizations can facilitate the implementation of the IPOA–Seabirds through shared experience and the exchange of skills and knowledge. There are several networks and organizations that promote seabird-friendly fishing techniques, information exchange, and provide training for fishers.

Best Practice Technical Guideline No. 6 – Education, training and outreach

States and RFMO/As should:

(i) Encourage the transfer of skills and information through expanded networks.
(ii) Encourage on-shore and at-sea training by practitioners experienced in the use of mitigation measures into their plans.
(iii) Ensure that training programmes are designed to deliver information so that it facilitates knowledge exchange between fishermen.

Box 4

Initiatives in information exchange and outreach

It is vital to encourage skills and knowledge transfer and data exchange by maximising and building on existing networks within regions and internationally.

The Albatross Task Force has been established by BirdLife International as a team of instructors to work with fishing crews to demonstrate the uptake of effective mitigation measures. They also interact with fisheries management agencies. Their focus is in providing instruction in the simple measures that can be used to reduce seabird incidental catch. The programme enhances skills, knowledge and information exchange on an international scale and is designed to feed into the NPOA–Seabirds process on a regional scale. The countries targeted to date have fleets that fish in bycatch "hotspots" – Argentina, Brazil, Chile, Namibia, South Africa and Uruguay.

The International Fishers Forum (IFF) is designed to bring together fishers, decision makers and NGOs to identify solutions to reduce incidental catch of seabirds, marine turtles, marine mammals and fish. The first four IFF meetings (New Zealand 2000, Hawaii 2002, Japan 2005 and Costa Rica 2007) resulted in collaborative mitigation research initiatives. In December 2006, the first South American Fishers Forum was held in Brazil. Future regional IFFs are considered by many as an efficient way to deliver tangible results through information exchange and networking at a regional level.

Observer programmes

66. *"Data collection programmes should collect reliable data to determine the incidental catch of seabirds in longline fisheries and the effectiveness of mitigation measures. Such programmes may make use of onboard observers – IPOA–Seabirds"*.

67. Given the difficulties of identifying seabirds to species, the incidental catch of seabirds is difficult for fishermen to rigorously document. Data collection by well trained fishery observers have been an important component in the success of fisheries that aim to document and reduce the incidental catch of seabirds. As an example, the kinds of objectives that can be addressed by observer programmes, and the detail of data types that can be collected at different levels of enquiry into fishery incidental mortality problems, are set out in Table 5, Annex 4.

68. To derive a balanced picture of incidental seabird catch, observer coverage may need to be spread representatively across the fishing effort in an area. The level of coverage (percentage of effort observed) needs to be tailored to different objectives of fisheries monitoring. Where detailed analyses of efficacy of different mitigation measures is required, a high level of coverage may be necessary. Low level of observer coverage may be adequate if only exploratory information on seabird mortalities is required.

69. Seabird identification is complex and the occurrence of species varies by region and time of year. Training is a key component of a fishery observer programme relative to the incidental catch of seabirds. Further, data collected from necropsies, such as species identification, demographic data and provenance, can be a vital source of data. It is therefore important that observers and/or fishermen recover seabird carcasses for analysis by specialists on shore. Where recovery of carcasses is not feasible, the use of photographs may help identify species.

70. Observer programmes require considerable technical and financial resources to be successful. Observer costs, space to accommodate observers on a vessel, safety issues, logistical constraints, and details of data storage and reporting systems hinder the capability of nations and RFMO/As to put observer programmes into place. Consequently, building capacity to establish and maintain observer programmes is of the utmost importance.

71. Electronic monitoring has been successfully applied in a range of fisheries to monitor target and non-target catch. The application of this technology across a wider range fisheries has significant

potential to reduce observer requirements. Video monitoring, deployed with appropriate regulatory provisions, has potential to be used as an effective audit on fisher self-reporting. Information recorded by fishermen can provide valuable supplementary information. Logbook data, photographs of seabirds caught, retention of carcasses, records of fishery operations and seabird catch mitigation provide critical insight into seabird mortality and possible mitigation approaches. Training and education of fishermen would improve the quality of the information they provide.

Best Practice Technical Guideline No. 7 – Observer programmes

The use of well trained observers is the most reliable means of monitoring fisheries performance with respect to seabird incidental catch and use of mitigation measures. Thus, States and RFMO/As are encouraged to:

(i) establish observer programmes to provide independent and representative data;
(ii) design observer programmes that are specific to the following objectives: (i) assessing whether incidental catch is occurring – lowest intensity; (ii) estimating capture statistics – moderate intensity; (iii) examining the efficacy of different mitigation measures – highest intensity;
(iii) establish programmes that provide training to fishery observers on seabird identification and data collection;
(iv) build capacity by developing the resources to finance and technically support observer programmes;
(v) investigate opportunities to adopt remote monitoring technology;
(vi) consider the use of valuable data collected by fisherman via logbooks and other sources.

Seabird incidental catch reduction objectives

72. There are two primary methods for establishing incidental mortality goals:

(i) an incidental catch rate expressed, for example, as seabirds killed per 1 000 hooks or other unit of effort; and
(ii) the number of seabirds caught, either at a species specific or generic seabird level.

73. Typically, seabird incidental catch is reported as the number of birds killed per unit effort. While this may be appropriate as a measure of fishery performance, as it relates seabird mortality to fishing effort in a manner that is both transparent and meaningful to fisheries management authorities, effort-based bycatch objectives can be flawed if they do not account for incidental catch levels in relation to fishing effort. For example, incidental catch objectives based on a mortality rate can be ineffective if a reduction in incidental catch is offset by an increase in fishing effort, causing an increase in the absolute mortality. Further, capture of a few individuals of highly threatened species, such as those listed by the IUCN Red List[7] can increase their threat of extinction.

74. Both rate-goals and total estimated incidental mortality-goals will require an appropriate level of observer monitoring and knowledge of the species composition to ensure that rare species are not impacted by occasional captures. For rare and highly endangered species, adopting a long-term goal of near-zero level of incidental mortality in all fisheries contexts will assist with achieving the objective of continual reduction in seabird incidental mortality.

Best Practice Technical Guideline No. 8 – Seabird incidental catch reduction objectives

States and RFMO/As should consider:

(i) establishing attainable objectives that lead to ongoing reductions in seabird mortality;
(ii) both total incidental catch levels and fishing effort when rate based objectives are established;
(iii) explaining the rationale for establishing such objectives;

[7] www.iucnredlist.org

(iv) presenting clearly stated and achievable timelines for these objectives.

Monitoring and reporting framework for NPOA–Seabirds and regional plans

75. Regular review of information about seabird incidental catch is necessary to enable fisheries and fishery managers to improve performance with respect to incidental catch of seabirds. Data-reporting programmes are most effective when data are reported at a fine scale (e.g. set-by-set or in small statistical areas). Due to the evolving nature of fisheries practices and mitigation techniques, annual review of data on captures and of the effectiveness and implementation of mitigation requirements is recommended to ensure specifications for mitigation devices are current best-practice and are appropriately deployed.

76. The IPOA–Seabirds suggests that States conduct an assessment/review of NPOA–Seabirds "for the purpose of identifying cost-effective strategies for increasing effectiveness" at least every four years. To this end, the assessment and review should be part of an overall reporting framework. Such a framework should represent the range of interests of all stakeholders with clear guidelines on responsibilities for monitoring, implementation, evolution and review of NPOA–Seabirds or regional plans.

77. The development of protocols for data sharing is critical to ensure that data is analysed and reported in a manner that facilitates effective decision making.

Best Practice Technical Guideline No. 9 – Monitoring and reporting framework for NPOA–Seabirds and regional plans

States and RFMO/As are encouraged to:

(i) establish a framework including indicators to monitor the implementation and review of plans. Such a framework should include clear reporting formats, protocols and timelines. This process should include a broad range of stakeholders;

(ii) exchange seabird incidental catch data between regional and national fisheries management bodies at the finest possible resolution feasible.

Periodic performance review

78. There is a need to assess the effectiveness of management actions, and to prioritize the treatment of specific parts of the overall problem of interest. The IPOA–Seabirds requires "*States which determine that a NPOA–Seabirds is not necessary should review that decision on a regular basis, particularly taking into account changes in their fisheries, ...*".

79. A review of the risks posed to seabirds from existing fisheries, their expansion, and/or the development of new fisheries is required to ensure that problems with incidental catch of seabirds are comprehensively addressed. The review may trigger a new assessment.

80. It has been shown that a relatively small proportion of vessels are responsible for the majority of incidental catch in particular fisheries. In many cases actions focussed on those vessels have resulted in reducing the incidental catch of seabirds. This is because vessel-specific factors are often the triggers for multiple incidental catch events, or account for lower levels of chronic incidental mortality.

Best Practice Technical Guideline No. 10 – Periodic performance review

States and RFMO/As are encouraged to:

(i) undertake a review of the risks to seabirds if existing fisheries expand and/or new fisheries develop;

(ii) consider how to identify those vessels and operators that require training to modify their practices.

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ANNEX 1 – Special requirements of developing countries

The challenge of effectively implementing the IPOA–Seabirds including through NPOA–Seabirds is that it places stress on national systems and capacity in most countries, especially in the developing world. Undertaking assessments and the review thereof to establish whether incidental catch in seabirds exist in fisheries and the development and implementation of NPOA–Seabirds attract additional burden in costs and commitment of non existent or little capacity. The problems faced by developing countries in implementing the CCRF is recognized in major international instruments, in particular, Article 5 of the CCRF.

Paragraph 30c of the Plan of Implementation of the World Summit on Sustainable Development and the 2001 Reykjavik Declaration drew attention to Article 5 of the CCRF and affirmed the commitment of States to strengthen international cooperation with the aim of supporting developing countries in incorporating ecosystem considerations into fisheries management in particular in building their expertise.

In this context, States and RFMO/As should strengthen international cooperation with the aim of supporting developing countries in implementing the IPOA–Seabirds and these Best Practice Technical Guidelines. In particular such international cooperation should aim at:

(i) building their expertise through targeted education and training for collecting and processing the biological, oceanographic, ecological and fisheries data needed for designing, implementing and upgrading NPOA–Seabirds and regional plans as appropriate;

(ii) mobilizing resources and ensuring that international and national financial agencies and mechanisms facilitate and contribute to the finances necessary to implement IPOA–Seabirds, NPOA–Seabirds and relevant regional plans;

(iii) building long-term national and regional institutional capacity to manage resources sustainably including through adopting and implementing an ecosystem approach to fisheries for conserving biological diversity.

ANNEX 2 - Instruments supporting IPOA–Seabirds

Code of Conduct for Responsible Fisheries (CCRF)

1. The CCRF sets out principles and international standards of behaviour for responsible practices with a view to ensuring the effective conservation, management and development of living aquatic resources, with due respect for the ecosystem and biodiversity. The Code addresses general principles (Article 6), fisheries management (Article 7), fishing operations (Article 8) and fisheries research (Article 12).

2. While not referred to specifically in the Code, seabirds are *de facto* included either as component of the ecosystem, incidental catch or as discards. The following Articles of the Code apply;

(i) Article 6.6...States and users of aquatic ecosystems should minimize waste, catch of non-target species, both fish and non-fish species, and impacts on associated or dependent species;

(ii) Article 7.5.1...States should apply the precautionary approach widely to conservation, management and exploitation of living marine aquatic resources in order to protect them and preserve the aquatic environment;

(iii) Article 7.6.9…States and subregional or regional fisheries management organizations and arrangements should promote, to the extent practicable, the development and use of selective, environmentally safe and cost effective gear and techniques;

(iv) Article 8.5.1…States should require that fishing gear, methods and practices, to the extent practicable, are sufficiently selective so as to minimize waste, discards, catch of non-target species, both fish and non-fish species, and impacts on associated or dependent species and that the intent of related regulations is not circumvented by technical devices;

(v) Article 8.5.3...States and relevant institutions should collaborate in developing standard methodologies for research into fishing gear selectivity, fishing methods and strategies;

(vi) Article 8.5.4…International cooperation should be encouraged with respect to research programmes for fishing gear selectivity, and fishing methods and strategies, dissemination of the results of such research programmes and the transfer of technology;

(vii) Article 12.4…States should collect reliable and accurate data which are required to assess the status of fisheries and ecosystems, including data on incidental catch, discards and waste. Where appropriate, this data should be provided, at an appropriate time and level of aggregation, to relevant States and subregional, regional and global fisheries organizations.

Convention on the Conservation of Migratory Species of Wild Animals

3. In 1983, the United Nations Environment Programme (UNEP) Convention on the Conservation of Migratory Species of Wild Animals (CMS) agreement came into force to conserve terrestrial, marine and avian migratory species throughout their range. Migratory species are defined by the Convention as those that regularly cross international boundaries, including into international waters.

4. Parties to CMS provide strict protection for endangered migratory species listed in Appendix I, and seek to develop international cooperative agreements for Appendix II listed migratory species, which are those that are considered likely to benefit significantly from such arrangements. Since April 1997 (the fifth meeting of the Conference of Parties to the Convention), all albatross species have been listed in either Appendix I or II.

Agreement on the Conservation of Albatrosses and Petrels

5. At the sixth meeting of the Conference of Parties to CMS the threats posed to a wide range of seabird species, and to albatrosses and petrels in particular by fisheries bycatch and colony based threats, were noted. It was requested that relevant Parties develop an Agreement under the Convention for the conservation of Southern Hemisphere albatrosses and petrels. This resulted in the

drafting of the Agreement on the Conservation of Albatross and Petrels (ACAP), which is a binding agreement with the stated objective to achieve and maintain a favourable conservation status for albatrosses and petrels by addressing threatening processes on land (in breeding colonies) and at sea (incidental mortality). ACAP Annex 1 currently lists 19 albatross and seven petrel species. ACAP came into force on 1 February 2004, and currently has 13 Parties[8] and several cooperating Range States. Under the Agreement a State qualifies as Range State based on albatross and petrel distribution and overlap of fishing effort with ACAP listed species.

United Nations Fish Stock Agreement (UNFSA)

6. The UNFSA implements the United Nations Convention on the Law of the Sea of 10 December 1982 by providing the framework for conservation and management of straddling fish stocks and highly migratory fish stocks. The agreement contains provisions that are relevant for non-target species (both fish and non-fish species including seabirds). It states, inter alia, that in order to conserve and manage straddling fish stocks and highly migratory fish stocks, States shall: apply the precautionary approach in accordance with article 6; minimize catch of non-target species through measures including, to the extent practicable, the development and use of selective, environmentally safe and cost-effective fishing gear and techniques; protect biodiversity in the marine environment; collect and share, in a timely manner, complete and accurate data concerning fishing activities on, inter alia, catch of target and non-target species and fishing effort, as set out in Annex I, as well as information from national and international research programmes; promote and conduct scientific research and develop appropriate technologies in support of fishery conservation and management; and implement and enforce conservation and management measures through effective monitoring, control and surveillance.

The FAO Compliance agreement

7. The Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (the FAO Compliance Agreement) requires parties to ensure that vessels entitled to fly their flags on the high seas do not engage in any activity that undermines international conservation and management measures. In this regard, each Party is obligated to, among others:

- establish records of vessels entitled to fly its flag and that such vessels are marked in a manner that allows them to be readily identified;
- ensure that each vessel entitled to fly its flag shall provide information on the vessel's operations that is necessary for the party to fulfil its obligations under the agreement;
- ensure that vessels entitled to fly its flag are not allowed to fish on the high seas without an authorization to fish;
- ensure that it can exercise effective control over vessels entitled to fly its flag before it can authorize such vessels to fish on the high seas;
- take enforcement measures in respect of vessels entitled to fly its flag which act in contravention of the agreement and make such contravention an offence under national legislation;
- share with FAO specified information on vessels entitled to fly its flag; and,
- cooperate in the implementation of the agreement.

The Compliance Agreement would be of particular relevance where there are international conservation and management measures established to address the incidental catch of seabirds by fishing vessels on the high seas.

[8] Argentina, Australia, Brazil, Chile, Ecuador, France, New Zealand, Norway, Peru, South Africa, Spain, United Kingdom and Uruguay.

ANNEX 3 – CCAMLR: A case study of economic incentive and industry leadership

CCAMLR Patagonian toothfish longlining

The achievements of CCAMLR in reducing the incidental catch of seabirds in the South Georgia Islands region from several thousands seabirds per year to zero in a decade is recognized internationally as a "best practice" model for reducing the incidental catch of seabirds and CCAMLR-style seabird avoidance measures are now being adopted in other parts of the world.

Financial incentive

Working with some of the world's leading mitigation scientists, and incorporating expert opinion from around the world, CCAMLR's Working Group on Incidental Mortality Associated with Fishing (IMAF) was responsible for prioritizing and supporting mitigation research and experimentation that resulted in the development of suite of mitigation measures that when combined have been proven to eliminate the incidental catch of seabirds. Primary among these measures was the seasonal closure of fisheries in high risk areas during the seabird breeding season. It is during this period when mortalities are most likely to occur, and are also most damaging to breeding populations. In 1996, the year of the first, albeit incomplete, monitoring of seabird captures across the CCAMLR Area, an estimated 6 500 birds were killed. In the following years a full range of mitigation measures, including a seasonal closure, were imposed and monitored and seabird by-catch numbers and rates around South Georgia were reduced ten-fold within a single year. The fact that there was consensus on the adoption odf such highly prescriptive mitigation and management measures is partly a reflection of the high value fishery and economic return in securing one of the limited number of licenses granted to access the fishery.

This dramatic success was predicated upon a range of other drivers that were influential in reducing mortality to zero, some of which can be traced back to the drafting of the CAMLR Convention.
The following factors have been identified as key drivers to change:[9]

(i) placement of independent scientific observers on all longline vessels;
(ii) creation of a formal Working Group which comprised all stakeholder constituencies – fishers, fishery managers, fishery scientists, technical experts, seabird biologists, NGOs – to analyse and assess data and to provide advice;
(iii) collaborative research into practical solutions involving fishing companies and scientists that were supported by governments ensuring that they were made mandatory by the Commission;
(iv) high value of the fishery so that the initial introduction of mitigation measures were neither disproportionately costly nor powerful disincentives to continue to participate in the fishery.

Leadership

The CAMLR Convention was the first in the marine environment to combine the requirements of sustainable harvesting with adequate protection for non-target species potentially affected by harvesting. In order to fully and effectively implement the CAMLR Convention's provisions, while dealing with ecological uncertainties, the Commission adopted an ecological approach to fisheries management grounded in the Precautionary Principle. This was underpinned by a strongly scientifically-based management approach (Cox *et al.*, 2007; Croxall, Rivera and Moreno, 2007). In order to develop and monitor CCAMLR's Conservation Measures and Resolutions, a number of specialist working groups were established, including IMAF.

Science

The achievements of CCAMLR reflect the collective political will of Member States (currently 25) to eliminate the incidental catch of seabirds. This resolve would not have been possible without complete confidence by the Member States in the scientific rigour of the advice provided by the working groups, and the decision making processes in place. Analyses of this system identify the

[9] Waugh *et al*., 2008; BirdLife International, 2004

placement of independent observers on all vessels as a key factor in underpinning the successful integration of science into management and licensing conditions. The observers have provided high quality information on the efficacy of management measures, allowing an adaptive management approach to be effectively implemented, rapidly and efficiently.

ANNEX 4 – Video and printed resources on reducing seabird incidental catch

NB: This is not a complete list of resources, but rather an example of what is available in various regions of the world.

Video resources

- Australian Fisheries Management Authority – *Catch Fish Not Birds (http://www.afma.gov.au/)*
- Projecto Albatroz – *Trabalhadores do Mar/Sea Workers (http://www.projetoalbatroz.org.br/mainpg.htm)*
- Royal Society for the Protection of Birds (BirdLife International) – *Save the Albatross: keeping seabirds off the hook (http://www.rspb.org.uk/)*
- Southern Seabird Solutions – *Fishing the Seabird Smart Way (http://www.doc.govt.nz/Conservation/001~Plants-and-Animals/004~Seabirds/001~Southern-Seabird-Solutions/index.asp)*
- Washington Sea Grant – *Off The Hook (http://www.wsg.washington.edu/)*

Printed resources

- Organization for the Promotion of Responsible Tuna Fisheries (OPRT) - Tuna Longlining Fishing: Meets the Challenge (http://www.oprt.or.jp)
- Commission for the Conservation of Southern Bluefin Tuna (CCSBT) Building a Seabird Friendly Southern Bluefin Tuna Fishery (http://www.ccsbt.org/)
- Argentinas, Universidad Nacional de la Patagonia Austral and Argenova S.A. - Evitemos la pérdida de carnada y la muerte de aves marinas. (http://www.avesargentinas.org.ar/aa/index.html)
- BirdLife International and ACAP - Mitigation Fact Sheet series (http://www.savethealbatross.net/ and http://www.acap.aq/)
- Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) – Fish the Sea, Not the Sky (http://www.ccamlr.org/)
- Washington Sea Grant – Streamer Lines to Reduce Seabird Bycatch in Longline Fisheries (http://www.wsg.washington.edu/)

Table 1. Structures and mechanisms used by a range of regional fishery management organizations to address the issue of the incidental catch of seabirds

Structure/mechanism in place in different RFMOs	CCAMLR (Bottom longline fishery)	IATTC	ICCAT	CCSBT	WCPFC	IOTC	SEAFO
Current seabird bycatch measures	CM25-02 CM24-02 Resolution 22/XXV	Resolution C-05-01	Resolution 02-14 Recommendation 07-07	Recommendations relating to Ecologically Related Species, 1997 (Attachment E in report of CCSBT3 Part 2; Attachment U to report of CCSBT4 Part 1)	WCPFC Convention Articles 5 and 6, Conservation and Management Measure 2007-04	Recommendation 05/09 Resolution 08/09	Conservation Measure 05/06
Specialist working group which addresses bycatch and ecosystem issues	Working Group on the Incidental Mortality Associated with Fishing	Bycatch Working Group	Subcommittee on Ecosystems	Working Group on Ecologically Related Species	Ecosystem and Bycatch Specialist Working Group	Working Party on Ecosystems and Bycatch	No specific WG Scientific Committee
Mandatory mitigation requirements to be applied in areas of high to moderate risk of seabird interactions*	Line weighting Streamer line Limitation on offal discharge Night setting in high risk areas		Streamer line for longline vessels fishing south of 20ºS. Swordfish vessels using monofilament gear are exempt if they use night setting and specified line weighting	Streamer line for longline vessels fishing south of 30ºS	Longline vessels fishing south of 30ºS, or vessels greater than 24m length fishing north of 23ºN must use two of the following: side setting; streamer line; line weighting; night-setting; offal management; blue-dyed bait; underwater setting chute, of which at least one must be from the first four of these	Longline vessels fishing south of 30ºS must use two of the following: streamer line; line weighting; night-setting; offal management; blue-dyed bait; line shooter, of which at least one must be from the first three of these	Longline vessels fishing south of 30ºS must use Tori lines; only night setting; offal management
Estimation of seabird bycatch at the level of the convention area or for the totality of fisheries managed under the agreement	Conducted annually by the IMAF working group	Addressed in 2006 and 2007 meetings of the IATTC Working Group on	An estimate will be produced as part of ICCAT seabird assessment, due March 2009	Estimates reported by member States for their fisheries	CMM-2007-04 requires annual submission of all available information to enable a seabird mortality estimate by the Scientific Committee	None in place	

Structure/mechanism in place in different RFMOs	CCAMLR (Bottom longline fishery)	IATTC	ICCAT	CCSBT	WCPFC	IOTC	SEAFO
		Stock Assessments					
Ecological risk assessment	Reviewed annually	Addressed in 2006 and 2007 meetings of the IATTC Working Group on Stock Assessments	Being developed as part of ICCAT seabird assessment, due March 2009	None in place	Part of WCPFC's Ecological Risk Assessment (2007-2010)	None in place	None in place
Observer monitoring of seabird bycatch	Mandatory	Encouraged. Not routinely undertaken	Encouraged	Levels of >10% coverage encouraged	Regional observer programme under development, with initial aim of 5% coverage for all fleets	Encouraged	No information
Carcass recovery	Mandatory	None in place	None in place	None in place	None in place	None in place	No information
Seabird bycatch target	Near zero levels	None in place	None in place	None in place	None in place	Near zero levels	None in place
Reporting of seabird bycatch and catch and effort information	Mandatory	Encouraged	Reporting of available information recommended under Recommendation 07-07. Format for reporting not yet specified	Encouraged	Encouraged	Resolution 08/09 requires reporting of available information within annual report. Format for reporting not yet specified	Conservation Measure 05/06request CP to establish mechanism for data collection and reports

Table 2. Examples of mitigation requirements for demersal longline fisheries (columns) exhibiting a range of requirements

Mitigation measure or practice	United States of America (Alaska)[1]	New Zealand	Chile [2]	Australia (Macquarie Island)	CCAMLR
Seasonal area closure			x[3]		x[4]
Bird bycatch limit				Species-specific bycatch levels based on conservation status	3 birds per vessel limit[5]
Night setting		x[6]	x	x	x[7]
Streamer lines	x[8]	x	x	x	x
Line weighting/minimum sink rate		x	x	x	x
Full offal retention				x	
No offal discharge at setting		x	x		x
No offal discharge from the side of the vessel where hauling occurs	x	x	x		x
Haul mitigation [9]					x[10]
Minimization of deck lighting					x
Removal of hooks from discards	x		x		x

[1] Groundfish and halibut fishery off Alaska.
[2] If a trot line system is used, these measures are not required.
[3] Introduced as a target species conservation measure, not specifically for seabird conservation purposes.
[4] Not required for low- or low-to-medium risk areas; applies from 1 September to 30 April for medium-high and high risk areas.
[5] Except waters adjacent to Prince Edward Islands and Kerguelen and Crozet Islands.
[6] Night setting to be used unless line-weighting is employed.
[7] Not required for low- or low-to-medium risk areas.
[8] Streamer lines of specified standard and paired streamer lines required on vessels over 55 feet in length.
[9] Encouraged, not mandatory.
[10] Not mandatory for low to medium risk areas.

Table 3. Examples of mitigation requirements for pelagic longline fisheries (columns) showing a range of requirements. Bird bycatch limits are not regulated in WCPFC

Mitigation measure or practice	**Australian ETBF (S of 25°S)**	**Hawaii swordfish fishery**	**United States of America (tuna fishery in Pacific N of 23°N)**	**New Zealand**	**Chile**	**South Africa**	**WCPFC[1]**	**CCSBT**	**IOTC**	**ICCAT**
Bird bycatch limit	0.05 birds/1 000 hooks for fleet					25 birds per vessel				
Night setting	x	x[2]		x[3]	x	x[4]	(x)		(x)	x[5]
Streamer lines (single)	x	x[6]		x	x	x	(x)	x	(x)	x[7]
Line weighting/ minimum sink rate	x	x	x	x	x	x	(x)		(x)	x[8]
Side setting and bird curtain		x					(x)			
No offal discharge at setting	x				x	x	x			
Strategic offal dumping[9]		x				x	x		x	
Thawed baits	x	x	x		x	x				
Blue-dyed bait		x	x				x		x	
Underwater setting devices							x			
Line shooter		x	x				x		x	

[1] Choice of two measures, including one of those bracketed
[2] Required when the vessel is not side-setting
[3] Night setting to be used unless line-weighting is employed
[4] Not required for sword fish vessels, unless the threshold 25 bird mortalities is reached, when it becomes a requirement
[5] Swordfish vessels only if not using a streamer line (must also use line-weighting)
[6] Specific bird scaring lines designed for use with side setting are described
[7] Swordfish vessels exempted from this requirement; if they do not use streamer line, then they must night set and use specified line weighting
[8] Swordfish vessels only if not using a streamer line (must also night set)
[9] Involves dumping of offal from the opposite side of the setting or hauling area in order to attract birds away from the hookline

Table 4. Examples of regulated or mandatory mitigation requirements for trawl fisheries (columns) showing a range of requirements.

Mitigation measure or practice	**Chile**[1]	**New Zealand**	**South Africa**	**CCAMLR**
Bird bycatch limit (annual)				(20 birds/vessel)[2]
Discharge restrictions:				
– during shooting and hauling			x	x
– prior to shooting	x			
Netsonde cables prohibited		x		x
Streamer lines		x[3]	x	
Bafflers or warp scarers		x[4]		
Minimize net time at surface				x
Net cleaning	x			x
Minimization of deck lighting				x

[1] Applies to trawl fishing for hake and ling only.
[2] Limit applies to icefish trawl only.
[3] May be used if bafflers or warp scarers are not in place.
[4] May be used if streamer lines are not deployed.

Table 5. An example of data collected by fishery observers at sea in relation to seabird incidental catch

Objective of monitoring	Data type collected in longline/trawl/gillnet fisheries
1. To characterize a fishery and assess if seabird bycatch problems exist	***Fishery characteristics*** • Vessel characteristics (name, registration, nationality) • Fishing trip and event characteristics: target fish species, trip number, event number, fishing method and gear used • Date, time of observations • Fishing effort during observed period (hooks/tows/sets) proportion of effort observed • Location of fishing event observed (Lat., Long.) • Mitigation used (compared to that required for the fishery) ***Seabird catch characteristics*** • Seabird mortality events (time, event number, number of individuals caught) • Species composition of incidental catch (species group, species, as possible) • Condition of seabird on capture (dead/alive/injured) • Retention or discarding of seabirds caught
2. To examine the precise nature of incidental catch of seabirds, and thereby identify specific mitigation solutions for the particular fishery **These elements are in addition to the items in 1. above**	***Fishery characteristics (at event level)*** • Offal management capacity of vessel • Mitigation measures used • Deployment of offal management (frequency/type of discharge) • Monitor the use of mitigation measures • Other mitigation used by fishing event (detail of the design and use of these) • Comments detailing the nature of capture events and factors that may act to avoid them ***Incidental catch characteristics*** • Detailed injury characteristics and which part of the fishing event the seabirds were recovered from. • Species composition and abundance of seabirds attending the vessel (in relation to mitigation use and offal management)

This is the report of the Expert Consultation on Best Practice Technical Guidelines IPOA/NPOA–Seabirds [International Plan of Action/National Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries], held in Bergen, Norway, from 2 to 5 September 2008. The guidelines are designed to: (i) assist countries in preparing and implementing more effective NPOA–Seabirds; (ii) provide regional fisheries management organizations (RFMOs) with guidance on implementing IPOA–Seabirds within a regional framework; and (iii) address incidental mortality of seabirds from relevant fishing gear. The guidelines emphasize the importance of a cyclical framework of data collection, research and monitoring to quantify and reduce the incidental mortality of seabirds in an adaptive manner.

The guidelines cover the following topics: (i) Relevant fishing gears; (ii) Uptake of seabird measures by RFMO/Arrangements; (iii) Defining an incidental catch problem; (iv) Mitigation measures and related standards; (v) Mitigation research; (vi) Education, training and outreach; (vii) Observer programme; (viii) Seabird incidental catch reduction objectives; (ix) Monitoring and reporting framework for NPOA–Seabirds and regional plans; and (x) Periodic performance review.

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