



**COUNCIL OF
THE EUROPEAN UNION**

Brussels, 21 November 2012

**16518/12
ADD 1**

**PECHE 487
ENV 873**

COVER NOTE

from: Secretary-General of the European Commission,
signed by Mr Jordi AYET PUIGARNAU, Director

date of receipt: 19 November 2012

to: Mr Uwe CORSEPIUS, Secretary-General of the Council of the European
Union

No Cion doc.: SWD(2012) 369 final

Subject: Commission Staff Working Paper
Impact assessment
Accompanying the document
Communication from the Commission to the European Parliament and the
Council
Action Plan for reducing incidental catches of seabirds in fishing gears

Delegations will find attached Commission document SWD(2012) 369 final.

Encl.: SWD(2012) 369 final



Brussels, 16.11.2012
SWD(2012) 369 final

COMMISSION STAFF WORKING PAPER

IMPACT ASSESSMENT

Accompanying the document

**COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN
PARLIAMENT AND THE COUNCIL**

Action Plan for reducing incidental catches of seabirds in fishing gears

{COM(2012) 665 final}

{SWD(2012) 370 final}

This report commits only the Commission departments involved in preparing it and in no way prejudices the final form of any decision to be taken by the Commission

TABLE OF CONTENTS

1.	Procedural issues and consultation of interested parties	6
1.1.	Organisation and timing	6
1.2.	Adaptations to the report in line with the comments of the Impact Assessment Board	7
1.3.	Consultation and expertise	8
2.	Problem definition.....	11
2.1.	Species Affected and Fisheries Involved	11
2.1.1.	Longlines.....	12
2.1.2.	Static Nets	13
2.1.3.	External Waters.....	14
2.1.4.	Other Gears	14
2.2.	Threat posed by bycatch.....	15
2.3.	Current Management.....	17
2.3.1.	Fisheries Legislation	17
2.3.2.	Environmental Legislation	19
2.4.	Existing mitigation measures and devices	21
2.5.	The affected stakeholders.....	22
2.6.	Underlying Drivers.....	24
2.7.	Evolution of the problem	26
2.8.	Necessity and Subsidiarity	27
3.	Objectives.....	27
3.1.	General objectives.....	27
3.2.	Specific objectives	27
3.3.	Reform of the CFP	29
4.	Policy options.....	30
4.1.	Option 1 – Status Quo	31
4.2.	Option 2 – EU-POA	32
4.3.	Option 3 – Stand-alone Regulation.....	34
5.	Analysis of impacts	36
5.1.	Option 1 – Status Quo	36

5.1.1.	Economic impacts	36
5.1.2.	Environmental impacts.....	38
5.1.3.	Social impacts	38
5.1.4.	Impact on SMEs.....	39
5.1.5.	Simplification and administrative burden	39
5.2.	Option 2 – EU-POA	39
5.2.1.	Economic Impact	39
5.2.2.	Environmental Impact.....	43
5.2.3.	Social Impact.....	45
5.2.4.	Impacts on SMEs	46
5.2.5.	Simplification and administrative burden	46
5.3.	Option 3 – Stand-alone regulation	48
5.3.1.	Economic impacts	48
5.3.2.	Environmental impacts.....	50
5.3.3.	Social impacts	51
5.3.4.	Impacts on SMEs	52
5.3.5.	Simplification and administrative burden	52
5.4.	Summary of impacts	54
6.	Comparing the options	57
6.1.	Qualitative Assessment by Option	57
6.2.	Ranking the options.....	58
7.	Monitoring and Evaluation	59
ANNEX I – SUMMARY OF PUBLIC CONSULTATION.....		61
ANNEX II – EXECUTIVE SUMMARY FROM MRAG STUDY		69
ANNEX III – ANNUAL SEABIRD BYCATCH FROM SELECTED EU LONGLINE AND STATIC NET FISHERIES		75
ANNEX IV – CONSERVATION STATUS OF SPECIES OF CONSERVATION CONCERN AND VULNERABLE TO BYCATCH IN EU WATERS		76
ANNEX V – DIFFERENT TYPES OF LONGLINES AND STATIC NETS		78

ANNEX VI – DESCRIPTION OF INTERNATIONAL AGREEMENTS AND CONVENTIONS	79
ANNEX VII NATIONAL MEASURES INTRODUCED INTO CASE STUDY FISHERIES	82
ANNEX VIII - MAPS SHOWING THE AREAS MANAGED BY RFMOs	84
ANNEX IX - MITIGATION MEASURES INTRODUCED BY TUNA RFMOS	85
ANNEX X - MAP OF SPAS ESTABLISHED UNDER THE BIRDS DIRECTIVE	89
ANNEX XI – DESCRIPTION OF MITIGATION MEASURES	90
ANNEX XII - INTERNATIONAL AGREEMENTS	94
ANNEX XIII - ADMINISTRATIVE AND MANAGEMENT COSTS	95

LIST OF ACRONYMS

ACAP	Agreement on the Conservation of Albatrosses and Petrels
ACFA	Advisory Committee for Fisheries and Aquaculture
ATF	Albatross Task Force
BPFG	Best Practice Technical Guidelines
BPUE	Bycatch Per Unit Effort
BSRAC	Baltic Sea Regional Advisory Council
CBD	The United Nations Convention on Biological Diversity
CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
CCSBT	Commission for the Conservation of Southern Bluefin Tuna
CCTV	Closed Circuit Television
CFP	Common Fisheries Policy
CITES	Convention on International Trade in Endangered Species of Wild Fauna & Flora
CMS	The Convention on the Conservation of Migratory Species of Wild Animals
COFI	Committee on Fisheries (FAO)
DCF	Data Collection Framework
DCMAP	EU Multiannual Programme for Data Collection
EC	European Commission
EEZ	Exclusive Economic Zone
EFF	European Fisheries Fund
EMFF	European Maritime and Fisheries Fund
EMPAS	Environmentally Sound Fisheries Management in Marine Protected Areas
EU	European Union
EU-POA	European Union Plan of Action
FAO	Food and Agriculture Organisation of the United Nations
FIMPAS	Fisheries Measures in Protected Areas
FTE	Full-time Equivalent
GES	Good Environmental Status
HELCOM	Helsinki Commission of the Convention on the Protection of the Marine Environment of the Baltic Sea Area
IASG	Impact Assessment Steering Group
IATTC	Inter-American Tropical Tuna Commission
IBA	Important Bird Area

ICCAT	International Commission for the Conservation of Atlantic Tunas
ICES	International Council for the Exploration of the Sea
IOTC	Indian Ocean Tuna Commission
IPOA	International Plan of Action
IUCN	International Union for the Conservation of Nature
IUU	Illegal, Unreported and Unreported
MRAG	Marine Resources Assessment Group
MSC	Marine Stewardship Council
MSFD	Marine Strategy Framework Directive
NGO	Non-Governmental Organisation
NPOA	National Plan of Action
NSRAC	North Sea Regional Advisory Council
NWWRAC	North Western Waters Regional Advisory Council
OSPAR	Oslo and Paris Commissions
PBR	Potential Biological Removal
PRAC	Pelagic Stocks Regional Advisory Council
RFMO	Regional Fisheries Management Organisations
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SCM	EU Standard Cost Model
SEAFO	South-East Atlantic Fisheries Organisation
SEO	Sociedad Española de Ornitología
SFIA	Sea Fish Industry Authority
SPA	Special Protection Area
SPEA	Portuguese Society for the Study of Birds
TFEU	Treaty on the Functioning of the European Union
UNCLOS	United Nations Convention on the Law of the Sea
UNCSD	United Nations Conference on Sustainable Development
UNEP	United Nations Environment Programme
UNFSA	United Nations Fish Stock Agreement
VMS	Vessel Monitoring System
WCPFC	Western and Central Pacific Fisheries Commission
WGCSE	Working Group on Seabird Ecology (ICES)

Lead DG: DG MARE

Other departments involved: SG, DG ENV, DG EMPL, DG REGIO, DG ECFIN, DG TRADE, DG CLIMA, DG RTD, DG ENTR.

Agenda planning/WP reference: 2009/MARE/071

1. PROCEDURAL ISSUES AND CONSULTATION OF INTERESTED PARTIES

1.1. Organisation and timing

This impact assessment concerns a proposal for the development of a European Union Plan of Action for reducing the incidental catches of seabirds in fishing gears (EU-POA). This is within the framework of an International Plan of Action (IPOA) for Reducing the Incidental Catches of Seabirds in Longline Fisheries¹ adopted in 1999 by the UN Food and Agriculture Organisation (FAO) Committee on Fisheries (COFI). The European Commission, in fulfilment of its responsibilities as a contracting party of international organisations acting in the context of the IPOA, is committed to developing a Plan of Action for EU vessels fishing in EU and non-EU waters.

The proposal is provided for in 'Agenda Planning' (2009/MARE/071), in the 2011 Annual Management Plan of the Directorate-General for Maritime Affairs and Fisheries (DG MARE) and in the Commission Work Programme (CWP) as a policy output under the activity "*Conservation, management and exploitation of living aquatic resources*", with the specific objective: "*To improve fishing methods with a view to reducing incidental and unwanted catches, and the impacts on the marine environment*".

In order to support the work an internal DG MARE Working Group was set up in July 2009 by the unit dealing with the Common Fisheries Policy and Aquaculture (A2) and comprising representatives from the Regional units – Atlantic (C2), Mediterranean and Black Sea (D2) and Baltic and North Sea (E2) as well as from the unit dealing with International affairs and Regional Fisheries Organisations (B1).

An Impact Assessment Steering Group (IASG) was formed in January 2010, which in addition to DG MARE was comprised of representatives from nine Directorates-General, namely the Secretariat General, DG ENV, DG EMPL, DG REGIO, DG ECFIN, DG TRADE, DG CLIMA, DG RTD and DG ENTR. The IASG met on the 14 April 2010 and 2 September 2011 and worked on a revised draft of the Impact Assessment by written consultation following the second meeting. Between these meetings regular contact was maintained with the IASG and in addition there were regular written exchanges with DG ENV given their interest in this area.

¹ FAO. 1999. International Plan of Action for reducing incidental catches of seabirds in longline fisheries. Rome, FAO. 1999. pp 1-11.

1.2. Adaptations to the report in line with the comments of the Impact Assessment Board

DG MARE has welcomed the comments, suggestions and questions of the Impact Assessment Board and has adapted the report so as to address these. The report has been re-structured in line with the comments received.

On the basis of the first opinion received, the report has been adapted in order to provide more evidence regarding the existing problem and the unsustainability of current fishing practices with respect to seabirds. This has involved the inclusion of additional information from a background study² prepared to support this impact assessment as well as other sources on the impact of fisheries on seabird populations and the species at most risk into Sections 2.1 and 2.2. The information on the affected sector has been expanded (Section 2.6) as has the section on existing mitigation measures (Section 2.5).

The objectives contained in Section 3.1 and 3.2 have been refined and indicative timelines included although these are very much dependent on the outcome of the reform of the Common Fisheries Policy.

The policy options included in Section 4 have been expanded with the inclusion of an option based on the implementation of the Birds and Habitats Directives. This has been considered and subsequently discarded for the reasons given in Section 4. Under option 3 (Section 4.3), two sub-options (sub-option 3a and 3b) have been considered to make this option more realistic. The rationale for all of the various options has also been expanded upon.

The explanation of the costs for each policy option contained in Sections 5.1.3, 5.2.3 & 5.3.3 and 5.1.4, 5.2.4 and 5.3.4 has been strengthened. However, a more substantive analysis detailing regional and social/employment impacts has not been possible as there is only limited information available. In any case the analysis carried out indicates that the preferred option from this initiative will have only minimal impacts on employment given the measures are largely voluntary and can be tailored to specific fisheries.

The monitoring and evaluation arrangements have been revised in Section 7 to be clearer with indicative timelines and indicators for measuring effectiveness included.

Throughout the text additional indications of the views expressed by stakeholders from the public consultation have been added and the executive summary of the MRAG study has been included as an Annex (Annex II) given it is the primary source of information for this IA. Two new Annexes - Annex III "Annual seabird bycatch from selected EU longline and static net fisheries" and IV "Conservation status of species of conservation concern and vulnerable to bycatch in EU waters"- have also been added to provide additional background information.

On the basis of the second opinion received, the report has been further adapted with refinement to the objectives and the addition of specific actions and timelines. In the problem definition section all relevant data on the incidence of seabird bycatch and seabird population levels has been presented. However, it should be noted the available data is a combination of

² MRAG. 2011. Contribution to the preparation of a Plan of Action for Seabirds http://ec.europa.eu/fisheries/documentation/studies/index_en.htm

very detailed for some species and fisheries, sporadic for others and in many cases purely anecdotal.

The options design in Section 4 has been improved and clarifications added to Section 4.2 on the operation of option 2. The views of the stakeholders have also been more transparently presented for each of the policy options.

Further clarification on the impacts on SMEs has been added to Section 5.2.4 and also clarifications on the assumptions for the costs in Sections 5.2.5 and 5.3.5 have been included. Comments on the likely impacts on employment have been added by way of clarification. Table 12 (Summary of impacts) in Section 5.4 has been replaced with a new table.

Further stakeholder views expressed in the public consultation have been incorporated into the text and the justification for not consulting the European Sectoral and Social Dialogue Committee has been expanded.

Finally several sections (2.3 and 2.4) have been shortened and tables 3 and 4 in the original text have been moved to the Annexes (Annex VII and Annex X). An additional annex has been included detailing the international conventions and agreements relevant to this initiative (Annex VI).

1.3. Consultation and expertise

This impact assessment was prepared based on information received from the following sources:

1. Initial advice received from the International Council for the Exploration of the Sea (ICES) in 2008³ provided a general assessment of the level of incidental catches of seabirds in EU waters, identified the main species affected and the main fisheries responsible for seabird mortality by area and by gear type. This advice has been updated in subsequent years by the ICES Working Group on Seabird Ecology (WGSE)⁴. Information from other countries such as Canada, who have developed National Plans of Action as well as from Regional Fisheries Management Organisations (RFMOs) such as CCAMLR⁵ and ICCAT⁶ which have successfully implemented mitigation measures were also taken into account in this initial assessment as have the views and information supplied by the NGO Birdlife International given their expertise in this area.
2. A public consultation was launched in June 2010⁷. Stakeholders were invited to comment on the scope and objectives of a proposed EU-Plan of Action for reducing incidental catches of seabirds, as well as on the potential fields of action to be contained in the POA. These were presented in a consultation document⁸ prepared by

³ ICES Advice 2008, Book 1, 1.5.1.3 Interactions between fisheries and seabirds in EU waters

⁴ ICES. 2009. Report of the Working Group on Seabird Ecology (WGSE), 23-27 March 2009, Bruges, Belgium. ICES CM 2009/LRC:10. 91pp.

ICES. 2010. Report of the Working Group on Seabird Ecology (WGSE), 15-19 March 2010, ICES Headquarters, Copenhagen, Denmark. ICES CM 2010/SSGEF: 10. 77pp.

⁵ Convention on Conservation of Antarctic Marine Living Resources

⁶ International Commission for the Conservation of Atlantic Tunas

⁷ http://ec.europa.eu/fisheries/partners/consultations/seabirds/index_en.htm

⁸ http://ec.europa.eu/fisheries/partners/consultations/seabirds/consultation_document_en

the Commission in support of the process. A total of 215 contributions were received⁹ from fisheries and environmental administrations from Member States, key stakeholders from the fishing industry particularly the relevant Regional Advisory Councils (RACs), NGOs, an international fishery management organisation and the general public.

The majority of submissions (87%) came from the general public across a range of Member States. All of them came from members of the civil society rather than individual fishermen and tended to be less technical or detailed in respect of the analysis of each field of action presented in the consultation paper. They were mainly in the form of two "chain e-mails", in response to campaigns launched by environmental NGOs. Given these contributions were not technical they were given less weight in assessing the contributions received.

Of critical importance were the inputs of the relevant RACs (North Western Waters (NWWRAC), North Sea (NSRAC), Baltic (BSRAC) and Pelagic (PRAC)). The RACs were established to give stakeholders – fishermen, vessel owners, processors, traders, fish farmers, environmental and consumer organisations and others – a vehicle through which to feed recommendations into CFP policy developments such as this initiative. Their role is to submit opinions to the Commission and Member States on different aspects of fisheries management and their views reflect the relevant sectors and segments of the catching sector, as well as the interests of important NGOs who are members of the RACs.

Annex I contains a full summary of the findings from the public consultation but the main conclusions that had the general consensus of the stakeholders were as follows:

- (a) There was support for the adoption of an EU-POA for seabirds except from a group of fishermen's representative bodies who argued that the measures proposed in the consultation paper are already covered by the EU Birds Directive¹⁰ through the implementation of Special Protection Areas (SPAs).
- (b) Measures should apply across the whole EU fishing fleet operating in EU waters and in non-EU waters.
- (c) Interactions between seabirds and fishing gears need to be reassessed to identify existing knowledge gaps and make it easier to define suitable and effective management tools.
- (d) Longlines and static nets fisheries are the most common causes of incidental mortality in EU waters and should be the focus of any measures. Other fishing gears known to be responsible for incidental catches of seabirds and should not be excluded (e.g. trawls and purse-seines).
- (e) The choice and implementation of mitigation measures should follow a step-by-step approach, balanced between the conservation objectives, economic profitability and safe working conditions for fishermen.

⁹ http://ec.europa.eu/fisheries/partners/consultations/seabirds/contributions/index_en.htm
¹⁰ Council Directive 2009/147/EC on the conservation of wild birds

- (f) Collection of data and reporting on incidental catches of seabirds needs to be mandatory rather than voluntary and continued research into mitigation measures and data collection are needed.
- (g) Education, training and outreach should be made available to fishermen and other stakeholders to raise awareness about the problem of seabird bycatch and the practical solutions available.
3. An overview of the issues relating to seabird bycatch was presented to the Advisory Committee for Fisheries and Aquaculture (ACFA) on 6 July 2010. ACFA provides a forum for dialogue with the fishing industry on policy issues. An outline of the structure and content of possible measures to reduce seabird bycatch including the adoption of an EU Plan of Action were discussed. During this meeting ten Member States¹¹ expressed their support for the development of a Plan of Action.
4. In August 2010, under Framework Contract No FISH/2006/09 Lot 2, a background study was externally contracted to a consortium led by MRAG Limited². The main aim of this study was to assess the effectiveness of mitigation measures being used globally, taking account of ICES advice and also recommendations contained in the FAO Best Practice Technical Guidelines (BPTG) for IPOA/NPOA–seabirds¹² (agreed by FAO-COFI in 2008). It was based on a number of case study fisheries where significant seabird bycatch had been identified by ICES. The case studies were as follows:
- Demersal longline fisheries in the Grand Sol to the west of Ireland;
 - Pelagic and demersal longline fisheries in the western Mediterranean;
 - Pelagic and demersal longline fisheries in the eastern Mediterranean (Maltese and Greek waters);
 - Static net fisheries in the eastern and western Baltic; and
 - Static net fisheries in the eastern North Sea.

Information was gathered through direct consultation and interviews with fishermen operating in these areas as well as from fisheries departments, researchers and NGOs working in related fields. Collection and analysis of information focused on awareness of seabird bycatch, estimate of bycatch levels, current mitigation methods (if any) deployed and reaction of fishermen to the introduction of additional measures. The study also assessed the cost associated with the use of potential mitigation measures and the socio-economic and environmental impacts of their use in the specific fisheries. This study was completed in June 2011 and provides much of the basis for this Impact Assessment. The executive summary is provided in Annex II.

¹¹ UK, France, Germany, Spain, Netherlands, Sweden, Estonia, Denmark, Portugal, Poland

¹² FAO. 2008. Report of the Expert Consultation on Best Practice Technical Guidelines for IPOA/NPOA-Seabirds. Bergen, Norway, 2-5 September 2008. 46pp.

It was not felt necessary to consult other stakeholder groups directly such as the European Sectoral Social Dialogue Committee on the sea fisheries sector specifically on the social impacts of this initiative. The contributions received from the RACs as part of the public consultation were detailed and all of the likely impacts including the social and employment impacts. It is also worth underlining that the European Transport Workers' Federation that represents the employees in the sea fisheries sector social dialogue committee is also a member of the RACs.

Moreover the interviews conducted with individual fishermen as part of the previously mentioned background study² were very informative and largely supported the views expressed in the public consultation by the RACS on the anticipated impacts. Potential impacts on employment from the introduction of mitigation measures were also briefly discussed at the meeting held with ACFA. Major impacts on employment were not raised as a significant issue in any of these separate consultations.

The Commission's minimum standards for consultations have been met. The environmental, social and economic advice, the results of the open consultation process (in particular the contributions from the RACs), the conclusions from the consultation meeting, the outcome of the discussions in the IASG and the recommendations from ICES and the MRAG study all significantly contributed to the analysis of the policy options and of the different policy measures discussed in this impact assessment.

2. PROBLEM DEFINITION

2.1. Species Affected and Fisheries Involved

'Seabirds' is a term adopted in this report to cover all species that primarily use intertidal (e.g. shorebirds), littoral (e.g. sea ducks) and offshore areas (e.g. traditional 'seabirds'). Interactions between fisheries and seabirds can essentially be categorised in three ways. Firstly, and most importantly, seabirds can be killed accidentally by some kinds of fishing gears, notably when they predate on baited longlines as they are deployed and when they are caught in static nets set near the surface. Secondly, fishing can result in discards of dead fish which can provide abundant food for seabirds in some instances, at times leading to substantial increases in the numbers of some bird species in those areas. Thirdly, fishing can deplete fish stocks on which seabirds feed. This initiative deals solely with the interaction of seabirds with fishing gears leading to incidental bycatch.

ICES estimates conservatively that the EU fishing fleet is responsible for the death of c. 200,000 seabirds annually in EU and external waters⁴ but indicates that there is a paucity of accurate data on levels of incidental catches. This presents a challenge in assessing the impact of fisheries on these species and reflects the lack of systematic monitoring and reporting on incidental catches in fisheries. However, based on the ICES advice, the data that is available indicates seabird mortality is substantial in a number of areas within EU and non-EU fisheries and for a number of species, some of which are classified as being threatened or endangered.

Seabird species are generally long-lived and their populations are highly sensitive to changes in adult survival. Therefore mortality induced by incidental capture in fisheries is a significant

danger to the populations of these species¹³. Of 346 known species of seabirds, nearly half (47%; 52% of those with known trends) are known or suspected to be experiencing population declines¹³. All evidence indicates that over the last 20 years, seabirds have had a substantially poorer conservation status than non-seabirds and that their populations have deteriorated faster over this period compared to other species¹³.

The MRAG study² indicates that at least 34 of these species are caught incidentally as bycatch in EU waters due to the overlap between fishing activity and the spatial distributions of these species. Annex III provides a detailed breakdown of bycatch in the fisheries used as case studies in the study by way of illustration of the extent of the problem.

All available scientific information and also the majority of stakeholders in the public consultation highlight longlines and static nets as the gears with the highest seabird bycatch in EU waters. Interactions with these gears mainly occur during foraging and this behaviour determines their vulnerability to being caught in these fishing gears.

In the case of longline fisheries, species that plunge dive or pursuit dive are particularly vulnerable to being caught during setting or hauling of longlines as they are able to access bait even at substantial depths under the surface. This behaviour is exhibited in particular by shearwaters, gannets and auks. Surface-seizing birds such as gulls and fulmars are also vulnerable, as the baited hooks can take some time to sink during setting².

In static net fisheries, birds that are most vulnerable are mostly coastal species that dive from the surface to either forage on the bottom or pursue prey through the water column. This foraging behaviour is common amongst species such as sea ducks, diving ducks, divers/loons, grebes, cormorants and auks².

Annex IV provides a complete list of the species most at risk and their current conservation status in EU waters as well as an indication of the fisheries in which they are reported to be incidentally caught.

2.1.1. Longlines

Extensive pelagic and demersal longline fisheries operate in EU waters to the north, west and south-west of Ireland, off Madeira and the Azores, as well as in the eastern and western Mediterranean. Pelagic longlines are used to target large migratory species such as tunas, swordfish and pelagic sharks in waters off the continental shelf. Demersal longlines are used to target species such as Greenland halibut, cod, hake, ling, tusk and sea bream in both coastal and offshore waters. Even though there are differences in their operation and gear configurations, there is evidence of incidental seabird bycatch in both types of longline fisheries. Annex V illustrates the different types of longline gears used.

ICES reports that 20 species of seabirds interact with longline fisheries in EU waters, principally in the Mediterranean pelagic and demersal longline fisheries and the North-east Atlantic (Gran Sol) demersal longline fishery, although ICES¹⁴ reports bycatch of seabird in almost all EU longline fisheries. MRAG² provide annual estimates of seabird bycatch in the

¹³ Croxall J.P. Butchart S.H.M. Lascelles B. Stattersfield A.J. Sullivan B, Symes A. Taylor P. 2012, Seabird conservation status, threats and priority actions: a global assessment. Bird Conservation International (2012) 22:1-34.

¹⁴ ICES. 2010. Report of the Working Group on Seabird Ecology (WGSE), 15-19 March 2010. ICES CM 2010/SSGEF:10

case study fisheries. In the demersal longline fisheries in the Mediterranean and Gran Sol looked at, bycatch is estimated at $44,700 \pm 19,373$ while for the pelagic longline fisheries in the Mediterranean they estimate bycatch at $9,231 \pm 4,029$.

Four species are notable for their high conservation status with moderate to high frequency of capture in longline gear relative to their populations. The Balearic Shearwater (*Puffinus mauretanicus*) is classed by the IUCN as Critically Endangered species, meaning it has been evaluated to have a very high risk of extinction in the wild. Three others, the Sooty shearwater (*Puffinus griseus*), Yelkouan shearwater (*Puffinus yelkouan*) and Audouin's gull (*Larus audouinii*) are classified as Near Threatened meaning the populations are in moderately rapid decline globally.

In addition to these species a further five are listed in the Birds Directive¹⁰ as having unfavourable conservation status requiring "*special conservation measures*" due to declines in localised populations. These include the Corys shearwater (*Calonectris diomedea*) and Mediterranean gull (*Larus melanocephalus*) in the Mediterranean and the Black-legged kittiwake (*Rissa tridactyla*), Black guillemot (*Cepphus grylle*) and Manx shearwater (*Puffinus puffinus*) in the NE Atlantic². For all of these species significant levels of bycatch are reported both in the MRAG study² and by ICES³.

Several other species - the Yellow-legged gull (*Larus michahellis*) in the Mediterranean and the Northern fulmar (*Fulmarus glacialis*), Great shearwater (*Puffinus gravis*) and Northern gannet (*Morus bassanus*) in the NE Atlantic have high incidental catches and ICES reports that the sheer scale of the numbers caught in longline fisheries is cause for concern even though the populations of these species are relatively stable^{3,4,4}.

2.1.2. Static Nets

Static nets, encompassing gillnets, entangling nets, trammel nets and driftnets are widely used in EU fisheries to target a range of demersal species, including cod, hake, turbot, bass, mullet, rays and shellfish such as crawfish, as well as pelagic species such as herring, sprat and mackerel. They are also used in coastal lakes and estuaries to target freshwater species such as perch, zander and bream where there are interactions with certain intertidal and littoral seabird species. A range of static nets with varying constructions, mesh sizes and soak times depending on the target species are used. Annex V illustrates the different types of static nets commonly deployed.

Static net fisheries tend to be seasonal and interact with a wide range of seabird species. Fisheries in the Baltic Sea and North Sea are considered to be the biggest contributors to bycatch in EU waters although bycatch is not confined just to static net fisheries in the Baltic and North Sea. ICES¹⁴ report bycatch of seabirds in static net fisheries throughout EU waters. This includes waters off the south-west England, off the north-west coast of Ireland, the northern and western North Sea and off northwest Spain. All of these fisheries are characterised by comprising large numbers of small vessels.

A recent review¹⁵ has been undertaken of 30 studies reporting seabird bycatch in order to assess the scale of the problem and the potential impacts on bird populations in the Baltic Sea

¹⁵ Żydelis, R., Bellebaum, J., Österblom, H., Vetemaa, M., Schirmeister, B., Stipniece, A., Dagys, M., van Eerden, M. and Garthe, S. 2009. Bycatch in gillnet fisheries- An overlooked threat to waterbird populations. Biological Conservation, 142: 1269-1281.

and North Sea (this included the coastal lakes IJsselmeer and Markermeerin). While the cumulative annual bycatch estimate (made up mainly of divers, grebes, sea ducks, diving ducks, auks and cormorants) from this survey was 90,000 birds, this was considered to be ‘a substantial underestimate’. The authors conclude it more likely that between 100,000 and 200,000 birds are killed in static nets fisheries in the region each year. MRAG² estimate bycatch in these fisheries at 95,440 ± 19,076.

Several species in the region are at immediate risk and subject to international legal protection². The Steller’s eider (*Polysticta stelleri*) has a global status of ‘Vulnerable’, meaning it has been evaluated to have a high risk of extinction in the wild. The Black-throated Diver (*Gavia arctica*) also has a European IUCN Red List category of "Vulnerable" although is listed as "Least Concern" globally. The Common pochard (*Aythya farina*), Red-throated diver (*Gavia stellata*), Slavonian grebe (*Podiceps auritus*), Long-tailed duck (*Clangula hyemalis*), Greater scaup (*Aythya marila*), Common guillemot (*Uria aalge*), Black guillemot (*Cepphus grille*), Tufted duck (*Aythya fuligula*), Black scoter (*Melanitta nigra*), Velvet scoter (*Melanitta fusca*) and smew (*Mergellus albellus*) are all listed in the Birds Directive as being "species of European concern" with reported bycatch in static net fisheries in the Baltic and North Sea.

2.1.3. External Waters

In non-EU waters, bycatch mainly occurs in longline fisheries. According to a recent study on global bycatch, 17 of the 22 known species of albatross are threatened with extinction¹⁶, with the key threat to these species recognised to be longline fisheries. A further 7 species of petrel (*Procellaria* and *Macronectes* spp.) listed under the Agreement on the Conservation of Albatrosses and Petrels (ACAP), face similar threats¹⁷. Incidental mortality of these species has been recorded in 28 legal fisheries and from 14 different nations including France, Spain and the UK. These *Procellariiform* species are extremely wide-ranging, and their distributions overlap considerably with areas targeted by the world’s fishing fleets¹⁸. The populations are highly susceptible to increases in adult mortality. For already highly globally threatened species, such as the Endangered Amsterdam albatross (*Diomedea amsterdamensis*) and the Critically Endangered Tristan albatross (*Diomedea dabbenena*), the impact of bycatch has been highlighted as a driving factor in population declines¹⁶. A recent review on the threat to seabirds puts bycatch firmly as the primary causes of adult mortality and assesses that bycatch is a threat to even relatively common species such as black-browed albatross (*Thalassarche melanophrys*) and black-footed albatross (*Phoebastria nigripes*)¹⁶.

2.1.4. Other Gears

There are also reports globally of incidental catches in trawl and purse seine fisheries but almost no information is available on the extent in EU waters. ICES report northern gannets present as bycatch in pelagic trawl fisheries operating off the north and north-east coasts of

¹⁶ Anderson O.R.J, Small C.J, Croxall J.P, Dunn E.K., Sullivan B.J, Yates O, Black A. 2011. Global seabird bycatch in longline fisheries. *Endang Species Res* Vol: 14: 91-106, 2011.

¹⁷ ACAP (Agreement on the Conservation of Albatrosses and Petrels) 2009. Species Assessments. Available at www.acap.aq/acap-species.

¹⁸ Birdlife International. 2004. Tracking ocean wanderers: the global distribution of albatrosses and petrels. Results from the Global Procellariiform Tracking Workshop, 1-5 September, 203, Gordon's Bay, South Africa. Birdlife International, Cambridge.

Scotland⁴. An extrapolation from one study to total fishing effort in these fisheries estimated around 780 gannets may have been caught in that year⁴.

Significant bycatch events are well documented in numerous trawl fleets outside of EU waters. For example, data collected in the South African hake (*Merluccius* spp.) fleet from 2004–2005, indicated a bycatch of around 18,000 birds⁴. They reported that 85% of mortality resulted from birds being killed by interactions with warp cables (i.e. wings being wrapped around the cable resulting in drowning), with 15% resulting from birds becoming entangled in the nets themselves. Given the level of trawling activity within EU waters, it is safe to assume there must be some similar interactions particularly with the large gull species that are common in EU waters¹⁴.

Evidence is emerging that purse seines can also take significant bycatch of species such as shearwaters. A questionnaire survey carried out in 2008/2009 in Portuguese ports showed purse seines to have taken the highest proportion (45%) of the Critically Endangered Balearic shearwaters compared to any other fishing gears, including longlines and static nets in this region⁴.

Bycatch with these gear types was highlighted in the public consultation by a number of NGOs and national administrations as being an emerging problem.

2.2. Threat posed by bycatch

The issue of seabird bycatch has only been apparent for about two decades. Nevertheless, seabird bycatch is regarded by many, along with the impacts of invasive alien species (e.g. rodents), as the most pervasive and immediate threat to many seabird species in both coastal waters and on the High Seas¹³. Other threats to seabird species include human disturbance, commercial development, hunting and pollution but assessing the contribution of the different anthropogenic threats including bycatch to seabird mortality is a complex and somewhat subjective task given the lack of knowledge on population levels, distribution of seabird species, threat vulnerability and overall conservation status.

Bycatch estimates are available for a number of fisheries in both EU and non-EU waters but as MRAG² point out, generating estimates of bycatch has limited application unless some inference can be made about the impact of bycatch on the seabird populations involved. Currently, however, there are no guidelines defining bird bycatch limits or other mortality levels that could be deemed as sustainable at either population or geographic scale in Europe¹⁵. Therefore while many studies have established that bycatch mortality for some seabird species is at levels that have potentially serious impacts, and in some cases are clearly unsustainable for known or estimated populations, establishing safe levels of bycatch for most species is not possible.

One approach that has been considered to define such safe levels of incidental catches is using Potential Biological Removal or PBR¹⁵. PBRs can be used to estimate the additional mortality a population might be able to sustain, over and above natural mortality which includes the relative impact of bycatch on populations¹⁹. This approach was first used to assess the impact of fisheries on seabirds using the example of white-chinned petrels which were frequently

¹⁹ Wade, P.R. 1998. Calculating limits to the allowable human-caused mortality of cetaceans and pinnipeds. *Marine Mammal Science* 14, 1-37.

caught in longline fisheries in the Southern Ocean²⁰. It has since been applied to other species including some in EU waters. Using this information, MRAG² provide PBR estimates for five species frequently caught in longline and static net fisheries in EU waters and compared these with annual bycatch estimates and populations to provide proportion of mortality related to bycatch. The results of this analysis are shown in Tables 1 and 2.

In the case of the Balearic and Cory's shearwater, comparing the PBR estimates with annual bycatch illustrates the vulnerability of these species to additional human-induced mortality. For the Balearic shearwater the PBR estimate is very low and therefore even very low levels of bycatch are considered a threat to the population. For Cory's shearwater the estimates are considerably larger, and although this species is considered to be more abundant, it is likely to be impacted across a much wider geographical range than the Balearic shearwater. Therefore according to the MRAG analysis², it is likely to be vulnerable when bycatch from all EU longline fisheries are aggregated together. Moreover, in the Mediterranean this species is reported to suffer additional mortality from predation by rats. It is highly likely that bycatch in pelagic and demersal longline fisheries, in combination with this predation, is a serious threat to the Cory's shearwater population in the Mediterranean³.

Table 1 PBR against bycatch for selected species caught in longline fisheries in the Mediterranean and NE Atlantic

Species	Total population estimates	Potential Biological Removal Rate (PBR)	Annual Bycatch estimates
Balearic shearwater	25,000	438 (406-465 95% CL)	~250 (57% of PBR)
Cory's shearwater	870,000	31,855	~20,000 (63% of PBR)

Source: MRAG study

In the case of two species considered in the Baltic - Greater scaup and Common guillemot - the PBR estimates in table 2 show that the current levels of mortality from static net fisheries are significant. When combined with other forms of mortality (e.g. hunting) fishing poses a serious threat to the populations. In the case of the common guillemot the estimated bycatch is in excess of the PBR by 2.5 times although there are reports that the actual population size of this species is much bigger and the actual PBR could be an underestimate, meaning bycatch may not be impacting on the population as much as indicated. Nevertheless undoubtedly bycatch contributes significantly to the overall anthropogenic mortality for this species.

For the long-tailed duck the bycatch estimates represent only a small proportion of total mortality expressed by the PBR. This species faces threats from other sources of mortality, such as hunting and oil pollution and fisheries induced mortality may have less of an impact on the population. Nonetheless reports¹⁵ suggest the population of long-tailed duck has declined in the Baltic in areas where there is high fishing activity and there are concerns that the level of bycatch is significantly underestimated¹⁵.

Table 2 PBR against bycatch for selected species caught in static net fisheries in the Baltic

Species	Total population	Potential Biological	Annual Bycatch
---------	------------------	----------------------	----------------

²⁰ Dillingham, P.W. and Fletcher, D. 2008. Estimating the ability of birds to sustain human-caused mortalities using a simple decision rule and allometric relationships. *Biological Conservation* 141: 1783-1805.

	estimates	Removal Rate (PBR)	estimates
Long-tailed duck	3.02 x 10 ⁶	113,000 (75,000-136,000 95% CL)	24,000 (21% of PBR)
Greater scaup	204,000	11,000 (8,900-13,100 95% CL)	6,500 (59% of PBR)
Common guillemot	36,000	620 (520-700 95% CL)	1,500 (241% of PBR)

Source: MRAG & Zydalis et al., 2009¹⁵

These are several examples that illustrate the high level of mortality caused by bycatch on the species considered. Unfortunately due to a lack of accurate population and/or bycatch estimates it is not possible to provide PBR estimates for the 20 or more other species of conservation concern that are reported to have significant levels of bycatch in EU waters. ICES¹⁴ have committed to providing such estimates for more seabird species in coming years. According to the MRAG study² it is felt this is the most appropriate method of assessing the threat of bycatch on seabird populations currently available although it has limitations and can provide a misleading and understated measure of actual impact if interpreted wrongly. This has been highlighted by Birdlife as a weakness in using this approach²¹.

2.3. Current Management

Management measures to protect seabirds are spread across a wide range of fisheries and environmental legislation as well as being included in a number of international Conventions and Agreements. There is a combination of binding and non-binding measures specifically tailored to reducing seabird bycatch in different fisheries and others where the protection of seabirds is included in the context of broader ecosystem management objectives of reducing fisheries impacts. A full description of the various international Conventions and Agreements is given in Annex VI.

2.3.1. Fisheries Legislation

In terms of fisheries legislation the interaction of seabirds with fishing activities falls under the overarching objectives of the Common Fisheries Policy (CFP)²², which points to the need to minimise the impacts of fishing activities on marine ecosystems. However, other than a closed area to protect seabirds in the sandeel fishery in the North Sea included in the current technical measures regulations²³, no other specific legislation to protect seabirds from adverse impacts of fishing activities is in place in EU waters. Furthermore there is no formal

²¹ BirdLife International, 2009. European Community Plan of Action (ECPOA) for reducing incidental catches of seabirds in fisheries. Proposal by BirdLife International. September 2009. 38pp.

²² Council Regulation (EC) No 2371/2002 on the conservation and sustainable exploitation of fisheries resources

²³ Annex III para. 4 of Council Regulation (EC) 43/2009 of 16 January 2009 fixing for 2009 the fishing opportunities and associated conditions for certain fish stocks and groups of fish stocks, applicable in Community waters, and for Community vessels, in waters where catch limitations are required. November 2009.

obligation for fishermen to report these incidental catches nor a formal obligation for Member States to collect this information under the current EU Data Collection Framework (DCF)²⁴.

At a national level, however, recognising the problem, several Member States have introduced measures or developed Codes of Conduct to reduce seabird bycatch in specific areas or fisheries. These measures are a mixture of gear-based and operational mitigation measures, closed or restricted areas and restrictions on fishing effort. The actual effectiveness of these measures is poorly understood as few, if any, have been properly assessed but in at least one case in the North Sea (i.e. Ijsselmeer and Markermeer lakes) significant reductions in bycatch are reported as a result of the measures. Annex VII summarises the national measures taken in the case study fisheries used in the MRAG study².

The situation in fisheries in non-EU waters in which EU vessels operate is more advanced in terms of seabird protection. In these waters the Regional Fisheries Management Organisations (RFMOs) are key for the conservation and management of seabirds with RFMOs having been given explicit responsibilities under the UN Fish Stocks Agreement (UNFSA)²⁵ for minimising bycatch in their fisheries. To date, the majority of RFMOs have adopted some form of mitigation measures aimed at avoiding seabird mortality in longline fisheries. As a contracting party to many RFMOs, the EU is bound to implement those measures.

The EU has also made a number of commitments related to the principles of sustainable development and others more specifically related to the management of the shared ocean resources, including species at conservation risk which are relevant to seabirds. These include:

- The United Nations Convention on the Law of the Sea (UNCLOS)²⁶
- The United Nations Convention on Biological Diversity (CBD)²⁷
- The Convention on the Conservation of Migratory Species of Wild Animals (also known as CMS or Bonn Convention)²⁸

Under the auspices of CMS there is an Agreement on the Conservation of Albatrosses and Petrels (ACAP)²⁹. This is a legally binding international treaty whose objective is to achieve and maintain a favourable conservation status for albatrosses and petrels by addressing threats on land and at-sea. Bycatch is regarded as the primary threat for this group of species.

In line with the ACAP, measures adopted by the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) have proven to be the most comprehensive with the result that incidental catches of seabirds in the Antarctic in the demersal longline fisheries for toothfish have been eliminated to all intents and purposes. These measures are

²⁴ Council Regulation (EC) No 199/2008 of 25 February 2008 concerning the establishment of a Community framework for the collection, management and use of data in the fisheries sector and support for scientific advice regarding the Common Fisheries Policy.

²⁵ <http://www.tuna-org.org/Documents/TRFMO2/19%20ANNEX%205.11%20ENG.pdf>

²⁶ OJ L 179, 23.6.1998, p. 3-134

²⁷ OJ L 309, 13.12.1993, p. 1.

²⁸ <http://www.cms.int/about/intro.htm>

²⁹ <https://www.acap.aq/>

transposed into EU law through Regulation (EC) No 600/2004³⁰ and comprise the mandatory use of streamer□lines, prohibition of discharge of waste during setting and hauling operations, line weighting and seasonal closure of high risk areas. Recording bird bycatch is closely monitored on each participating vessel by an independent fisheries observer and reviewed on an annual basis through the CCAMLR Working Group for Incidental Mortality Associated with Fishing (WG□IMAF). As a direct result of implementing these measures, the number of incidental mortality of seabirds with demersal longline vessels declined dramatically from approximately 6,500 in 1996 to less than 100 in 2002 and zero in 2007. These measures are discussed in more detail in Section 5. Other RFMOs have attempted to implement similar measures but with varying degrees of effectiveness. These include:

- The Indian Ocean Tuna Commission (IOTC);
- Commission for the Conservation of Southern Bluefin Tuna (CCSBT);
- Inter-American Tropical Tuna Commission (IATTC);
- Western and Central Pacific Fisheries Commission (WCPFC);
- International Commission for the Conservation of Atlantic Tunas (ICCAT); and
- South-East Atlantic Fisheries Organisation (SEAFO).

Annex VIII shows the areas covered by the different RFMOs while Annex IX provides a list of measures currently implemented within the relevant RFMOs.

2.3.2. *Environmental Legislation*

Other than fisheries legislation, protection of non-target species such as seabirds is provided under EU environmental policy and in particular by the Birds¹⁰ and Habitats Directives³¹ and the Marine Strategy Framework Directive (MSFD)³². The full implementation of these Directives is part of the EU's response to its commitments under the UN Convention on Biological Diversity³³, and is reinforced by the commitment made by EU Heads of State "to halt the loss of biodiversity [in the EU] by 2010"; it is further reiterated in the EU Biodiversity Strategy to 2020³⁴.

The key measure established by the Birds Directive is a general scheme of protection for all wild birds prohibiting various acts including, most relevant to fisheries, deliberate killing or capture by any method³⁵.

³⁰ Council Regulation (EC) No. 600/2004 of 22 March 2004 laying down certain technical measures applicable to the fishing activities in the area covered by the Convention on the conservation of Antarctic marine living resources.

³¹ OJ L 206, 22.7.1992, P. 7-50

³² OJ L 164, 25.6.2008, p.19-40

³³ OJ L 309, 13.12.1993, p. 1.

³⁴ COM(2011) 244 final. Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions. Our life insurance, our natural capital: an EU biodiversity strategy to 2020.

³⁵ In light of case law of the Court of Justice of the European Union, C-221/04, paragraph 71.

The Birds and Habitats Directives also establish the Natura 2000 network of protected areas, which embraces sites designated under any of the Directives concerned – Special Protection Areas (SPAs) established under the Birds Directive and Special Areas of Conservation (SACs) established under the Habitats Directive.

SPAs designated under the Birds Directive are of most relevance in providing explicit protection for seabirds from interactions with fishing gears. SACs designated under the Habitats Directive are designed specifically to protect listed habitats and other species of conservation concern (e.g. marine mammals) rather than seabirds but as they may overlap SPAs or cover areas where seabirds may forage for food they also provide protection to seabirds indirectly.

As of February 2011, under the Birds Directive, a total of 936 SPAs covering an area of 122,000km² have been established in marine areas. A map showing the SPA network is included in Annex X. Most of these marine SPAs are in inshore waters or mudflats and have limited interaction with fisheries. Increasingly, however, coastal and offshore SPAs are also being designated and Member States will need to include fisheries management measures to ensure the favourable conservation status of protected birds in these sites. The German EMPAS³⁶ and Dutch FIMPAS³⁷ processes are two such examples. The measures they have identified are varied and range from temporal to spatial closures to specific measures for gear-types and fisheries but the process for agreeing these measures given multiple Member States and stakeholders can be involved continues to be slow. Nonetheless, the development of such management measures will be a key component in providing protection for seabirds in the future and should be extended to Important Bird Areas (IBA) identified by Birdlife International³⁸ as well as in SPAs.

The Directives also have built-in reporting requirements. Article 12 of the Birds Directive requires Member States to report every three years on the implementation of national provisions taken under the Directive. Under the Habitats Directive, monitoring of conservation status is an obligation arising from Article 11 of the Habitats Directive for all habitats (as listed in Annex I of the Birds Directive) and species (as listed in Annex II, IV and V of the Directive) of Union interest; consequently this provision is not restricted to Natura 2000 sites and data need to be collected both in and outside the Natura 2000 network to achieve a full appreciation of conservation status. The main results of this monitoring, along with progress made with implementation have to be reported to the Commission every six years according to Article 17 of the Directive. Similar data reporting requirements on the status and trends of bird populations are currently being introduced in order to achieve a streamlined reporting system. Notwithstanding this, reporting under the Directives is not at a sufficient resolution to distinguish the threats from different anthropogenic activities in relation to specific populations so the value of these reports in establishing the actual impact of bycatch is limited.

The MSFD aims to bring coherence between different policies and foster the integration of environmental concerns into other policies, such as the CFP. Under the MSFD protection of seabirds is recognised as a requirement that will contribute towards the achievement of Good Environmental Status (GES). Implementation of the MSFD is a legal requirement under the TFEU and dedicated measures to protect seabirds are implicitly required in compliance with

³⁶ <http://www.ices.dk/projects/empas.asp>

³⁷ <http://noordzee.wordpress.com/2009/11/01/project-fimpas-official-summary/>

³⁸ Birdlife International (2011). Important Bird Areas factsheets. <http://www.birdlife.org>

the Directive. It does not propose specific monitoring or mitigation measures but simply specifies long-term targets and indicators for measuring progress in achieving GES. Its relevance is to provide a basis for framing management objectives in fisheries legislation for issues such as seabird bycatch.

In the context of the MFSD, the issue of seabird bycatch is also covered within the framework of Regional Sea Conventions on marine environment, in particular OSPAR³⁹, HELCOM⁴⁰ and the Barcelona Convention⁴¹. All of these Conventions contain objectives relating to the protection of biologically sensitive species including seabirds although again do not necessarily contain specific monitoring requirements or mitigation measures.

2.4. Existing mitigation measures and devices

There is a range of mitigation measures which have been developed. Some of these have been shown to be highly effective at reducing seabird bycatch. Annex XI provides a more detailed description of these measures and whether or not they are currently in commercial use.

They can be split between specific measures by fishing method and measures with broad applicability across multiple fishing gears. Most have been developed to reduce bycatch in longline fisheries and these can be divided into four main categories:

- (2) Avoidance of fishing in areas and/or at times when seabird interactions are most likely and intense (night setting, area and seasonal closures).
- (3) Limiting bird access to baited hooks (weighted lines and side-setting).
- (4) Deterring birds from taking baited hooks (streamer (bird-scaring) lines, acoustic deterrents, water cannon).
- (5) Reducing the attractiveness or visibility of the baited hooks (dumping of offal and artificial baits).

Mitigation measures tested in static net fisheries are fewer in number. Two methods have been proposed and tested to alert seabirds to the presence of static nets and thereby avoid collision⁴². One method is to increase the visibility of the net (visual alerts), and the other method is to attach acoustic deterrents (pingers) to nets. Encounters with static nets may also be reduced by setting nets deeper than the diving depth of seabirds. None of these methods are widely used currently.

MRAG² found that the measures for longline fisheries and the dual measures are effective as long but fishery specific. Experience in CCAMLR and several other longline fisheries in external waters have shown the effectiveness of these measures is enhanced if several simple measures (e.g. bird scarer lines, night setting and line weighting) are used in combination.

The mitigation measures for static net fisheries are less well developed and tested and doubts remain over the effectiveness as acknowledged by MRAG². None of them are currently used commercially in static net fisheries to reduce seabird bycatch. Closed or restricted areas are the only effective mitigation measures available in these fisheries at present.

³⁹ <http://www.ospar.org/>

⁴⁰ <http://www.helcom.fi/>

⁴¹ <http://www.unepmap.org/index.php?module=content2&catid=001001004>

⁴² Melvin, E.F., Parrish, J.K. and Conquest, L.L. 1999. Novel tools to reduce seabird bycatch in coastal gillnet fisheries. *Cons. Biol.* 13: 1386-1397.

It is apparent that the general preference of fishermen is for practical, low-tech measures (i.e. offal discharge, streamers for longlines and buoys with bird scarers for static nets). Such measures lend themselves to a Code of Conduct type approach that can be reinforced through peer-led example and pressure rather than prescriptive legislation. Less favourable measures are more costly and complex modifications such as bird-scaring curtains for longlines and acoustic pingers for static nets. Not surprisingly spatial and temporal measures are the least popular among fishermen given the anticipated loss of earnings from the partial or total closure of fishing grounds although they acknowledge that they are likely to be effective.

In the public consultation most stakeholders recognised the current suite of measures available in longline fisheries to be reasonably effective. Line weighting was highlighted by the NGOs and at least one national administration in the public consultation as being a particularly effective measure, although the RACs, fishermen's organisation and other national administrations contested this and claimed it was dangerous, particularly for small vessels. Also in public consultation the Baltic Sea RAC and several NGOs highlighted the ban on drift netting introduced in the Baltic and high seas as being particularly effective.

2.5. The affected stakeholders

The adoption of new measures and the strengthening of existing measures to protect seabirds will impact on a range of stakeholders. The choice of measures will have implications principally for the catching sector and administrators. Table 3 below shows the main stakeholders groups involved.

Table 3 Key stakeholders in the conservation of seabirds

Stakeholder Group	Description	Key interests
Catching sector	EU Vessel owners, operators and crew.	Maintaining profitability and livelihoods.
Fisheries-dependent businesses & communities	Business and communities dependent upon longline and static nets fisheries for their livelihoods. Other dependent economic sectors involved in ecotourism, bird watching etc.	Maintaining profitability and livelihoods.
Administrators	Regional, national and provincial bodies regulating EC protection of seabirds as well as RFMOs in external waters.	Ensuring an efficient, effective and practical management framework that balances a wide range of stakeholder needs.
Research Sector	Scientific research bodies (ICES) contributing to the conservation and management of seabirds, and to sustainable fishing gears and practices.	Contribution to an effective fisheries management regime through the timely access to robust data from fishery dependent and independent sources.
NGOs	Non-governmental organisations advocating responsible management of seabirds.	To secure effective monitoring and mitigation of incidental catches of seabirds.
General public	The wider public with an interest in and concern for seabirds in particular and the marine environment in general.	To maintain seabird populations and biodiversity.

Source: Author

Of these stakeholder groups, the most affected by the introduction of measures to protect seabirds would be the longline and static net fleets operating in EU fisheries which have been highlighted as causing high levels of bycatch and where few management measures are in place. Apart from a few specific fleets (e.g. the Gran Sol and pelagic longline fleets in the western Mediterranean), which are made up of a small number of larger vessels greater than 24m, the rest are characterised by comprising large numbers of small coastal vessels (typically less than 12m in length). Estimated figures for the number of vessels involved in longline and static net fisheries EU-wide are shown in Table 4.

Table 4 Estimated numbers of EU static net and longline vessels by length class

Gear Category	Size Range	Number of Vessels
Static nets	Less than 12m	38,269
Static nets	Greater than 12m	1,808
Total		40,077
Longlines	Less than 12m	13,086
Longlines	Greater than 12m	1,170
Total		14,256

Source: EU Fleet Register

Table 5 shows a breakdown of the fleets from the case studies in the MRAG study² which have been identified by ICES³ as having high bycatch. Estimates of employment are included by way of illustration.

Table 5 Summary of the estimated number of vessels in the case study fisheries used for the MRAG study

Area	Fishing Method	Member States	No. of Vessels	Estimated employment (FTE)
Western Mediterranean	Pelagic longline	Spain, Italy, France	1295	~2400
Western Mediterranean	Demersal longline	Spain, Italy France	1320	~2850
Eastern Mediterranean	Pelagic longline	Malta, Greece	2815	Not known
Eastern Mediterranean	Demersal longline	Malta, Greece	5353	Not known
Gran Sol	Demersal longline	Spain, France	74	1,260
Eastern Baltic Sea	Static net	Estonia, Latvia, Lithuania	2692	~3,000
Western Baltic Sea	Static net	Sweden, Denmark, Germany	1123	1,600
Eastern North Sea	Static net	Netherlands, Germany	122	~244 (Netherlands only)

Source: MRAG²

It is difficult to classify these vessels into micro, small or medium-sized enterprises⁴³ because accurate employment figures and average turnover for the EU fleet as a whole are not available or reliable. However, it is apparent that the majority (more than 90%) of these longline and static net vessels would be classified as micro-sized enterprises with 1-2 crew and a turnover less than €2 million. Many of these vessels operate on a part-time basis and regularly switch between fishing methods. A small number of the larger longline vessels could be classed as small-sized enterprises with crews of 10-30 and a turnover of close to €10 million. Several of these larger vessels are owned by companies typically employing 100-250 people with turnover of €20-30 million and could therefore be classed as medium-sized enterprises. For instance the Spanish company Grupo Regal and Associate Companies own and manage most of the Spanish longline fleet operating in the Gran Sol fishery².

If other fishing gears such as trawls and purse seines, potentially causing seabird bycatch, are included, then almost the entire EU fleet of around 84,000 vessels, employing around 141,000 could potentially be impacted. According to the estimation made for the CFP reform impact assessment⁴⁴ around 90% of the total EU fleet would be classified as micro-sized enterprises.

In external waters there are approximately 400-500 EU licences available for longline vessels, predominantly for tuna, swordfish and Patagonian toothfish. Most of these vessels would be classed as small or medium-sized enterprises with between 10-30 crew on board and turnover less than €10 million although as in EU waters many of these vessels are owned by larger companies of 100-250 employees with a larger annual turnover (e.g. Grupo Regal operate a number of vessels in the longline fishery in the Antarctic). A breakdown of the numbers of vessels by agreement is given in Annex XII.

2.6. Underlying Drivers

The problems and underlying drivers leading to incidental seabird bycatch are summarised in Table 6 below:

Table 6 Problems and underlying drivers

Problems	Drivers
Frequent interactions between fisheries and seabirds are inevitable and result in incidental catches of seabirds.	Seabirds have become increasingly dependent on their association with fisheries for survival and breeding success. In so doing, they are augmenting the risk that they become injured and/or die and that their populations decrease as a result Longline and static nets that account for a large proportion of the incidental catches of seabirds are the most efficient methods for catching certain fish species many of which are of high value. Therefore these gears are widely used.
Current management measures under EU fisheries and environmental legislation and measures included under international Conventions and Agreements have been largely ineffective in reducing seabird bycatch except	Management measures are contained in a number of different regulations both fisheries and environmental as well as in international conventions and Agreements.

⁴³ http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/sme-definition/index_en.htm

⁴⁴ SEC(2011) 891. Impact Assessment concerning the Commission's proposal for the 2012 reform of the Common Fisheries Policy

<p>in some longline fisheries in external waters.</p>	<p>A lack of urgency both at EU and internationally to address the issue of seabird bycatch and poor and inconsistent implementation of existing measures despite a number of indications by the EU to take action.^{45 46 47 48}</p> <p>A lack of incentive for fishermen to comply with these measures or adopt measures voluntarily even though the interactions with seabirds are known to have an impact on fishing productivity and profitability.</p>
<p>There is a general lack of knowledge on the actual scale of incidental catches due to the sporadic nature of monitoring.</p>	<p>No formal obligation to monitor seabird bycatch in EU waters so monitoring is at low levels and sporadic. Data on seabird populations and distributions is incomplete.</p> <p>Monitoring under the Birds and Habitats Directive are not specifically geared to bycatch in fisheries and therefore monitoring is not at a sufficient resolution to estimate the extent of bycatch.</p> <p>In external waters monitoring is required in most fisheries but normally on a voluntarily rather than mandatory basis so is inconsistent.</p>
<p>Proven mitigation measures have been developed for longline fisheries but uptake remains low in EU waters and only sporadic in no-EU fisheries. For other fishing gears few, if any proven mitigation measures currently exist.</p>	<p>Effective mitigation measures are well documented for longline fisheries but in the absence of regulation uptake of such measures is low in EU waters. They are more widely used in external waters although implementation is inconsistent and ineffective in many fisheries</p> <p>There has been less emphasis on seabird bycatch with other fishing gears so mitigation measures for these gears remain unproven and not commercially acceptable.</p>
<p>There is a poor understanding and acceptance by fishermen that a problem of seabird bycatch exists or of the benefits of adopting mitigation measures to reduce bycatch. This is particularly apparent in EU waters.</p>	<p>Lack of awareness raising and training of fishermen in the use and benefits of mitigation measures and accurate identification of seabirds for reporting purposes.</p> <p>At an individual vessel level, recommended actions to mitigate against seabird bycatch are considered disproportionate to the scale of impact on seabird populations.</p> <p>Fishermen believe that using mitigation measures will result in capital outlay and loss of earnings from reduced catches.</p>
<p>Research into mitigating seabird bycatch has been concentrated on longline fisheries with little work to</p>	<p>Longline fisheries have been identified as the biggest source of seabird bycatch.</p>

⁴⁵ COM(2002) 186 final. Communication from the Commission setting out a Community Action Plan to integrate environmental protection requirements into the Common Fisheries Policy

⁴⁶ COM(2006) 216 final. Communication from the Commission. Halting the Loss of Biodiversity by 2010 – and beyond. Sustaining ecosystem services for human well-being. 22 May 2006.

⁴⁷ COM(2008) 187 final. Communication from the Commission to the Council and the European Parliament. The role of the CFP in implementing an ecosystem approach to marine management.

⁴⁸ COM(2011) 244 final. Communication from the Commission to the European Parliament, The Council, The Economic and Social Committee and the Committee of the Regions. Our life insurance, our natural capital: an EU biodiversity strategy to 2020.

develop measures for other fishing gears (e.g. static nets, trawls and purse seines).	Reducing bycatch in other fishing gears is technically more challenging than for longlines.
---	---

Source: Author

2.7. Evolution of the problem

Based on the available scientific advice from ICES^{3,4} and the findings of MRAG² and other recent studies^{15&16}, at least 60 of 346 seabird species are known to be incidentally caught in fishing gears in EU and non-EU waters. Of these 60 species around 49 (25 in EU waters and 24 in non-EU waters) are classified as being of conservation concern either globally or at a local population level. In EU waters 6 species and in non-EU waters 22 species with reported high levels of bycatch are IUCN listed as being at high risk. ICES concludes that there is a seabird bycatch problem in EU fisheries and that measures should be developed to tackle this problem. The majority of the contributions from the general public, RACs, NGOs and national administrations to the public consultation concur with this conclusion.

In a worst case scenario incidental seabird bycatch will remain unsustainable in EU waters for the threatened species indicated in Section 2.1 in the short to mid-term and have the potential to lead to further declines in the population of these species. In the best case scenario existing levels of seabird mortality may reduce through the voluntary use of adapted gears and fishing techniques by fishermen. MRAG² indicates that this has occurred sporadically in several fisheries implicated as having high bycatch (e.g. Western Mediterranean longline fisheries and the Gran Sol longline fishery) and where there is an economic incentive to adopt such measures to minimise bait loss, catch and gear damage and catches foregone. However, in the absence of campaigns to increase awareness of the problem and the benefits of adopting mitigation measures this is likely to be on a limited scale. No such incentives exist for static net fisheries, the other main source of bycatch in EU waters, and without proven mitigation measures other than closed or restricted areas, bycatch would be expected to continue at current levels. SPAs and SACs created under the Birds and Habitats Directives which contain fishery management measures to reduce seabird bycatch may help to improve the situation in the longer-term but are currently ineffective on their own.

Monitoring of seabird bycatch would continue to be sporadic without any action. Monitoring of seabird bycatch is not explicitly required under the Data Collection Framework (DCF) as part of the current CFP, while monitoring under the Birds and Habitats Directive is not at sufficient resolution to allow an accurate assessment of the level and impact of bycatch on populations. Some evidence of voluntary reporting under the current DCF is reported but is restricted to a few Member States. Therefore knowledge on the level of incidental catches, species, areas and fisheries affected would remain incomplete making the framing of management decisions problematic.

In external waters, seabird bycatch would be expected to remain at current levels as existing mitigation and monitoring measures would remain in place, albeit inconsistently implemented across regions. This inconsistency was highlighted by several NGOs in the public consultation as a major problem. If no action is taken to improve the implementation of these measures and reduce bycatch, then evidence would suggest that the populations of albatross and petrels under threat could further decline. In a worst case scenario bycatch could significantly contribute to extinction of a species. This has already been the case for the now extinct Large St Helena Petrel (*Bulweria bifax*), which was reportedly caught in significant numbers in several longline fisheries¹³. In the best case scenario bycatch could be stabilised at

current level, reduced or as evidenced by the fisheries in the Antarctic managed by CCAMLR almost eliminated.

2.8. Necessity and Subsidiarity

This proposal concerns a field of exclusive Union competence and therefore subsidiarity does not apply. Under the Treaty, the EU has exclusive competence to manage fishing activities for conservation purposes, which would include the reduction of bycatch of biologically sensitive species including seabirds. The relevant Articles of the TFEU are Article 3(1d) which covers "the conservation of marine biological resources under the common fisheries policy" and Articles 38 to 44 that relate specifically to the CFP.

Member States are able to develop measures for their own fleets that lead to a more sustainable protection of seabirds and this is particularly the case in waters inside 12 nautical miles. However, some fisheries, which impact with seabirds, are shared between Member States (and sometimes the fleet of one Member State are mostly present in the waters of another Member State), and this makes Member States reluctant to submit their own fleets to constraining measures unless the same or equivalent rules will apply to neighbouring fleets, in view of maintaining an economic level playing field. In addition, the scientific knowledge on seabird bycatch can only improve when common standards for data sourcing are followed, otherwise scientists will not be able to compare data stemming from various Member States.

3. OBJECTIVES

3.1. General objectives

Given the lack of accurate data on populations and estimates of bycatch for all seabird species, it is difficult to set absolute targets for the reduction of seabird bycatch. Therefore this proposed initiative has the objective: ***to minimise and where possible eliminate the incidental catches of at least 49 threatened seabird populations by EU vessels operating in EU and non-EU waters and reduce bycatch for other seabird species where the populations are stable but bycatch is at levels that are cause for concern.***

This should be achieved at the latest by 2020 in line with the objective of the MSFD to reach GES for the marine ecosystem by this date. It is also in line with one of the overarching objectives of the CFP of moving to an ecosystem approach to fisheries management.

3.2. Specific objectives

The specific operational objectives to support this general objective are:

- (1) Identify and rectify weaknesses and incoherencies in current management measures both in EU and non-EU waters by:
 - Defining clear management targets for seabird species under threat from bycatch. Targets should be defined at the latest by the end of 2013.
 - Progressing the development of fisheries management measures in SPAs to protect seabirds on a continual basis in line with the reform of the CFP.
 - Reviewing current measures in place in RFMOs at the latest by the end of 2013 and thereafter assessing compliance and effectiveness on a continual basis.

- Coming forward with recommendations to monitor and introduce mitigation measures (on a voluntary basis) to reduce seabird bycatch for non-EU vessels operating in EU waters as part of Coastal State Agreements (e.g. Norway) at the latest by the end of 2013.
- (2) Consolidate and collect data critical to establish the extent and threat posed by seabird bycatch particularly to the populations of species identified as being of conservation concern by:
- Reviewing available bycatch data, validating sources of information and identifying fisheries where further monitoring is required at the latest by the end of 2013.
 - Collecting bycatch data on these fisheries either on a voluntary basis through the current DCF, under the Birds and Habitats Directive, through pilot projects and self-sampling by industry or national monitoring programmes. Alternatively this could be done under mandatory monitoring required under EU law. Implementation should begin immediately.
 - Creating a standard reporting format for recording seabird bycatch at the latest by mid-2013.
 - Ensuring observers deployed on vessels in external waters routinely record seabird bycatch data and submit it to the respective RFMOs and the Commission on a continual basis.
 - Considering the feasibility of incorporating the monitoring of seabirds under the new DCF due to be introduced in 2014 as a mandatory requirement.
 - Assessing whether the management targets set under objective 1 are being met using suitable indicators (e.g. PBRs). Assessment of existing data should begin immediately and continue as knowledge increases.
- (3) Minimise bycatch of seabird species of conservation concern to levels that eliminate the threat to the populations of these species through the implementation of appropriate mitigation measures by:
- Implementing measures in high-risk longline fisheries both in EU and non-EU waters through national measures, voluntary uptake by industry or through a specific regulation detailing mandatory mitigation measures. Implementation should begin immediately and continue in this format up until the introduction of a new technical measures framework to be developed post-CFP reform (expected early 2016) whereafter necessary measures would be incorporated under the framework.
 - Assessing and implementing mitigation measures for static net fisheries in EU waters where bycatch is reported to be high. This is dependent on such measures being further researched and tested but should be a priority action. Implementation of mitigation measures in these fisheries should continue until the new technical measures framework is implemented and measures are incorporated into this framework.

- Bringing forward proposals for additional mitigation measures in RFMOs on a continual basis as and when required.

Crucial to a better understanding of the problem and the development of practical solutions two further supporting objectives are foreseen:

- (4) Address the lack of acceptance by fishermen that seabird bycatch is a problem as well as the lack of incentive for fishermen to adopt mitigation measures. Critical to achieving this will be the allocation of funding by Member States under the EFF (until the end of 2013) and the new EMFF (in the period 2014-2020).
- (5) Resolve outstanding difficulties with existing mitigation used in longline fisheries and address the absence of effective mitigation measures for other fishing gears, particularly static net fisheries. As with objective 4, EFF and EMFF funding will be critical to achieving this objective.

3.3. Reform of the CFP

The reform of the CFP, which is currently under negotiation, is crucial to achieving the objectives of this initiative as part of an ecosystem approach to fisheries management. Such an approach will contribute to the protection and preservation of the marine environment and be compatible with current environmental legislation (i.e. Birds and Habitats Directive) and the requirement to reach Good Environmental Status (GES) for the marine ecosystem contained in the MFSD.

Regardless of the actions taken, achieving this will require improvements in the coherence between regulatory instruments and a more holistic approach to fisheries management that takes account of the regional specificities of fisheries. For bycatch issues including seabirds this will involve several important elements:

- A new approach to technical measures which for seabirds will contain limits for levels of bycatch along with a tool box of mitigation measures that could be used to achieve these targets. Member States could then develop "regionalised" technical measures using this toolbox and demonstrate the measures implemented are being effective. This approach will take time to be developed and the final content is dependent on the outcome of the reform. Realistically it will not be in place before 2016.
- The new EU Multiannual Programme for Data Collection (DCMAP) planned to be introduced in 2014. Discussions are currently on-going regarding whether to include the monitoring of other ecosystem components including seabirds. Input from experts and a costing of such an extension of the current Data Collection Framework are still needed.
- Financial support for new measures provided under the current European Fisheries Fund (EFF) and the new European Maritime and Fisheries Fund (EMFF)⁴⁹. The new EMFF is scheduled to be introduced in 2014 and would provide aid for the development and use of environmentally friendly fishing methods and gears, pilot projects aiming at experimental use of more responsible fishing gears and the testing of alternative monitoring technologies such as CCTV.

⁴⁹ COM(2011)804. Proposal for a Regulation of the European Parliament and of the Council on the European Maritime and Fisheries Fund

- The Commission to take a more pro-active role in the RFMOs to try to remedy the current situation of poor compliance of some Member States with RFMOs' conservation and management measures. This commitment is given in the recent Communication on the External Dimension of the CFP⁵⁰.

4. POLICY OPTIONS

Three policy options to address these objectives are considered:

- Option 1: Status quo: Baseline scenario (hereafter "Status Quo")
- Option 2 : Development of an EU Plan of Action for reducing seabird bycatch (hereafter "EU-POA")
- Option 3 : The adoption of a stand-alone Regulation (hereafter "Stand-alone Regulation")

For options 2 and 3 the actions are largely as outlined but they differ from each other in the legal format.

A fourth option relying on the implementation of mitigation and monitoring measures under the Birds and Habitats Directive was also considered. This option was referred to in the public consultation by several fishermen's representative organisations who felt no additional measures were needed if appropriate fisheries management measures were properly implemented within SPAs. However, this was rejected on the grounds that:

- Evidence to date suggests that the primary measure contained in the Birds and Habitats Directives i.e. SPAs and SACs are not the most effective means of protecting seabirds from fisheries interactions. Most seabird species often forage for food far from their breeding sites for which such sites are best able to protect and even though there is a commitment within the Birds Directive to protect seabirds as much outside SPAs as inside, so far this has not resulted in measurable reductions in bycatch.
- The monitoring required under the Birds and Habitats Directive is not at a sufficient resolution or frequency to provide an accurate estimate of bycatch levels.
- The development of effective fishery management measures in offshore SPAs and SACs is still a work in progress as evidenced by the FIMPAS and EMPAS projects. Such measures are currently difficult to agree given they often straddle the territorial waters of a number of Member States.
- The Birds and Habitats Directives will not address the issues of seabird bird bycatch in non-EU waters.

⁵⁰ COM(2011)424. Communication from the Commission to the European Parliament, The Council, The European Economic and Social Committee and the Committee of the Regions on External Dimensions of the Common Fisheries Policy.

A fifth option of a complete prohibition of fishing with longlines and static nets within EU waters where seabird bycatch has been identified as being problematic was considered on the basis that this was proposed by several NGOs and members of the general public. However, this was also rejected on the grounds that:

- This is disproportionate to the scale of the problem and would lead to major impacts on longline and static net vessels EU-wide. An estimated 54,000 vessels, landing ~30% of the total EU catch would be affected;
- Simple and effective mitigation measures are available in many cases; and
- These gear types are recognised as being environmentally friendly compared to towed gears in that they are size-selective, fuel-efficient and have a lower impact on the seabed. Prohibiting them would force fishermen to adopt or revert back to other fishing methods with higher environmental impacts.

4.1. Option 1 – Status Quo

This first policy option would be a continuation of the current *status quo* taking no further action that would go beyond what already exists in current EU fisheries and environmental policies (including legislation adopted by RFMOs and transposed into EU law). This would mean seabirds continuing to be protected under a range of diverse, mainly voluntary and largely incoherent management measures, which other than a few isolated cases in external waters (e.g. CCALMR) seem to have been ineffective. This was highlighted by the majority of contributors to the public consultation as a non-option as there is compelling evidence that current management measures have failed and that a significant problem exists.

Essentially uptake of mitigation measures in EU waters would continue to be left to voluntary actions taken by fishermen or through national measures and in external waters as non-binding measures (e.g. resolutions or recommendations) in RFMOs. MRAG² supported by the findings of several other studies^{15, 16} conclude this uncoordinated approach has not worked and the uptake of effective measures on a voluntary basis, without supporting awareness raising campaigns has been limited and sporadic. Therefore without any improvement in the effectiveness and implementation of mitigation measures, seabird bycatch would be expected to remain at unsustainable levels in the short to medium term.

Monitoring of bycatch would continue to be only broadly covered under the Birds and Habitats Directive, supplemented with voluntary observations at national level, either as pilot studies or under the existing and new DCF. This would be insufficient to provide a clear picture of bycatch levels as highlighted by a the majority of stakeholders in the public consultation. In external waters monitoring carried under the RFMOs would continue to be variable and sporadic.

There would also be no attempt to raise awareness of the problem of seabird bycatch to fishermen other than existing campaigns coordinated by NGOs or any incentive for fishermen to adopt measures voluntarily other than for operational reasons. There would also be no incentive for Member States to instigate research into solutions to the problem of seabird bycatch.

4.2. Option 2 – EU-POA

This second option is based on the adoption of an EU-POA, which would follow an adaptive management approach. This approach was endorsed by the majority of the stakeholders in the public consultation (most NGOs, RACs and national administrations) and also by ACFA. Adaptive, regionalised management is advocated in the CFP reform.

The POA would contain voluntary measures supported by regulatory instruments within the CFP, environmental legislation, international fishery legislation as well as the Conventions and Agreements detailed in Section 2.4. The POA would provide an overarching framework encompassing monitoring and mitigation measures with links to flanking measures (EFF/EMFF) that would provide financial support across fisheries. It would seek to provide a more structured approach than the current situation where the catching sector are largely left to adopt their own measures without any guidance or real incentives.

The measures envisaged under this option would be applicable to all vessels operating in Union waters and to EU flagged vessels in external waters. This was the scope advocated by the majority of stakeholders, including the RACs in the public consultation. Furthermore, in order to ensure a coherent approach between the internal and external EU fisheries policy, the Union would seek that the relevant international bodies enhance measures to protect seabirds by facilitating their adoption by fishermen, integrating seabird bycatch monitoring into observer programmes (where this has not already been achieved) and promoting best practice to non-EU fleets.

The POA would contain a combination of existing legally binding elements, future measures introduced under the regulatory instruments of the reformed CFP as well as non-binding/voluntary measures. These are summarised in table 7.

Table 7 Binding and non-binding measures under the POA

Existing and Future Legally Binding Measures	Non-Binding/Voluntary Measures
Fishery Management measures in SPAs created under the Birds Directive	Monitoring of seabird bycatch under the DCF (currently voluntary with the intention of possibly making it mandatory under the new DCF)
Reporting and targets defined under the Birds Directive, MSFD, RFMO agreements and under International Conventions	Voluntary mitigation measures adopted by the fishing industry
Existing Mitigation Measures (EU legislation in EU and non-EU waters)	Enhanced observer coverage by Member States in areas where bycatch is highest
Regionally specific technical Measures implemented under the new technical conservation measures framework in the context of the CFP reform	Non-binding resolutions and recommendations under RFMO Agreements and International Conventions
National mitigation measures (e.g. Spain)	Financial support for adoption of mitigation measures, research and education awareness under the EFF and EMFF

Source: Author

To address specific objective 1 it would aim to provide a consistent approach between fisheries and environment policies, recommending actions in areas and fisheries in EU waters

identified as having high levels of incidental catches of seabirds with direct consultation with stakeholders. In external waters it would provide a mechanism to ensure coherence and complementarities between RFMOs, fisheries agreements and environment conventions, such as CITES, CMS, Regional Seas Conventions and UNSDC (Rio+20) and help to ensure better implementation of existing measures.

To meet specific objective 2 in addition to national monitoring programmes, under the POA Member States would be encouraged to extend monitoring under the DCF to include seabird bycatch in fisheries known to or suspected of having a bycatch problem. This would be a voluntary action but it should be noted that some Member States, notably UK, France, Poland, Ireland and the Netherlands already monitor bycatch of protected species including seabirds under their DCF programmes.

In identified high-risk fisheries, Member States would also be encouraged to implement enhanced observer programmes in line with a precautionary approach to establish the extent of the problem. Financial support for such programmes would be provided through the EFF and the new EMFF. After 2014 the intention would be to make reporting of seabird bycatch a mandatory requirement in all fisheries covered under the new DCF and for Member States to report regularly on seabird bycatch in the relevant fisheries. The need for mandatory reporting for seabird bycatch in the longer term was advocated by NGOs and the RACs in the public consultation.

Specific bycatch monitoring would be supported by separate monitoring required under the Birds and Habitats Directive on the implementation of national provisions taken under these Directives. Combining data from these sources would allow the development of PBR estimates for a range of seabird species allowing assessment of the relative contribution of bycatch to overall mortality and the setting of concrete management objectives.

To achieve objective 3, in the short-term, implementation of mitigation measures in EU waters under the POA would be essentially voluntary or through national measures. The POA would recommend fisheries where actions should be prioritised based on known information, conservation threat and the appropriate mitigation measures available. MRAG² and ICES³ indicates that priority should be given to:

- longline fisheries in the eastern and western Mediterranean and the Gran Sol fishery in the NE Atlantic;
- in external waters where the use of mitigation measures should be consolidated;
- and static net fisheries in the Baltic and eastern North Sea noting that mitigation measures other than closed or restricted areas are less well developed.

In the longer-term the aim is to incorporate mitigation measures under the new regional approach to technical measures to be developed under the reform of the CFP outlined in Section 3.3. The extent to which regionally specific mitigation measures will be needed under this approach will depend largely on the uptake and effectiveness of measures introduced in the short-term. If there is verifiable adoption of measures and management targets set are being met then there will be less of a need for mandatory measures to be introduced. If there is no evidence of significant reductions in bycatch or uptake of mitigation measures is poor, then the Commission could step-in and implement mandatory measures. This in itself is an

incentive for the catching sector to voluntarily adopt mitigation measures to avoid potentially more stringent requirements in the future.

In line with objective 4 and to support objectives 2 and 3, the POA would recommend Member States implement education and training programmes for fishermen to raise awareness of the problem, to demonstrate the benefits of using of mitigation measures and also in the identification of seabirds for reporting purposes. In addition Member States would be encouraged to instigate research to develop and test practical mitigation measures in line with objective 5. These measures along with funding to offset the costs of using mitigation measures would be facilitated through the EFF and the new EMFF as outlined in Section 3.3. Funding may also be available for targeted research through the EU LIFE⁵¹ programme and FP7 programme⁵².

In external waters, the issue of seabird bycatch is more about the consolidation and implementation of existing monitoring and mitigation as the problems are better documented in line with objective 1. The main function of the POA in these fisheries would be to provide a vehicle to propose the strengthening of existing measures and implement awareness raising measures to improve compliance. The POA would also provide a mechanism to encourage RFMOs, both through direct request and via the FAO, to develop their own National/Regional Plans of Action, consistent with the FAO Best Practice Technical Guidelines¹². In the longer-term, under the reform of the CFP, evidence of compliance with conservation measures such as mitigation and monitoring of seabird bycatch could be made a condition of the licence of participating vessels. Such a requirement is already implemented as part of the measures in place in CCAMLR.

The approach described under this option would not require a separate impact assessment as the measures would be implemented through existing measures or by voluntary or national measures in the first instance. In the longer-term an impact assessment will be required to support the new technical measures framework but this regulation will not specifically contain detailed measures for seabirds which should be regionalised and implemented at a Member State level.

4.3. Option 3 – Stand-alone Regulation

Option 3 takes a stricter precautionary approach than option 2 and was advocated by one particular NGO and members of the general public in the public consultation but rejected by the RACs and fishermen's organisations as being dis-proportionate to the scale of the problem. It assumes that the new approach to technical measures will not be in place until 2016 and the new DCF until 2014 at the earliest. Therefore based on the current conservation status of at least 25 seabird species in EU waters (either listed by IUCN or in the Birds Directive), regulatory measures to protect these species need to be put into place more expediently.

Essentially, it seeks the adoption of prescriptive mitigation measures and monitoring of identified fisheries under ordinary legislative procedure. It would apply principally in EU waters with provisions for EU vessels operating in external waters continuing to be covered under the legislative frameworks already adopted by the RFMOs. It would be based on

⁵¹ <http://ec.europa.eu/environment/life/>

⁵² http://cordis.europa.eu/fp7/home_en.html

existing knowledge of fisheries which have reported bycatch of threatened seabird species and the use of proven mitigation measures to address this bycatch.

The Regulation would build on the experiences of Regulation (EC) No 600/2004 which sets out monitoring and mitigation measures in the Antarctic fisheries managed by CCAMLR. These measures are relatively simple and have been successful in almost eliminating bycatch in the longline fisheries in this region. It would also follow a similar approach to Regulation (EC) 812/2004⁵³ which contains specific monitoring and mitigation measures for cetacean bycatch across different fisheries and areas within in EU waters.

Under this option two sub-options could be foreseen:

- Sub-option 3a: including both monitoring and mitigation measures;
- Sub-option 3b: including only mitigation measures with monitoring incorporated under the new DCF as per option 2.

Under sub-option 3a, the fisheries to be monitored would be defined based on known information and level of conservation threat. Monitoring would be in parallel with the introduction of mitigation measures and extended to cover other fisheries where a bycatch problem is suspected. As per Regulation (EC) 812/2004 it would contained defined levels of monitoring for different fisheries based on the level of observation thought likely to detect a conservation threat. Implementation of a separate monitoring programme was advocated by the NGOs but rejected by the RACs.

Under sub-option 3b, monitoring of seabird bycatch would be addressed as under option 2 and over-time it would be incorporated under the new DCF planned to be introduced in 2014 if this proves feasible.

Under both sub-options, mitigation measures would be defined for the high-risk longline and static net fisheries as identified under option 2. In the longline fisheries this would equate to the mandatory use of proven gear modifications and changes to fishing practice which have been effective in CCAMLR and in other fisheries globally. These include the use of bird scarer lines, offal discharge management measures, line weighting and night setting. For these measures defined standards and specifications would be set out as in the CCAMLR Regulation. All of these measures were deemed effective in the public consultation although the RACs and fishermen's organisations highlighted line weighting as potentially dangerous.

These measures would be supported with the establishment of spatial/temporal closures or gear restrictions where appropriate. Such areas would be established on the basis that inaction or using mitigation measures alone could cause serious and potentially irreversible damage to threatened seabird populations. They would complement SPAs and SACs established under the Birds and Habitats Directive.

For static net fisheries, as under option 2, initially measures would have to be restricted to spatial or temporal closures and simple operational changes such as offal discharge management given that other mitigation measures for static net are not well developed or

⁵³ Council Regulation (EC) 812/2004 laying down measures concerning incidental catches of cetaceans in fisheries and amending Regulation (EC) No 88/98

tested currently. As new mitigation techniques are developed then these would be incorporated into the Regulation.

In the longer-term for both sub-options, these mitigation measures could be incorporated under the new approach to technical measures proposed under the CFP reform and the relevant parts of the Regulation could be repealed.

This regulatory approach (either sub-option 3a or 3b) would address specific objectives 2 and 3 and also objective 1 within EU waters. It would not specifically deal with objectives 4 and 5 in that it would not contain specific provisions for research, training or education. Funding for such initiatives would still be available under the EFF/EMFF if Member States wished to include measures to protect seabirds as part of their Operational Programmes. The Regulation would be based on the assumption that a problem exists and measures to mitigate this problem are available so there would be no explicit need for further research, training or awareness raising measures.

In the case of both sub-options as there would be economic, environmental and social impacts a separate impact assessment is likely to be required to support the Regulation although much of the background information for this impact assessment may already be included in the MRAG study.

5. ANALYSIS OF IMPACTS

The main outcome from the different policy options are analysed against their economic, environmental and social impacts. The options are also assessed against the Commission's Action Plan for simplifying and improving the Common Fisheries Policy⁵⁴ as well as the administrative burden on the main actors as a result of introducing new measures.

5.1. Option 1 – Status Quo

5.1.1. Economic impacts

Mitigation

The main sector affected economically under this option would be the catching sector. There would be no direct costs for adopting new mitigation measures as none would be required, although individual vessel owners may adopt voluntary measures in certain circumstances. Negative impacts from a reduction in fishing productivity and profitability through interactions with seabirds may result. In longline fisheries, this negative economic impact would be in the form of direct costs incurred by bait loss to seabirds. Bait costs for longline vessels are currently high and MRAG² estimate they may make up c. 15%-20% of the total operating costs of a longline vessel. These costs are dependent on the size of vessel, number of hooks being fished and type of bait used. Although these losses have not been accurately estimated directly for EU fisheries, several studies have been carried out in international longline fisheries that illustrate the scale of such losses typically incurred. These range from a Norwegian study⁵⁵ that showed losses to Northern fulmars in unmitigated demersal longline

⁵⁴ COM(2004) 820 Communication on Perspectives for simplifying and improving the regulatory environment of the Common Fisheries Policy

⁵⁵ Løkkeborg, S and Bjordal, Å. 1992. Reduced bait loss and bycatch of seabirds in longlining by using a bird scarer. Document to Working Group FSA-92 CCAMLR, Hobart, Australia Pp 5.

fisheries to be as high as 70%, to a Japanese study⁵⁶ that observed bait losses of between 15-16% in pelagic longline fisheries for bluefin tuna off New Zealand's EEZ. Assuming these rates are equivalent to EU fisheries then the losses are significant and conservatively would be c.20%.

There would be additional direct losses incurred through damage to fish catches from depredation by seabirds, as well as direct gear damage caused by seabirds. These costs have not been estimated accurately but according to MRAG², based on the interviews conducted with fishermen, they are marginal compared to the cost of bait losses. No fishermen reported them as being problematic although all reported that they did occur quite regularly.

There will also continue to be indirect costs from catches foregone from seabirds being caught on baited hooks that could have yielded catch. These losses have been estimated directly in non-EU longline fisheries and shown to be substantial, particularly in low volume/high value fisheries. For example, data from longline vessels targeting Patagonian toothfish over a ten year period from 1994-2003, estimated losses of c. \$2 million (€1.36 million euro) in foregone catch from seabirds. Based on the MRAG analysis², the estimated losses in similar large-scale longline fisheries in EU waters are comparable although would depend primarily on the value of the species targeted and the seabird species interacting with the gear. In small-scale longline fisheries, the scale of these losses is less clear but in proportion to landed catch is still likely to be significant based on all known information.

In situations, where losses are particularly acute, some fishermen may instigate their own mitigation measures voluntarily, which need to be factored into this analysis. There is evidence from the MRAG study² of fishermen operating in the Mediterranean and Gran Sol adopting simple operational changes and using mitigation devices in an attempt to reduce seabird bycatch to counter these economic losses. There are no accurate estimates of how effective these measures are or of uptake by fishermen but continued adoption of voluntary measures in such circumstances will lead to some reductions in seabird bycatch (c. 5-10% based on anecdotal evidence contained in the MRAG study²). Whether the use of these mitigation measures will be maintained in the longer-term will very much depend on the problem continuing to exist at a level that provides a sufficiently strong economic driver for fishermen to react to the problem.

In static net fisheries (and other fisheries such as trawl and purse seine fisheries) economic losses from the direct and indirect effects are much lower as losses are restricted to catch and gear damage and downtime from removing bycaught seabirds from nets. The scale of such losses have not been quantified although based on the MRAG analysis², the costs are marginal except in exceptional circumstances where seabird bycatch in individual hauls are large, resulting in significant downtime. Overall none of these were seen as particularly major issues by static net fishermen interviewed during the MRAG study², although the majority reported that catch loss, gear damage and downtime occurred regularly during fishing operations. There was little evidence of fishermen adopting voluntary mitigation measures in static net fisheries, which would support the view that the economic losses caused by seabirds in these fisheries are not significant.

Other Users

⁵⁶ Melvin, E.F. and Walker, N. 2008. Optimising tori line designs for pelagic tuna longline fisheries. Report of work under New Zealand Ministry of Fisheries Special Permit 335. Pp8.

There would potentially be economic impacts on fisheries dependent businesses such as the processing sector and ancillary industries but these impacts are expected to be marginal.

For NGOs, there are now a number of groups/organisations actively involved in trying to protect seabirds. Their activities require financial and human resources. A continuation of the status quo would result in them continuing in both the short and long-term to spend money and time researching seabird issues and lobbying for protection of seabirds.

For the general public the need to halt biodiversity loss is of increasing importance and this has created a demand for sustainably and responsibly caught fish products. This was apparent from some of the submissions from the general public in the public consultation. Failure to take measures to reduce seabird bycatch could lead to increasing difficulties for the catching sector to sell products in the market because of reduced demand for products not considered to be caught in an environmentally friendly manner.

There could also potentially be economic impacts on tourism operators through loss of opportunities for eco-tourism and bird-watching. Without measures to protect and rebuild bird populations to previous levels, these services will not be available to future generations. Several studies have looked at the value of iconic species such as cetaceans and sharks that could be equated to seabirds. These studies have concluded that certain species (e.g. albatrosses, gannets and auks) have significant value when alive as a tourist attraction. However, putting an actual value on this for seabirds is very difficult in practice⁵⁷.

5.1.2. Environmental impacts

As outlined in sections 2.4 and 2.5, in all probability, incidental seabird bycatch would continue at the current unsustainable levels in EU waters and have the potential to influence the population status of at least 49 seabird species.

Monitoring of seabird bycatch would continue to be low with no legal obligation under the DCF and therefore there is unlikely to be any improvement in the current knowledge on the level of incidental catches, species, areas and fisheries affected. Monitoring obligations under the Birds Directive alone are currently not targeted enough to provide a clear picture of the extent of the problem.

In external waters, seabird bycatch would be expected to remain at current levels with the existing mitigation and monitoring measures in place. If no action is taken to improve the implementation of these measures then in the worst case scenario certain species of albatross and petrels could become extinct if current levels of bycatch were to continue. In the best case scenario, bycatch would be stabilised, reduced or, as shown by the experiences in CCALMR, eliminated almost completely²¹.

5.1.3. Social impacts

Media campaigns by NGOs have undoubtedly raised awareness on bycatch issues and the environmental impacts of fishing in general. Therefore failure to introduce any new measures, as under option 1, would meet with a negative reaction from the general public and NGOs. This is exacerbated by the fact that seabirds are some of the most visible and iconic indicators

⁵⁷ TEEB – The Economics of Ecosystems and Biodiversity for National and International Policy Makers – Summary: Responding to the Value of Nature 2009.

of ocean health (particularly albatrosses) and that a number of species are listed as threatened or endangered. This is evidenced by the public consultation where all of the submissions from the general public stressed the need to address the problem of seabird bycatch. Pressure on national administrations, the Union and the RFMOs is therefore likely to increase significantly if no action is taken.

There are unlikely to be any impacts on employment as there would be little change in costs or profitability from the current situation. A report from BirdLife²¹ would also suggest that in external waters, even where mandatory mitigation measures have been introduced there has been no impact on employment with any additional costs absorbed under the vessels operating costs and offset by the benefits outlined.

The other main social impact of making no policy changes would be on the credibility of the Commission since it would be seen as reneging on an international commitment given to the FAO to develop a Plan of Action for seabirds and to implement the globally recognised FAO Code of Conduct for Responsible Fisheries. The commitment to developing a POA dates back to 2001 when the EU first became a signatory to the FAO Plan of Action. It would also amount to failure by the Union to implement measures to reach favourable conservation status for several seabird species as required under the Birds Directive or GES as required under the MSFD as well as respecting several international conventions to which the EU is a contracting party.

5.1.4. Impact on SMEs

No direct impacts on SMEs are foreseen.

5.1.5. Simplification and administrative burden

As no new legislation would be introduced under this policy option there would be no implications with respect to simplification of regulations or any additional administrative burden. The current complex mixture of binding and non-binding rules would continue to apply.

5.2. Option 2 – EU-POA

5.2.1. Economic Impact

Mitigation

As with option 1, the main sector affected economically would be the catching sector. To assess these impacts fishermen's perceptions to a range of mitigation measures were assessed by MRAG². This assessment was based on information on direct (capital) costs for mitigation measures as well as from interviews with 151 fishermen or groups of fishermen across the case study fisheries on their estimates of the impacts of introducing different mitigation measures. It should be stressed this analysis took no account of the potential economic benefits mitigation measures might elicit, in terms of reductions in bait loss, catch and gear damage and catches foregone as indicated under option 1. This somewhat skews the analyses as a result and therefore in assessing the overall impact these positive benefits have been included in the final projections.

Tables 8 summarise the results for the longline fisheries. They show estimated cost effectiveness of these mitigation measures in terms of loss of income, costs and profit loss/gain⁵⁸.

Table 8 Cost Effectiveness of various mitigation measures for longlines

Mitigation Type	Estimated average change		
	Income	Cost	Profit
Offal discharge different times	0%	0%	0%
Faster bait sinking	0%	1%	-1%
Offal discharge opposite side	-3%	0%	-3%
Bird scaring curtain	-3%	2%	-6%
Streamer Lines	-2%	2%	-5%
Side-setting	-5%	5%	-10%
Dyed bait	-8%	4%	-12%
Increase weight of line	-15%	5%	-19%
Change bait type	-16%	3%	-19%
Closed areas/seasons	-28%	-8%	-20%
Night setting	-35%	0%	-35%
Circle hooks	-40%	4%	-43%

Source: MRAG²

According to the fishermen interviewed most mitigation measures in longline fisheries would result in negative economic impacts or at best would be cost neutral. The direct (capital) costs for mitigation measures ranged from zero for operational measures such as night setting or offal management measures, to minimal costs for measures such as bird scaring lines that can be bought commercially for around €200-250 per pair of lines to more complex measures such as integrated weighted lines which would have much higher direct costs being c. 5% more expensive than standard longlines. Birdlife estimate the capital costs for line weighting to be more in the region of 14-23%²¹.

In addition to the capital costs, fishermen also highlighted loss of earnings and operational efficiency. Loss of catch caused by the use of measures predicted by fishermen ranged from 0% for offal management to -43% for the use of circle hooks, which were unpopular and felt by fishermen not to be an appropriate measure. Those deemed most effective both by MRAG² and also by ICES⁴, FAO¹² and in the public consultation, namely bird scarer lines, line weighting and night setting were estimated to result in loss of earnings of 5%, 15% and 35%). Taking account of the benefits of reduced bait loss, gear damage and catches foregone it is estimated that the actual losses with these measures are considerably less than anticipated by fishermen. A comparable study of longline vessels in the Falkland Islands reported by BirdLife²¹ showed that for each 1 million hooks set; a reduction in seabird mortality rate of 0.1 birds/1000 hooks due to the adoption of mitigation measures would raise an additional US\$5,025 (€3,400) of revenue. This would indicate that fishermen in the MRAG study² over-

⁵⁸ For each mitigation measure, the average impact on income, costs and profit in relation to the status quo is presented. All figures are rounded up.

estimate the impact of mitigation measures and at worst it is more likely that their use would result in loss of earnings of less than 10% when taking account likely economic gains.

Tables 9 summarise the results for the static net fisheries.

Table 9 Cost Effectiveness of various mitigation measures for static nets

Mitigation Type	Estimated average change		
	Income	Cost	Profit
Buoys with visual deterrents	-6%	3%	-9%
Red corks	-14%	5%	-19%
Multi-coloured twine	-16%	5%	-20%
Acoustic Deterrent Devices	-10%	10%	-21%
Spatial restrictions	-29%	6%	-35%
Temporal restrictions	-49%	-11%	-38%
Use of alternative gears	-26%	18%	-43%
Increase net setting depth	-40%	4%	-44%
Set nets only at > 20m depth	-67%	6%	-73%

Source: MRAG²

Based on the fishermen's responses, most measures have only marginal capital costs except for the diversification to alternative gears where capital costs are estimated at 18%. However, all measures were assessed by fishermen to result in comparatively higher profit loss compared to longline fisheries. The benefits for adopting these measures are limited to reduced downtime yielding only marginal benefits so these estimated losses are more realistic in this case. Therefore the introduction of measures into static net fisheries is likely to cause much more disruption to the catching sector than measures in longline fisheries. This reflects that measures for static gears are less well developed. The scale of these costs would depend on the measures adopted with the lowest estimated at 9% for buoys marked with visual deterrents to 73% for restrictions on setting nets in less than 20m depth. All similar measures that resulted in restrictions temporally or spatially including areas totally closed were estimated as having the biggest impact on earnings. All things considered it is estimated that the introduction of any measures into static net fisheries will result in reductions in profit of more than 25%.

MRAG² notes that some voluntary actions have been taken to reduce bycatch in static net fisheries. For example Danish vessels in the Baltic voluntarily avoid dense concentrations of sea ducks to minimise interactions. This is an easy and low cost approach with no impact on the catch and only a small amount of additional steaming time to work around the sea duck aggregations. Similar avoidance measures are advocated in other fisheries anecdotally by the fishermen interviewed in the MRAG study² and also alluded to in the public consultation by NGOs, fishermen's organisations, RACs and national administrations.

No assessment has been carried out for other fisheries such as trawl and purse seine fisheries but the economic costs and marginal benefits would most likely be similar to static net fisheries given effective measures are not well-developed.

Taking cognisance of the weaknesses of the MRAG analysis², it is clear there are costs for implementing mitigation measures to reduce seabird bycatch but there are benefits that can offset these costs in longline fisheries. In static net fisheries it is more difficult as the range of measures available is narrower and the economic impacts are potentially higher. This highlights the need for tailored mitigation measures for specific fisheries. Where possible combinations of simple gear modifications, changes to operations or voluntary avoidance should be adopted rather than large-scale spatial or temporal measures or more expensive gear modifications such as circle hooks with less proven efficiency and the costs and/or potential losses from reduced catches are higher. This fishery/regionally based approach was strongly advocated by the RACs in the public consultation and is supported by the NGOs and national administrations.

External waters

In external waters direct costs for the catching sector for adoption of new measures or the strengthening of existing measures are likely to be marginal given such measures already exist within most RFMOs. In addition, the vessels involved are generally large and the direct cost of adopting these measures is modest compared to the overall operating costs of these vessels. These costs have not been directly assessed for these fleets but in fisheries where they have been implemented the costs or associated catch losses have not been an issue for the fleets involved²¹.

Additional elements

There are other potential economic benefits for the fishing industry in adopting the POA. To satisfy consumer demand markets are increasingly seeking to source fish from sustainable fisheries that meet the standards provided in the FAO International Guidelines on fisheries eco-labelling and the Code of Conduct for Responsible Fisheries. Reducing or maintaining low seabird bycatch levels can be an important requirement to meet these standards in fisheries identified with such problems. Cases in point are the Gran Sol longline fishery⁵⁹ which is currently undergoing assessment for Marine Stewardship Certification (MSC) and the Patagonian Toothfish fishery in CCALMR waters⁶⁰, which has achieved accreditation under MSC. In both fisheries seabird bycatch and the adoption of mitigation measures are important issues in achieving and maintaining certification. Ensuring continued market access and possible higher prices for certified fish products are strong drivers for industry. However, it is difficult to quantify the actual monetary benefits.

Based on the FAO model¹², in addition to monitoring and mitigation measures, an essential element of the POA is delivering adequate training of fishermen as well as awareness-raising about the rationale and justification for adopting such measures. This was also highlighted by the NGOs and RACs in the public consultation as crucial to the success of a POA. The NGOs pointed to the experiences in CCAMLR as an example of the benefits of such programmes.

To develop such programmes implies an economic cost. As an illustration of the level of costs involved, an Albatross Task Force (ATF) operated by Birdlife across seven countries operates on a budget of c. €500,000 per year for 15 ATF instructors, funded from donations to Birdlife from a variety of sources (e.g. governments, general public)²¹. These instructors train

⁵⁹ <http://www.msc.org/track-a-fishery/in-assessment/north-east-atlantic/grupo-regal-spain-hake-longline/grupo-regal-spain-hake-longline>

⁶⁰ <http://www.msc.org/track-a-fishery/in-assessment/southern-ocean/SARPC-toothfish/SARPC-toothfish>

fishermen in the use of mitigation measures. They also have a role in strengthening national observer programmes through developing at-sea observer protocols and seabird identification guides while also providing workshops and provision of training materials. The NGOs are best place to continue and expand this work into other regions but the scale will depend on their ability to fund such programmes or finding alternative funding sources (e.g. EFF/EMFF or national funding).

In addition to awareness-raising measures, there is undoubtedly a need for applied research to improve the knowledge of seabird behaviour and fishing practices for refining mitigation measures. While mitigation measures for longline fisheries are fairly well proven, for other gear types (e.g. static nets, trawls or purse seines) appropriate measures are less well developed.

The direct economic costs of these awareness raising, education measures and applied research in the case of the POA would depend to a large extent on the importance given by Member States to such measures. However, given the potential integration into other relevant regulations, the magnitude of these costs could be shared across a number of conservation areas (i.e. combine training on a range of non-target species). The number of NGOs involved would also increase, given the wider range of species covered (e.g. cetaceans). Costs for research along with the awareness-raising and training could be offset potentially with funding through the EFF and the new EMFF. Additionally funding through FP7 and the EU's LIFE programme, may also be sources of funding for research into the mitigation of seabird bycatch in the future. Such studies have been funded under the LIFE programme in the past.

Other Users

There would potentially be economic impacts on fisheries dependent businesses such as the processing sector and ancillary industries but these impacts would be dependent on the extent of the measures taken.

There would be some economic impacts envisaged for the NGOs for the provision of awareness-raising measures as described.

There could potentially be positive economic impacts on tourism operators through the protection of opportunities for eco-tourism and bird-watching as result of increasing seabird populations. However, this is difficult to quantify and is dependent on any measures introduced being effective.

5.2.2. Environmental Impact

Mitigation

Under option 2, based on experiences globally, adoption of simple mitigation measures will potentially lead to significant reductions in seabird bycatch, particularly in longline fisheries. This is predicated on implementation of the measures. Published results for mitigation trials illustrate appropriate measures can reduce or even eliminate seabird bycatch when a combination of measures is applied. For instance in CCAMLR, measures required are split between gear-based measures (e.g. weighting of lines and bird scarer lines) and operational measures (e.g. night setting and offal discharge management).

Results vary greatly between fisheries, regions and bird species but examples of the effectiveness of mitigation measures in several international fisheries include:

- The seabird bycatch in the Chilean pelagic longline fleet dropped from an estimated 550+ birds in 2007 to 22 in 2009, a reduction of ~96% in two years¹⁶.
- In the Falkland Islands Patagonian toothfish longline fishery seabird bycatch fell by 99% over the period 1994-2003⁶¹.
- In the New Zealand longline fishery for ling following the introduction of weighted longlines seabird bycatch was reduced by more than 90%⁶².

These results are felt comparable with EU fisheries, particularly for the large-scale longline fisheries (e.g. Gran Sol and Mediterranean surface longline fisheries). In the short-term incremental reductions of between 20-30% annually are achievable based on experiences in fisheries internationally¹⁶.

In addition to gear-based or operational mitigation measures, restricted or closed areas can also be used to mitigate against seabird bycatch in longline fisheries. One example of this is a temporal closure directly in place in the CCAMLR toothfish fishery aimed at reducing seabird bycatch, with summer restrictions meaning vessels can only operate in the winter months. This led to a reduction in birds per thousand hooks; from 0.2 in 1995 to 0.025 in 1997². Provided they are well defined similar closed or restricted areas in combination with other measures could be used to reduce bycatch in certain EU longline fisheries.

Reductions in bycatch in static net fisheries are much more difficult to predict and there are no clear examples of reductions being achieved in static net fisheries with gear modifications or operational changes. The MRAG report² does provide an example of the driftnet fishery for salmon in Puget Sound, US, where fishing was limited to periods of peak salmon abundance and closed the rest of the year. This reduction in fishing activity led to a 43% decline in bird bycatch⁶³. The effectiveness in EU fisheries would depend on the characteristics of the fisheries involved and the information available to define the extent of areas appropriately.

For other gears such as trawls and purse seines there are few examples of mitigation measures reducing seabird bycatch. One study⁶⁴ shows that following the introduction of streamer lines to the demersal trawl fisheries of the Falkland Islands, observed seabird mortality was reduced by 90%. Similar results have been found in the South African hake trawl fishery.

Monitoring

Over-time monitoring both direct (dedicated seabird bycatch programmes) or indirect monitoring as part of other programmes (e.g. DCF) would improve the knowledge of incidental seabird bycatch in EU and non-EU waters and increase the number of fisheries covered. This is important in the identification of emerging bycatch problems (e.g. in trawl or purse seine fisheries) The weakness in the approach is that in the short-term monitoring in EU

⁶¹ Munro, G (2003) The potential economic benefit to fishermen of using mitigation measures to reducebait loss. Presentation to Futruno/Valdivia workshop, Chile, 2-6 Dec 2003.

⁶² Robertson, G., McNeill, M., Smith, N., Wienecke, B., Candy, S. and Oliver, F. (2006) Fast sinking (integrated weight) longlines reduce mortality of white-chinned petrels (*Procellaria aequinoctialis*) and sooty shearwaters (*Puffinus griseus*) in demersal longline fisheries. *Biol. Conserv.* 132, 458-471.

⁶³ Melvin, E.F., Parrish, J.K. and Conquest, L.L. 1999. Novel tools to reduce seabird bycatch in coastal gillnet fisheries. *Cons. Biol.* 13: 1386-1397.

⁶⁴ Reid T.A. and Edwards, M. 2005. Consequences of the introduction of Tori Lines in relation to seabird mortality in the Falkland Islands trawl fishery, 2004/05. Unpublished Falklands Conservation Report.

waters would be largely voluntary and may be at an insufficient level in some fisheries to detect a bycatch problem.

Additional elements

Awareness-raising and training would result in positive environmental benefits as awareness and understanding of the problem by fishermen increases. Based on the Birdlife ATP programme²¹ such measures can improve the robustness of bycatch data, encourage experimental trials to support the development of mitigation measures and promote the use of mitigation measures to fishermen.

The testing of new mitigation techniques for longlines, static nets and other gear types and improving knowledge of seabird distributions and their overlap with fisheries would be highly beneficial in developing future management strategies. The development of such measures through applied research, particularly in static net, trawl and purse seine fisheries will clearly have positive impacts in terms of reducing seabird bycatch although the actual benefits are hard to quantify.

International elements

In external waters the POA would primarily be a mechanism to enhance measures already adopted by RFMOs and encourage a culture of compliance among EU vessels operating in these fisheries. The POA would provide a basis for negotiating future measures (both binding and non-binding) included in RFMO agreements. It would also provide a platform for the promotion of best practice among EU vessels operating in external waters. Increasing compliance and enhancing existing measures will result in significant reductions in seabird bycatch in external waters as evidenced by the experiences in CCAMLR and other fisheries in non-EU waters.

5.2.3. Social Impact

There would undoubtedly be a positive reaction to the introduction of a POA by the general public and most NGOs, given in the public consultation they were the main advocators of a POA. It was, however, criticised by one NGOs as being inadequate given the measures would be largely voluntary.

As evidenced by the public consultation, the adaptive approach proposed would be supported by the catching sector and national administrations given it is non-prescriptive with opportunities for regionally based management measures. It allows time to gather information leading to a better understanding of the problem and for the development of measures for the relevant fisheries to solve the problem.

The certification of fisheries under this option may also lead to an improved perception by the general public as a result of demonstrating responsible fishing practices.

As with option 1 no significant impact on employment is anticipated. The majority of vessels involved in EU waters are small vessels with 1-2 crew. Any changes in costs and profitability are marginal and offset against benefits outlined so it is unlikely that this initiative would result in a creation or reduction in employment. For the fleets with larger vessels involved, experience globally²¹ has shown that any extra costs for mitigation measures or absorbed into the operating costs of the vessels with no impact on employment.

5.2.4. *Impacts on SMEs*

In EU waters, of the approximate 54,000 vessels that fish with longlines and gillnets that would be most affected by this initiative, almost 96% of them would be less than 12m in length and would be classified as micro-sized enterprises. Therefore the proportionality principle would apply in this case in implementing the POA. The conservation of biologically sensitive species including seabirds falls under the exclusive competence of the Union and exempting all of these micro-sized enterprises would undermine the conservation objective of minimising seabird bycatch given the collective impacts of all of these vessels on seabird populations. If micro-sized enterprises were exempted then the measures would only apply to around 2,000 larger vessels plus an additional 400-500 vessel in non-EU waters, which would be classified as small to medium sized enterprises. It is interesting to note that in the public consultation, the NGOs and two of the RACs advocated that the scope of any measures should include artisanal vessels, as the level of incidental catches in these fisheries goes largely undetected and unreported. This supports the inclusion of all vessels regardless of size under a POA.

Even though the majority of vessels involved are classed as micro-sized enterprises, in reality any impacts can be minimised in most cases because:

- The measures are largely voluntary and can therefore be tailored to the vessels and fisheries involved.
- Grant aid under the EFF and EMFF would most likely be available to offset capital costs.
- Costs and loss in catch can be offset in longline fisheries against the benefits of using these measures in reduced bait loss and catches foregone.
- Any costs for monitoring would be borne by the national administrations and not the vessel owners.
- No additional reporting requirements are envisaged under this option.

5.2.5. *Simplification and administrative burden*

The adoption of an EU-POA would result in some additional administrative costs and obligations for Member States over about existing monitoring measures. However, the integration of monitoring measures over-time into the new DCF regulation would most likely lead to reductions in these costs. The avoidance of duplication of measures was highlighted by the RACs and national administration in the public consultation as important to keeping the costs for additional administration to a minimum.

Cost for national administrations, the Commission and Fishermens Representative Organisations would include:

- Costs for dissemination of information to MS and industry;
- Additional monitoring costs over and above existing observer programmes;
- The possible use of alternative monitoring technologies (e.g. CCTV); and

- Reporting obligations by the Commission and Member States

In terms of monitoring, under the POA, Member States would not necessarily be required to introduce specific monitoring programmes for seabird bycatch in the first instance. The POA would merely recommend levels of monitoring that would be commensurate with the level of bycatch and risk to seabird species and also reinforce existing commitments under environmental legislation. It would be up to Member States to decide how best to monitor the relevant fisheries cost effectively. In this respect, monitoring of seabird bycatch could, as far as practically possible, be incorporated into the current DCF and under the Birds Directive and in conjunction with current monitoring obligations required under Regulation (EC) 812/2004 for cetaceans at zero cost. Other mandatory observer programmes under management and recovery plans could also be utilised. In the longer-term monitoring the aim would be to incorporate into the new DCF due to be implemented in 2014. The addition of seabird monitoring under the existing and new DCF is unlikely to increase monitoring costs given it is merely an added task of observers placed on board vessels. DCF is already an accepted cost for Member States and is 50% funded by the EU.

New technologies such as CCTV and self-sampling programmes could also be used to supplement observer coverage. In this case, these technologies would be used as scientific monitoring tools rather than for direct control and enforcement purposes. The use of CCTV has other applications (e.g. discard monitoring) other than just monitoring seabird bycatch and this must be factored in when assessing any costs. A Danish study⁶⁵ using CCTV found that capital costs for installation and maintenance of an individual system were in the region of €10,200 with costs for monitoring 500 hauls annually estimated at €5,000 (Anderson pers. comment). On this basis compared to observer programmes, it is a reasonably cost effective monitoring tool. Self-sampling programmes have been widely used to provide enhanced discard data collected under the DCF. Such schemes are cost-effective and useful if there are incentives for fishermen to record the data (e.g. as a requirement under a certification scheme). However, the quality of the data can be variable due to sporadic and often biased recording of data by fishermen.

The monitoring of fishing activity within closed or restricted areas including SPAs or SACs in which the majority of vessels are less than 12m in length and do not have to carry Vessel Monitoring Systems (VMS) would also potentially represent a cost for national administrations. The actual magnitude of these costs is not quantifiable without a detailed assessment of the likely extent of areas and the number of vessels involved but VMS systems specifically designed for small vessels have been tested extensively by the Sea Fish Industry Authority (SFIA) in the UK to monitor fishing activity in an SAC off the south-west of England⁶⁶. The systems tested cost around STG £1,000-2,500 (€1,225-3,000) per vessel. Such systems could be used to monitor fishing activity for a number of purposes and would potentially be eligible for funding under the EMFF so the costs would not be excessive and as with CCTV would have multiple monitoring applications. Such monitoring has potential benefits for the catching sector in that it demonstrates responsible practice.

Based on the assumptions described above the administrative and monitoring costs in EU waters for option 2 have been estimated using the EU Standard Cost Model (SCM) at approximately **€5.2 million annually until 2014** (the detailed calculations are contained in

⁶⁵ Kindt-Larsen, L., Kirkegaard, E., and Dalskov, J. 2011. Fully documented fishery: a tool to support a catch quota management system. – ICES Journal of Marine Science, doi:10.1093/icesjms/fsr065.

⁶⁶ Caslake R., 2009. SR617. Seafish inshore VMS pilot project. SFA 03. July 2009. 18pp.

Annex XIII). After 2014 with the potential integration of observation of bycatch under the DCF, the monitoring costs would be expected to reduce further.

Around 95% of these costs (i.e. €4.9 million) are related to additional monitoring and inspection by Member States to ensure measures are being applied. This is on the basis of Member States placing observers on a sample of 50 vessels for 100 days per year. This level of coverage is in line with recommendations by ICES on sampling of bycatch⁶⁷ of biologically sensitive species such as seabirds or cetaceans. Monitoring uptake of voluntary or national measures, through inspections by national control authorities are calculated at a level of 10% of the static net and longline fleet at least once a year. This is considered an acceptable level of coverage based on the guidelines for inspections of sampling of landings and catches contained in the basic control regulation for EU fisheries, Regulation (EC) No. 1224/2009⁶⁸. The remaining costs relate to the dissemination of information to the fishing industry by DG MARE assisted by the national administrations and RACs as well as collation and reporting of information to DG MARE by the national administrations. It is assumed that costs for any monitoring of seabird bycatch under the existing DCF are cost neutral. The costs for using CCTV, VMS for small vessels or other alternative means of monitoring would be spread across a range of applications and not just seabird bycatch and are also taken as cost neutral. Costs for research and education and outreach would largely be covered under the EFF and EMFF.

There are existing monitoring programmes in most of the longline fisheries managed by the RFMOs in external waters. The level of coverage provided by these schemes currently varies considerably between RFMOs. In some cases the monitoring of seabird bycatch is specifically mentioned, while in others recording of bycatch is encouraged but remains voluntary. This variability implies some level of direct costs to RFMOs administrations and Union third country contracting parties to improve the consistency and coverage of monitoring. These costs, however, are not deemed to be significant as these schemes already exist.

As with option 1, no new legislation would be specifically introduced under this policy option so there would be no increased complexity in the management system. The approach under the POA is very much designed to be non-prescriptive and flexible leaving the development of appropriate measures to the Member States in consultation with stakeholders. The integration of these measures over-time into other regulations also represents simplification. The POA is in line with the regional approach with scope for extensive industry consultation envisaged under the reform of the CFP.

5.3. Option 3 – Stand-alone regulation

5.3.1. Economic impacts

Sub-options 3a and 3b – stand-alone regulation - would be in the form of binding rules under ordinary legislative procedure. In the case of sub-option 3a this would be for both monitoring and mitigation and for sub-option 3b purely for mitigation measures.

The choice of mitigation measures for both sub-options would be similar to those described under policy option 2 with a combination of gear modifications, operational changes and

⁶⁷ ICES. 2009. Report of the Study Group for Bycatch of Protected Species (SGBYC), 19-22 January 2009, Copenhagen, Denmark ICES CM 2009/ACOM:22.

⁶⁸ OJ L 343, 22.12.2009, p.1

restricted or closed areas. Therefore the economic impacts would be broadly similar. The difference would be they would be mandatory with less flexibility to tailor measures to particular fisheries.

As with option 2 the impacts on earnings would vary between the mitigation measures adopted. MRAG² shows many are of low capital cost and have little or no impact on catch rates (e.g. streamer lines, offal discharge) while others such as night setting and weighted lines could reduce income by up to 35%. These losses should be balanced against the benefits in terms of reduced bait loss, gear and catch damage and catch foregone in longline fisheries as described in Section 5.2.1.

For static net fisheries as with option 2 the only available mitigation measures currently would be limited to simple operational measures (e.g. offal discharge management) and closed or restricted areas. Under this regulatory approach mandatory restricted or closed areas could be introduced for specific gear types on the grounds of serious conservation threat within SPAs or SACs or in other areas identified.

Based on available information on levels of seabird catch, species under most threat and fisheries and gear types leading to the greatest threats, this would imply closures or restrictions could be introduced for longline fisheries in the eastern and western Mediterranean and in the Gran Sol area in the NE Atlantic as well as static net fisheries in the Baltic and eastern North Sea.

Without carrying out a much detailed analysis of such closures it is not possible to estimate the impacts on the fleets but they could be significant if the closures cause widespread displacement of fishing effort. As a worst case scenario, if we look at the example of the Gran Sol longline fishery, it currently involves 75 vessels, landing approximately 12,400 tonnes of mainly hake with a landed value in excess of €30 million. Assuming that only those areas where seabird interactions are known to be high were closed (mainly off the west of Scotland area), then the vessels would have to concentrate activity in less productive fishing areas (Bay of Biscay). They would suffer directly in terms of lost income from fishing less productive grounds, but also could run out of quota or effort allocation early in the year, making their activity unviable or force them to shift into other fisheries.

In static net fisheries, particularly in the Baltic Sea, closures or restrictions would impact on a larger number of smaller vessels. The interviews conducted in the MRAG study² showed that the fishermen in this area agreed that closures could be effective but would reduce incomes by between 30-70% depending on the nature of the restrictions. Particularly unpopular were winter closures which would coincide with the cod season in the Baltic. These losses could be partially offset. In this case by moving fishing grounds or diversifying to alternative gears (e.g. fish traps or longlines). According to MRAG² there are serious doubts concerning the catch efficiency of such alternative gears. Without more research it is difficult to see fishermen adopting such gears as this would result in significant investment costs for fishermen with associated economic losses in the short-term from reduced catches. This view was also expressed by the RACs in the public consultation who felt that voluntary avoidance measures or short, targeted closures would be as effective with less disruption to fishing operations.

As with option 2 there would also be potential economic benefits for the catching sector in adopting a stand-alone regulation in achieving certification.

Other users

The impacts on other users with either of these two sub-options would be broadly similar to those under option 2.

5.3.2. *Environmental impacts*

Mitigation

The likely environmental impacts for sub-options 3a and 3b are similar to those described in option 2, although given the measures will be mandatory, the speed of seabird bycatch reduction could potentially be faster in fisheries where measures are introduced.

The provision for mandatory seasonal/temporal closures or restrictions on certain fishing activities would provide extra protection for seabird species of particular conservation concern although their effectiveness would depend on them being in the right location and with adequate control measures in place.

The experience in the CCAMLR region and in other fisheries globally, where the introduction of a combination of measures into the fisheries resulted in seabird bycatch being virtually eliminated in 3-5 years, demonstrates that the implementation of strict measures can be effective when there are strong drivers for compliance. In the case of CCAMLR the costs for using mitigation measures are minimal compared to the overall operating costs of the vessels but the costs for not complying with the measures are high as non-compliance will result in loss of access to a highly-lucrative fishery. In EU fisheries, particularly the small-scale longline and static net fleets, this driver is not as apparent as the margins are much tighter and this is a weakness in this approach in these fisheries. Transposing measures from other areas or fisheries into small-scale EU fisheries was considered bad practice by the RACs in the public consultation.

Monitoring

Monitoring under sub-option 3a would improve the knowledge of incidental seabird bycatch but only in those fisheries where monitoring would be required. For instance there would be no obligation for Member States to monitor interactions of seabirds in trawl or purse fisheries as there is no scientific data in EU waters to suggest a problem exists. This is despite anecdotal reports in similar fisheries in non-EU waters which indicate seabird bycatch is likely. As a result there would be little scope to adapt monitoring strategies quickly to deal with emerging bycatch problems identified in other fisheries. Any amendment to address potential shortcomings would require changes to the legislation under co-decision during which time the problem could conceivably increase. According to ICES this has been one of the failings of Regulation (EC) 812/2004. Under this Regulation after six years of monitoring there is still not a clear picture of levels of cetacean bycatch and ICES have concluded that monitoring has been a patchwork of relevant and irrelevant monitoring. A similar problem could well arise with a dedicated seabird bycatch monitoring programme, whereby coverage is targeted to the wrong fisheries or areas with limited flexibility to adapt these areas quickly. There are also question as to whether such extensive monitoring is cost-effective in the case of monitoring the bycatch of species such as seabirds that are sporadic.

Monitoring under sub-option 3b would be identically to option 2 and so the environmental impacts would be as reported in section 5.2.2.

External waters

In external waters, seabird bycatch would remain at current levels as existing measures would remain in place. The environmental impacts on seabird populations would be the same as per option 1 with no added protection or monitoring over and above what already is in place.

5.3.3. *Social impacts*

As for policy option 2 the social impacts would be largely positive with support from the NGOs and the general public for either sub-option. However, all NGOs and the RACs expressed the view that measures should cover gear types other than longline and static nets and should cover both EU and no-EU waters. Not including measures for other gear types (trawls and purse seines) or the lack of any specific measures in external waters to address the variability in implementation of measures across the RFMOs may lead to criticism.

The catching sector and the administrations of some Member States would likely to consider either sub-option as disproportionate to the extent of the problem. Effectively they would see it as a "broad-brush" approach to what essentially are regional issues. It would be seen as prescriptive and potential give rise to increased costs for mitigation measures and dedicated monitoring schemes. This view was expressed by the RACs and fishermen representatives in the public consultation who stressed the need for a "bottom-up" approach to manage bycatch.

Some Member States with large numbers of static net or longline vessels operating in areas identified with high bycatch may also claim the measures under either sub-option are inequitable given their fleets would be impacted more than others. This is evidenced by the reaction to Commission proposals to introduce mandatory mitigation measures with limited monitoring requirements for longline fisheries in EU waters in 2009 under the transitional technical measures Regulation (EC) No 1288/2009⁶⁹. This proposal was vehemently opposed by several Member States most affected and it was quickly withdrawn. Sub-option 3b would therefore probably be more favourably received as the monitoring element would be less onerous.

The catching sector would be affected by the introduction of widespread closures or restricted areas under both of these sub-options. Closing or restricting fisheries, even temporarily, would have a socio-economic impact on fishermen but also on ancillary industries and local communities. In the example of the Estonian, Lithuanian and Latvian static net fleets operating in the Baltic, the dependency on the local community on these fleets is high from a social and economic point of view, with employment estimated at ~3,000 fishermen². Without a more detailed assessment it is not possible to estimate the scale of the impact of closing or restricting fishing but from an economic perspective in a worse case scenario this could result in decreased profitability for vessels that would lead to decreased turnover for ancillary industries and less money put back into the local community. From a social perspective there could be a reduction in fishermen employed and also employment in ancillary business. This highlights the need to ensure any such closures should be balanced between conservation needs and socio-economic impacts on fishermen.

⁶⁹ Council Regulation (EC) No 1288/2009 of 27 November 2009 establishing transitional technical measures from 1 January 2010 to 30 June 2011

5.3.4. *Impacts on SMEs*

The impact on SMEs would be similar to option 2 for both sub-options as reported under Section 5.2.3 except that the measures would be mandatory with less scope for vessels owners to tailor mitigation measures to the fisheries. This implies a marginal increase in costs for micro-SMEs but this would be dependent on the measures enacted.

5.3.5. *Simplification and administrative burden*

Sub-options 3a and 3b would lead to detailed rules, applied over specific fisheries. This is contrary to the objectives being proposed under the reformed CFP, which points out the need to avoid "*top-down micro-management at EU level, lacking flexibility and adaptation to local and regional conditions*" but can be justified on the basis of threats to species of conservation concern being serious and with no action populations would continue to decline.

The introduction of dedicated monitoring programmes under sub-option 3a for seabird bycatch would entail an increase in administrative burden on national administrations, industry representative organisations and to a limited extent DG MARE. This has been a major criticism levelled at the cetacean bycatch regulation⁵³. Member States claim that the cost of monitoring is disproportionate to the scale of the problem with the result that the effectiveness of the monitoring actually achieved has been sporadic and of limited utility in understanding the extent of cetacean bycatch.

The main costs associated with the monitoring of seabird bycatch under sub-option 3 would be:

- Set-up costs to facilitate legislative change;
- Observer costs for monitoring;
- Enforcement costs to ensure measures are being applied including the use of CCTV; and
- Reporting costs of the outcome of the measures.

Based on experiences with monitoring programmes in external waters, typically observers would need to be placed on a sufficiently representative sample of vessels, and observe sufficient percentages of hooks or nets being set, to achieve a realistic assessment of seabird bycatch. According to ICES³ and Birdlife²¹, experience elsewhere in the world demonstrates that observing at least 10% of hooks or nets set will enable detection of (a) whether a bycatch problem exists, (b) sea areas where more data are needed. Once a problem is detected, they suggest that observers are needed on at least 20-30% of vessels in order to monitor bycatch accurately. These levels of coverage may be attainable when the fleets involved have a small number of relatively large vessels but are definitely not achievable without substantial costs in situations where there are large numbers of small vessels or Member States have multiple fleets to monitor. This has been a problem with the monitoring of cetacean bycatch where the targets are overly ambitious and require a very high level of observer coverage to attain them. Therefore a compromise is required between costs for monitoring and level of coverage likely to provide reasonable estimates of bycatch level.

As with option 2, the monitoring of fishing activity in closed or restricted areas including in SPAs or SACs in fisheries where the majority of vessels are less than 12m in length and are

not required currently to install Vessel Monitoring Systems (VMS) would potentially be a cost for monitoring. The difference for sub-option 3a compared to option 2 and sub-option 3b is that VMS in this case would be very much a control tool rather than simply a tool for monitoring activity to complement observer coverage and other monitoring carried out.

Based on the assumptions described above the administrative costs for sub-option 3a has been estimated at approximately **€14.4 million** annually (the detailed calculations are contained in Annex XIII). As with option 2 the majority of these costs (90% i.e. €12.96 million) are related to additional monitoring and inspection by control authorities to ensure measures are being applied. This is on the basis of Member States observing 1% of the total longline and static net fleets for 30% of their total operating time, estimated at 220 days/year (i.e. 66 days per vessel). The total cost of such observer programmes is estimated at €10.5 million. Control and enforcement costs would be as for option 2 with costs based on inspecting 10% of the static net and longline fleet at least once a year specifically for seabird bycatch. These would be recurring costs. The costs for using control tools such as CCTV, VMS for small vessels or other alternative means of monitoring would be spread across a range of applications and not just seabird bycatch and would be eligible under the EMFF and therefore potentially would be minimal. These costs are not included in the analysis. There would be minimal costs for research and education and outreach as these would be eligible for funding under the EMFF as under option 2.

For sub-option 3b the costs would be significantly less without the requirement for dedicated monitoring programmes as under sub-option 3a.

On this basis the costs would be similar to option 2 at **€5.2 million annually until 2014** (the detailed calculations are contained in Annex XIII). Around 95% of these costs (€4.9 million) are related to additional monitoring and inspection by Member States to ensure measures are being applied. This is on the basis of Member States of observing 50 vessels for 100 days per year and inspecting 10% of the static net and longline fleet at least once a year specifically for seabird bycatch as per option 2. The remaining costs relate to the dissemination of information to the fishing industry and collation and reporting of information to DG MARE. Under sub-option 3b these costs would be slightly reduced as there would be no costs incurred by the RFMOs. It is assumed that costs for any monitoring of seabird bycatch under the existing DCF are cost neutral and costs for CCTV, VMS and other alternative monitoring technologies would largely be covered under the EMFF.

In terms of simplification, many of the mitigation measures that would be included in any regulation under these sub-options, (e.g. bird-scaring curtains or weighted swivels) may be difficult to define in legislation to ensure vessels implement measures in an effective manner. This would therefore require the development of very detailed descriptions. Some measures such as streamer lines, dyed bait and offal discharge, are simpler to define, but more difficult to enforce as observation at sea would be required. Others, such as circle hooks and weighting of longlines, would be comparatively simple to define, introduce and enforce if these were the only permitted gears allowed. More generally defining positive lists of gears and their use in legislation could hamper the development and uptake of innovative technical solutions, as their use would not be foreseen.

5.4. Summary of impacts

Table 10 summarises the three options proposed with regard to their positive and negative economic, social and environmental impacts as well as the impacts on SMES and in terms of simplification and administrative burden.

Table 10: Summary of impacts for policy options

Options	IMPACTS					Simplification & Administrative Burden
	Economic	Environmental	Social	SMEs		
Option 1- Status Quo	Largely neutral but possible negative impacts on NGOs and tourism operators through loss of potential of opportunities for eco-tourism and bird-watching.	Negative - gaps in knowledge on extent of bycatch remain and bycatch continues at existing levels	Largely negative - a lack of action will lead to negative reaction from NGOs and the general public. Failure of EU to meet obligations under international agreement and Conventions.	Neutral	Neutral	Neutral
Option 2 – EU POA	Positive – Reduced operating costs from reduced bait loss, catch damage and catch foregone in longline fisheries. Short-term costs for adoption of mitigation measures. Measures to protect seabirds could also lead to fisheries meeting pre-requisites for certification schemes ensuring and possibly enhancing market access for products	Largely positive – Predicted reductions in bycatch of 20-30% annually following introduction of measures in longline fisheries. More difficult to predict in static net fisheries as measures are less well developed. Improved knowledge on level of seabird bycatch across a range of fisheries. Increased awareness & understanding of fishermen on avoidance of seabird bycatch. Enhancement of measures in RFMOs.	Largely positive – Acceptance by the catching sector. Positive reaction from NGOs and general public Certification of fisheries. No impact on employment anticipated.	Largely neutral on SMEs - from adoption of mitigation measures although on a voluntary basis so can be offset by tailoring measures to particular fisheries and using EMFF funding.	Largely negative – Short-term increased administration costs for national administrations, COM, RACs, and RFMOs estimated at €5.2 million . Offset in the longer-term through integration of measures into new DCF and technical measures framework post- CFP reform. Represents simplification and in line with the CFP reform in regionalising measures.	Largely negative – Short-term increased administration costs for national administrations, COM, RACs, and RFMOs estimated at €5.2 million . Offset in the longer-term through integration of measures into new DCF and technical measures framework post- CFP reform. Represents simplification and in line with the CFP reform in regionalising measures.
Sub-Option Stand-alone regulation (mandatory)	Largely negative – Reduced operating costs from reduced bait loss, catch damage and catch foregone	Positive – Reductions in bycatch in fisheries where measures are introduced. Reductions are likely to be	Largely positive – Acceptance by the NGOs and general public and will aid in fisheries attaining	Largely negative with some impacts on SMEs from the imposition of mandatory measures. The introduction	Largely negative with some impacts on SMEs from the imposition of mandatory measures. The introduction	Negative with increased administration and associated costs estimated at €14.4 million annually mainly incurred by national

<p>monitoring & mitigation measures)</p>	<p>in longline fisheries. Short-term costs for adoption of mitigation measures and possible loss of earnings. Introduction of mandatory closed or restricted areas may have a significant impact on static net fisheries. Positive impacts in that measures to protect seabirds could also lead to fisheries meeting pre-requisites for certification schemes ensuring and possibly enhancing market access.</p>	<p>accelarated compared to option 2 as measures are mandatory. Positive benefits in improved knowledge on level of bycatch in fisheries where monitoring is mandatory. Negatives due to a reliance on current information to identify fisheries to monitor & mitigation measures & a concentration on longline and static nets fisheries. No added protection in non-EU waters.</p>	<p>certification. However, the prescriptive approach would not be supported by the catching sector and national administrations as they would consider it disproportionate to the scale of the problem. The imposition of widespread closed or restricted areas has the ability to impact on employment.</p>	<p>of mandatory closed or restricted areas has the potential to increase impacts on SMEs</p>	<p>administrations, COM and RACs. Does not represent simplification and regulation approach would be inflexible and out of lien the regionalised approach advocated in the reform of the CFP.</p>
<p>Sub-Option 3b – Stand-alone regulation (mandatory mitigation measures only)</p>	<p>Largely negative – Reduced operating costs for bait loss, catch damage and catch foregone in longline fisheries. Short-term capital costs for adoption of mitigation measures and possible loss of earnings. Introduction of mandatory closed or restricted areas may have a significant impact. Positive impacts from fisheries meeting pre-requisites for certification schemes ensuring and possibly enhancing market access</p>	<p>Positive – Reductions in bycatch in fisheries where measures are introduced. Reductions likely to be accelerated compared to option 2 as measures are mandatory. Positive benefits in improved knowledge on level of bycatch in fisheries where monitoring is mandatory. Negatives due to a reliance on current information to identify fisheries to monitor & mitigation measures & a concentration on longline and static nets fisheries. No added protection in non-EU waters.</p>	<p>Largely positive – Acceptance by the NGOs and general public and will aid in fisheries attaining certification. However, the prescriptive approach would not be supported by the catching sector and national administrations as they would consider it disproportionate to the scale of the problem.</p>	<p>Largely negative with some impacts on SMEs from the imposition of mandatory measures. The introduction of mandatory closed or restricted areas has the potential to increase impacts on SMEs</p>	<p>Largely negative – Short-term increased administration costs for national administrations, COM, RACs, and RFMOS estimated at €5.2 million. Offset in the longer-term through integration of monitoring into new DCF post-CFP reform. Represents simplification and in line with the CFP reform in regionalising measures.</p>

Source: Author

Table 11 below summarises the annual estimated administrative and management costs for options 2 and sub-options 3a and 3b. The costs for option 1 - *status quo* - are assumed to be neutral. The costs for option 2 and sub-option 3b are expected to reduce after 2014 when monitoring is incorporated under the new DCF. The costs for option 3a are considered to be recurring costs. No costs for research, education awareness or training measures are included as these are difficult to estimate and in any case would be eligible for funding under the EMFF or other funding mechanisms (e.g. EU LIFE programme), meaning the overall costs would be greatly reduced.

Table 11 A Summary of estimated annual administration and monitoring costs

Costs	Option 2 (EU-PoA)	Sub-Option 3a (Stand-alone Regulation) Monitoring and mitigation	Sub-Option 3b (Stand-alone Regulation) Mitigation only
Administration	€273,540	€262,731	€262,731
Monitoring/Observing	€1,500,000	€10,771,200	€1,500,000
Inspection by Control Authorities	€3,408,121	€3,408,121	€3,408,121
Total Costs	€5,181,661	€14,442,052	€5,170,852

Source: Author

6. COMPARING THE OPTIONS

6.1. Qualitative Assessment by Option

The effectiveness of each option in terms of the general and specific operational objectives (sections 3.1 & 3.2) has been assessed as shown below in table 12 where effectiveness is defined "*as the extent to which options achieve the objectives of the proposal*".

Table 12 Comparison of the two options with regard to effectiveness compared to the status quo option

Option	General Objective	Specific Objective (1) Current management measures	Specific Objective (2) Data collection	Specific Objective (3) Mitigation measures	Specific Objective (4) Education & training	Specific Objective (5) Research
Option 1 – Staus Quo	--	--	-	o	o	o
Option 2 - EU-PoA	++	++	++	++	++	++
Sub-option 3a - Stand-alone regulation with monitoring	+ (++ in areas/fisheries covered by the regulation)	+	+ (++ in areas/fisheries covered by the regulation)	++	o	o

and mitigation measures						
Sub-option 3b - Stand-alone regulation with only mitigation measures	+	+	++	++	o	o
	(++ in areas/fisheries covered by the regulation)					

Source: Author

o = neutral impact, + = positive impact, ++ = very positive impact (relative to other options), - = negative impact, -- = very negative impact (relative to other options), n.a. = not applicable as the options does not cover this aspect

Option 2 is considered the most effective option.

Efficiency and coherence of each proposal has been compared to the status quo (option 1) as shown in table 13 where efficiency is defined as "*the extent to which objectives can be achieved for a given level of resources/at least cost*"; and coherence is defined as "*the extent to which options are coherent with the overarching objectives of EU policy, and the extent to which they are likely to limit trade-offs across economic, social and environmental domain*". In this particular case the overarching environmental objectives are laid down in the CFP, Birds Directive, MSFD and the EU's Biodiversity Strategy.

Table 13 Comparison with regard to efficiency and coherence compared to the status quo option

Option	Efficiency	Coherence
Option 1 – Status Quo	-	-
Option 2 - EU-POA	++	++
Sub-option 3a - Stand-alone regulation with monitoring and mitigation measures	+	-
Sub-option 3b - Stand-alone regulation with only mitigation measures	++	+

Source: Author

Option 2 is the most efficient and coherent policy option.

6.2. Ranking the options

On the basis of the analysis carried out option 2 (EU-POA) is preferred in that it should lead to a reduction in seabird bycatch across a range of fisheries and should achieve these reductions at less cost to the fishing industry and national administrations than sub-options 3a and 3b (stand-alone regulation).

The second preferred option is sub-option 3b which would be a stand-alone regulation containing mitigation measures with monitoring carried out as per option 2 (i.e. DCF and

Birds and Habitats Directive). This option has the advantage of dealing more expediently with seabird bycatch for species under threat than option 2 given the likely time frame for introduction of a new technical measures framework. It does, however, run the risk of having the same weaknesses as have been identified with Regulation (EC) 812/2004, which sets out mitigation measures to protect cetaceans.

The third preferred option is sub-option 3a. While this option should result in benefits in reducing seabird bycatch, as with sub-option 3b it runs the risk of having the same weaknesses regarding the requirement to use mitigation measures in specific fisheries. The inclusion of specific monitoring requirements compounds these problems and there is a danger, as found with Regulation (EC) 812/2004, that monitoring would be targeted in the wrong areas or at the wrong gear types.

Option 1 (no change) is the least desirable option. In the short-term, there are economic advantages but it will not achieve the specific objectives set. Current levels of seabird bycatch will continue to be unacceptably high and the level of knowledge on the scale of this bycatch in relation to seabird populations and conservation threat posed by fishing to seabirds will remain low. There will also be no enhancement of measures already adopted in external waters.

7. MONITORING AND EVALUATION

According to the FAO Best Practice Technical Guidelines there are a number of evaluation procedures that are needed to ensure the effective operation of a Plan of Action, the preferred policy option. These include the following elements:

- 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.
- Annual review of data on captures and of the effectiveness and implementation of mitigation to ensure specifications for mitigation devices are current best-practice and are appropriately deployed.

Taking this approach, under an EU-POA, the intention would be that Member States would report bi-annually to the Commission on the level of seabird bycatch observed by fishery and gear type, the implementation of any mitigation measures and the effectiveness of these mitigation measures. The Commission working with ICES and STECF would develop a standard reporting format to facilitate Member States and data access to the wider public.

On the basis of these reports, the Commission would carry out an interim assessment of the EU-POA after the second of these reports and then report to the Parliament and Council on the success of the Plan of Action in the form of a Communication to Council and Parliament. This report would provide the basis for evaluating:

- The current status of seabird mortality caused by interactions with fisheries and its likely impact on populations measured against biological indicators such as Potential Biological Removal Rates (PBR);
- The effectiveness of mitigation measures measured in terms of observed reductions in By Catch Per Unit Effort (BPUE); and

- The success of any education awareness measures and new research developments based on uptake of measures.

ICES, STECF and other expert bodies as appropriate would be requested to input into this review. In particular ICES will be asked to supply bycatch and population estimates for the species of concern. Such data is reviewed routinely by the ICES WGSE. This would provide a benchmark of bycatch levels with populations and provide a basis for defining management objectives.

The Commission would carry out a full review and evaluation of the POA after the fourth report (eight years) of implementation and update the POA accordingly. This review would be timed to coincide with the obligation under the MFSD to reach GES by 2020.

In parallel, under Article 12 of the Birds Directive, Member States must report every three years on the implementation of national provisions taken under the Directive. Where relevant, Member States should also use the data collected under the EU-POA to inform this report, particularly data on seabird populations.

ANNEX I – SUMMARY OF PUBLIC CONSULTATION

Consultation Summary

Reporting on the results of the public consultation for an EU Action Plan for reducing incidental catches of seabirds in fishing gears

Introduction

Within the framework of the FAO Code of Conduct for responsible fisheries (in particular Articles 7.6.9 and 8.5), in 1999 the FAO Committee on Fisheries (COFI) adopted an International Plan of Action (IPOA)⁷⁰ for reducing the incidental catches of seabirds in longline fisheries (IPOA-Seabirds). The European Commission (EC) has indicated its intention to develop a similar European Union Action Plan based on these guidelines and taking from the experiences of Regional Fisheries Management Organisations (RFMOs) such as CCALMR⁷¹ and countries such as Canada.

In developing a proposal for a European Plan of Action for reducing the incidental catch of seabirds in fisheries (EU-POA Seabirds) the first step is to carry out an impact assessment which will analyse:

- the nature and scale of the problem;
- who/what is affected;
- the views of stakeholders concerned;
- problem resolution' objectives;
- proposed actions to reach those objectives; and
- likely economic, social and environmental impacts of the management options and targets proposed.

The first two steps in this process have been completed based on scientific information provided by the International Council for the Exploration of the Sea (ICES) and other bodies such as CCAMLR.

This documents reports on the results of the public consultation that aimed to address step 3 and gather the views of different stakeholders on the initiative proposed by the Commission. Stakeholders were invited to comment on the scope and objectives of an EU PoA Seabirds, as well as on the potential fields of action which the Commission presented in its consultation document.

This summary document is based on the written contributions received. It does not draw any conclusions regarding the options proposed nor does it represent the formal position of the

⁷⁰ FAO, 1999. International Plan of Action for reducing incidental catch of seabirds in longline fisheries. Rome, FAO, 10p.

⁷¹ Convention on Conservation of Antarctic Marine Living Resources

Commission. This document will support the preparation of the Impact Assessment report, which in turn will be the basis for developing the Commission's proposal for an EU-PoA.

Contributions received

The public consultation took place between 11 June and 9 August 2010, with a total of 215 contributions received. Individual contributions are available on the dedicated website to this consultation⁷². Table 1 provides a summary of the submissions by stakeholder grouping.

Table 1 - Breakdown of contributions

Stakeholder Group	Number of contributions	Examples
Registered organisation	12 (6%)	Industry and fishers associations (Fishermen, fish and shellfish farmers, fish processors, wholesalers and retailers); Environmental NGOs
Public authorities	15 (7%)	Regional Advisory Councils; national administrations; Members of the EP
General public	31 chain e-mails 136 chain e-mails 19 individual submissions Total: 215 (86%)	Wide ranging
Unregistered organisations	2 (1%)	Fishermen's Association; Environmental NGO

Source: Author

The majority of submissions (87%) were received from the general public. These contributions tended to be less technical or detailed in respect of the analysis of each field of action presented in the consultation paper. They were mainly in the form of two "chain e-mails", in response to campaigns launched by environmental NGOs. These e-mails came from the general public across a range of Member States and indicated general support for the introduction of a PoA. Some were more forthright and requested the immediate adoption of an EU PoA covering all relevant fisheries and gears and for EU vessels operating in and outside EU waters. In some cases these submissions also called for restrictions on or the banning of certain fishing methods.

In addition to these e-mails there was also a small group of individual contributions from the general public. Most of these expressed concern at the level of seabird mortality in fisheries and the risk of loss of biodiversity.

There were nine submissions from NGOs (eight from registered organisations and one from an unregistered source), several of which were joint submissions from two or more organisations. These submissions were more detailed and the main points are summarized under the relevant fields of action.

Eight submissions were received from national administrations within the EU, with one submission from an international organisation dealing directly with incidental seabird catches. These submissions were generally quite detailed. Three individual submissions were received from MEPs. Two of these submissions took the form of short letters supporting the

⁷² http://ec.europa.eu/fisheries/partners/consultations/seabirds/index_en.htm

introduction of a PoA, while one provided more detailed comments relating to the fields of action.

Four of the Regional Advisory Councils (RACs), the North Western Waters (NWWRAC), North Sea (NSRAC), Baltic (BSRAC) and Pelagic (PRAC) RACs submitted comments. All of these contributions were detailed and made recommendations on the most appropriate actions to be taken.

There were a further three submissions from fishermen's representative bodies and the processing sector.

Scope and objectives of the EU-PoA Seabirds

Most of the contributions received from the general public, NGOs and national administrations emphasised the need for protection for endangered species and many pointed to adoption of the precautionary approach to seabird protection where information is lacking or disparate in EU waters. All of these contributions supported the adoption of an EU-PoA for seabirds and agreed that it should apply across the whole EU fishing fleet operating in EU waters and in non-EU waters.

There was general consensus that longlines and static nets fisheries are the most common causes of incidental mortality in EU waters and should be the focus of the PoA. However, contributors also stressed that other fishing gears should not be excluded from the PoA, namely those gears known to be responsible for incidental catches of seabirds (e.g. trawls, drift-nets, purse-seines).

The NGOs and two of the RACs advocated that the scope of the EU-PoA should include the artisanal and semi-professional fisheries, as the level of incidental catches in these fisheries currently goes largely undetected and unreported, and should be integrated into the wider control regime (including CFP reform). One NGO considered that in line with the Birds Directive, the EU-PoA should ensure the creation of protection zones prioritising areas accordingly to the level of risk to seabird populations

There was general consensus that priority should be given to threatened or endangered species of seabirds and also to areas/fishing gears where current evidence shows the existence of a problem. Two of the NGOs also highlighted that incidental seabird catches were not only a nature conservation problem but also an issue of animal welfare. They referred to Article 13 of the Lisbon Treaty where there is also an obligation to integrate animal welfare considerations into EU policymaking, including fisheries policy.

Respondents from the fishermen's representative bodies argued that the measures proposed in the consultation paper are already covered by the Birds Directive through the implementation of Special Protection Areas (SPAs) so there is no need for further measures. They are concerned that such measures taken in areas outside SPAs, which are of no special importance for the seabirds, would lead to high costs for implementation with few benefits and at the detriment of proper and concentrated management in the SPAs.

Proposed fields of action

In the public consultation a number of specific fields of action were identified as follows:

- (1) Assessing the interactions between seabirds and fishing gears in EU waters

- (2) Identification and implementation of mitigation measures in EU waters
- (3) Actions in International waters
- (4) Mitigation Research
- (5) Education, training and outreach
- (6) Reporting of all the actions

Under each of these fields of action, stakeholders were requested to comment on the appropriateness of the actions; on actions already being applied either voluntarily or nationally; the level of investment needed for each action; indicate who is to take responsibility for the action; and what are the likely economic, social and environmental impacts.

The comments received under each field of action are summarised below.

Field of Action 1 - Assessing the interactions between seabirds and fishing gears in EU waters

All stakeholders groups agreed that the interactions between seabirds and fishing gears need to be reassessed to identify existing knowledge gaps and make it easier to define suitable and effective management tools. Contributors also stressed that based on this detailed assessment, it was essential that resulting measures should be put in place in an adequate and proportionate way (e.g. priority should be given to threatened species and fisheries identified as having a high bycatch). Such an approach would allow the adoption of measures to match the local/regional situations rather than a "broad brush approach". To achieve this aim, a group comprising some of the NGOs, national governments, RACs, MEPs and a fisherman's organisation recommended that the collection of data and implementation of measures should follow a local or regionalized approach. This should take into account the specificity of the fishing gear and practices, fishing season, distribution of seabird population and their state of conservation.

There was general agreement that collection of data and reporting on incidental catches of seabirds needs to be mandatory rather than voluntary. Data collection through on-board observer programs, remote recording (e.g. CCTV) and logbook recording in the case of small-scale fisheries were highlighted as the most appropriate means of monitoring. One national government pointed out that the collection of data can be costly and encouraged the Commission to assess the impact of these monitoring options carefully in its impact assessment before introducing new monitoring measures.

The NGOs, two of the RACs and one national government focused on existing monitoring under the Data Collection Framework (DCF⁷³). Monitoring requirements under the Marine Strategy Framework Directive (MSFD⁷⁴) and the Control Regulation⁷⁵ could also be

⁷³ Council Regulation (EC) No. 199/2008 of 25 February 2008 concerning the establishment of a Community framework for the collection, management and use of data in the fisheries sector and support for scientific advice regarding the Common Fisheries Policy.

⁷⁴ Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for Community action in the field of marine environmental policy.

broadened to cover the monitoring of seabird incidental catches (no details of how this could be achieved were given). Using existing monitoring programmes would avoid duplication and reduce the burden on industry and national administrations.

Many of the NGOs advocated the implementation of observer programmes. Two of the RACs, however, expressed concern that introducing additional extensive monitoring programmes would not necessarily be practical and capable of delivering detailed information on the level of incidental catches, given that such catches can be occasional and unpredictable events. One RAC suggested concentrating efforts initially through pilot studies in known “hot-spots” or existing Natura 2000 sites, with the objective of establishing the scale of the problem in these high risk areas.

Other contributors (two NGOs and a national government) highlighted the fact that there are several existing projects in EU waters under the LIFE and Natura 2000 programmes that are collecting data and developing management recommendations for reducing incidental catches of seabirds.

Field of Action 2 - Identification and implementation of mitigation measures in EU Waters

It is generally understood that all mitigation measures will have some impacts on fishing activities. The choice and implementation of measures should follow a step by step approach, balanced between the conservation objectives, economic profitability and safe working conditions as presented in the consultation paper. There is general understanding that a detailed assessment of the interactions between seabirds and fishing activities is essential before agreeing on mitigation measures which may have a significant socio-economic and environmental impact. For situations where the information available shows the existence of a serious problem⁷⁵, measures to limit incidental catches of seabirds should be put in place as soon as possible, particularly in areas designated under Natura 2000. Such sites should also be used as areas for testing the efficacy of mitigation measures.

NGOs and one RAC call for the application of measures that can simultaneously mitigate the incidental catch of other animal groups in general, where appropriate.

Opinions on the implementation of measures were varied. Several members of the general public sought restrictions or even the banning of longline and static nets fisheries, whereas the majority of the NGOs, RACs and national administrations recommended that these measures be incorporated into the current EU technical measures legislation as part of the reform of the CFP. One national government suggested that the PoA should be on a voluntary/non regulatory basis as it was felt that this may be more effective and would achieve better industry buy-in. One of the fishermen's representative organisations was directly opposed to any additional measures with particular reference to the static nets fisheries. Several submissions pointed to the fact that since drift netting was banned in the Baltic and in the high seas, the problem of seabird incidental catches had reduced significantly without additional measures.

⁷⁵ Council Regulation (EC) No. 1224/2009 of 20 November 2009 establishing a Community control system for ensuring compliance with the rules of the common fisheries policy.

⁷⁶ Some NGOs urge for the inclusion of purse seine and trawl fisheries in the impact assessment conducted by the European Commission.

Concerning mitigation measures, there was general agreement that a combination of measures of proven efficacy and cost-effectiveness should be implemented to fishing gears. For longlines, NGOs and one national government identified line weighting as the most effective and practicable measure. One fishermen's organisation contested the use of this method on safety grounds, backed up by comments from the RACs, national governments and the other fishermen's organisations.

NGOs and one of the RACs highlighted that along with the application of mitigation measures there should be regular monitoring and review of their implementation and performance through the control agencies in conjunction with scientific studies and possibly self-reporting by fishermen. An adaptive management approach would allow the improvement of practices over-time in light of experience, dedicated research was favoured by the majority of respondents.

NGOs, Fisherman's organisations, the RACs, national and regional governments and the international organisation all provided information on avoidance measures already in place at local, regional and international level, and also to other fishing gears in addition to demersal longlines and static nets. A few contributors added that input from commercial fishermen to determine the best practice for their respective fisheries should be sought.

Field of Action 3 – Actions in International waters

There were only limited comments on actions in international waters. Of those received most advocated that measures introduced in EU waters should also apply to EU vessels operating in international waters. Several NGOs commented that implementation and compliance with mitigation measures adopted by a number of RFMOs remained low.

The measures adopted by CCALMR were highlighted by several contributors as being the most effective, achieving significant reductions in seabird mortality. However, the success in CCLMAR should not be considered a panacea for all fisheries. The measures were designed specifically for large-scale demersal longline fisheries in one particular fishery and maybe wholly unsuitable for other areas.

Field of Action 4 – Mitigation Research

Continuing research into mitigation measures and data collection were seen as essential by many of the respondents. Several submissions indicated that future research should focus more on testing the efficacy of mitigation in static nets fisheries rather than longlines given that many mitigation measures already were well tested and have been adopted in longline fisheries. Research into the level of incidental catches and the development of mitigation measures for other fishing methods (e.g. trawls and purse seines) was also highlighted as a priority.

One NGO highlighted the need to capture socio-economic data when researching mitigation measures. It was highlighted that there are potential benefits for fishers for adopting such measures, particularly in gaining accreditation on the basis of best practice. This was seen as a strong driver in longline fisheries rather than static nets fisheries.

Field of Action 5 – Education, training and outreach

Many submissions pointed out that it was important that the necessary education, training and outreach are made available to fishers and other stakeholders to raise awareness about the problem of seabird bycatch and its practical solutions.

Several of the NGOs pointed out that education of fishers in the safe handling and release of seabirds caught alive was necessary.

Several submissions pointed to the development of fact sheets assessing the effectiveness of mitigation measures, the strengths and limitations of these measures.

One NGO highlighted the need for sharing experiences, skills and knowledge and the need for technology transfer. Cooperation between the RACs and also between Member States was seen as essential in achieving this.

Field of Action 6 – Reporting of all actions

One of the national administrations agreed with the Commission that reporting of each of the actions is necessary in order to assess progress and effectiveness. Reporting should be simple without creating any additional burden on national administrations.

One of the NGO's highlighted the FAO Best Practice guidelines and the need to establish a framework including indicators to monitor implementation.

Several submissions refer to stakeholder workshops as a good assessment mechanism.

Cross-Cutting Issues

Two issues arose as being common to all of the fields of action: responsibility and investment.

- (a) The majority of contributors agreed that the Commission is the main player but that the Member States, the RACs, RFMOs (where appropriate) and NGOs have a vital role to play in developing and implementing co-management measures.
- (b) In general, contributors did not provide information on the level of investment required under the different Fields of Action. Many contributors agreed that a better understanding of the interactions between seabirds and fishing gears would enable targeted and efficient action that would minimise costs to stakeholders.

There was also a general understanding that there are mitigation measures of relatively low cost that can be effectively applied in many fisheries. Nevertheless, additional financial resources were foreseen by a number of contributors to support the cost of different mitigation actions to be applied in different fishing gears.

It was suggested in a number of submissions that the European Fisheries Fund (EFF) was the most appropriate mechanism. Funding could, also, be made available through the Seventh Framework Programme (FP7) – or, its successor.

Additional fields of actions

One NGO made a detailed submission on an additional field of action regarding the establishment of seabird incidental catch reduction objectives i.e. the setting of attainable goals for the reduction of incidental mortality, in terms of either bycatch rate and/or the numbers of seabirds caught over a measured time period. They point out this is included in the FAO best practice guidelines.

One of the public authorities and one of the NGOs advocated the addition of observer programmes as a new field of action, pointing to the recommendation by ICES for the development of systems for monitoring incidental catches and implementing a coordinated and standardised at-sea observer programme. Again they pointed to the FAO best practice guidelines.

Timelines

A number of submissions point to the lack of urgency on the Commissions behalf in moving this issue forward and delays in producing an EU-PoA. Several highlight that the consultation document lacks timelines for its objectives and point out that nine years have elapsed since this initiative was first discussed.

ANNEX II – EXECUTIVE SUMMARY FROM MRAG STUDY

Background

In 1999, the FAO Committee on Fisheries adopted an International Plan of Action (IPOA) for reducing the Incidental Catches of Seabirds in Longline Fisheries and called for States to begin its implementation no later than 2001. The European Commission, in fulfilment of its responsibilities as a contracting party of international organisations acting in the context of the IPOA, is committed to developing a plan of action to reduce the incidental catches of seabirds in fishing gear.

This report presents the findings of research carried out by MRAG Ltd and its partners, Poseidon Aquatic Resources Management Ltd and Lamans Management Services s.a., to contribute to the development of a European Community Plan of Action for Seabirds.

Objectives & Methodology

The main aim of this study was to assess existing mitigation measures and their effectiveness in key areas where incidental catches of seabirds have been identified as occurring, based on a study by the Working Group on Seabird Ecology of the International Council for the Exploration of the Sea. Six case study fisheries were used to explore the scale and extent of seabird bycatch, assess fishers' perception of the issue, identify existing and potential mitigation measures, and assess their cost-effectiveness.

The following case studies were covered:

For longline fisheries:

- the Gran Sol (demersal) (ICES area VIIj);
- the western Mediterranean (pelagic and demersal) (Spain) (GSA 5 & 6);
- Maltese and Greek waters (pelagic and demersal) (GSA 15, 20, 21, 22, 23);

For gillnet fisheries:

- the 'eastern' Baltic Sea (Estonia, Latvia, Lithuania) (ICES area III d);
- The 'western' Baltic Sea (Germany, Denmark, Sweden) (ICES area III b, c, d); and
- The eastern North Sea (Netherlands) (ICES area IV).

The study was based on direct consultation with the fleets operating in the case study areas, as well as data and information from fisheries departments, researchers and NGOs working in related fields.

Existing information on the case study fisheries, seabird populations in the case study areas, fishery-seabird interactions and mitigation measures were compiled. A questionnaire was developed and implemented as a small scale survey of between 10-52 respondents per case study fishery in order to explore fishers' usual gear deployment and fishing patterns, experiences of interactions with seabirds, their use of and opinions on a selection of

mitigation measures, the costs and benefits associated with different mitigation measures, and their general opinions on fishery-seabird interactions.

A cost-effectiveness score and ranking for the various mitigation measures was estimated for each case study, based on cost impact scores and estimates of effectiveness (based on fisher perception) as well as across fleets incorporating estimates of public sector costs.

The potential impacts of bycatch levels reported by fishers interviewed for the case study fisheries on seabird populations were explored by comparing estimates of total annual bycatch across fleets and regions with estimates of Potential Biological Removal (PBR) where possible.

Seabird-fishery interactions

Seabirds primarily interact with fisheries as they forage, and therefore foraging behaviour often determines their vulnerability to being caught in fishing gear. In the case of longline fisheries, species that plunge dive or pursuit dive are particularly vulnerable to being caught during setting or hauling of longlines (both demersal and pelagic) as they are able to access bait even at substantial depths under the surface. This behaviour is exhibited in particular by shearwaters, gannets and auks. Surface-seizing birds such as gulls and fulmars are also vulnerable, as the baited hooks can take a while to sink below the surface when setting.

In gillnet fisheries birds that are likely to get entangled in nets are mostly birds that dive from the surface near to the coast to either forage on the bottom or pursue prey through the water column. This foraging behaviour is common amongst species such as sea ducks, diving ducks, divers/loons, grebes, cormorants and auks.

A number of the seabird species that are vulnerable to bycatch in the Mediterranean, Gran Sol, Baltic and the North Sea case study fisheries are of global or European conservation concern. Five species have a global IUCN redlist status of 'Near Threatened' or higher: Balearic shearwater (*Puffinus mauretanicus*) (Critically Endangered), Steller's eider (*Polysticta stelleri*) (Vulnerable), Audouin's gull (*Larus audouinii*), Sooty shearwater (*Puffinus griseus*), and Yelkouan shearwater (*Puffinus yelkouan*) (Near Threatened). An additional four species have a Species of European Concern (SPEC) status of '2' (global population is concentrated in Europe, where it faces unfavourable conservation status): the Common pochard (*Aythya farina*), Cory's shearwater (*Calonectris diomedea*), Black guillemot (*Cepphus grylle*) and Manx shearwater (*Puffinus puffinus*).

Case study results - Longline fisheries

The Mediterranean demersal longline fisheries operate using small vessels (under 12m), close to the coast, targeting predominantly hake and breams, and often use longlining as one of a number of different fishing methods. The Mediterranean pelagic longline fisheries target swordfish and mainly albacore as well as other tuna species and use larger vessels, ranging more widely, but the vessels are still relatively small compared to other longline fleets, generally under 24m in length.

The key seabird species in the region that either interact with fisheries commonly, or are species of conservation concern with important breeding or wintering areas are Cory's shearwater, Yelkouan shearwater, Balearic shearwater, Audouin's gull and Yellow-legged gull. These species are present in the Mediterranean predominantly in the breeding season, but many individual birds also winter in the area. Previously reported bycatch rates have

generally been higher for these species in the demersal longline fishery than in the pelagic longline fisheries. Some factors considered to influence bycatch in Mediterranean longline fisheries include fleet type, season, setting time, geographical location and presence or absence of trawlers.

Pelagic longline fishers interviewed in Spain suggested that the albacore fishery had more significant interactions with seabirds than the swordfish fishery, as the lines are set closer to the surface of the water and smaller hooks are used.

In general the longline fishers surveyed in the Mediterranean did not view seabird bycatch as a problem, as individual experiences of bycatches of seabirds were rare occurrences (e.g. around 5 birds per fisher per year).

The potential mitigation measures that were considered acceptable by the fishers in the Mediterranean longline fisheries, and that were most cost-effective, were the use of offal/excess bait management, ensuring bait is thawed before use, and the use of streamer lines. Setting lines at night is potentially one of the most effective mitigation measures for avoiding seabird interactions, but, many of the fishers expected this to have significant negative impacts on their catches and revenue. However, some demersal fishers in Spain, Greece and Malta, and some pelagic fishers in Greece and Malta, already practise night-setting and the potential for implementing this across the fleets as a requirement should be explored.

The Gran Sol demersal longline fleet operates in Gran Sol and the Porcupine Bank, moving further north in summer to the fishing grounds West of Scotland, and then move further south in winter. The vessels are 24–40m in length and stay at sea for 2–3 weeks at a time. The key seabird species in the region that either interact with fisheries commonly or are species of particular conservation concern with important breeding or non-breeding areas include Northern fulmar, Northern gannet, Great shearwater, Sooty shearwater, Manx shearwater, Cory's shearwater and Black-legged kittiwake. The Gran Sol fleet has previously been identified as having significant seabird bycatches. However, fishers interviewed for this study suggest that since these previous studies were carried out, the fleet has adopted night-setting with reduced deck lighting, and use of streamer lines, as general practice, which has reportedly reduced seabird bycatches significantly. There is a need, however for the lower bycatch rates reported by Gran Sol fishers in this study to be verified, and for potential interactions with seabirds in the northern part of their area of operation to be further explored.

Case study results - gillnet fisheries

For the gillnet fisheries studied, the recent ban on driftnet fishing in the Baltic due to potential interactions with harbour porpoise has caused some suspicion amongst the fishing community and some were reluctant to take part in the current study as a result.

In the eastern Baltic countries (Estonia, Latvia and Lithuania) large numbers of small-scale coastal gillnetters operate throughout the coastal area and often in shallow water, targeting cod, flounder, bream, herring and smelt, and sometimes turbot. The Baltic is generally more important for wintering birds than breeding birds in terms of numbers. Birds in the eastern Baltic that interact with fisheries commonly or are species of conservation concern with important wintering areas in the region are Black guillemot, Black-throated and Red-throated divers, Velvet scoter, Steller's eider and Long-tailed duck. Based on the latest published population estimates, the greatest proportion of wintering populations of seabirds in the

eastern Baltic occurs in the Gulf of Riga-Irbe Strait (Estonia and Latvia) and Saaremaa and Hiirumaa west coasts (Estonia). Seabird bycatch rates estimated from fisher questionnaires were similar to previous studies in Estonia, but significantly lower in Latvia and Lithuania. Most fishers interviewed did not consider seabird bycatch to be a problem in the region and did not believe it impacts on bird populations, particularly as some seabird species are hunted. As a result many of the potential mitigation measures were not considered to be acceptable or necessary; those considered acceptable to some fishers included spatial and temporal closure of which they already have experience and setting nets deeper where practical.

In the western Baltic countries covered (Denmark and Sweden), the gillnet fisheries are in decline due to lower cod quotas in recent years and the increasing age of gillnet fishers. Seabird species that either interact with fisheries commonly, or are species of conservation concern with important breeding or wintering areas in this case study region include Tufted duck, Common scoter, Common pochard, Greater scaup, Red-breasted merganser, Slavonian grebe, Velvet scoter, Common eider, Black guillemot, Long-tailed duck, Common guillemot. Based on the latest published population estimates, the greatest proportions of wintering populations for these species occur in the Szczecin and Vorpommen lagoons and Pomeranian Bay (Germany/Poland), north-west Kattegat (Denmark/Sweden) and Hoburgs Bank (Sweden). In Denmark, questionnaire responses indicated that the lower number of fishers has reduced competition for space and facilitated voluntary avoidance of areas with high concentrations of seabirds by fishers. In Sweden, bycatch rates are relatively low because the nets are set in much deeper waters. Part of the Swedish gillnet fleet has also switched to longlines for cod in the winter months, but unfortunately assessing the implications of this with respect to seabird bycatch was not within the scope of this study. As with the eastern Baltic, potential mitigation measures such as spatial and temporal closures were not considered to be acceptable to the majority of fishers interviewed.

Seabird species in Dutch waters of the Eastern North Sea that are reported to interact with fisheries and/or are of conservation concern include the Red-throated diver, Tufted duck, Greater scaup, Goosander, Great-crested grebe, Red-breasted merganser, Great cormorant and Common eider. Additionally, the Common guillemot was a key species in the designation of the Natura 2000 site Frisian Front under the EU Birds Directive. The Dutch Ministry of Agriculture, Nature and Food Quality recently signed an agreement with Dutch environmental NGOs and the Dutch industry to work together to achieve sustainable fishing with the framework of the Fisheries Measures in Protected Areas (FIMPAS) project, through which fisheries measures are currently being developed for Natura 2000 sites including the Frisian Front. In the Frisian Front, the main objective is to maintain current population sizes of key seabird species, such as the Common guillemot, and despite lack of hard evidence of bycatch of seabirds in this area fisheries measures will be implemented based on the precautionary approach. In the wider Dutch gillnet fisheries, a reduction in effort, coupled with voluntary avoidance measures and visual deterrents (bird-scaring ribbons), appear to have been effective at reducing seabird bycatch.

Cost and effectiveness of mitigation measures

All mitigation measures were assessed by fishers as resulting in a negative economic impact or at best neutral; there was no consideration by fishers of the potential economic benefits some of the mitigation measures might elicit. The latest AER data at the time of the report shows that gill netters make a loss of 13% and long lines a profit of 4.3%; therefore mitigation measures mainly increase fleet losses and for a few reduce profits. Fishers primary concern

was of loss to catch caused by use of mitigation measures rather than increased operating costs.

Estimated cost effectiveness ranks for mitigation measures were highly fishery specific. Therefore when cost effectiveness rankings were pooled and assessed across fleets, economic impacts were likely to have been overestimated. However, the results were sufficient for broadscale comparative analysis. Cost-effectiveness of spatial and temporal restrictions could not be estimated as they depend greatly on specific cases so fisher estimates were worst case.

Generally fisher preference was for practical, low-tech measures i.e offal discharge, streamers, thawing bait for longlines and buoys with bird scarers and other visual deterrents for gillnets. Least cost-effective measures were estimated to be circle hooks and bird-scaring curtains for longlines and setting nets deeper and acoustic pingers for gillnets.

Potential impacts of bycatch on seabird populations

Annual estimates of seabird bycatch across fleets and regions illustrate a different outlook to individual fishers' opinions on the significance of seabird bycatch due to cumulative effects of low levels of bycatch experienced locally. Scaled up to take account of the total effort in the fishery, bycatch estimates from the surveys indicated that substantial numbers of seabirds are potentially being caught annually in some of these fisheries. Comparison of annual estimates by species groups with species specific estimates of incidental take that would not pose a threat to populations involved (PBR), suggest that the levels of bycatch reported by Spanish demersal longline fleets (in the Mediterranean and the Gran Sol) and Greek demersal and pelagic longline fishers interviewed, have the potential to influence population status of at least two seabird species that occur in the Mediterranean. These include the threatened Balearic shearwater and the more abundant Cory's shearwater which also occurs more widely throughout the Mediterranean and the Atlantic and is therefore likely to be impacted by fisheries elsewhere (e.g. Gran Sol). Relating bycatch estimates of seabirds from the surveys in the Baltic to species specific PBR estimates published previously, was not possible due to the number of different species involved and the non-species specific resolution of bycatch estimates generated by the questionnaire.

Bycatch estimates generated from the fisher surveys varied greatly for both gillnets and longlines and highlight the urgent need for data collection to enable impacts to be assessed more accurately than was possible in this study.

Conclusions

Scientific literature indicates levels of seabird bycatch are significant within case study regions with the potential to impact bird populations; bycatch levels reported by fishers surveyed were broadly similar. Both vulnerable and common bird species are impacted in all case study regions and results from this study suggest that at least two shearwater species in the Mediterranean are potentially impacted at unsustainable levels by longline fisheries in the region.

Published results for longline bycatch mitigation trials illustrate that simple measures can greatly reduce seabird bycatch (up to 100% when a combination of measures is applied) but results do vary greatly between fisheries, regions and bird species. Potential mitigation measures (based on fishery characteristics and bird species present) were broadly similar across longline case studies and included those that have been proven to be effective, such as offal management, thawing bait prior to use, streamer lines, night-setting with reduced deck

lighting and increasing line weight. Application of some or all of these measures should be implemented in fisheries where problems have been highlighted. However some flexibility in the selection of measures might be warranted, as fishery specific characteristics (e.g. most vulnerable species present and gear configuration and deployment patterns) suggest that practicalities or refinements of measures need to be assessed or developed on a case-by-case basis.

In general, there has been much less research carried out on seabird bycatch mitigation measures for gillnet fisheries than for longline fisheries. Visual cues and deterrents may be cost-effective, but pilot studies in the region are required to test their effectiveness. This would also help raise the awareness of the fishing community about the potential for their application, as many fishers were not aware of many of the potential mitigation measures, or did not believe they would be effective, particularly in the Baltic Sea. Spatial and temporal restrictions may be the only possible way of ensuring no seabird bycatch in certain important areas and times, but would encounter strong resistance from the fishers.

Recommendations

In European fisheries for which there is a likelihood that seabird populations, particularly threatened species, are currently being affected by incidental catches at unsustainable levels, mitigation measures should be introduced and enforced as soon as possible. Management measures should also be developed for fisheries within Natura 2000 sites. In order to balance conservation concerns with the needs of fishers in these areas, consideration of incentive-based implementation and adaptive management frameworks should be considered to increase levels of compliance over the longterm. In line with the precautionary approach, measures might also be warranted in fisheries for which the extent of seabird bycatch is currently unknown.

Ideally, a results based management approach is recommended, whereby fisheries in general should reduce their seabird bycatch by, or to, a specified level. Currently, however, the data available do not easily allow for bycatch limits or thresholds to be set; therefore there is an urgent need to develop effective data collection methods for seabird bycatch data across all EU fisheries to enable cumulative bycatch estimates to be assessed. There is also currently no means by which bycatch levels could be monitored against management thresholds and this needs to be addressed.

Further research is required to assist the process of determining acceptable levels of additional mortality that populations can withstand, from fisheries and other human-induced mortalities such as hunting that are under the jurisdiction of the Commission. Additional research testing, of both established and new mitigation measures should also be prioritized and may provide a means of engaging industry in the management process as well as contributing information for setting bycatch reduction targets.

The fact that most of the fishers interviewed in all case studies did not consider seabird bycatch to be a problem indicates that further outreach work with the fishing community is necessary in order to build their understanding and support for the need for mitigation measures, if implementation of a Community Plan of Action for Seabirds is to be successful.

**ANNEX III – ANNUAL SEABIRD BYCATCH FROM SELECTED EU LONGLINE
AND STATIC NET FISHERIES**

Published estimates of annual seabird bycatch in the case study longline fisheries
(the number in brackets are the estimates from the questionnaires carried out as part of the MRAG study)

Fishery	Estimates of total annual seabird bycatch	Main Species
Western Mediterranean Pelagic Longlines (Spanish vessels)	300-700 (329±176)	Cory's shearwater and Balearic shearwater
Western Mediterranean Demersal Longlines (Spanish vessels)	656-2829 (8620±4579)	Cory's shearwater, Balearic shearwater and Yelkouan shearwater
Eastern Mediterranean Pelagic Longlines (Maltese, Greek vessels)	n/a (4615±3876)	Cory's shearwaters
Eastern Mediterranean Demersal Longlines (Maltese, Greek vessels)	1,231 (6846±4006)	Cory's shearwater and Yelkouan Shearwater
Gran Sol Demersal Longlines (Spanish Vessels)	56,307 (2620±139)	Shearwaters, Northern Fulmars and Northern Gannets

Source: MRAG Study

Published estimates of annual seabird bycatch in the case study static net fisheries
(the number in brackets are the estimates from the questionnaires carried out as part of the MRAG study)

Fishery	Published estimate of total annual seabird bycatch	Main Species
Eastern North Sea static nets (Netherlands vessels)	~12,000 (611±239)	Tufted duck, Greater scaup, Great-crested grebe
Eastern Baltic (Estonian, Latvian, Lithuanian)	~16,500 (35,400±10063)	Long-tailed ducks, Velvet scoter, divers, Steller's eider
Western Baltic (Swedish, Danish, German)	~18,000 (60,039±8774)	Common eider, Common guillemot, Great cormorant

Source: MRAG Study

**ANNEX IV – CONSERVATION STATUS OF SPECIES OF CONSERVATION
CONCERN AND VULNERABLE TO BYCATCH IN EU WATERS**

Common Name	Scientific Name	IUCN Redlist status ⁷⁷	SPEC status ⁷⁸	Birds Directive Listing	Areas	Fishing Gears
Red-throated diver	<i>Gavia stellata</i>	LC	SPEC 3	Yes, including Annex I	Eastern North Sea & Eastern Baltic	Static Nets
Black-throated diver	<i>Gavia arctica</i>	LC	SPEC 3	Yes, including Annex I	Eastern Baltic	Static Nets
Slavonian grebe	<i>Podiceps auritus</i>	LC	SPEC 3	Yes, including Annex I	Western & Southern Baltic	Static Nets
Cory's shearwater	<i>Calonectris diomedea</i>	LC	SPEC 2	Yes, including Annex I	Widespread in Mediterranean & NE Atlantic	Longlines
Sooty shearwater	<i>Puffinus griseus</i>	NT	SPEC 1	Yes	NE Atlantic	Longlines
Manx shearwater	<i>Puffinus puffinus</i>	LC	SPEC 2	Yes	NE Atlantic	Longlines
Balearic shearwater	<i>Puffinus mauretanicus</i>	CE	SPEC 1	Yes, including Annex I	Western & Eastern Mediterranean	Longlines, Purse Seines & Static Nets
Yelkouan shearwater	<i>Puffinus yelkouan</i>	NT	Non SPEC_E	Yes, including Annex I	Western & Eastern Mediterranean	Longlines, & Static Nets
Shag	<i>Phalacrocorax aristotelis</i>	LC	Non SPEC_E	Yes, including Annex I (Med spp)	Western & Eastern Mediterranean	Longlines & Static Nets
Common pochard	<i>Aythya ferina</i>	LC	SPEC 2	Yes	Western Baltic & Eastern North Sea	Static Nets
Tufted duck	<i>Aythya fuligula</i>	LC	SPEC 3	Yes	Eastern North Sea (coastal lakes)	Static Nets
Greater scaup	<i>Aythya marila</i>	LC	SPEC 3W	Yes	Western Baltic Eastern North Sea	Static Nets
Common Eider	<i>Somateria mollissima</i>			Yes	Widespread	Static Nets

⁷⁷ IUCN Status: CE – Critically Endangered; EN – Endangered; VU – Vulnerable; NT – Near Threatened; LC – Least Concern

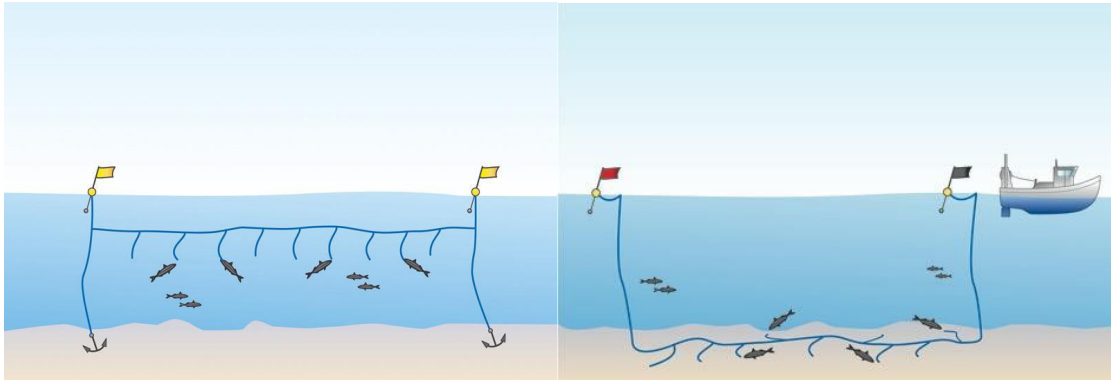
⁷⁸ SPEC Status: SPEC 1 – Global conservation concern; SPEC 2 – Global population concentrated in Europe, where it faces unfavourable conservation status; SPEC 3 – Global population not concentrated in Europe, but unfavourable conservation status in Europe; Non Spec_E – Global population concentrated in Europe, where it faces favourable conservation status; Non Spec_G – Global population not concentrated in Europe; favourable conservation status in Europe. Species highlighted in blue are of global conservation concern (IUCN status of NT or higher)

Steller's eider	<i>Polysticta stelleri</i>	VU	SPEC 3W	Yes, including Annex I	Eastern Baltic	Static Nets
Long-tailed duck	<i>Clangula hyernalis</i>			Yes	Eastern & Western Baltic & North Sea	Static Nets
Black scoter	<i>Melanitta nigra</i>			Yes	Western & Southern Baltic	Static Nets
Velvet scoter	<i>Melanitta fusca</i>	LC	SPEC 3	Yes	Western & Southern Baltic	Static Nets
Smew	<i>Mergellus albellus</i>			Yes, including Annex I	Western & Southern Baltic	Static Nets
Mediterranean gull	<i>Larus melanocephalus</i>	LC	Non SPEC_E	Yes, including Annex I	Mediterranean	Longlines
Audouin's gull	<i>Larus audouinii</i>	NT	SPEC 1	Yes, including Annex I	Western & eastern Mediterranean	Longlines
Black-legged kittiwake	<i>Rissa tridactyla</i>	LC	Non SPEC	Yes	NE Atlantic	Longlines & Static Nets
Common guillemot	<i>Uria aalge</i>			Yes, including Annex I (ssp. <i>Ibericus</i>)	Western & southern Baltic, North Sea & NE Atlantic	Static Nets
Brünnich's guillemot	<i>Uria lomvia</i>			Yes	Western & southern Baltic & North Sea	Caught occasionally in static nets
Razorbill	<i>Alca torda</i>			Yes	North Sea & NE Atlantic	Static Nets
Black guillemot	<i>Cepphus grille</i>	LC	SPEC 2	Yes	Western & Southern Baltic	Static Nets

Sources: Birdlife International, 2004, Birdlife International, 2011: EU Birds Directive, 2009

ANNEX V – DIFFERENT TYPES OF LONGLINES AND STATIC NETS

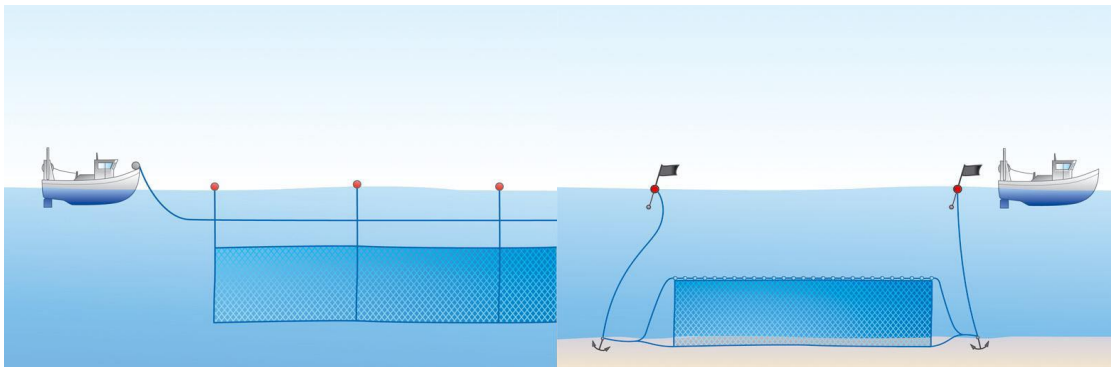
Longlines



Pelagic Longline

Demersal Longline

Static Nets



Drift net

Set Gillnet

Source: www.fish.org

ANNEX VI – DESCRIPTION OF INTERNATIONAL AGREEMENTS AND CONVENTIONS

The OSPAR Convention

The Convention for the Protection of the Marine Environment of the North-East Atlantic (the "OSPAR Convention")⁷⁹, provides a mechanism by which governments⁸⁰, together with the European Union, cooperate to protect the marine environment of the North-East Atlantic. Work to implement the OSPAR Convention and its strategies is taken forward through the adoption of decisions, which are legally binding on the contracting parties, recommendations and other agreements. Decisions and recommendations set out actions to be taken by the contracting parties. Of most relevance to seabirds are the OSPAR *List of Threatened and/or Declining Species and Habitats*, which include a number of species of seabirds which are caught as bycatch in fishing gears. OSPAR examines data with a view to make recommendations for future assessment and monitoring.

HELCOM

The Helsinki Commission, or HELCOM, works to protect the marine environment of the Baltic Sea from all sources of pollution through intergovernmental co-operation between Denmark, Estonia, the European Community, Finland, Germany, Latvia, Lithuania, Poland, Russia and Sweden. HELCOM is the governing body of the Convention on the Protection of the Marine Environment of the Baltic Sea Area, more usually known as the Helsinki Convention. HELCOM's vision for the future is a healthy Baltic Sea environment with diverse biological components functioning in balance, resulting in a good ecological status and supporting a wide range of sustainable economic and social activities. HELCOM encourages contracting parties to carry out research on seabird bycatch, as well as monitoring and reporting.

Barcelona Convention

The Barcelona Convention of 1976⁸¹, amended in 1995, aims to reduce pollution in the Mediterranean Sea and to protect and improve the marine environment in the area, thereby contributing to its sustainable development. Of particular relevant is the Protocol concerning specially protected areas in the Mediterranean, to which the Community acceded in 1998⁸². This requires the protection of natural resources in the Mediterranean region, preservation of the diversity of the gene pool and protection of certain natural sites through the creation of a series of specially preserved areas. It introduces national or local measures which the Parties must take in order to protect animal and plant species throughout the Mediterranean area. The annexes to the Protocol include a list of common criteria which the Parties must respect when choosing which marine and coastal areas are to be protected under the system of specially protected areas of Mediterranean importance (SPAMI). The annexes also list threatened or endangered species as well as a list of species whose exploitation is regulated. The Barcelona Convention has also drafted guidelines for reducing bycatch of seabirds in the Mediterranean

⁷⁹ <http://www.ospar.org/>

⁸⁰ Belgium, Denmark, Finland, France, Germany, Iceland, Ireland, Luxembourg, The Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom

⁸¹ <http://www.unepmap.org/index.php?module=content2&catid=001001004>

⁸² Council Decision 1999/800/EC

region. These guidelines assess seabird-fishery interactions and provide information about mitigation tools and techniques.

The Bonn Convention

The Convention on the Conservation of Migratory Species of Wild Animals (also known as CMS or Bonn Convention)⁸³ aims to conserve terrestrial, marine and avian migratory species throughout their range. It is an intergovernmental treaty, concluded under the aegis of the United Nations Environment Programme (UNEP), concerned with the conservation of wildlife and habitats on a global scale. Since the Convention's entry into force, its membership has grown steadily to include 116 (as of 1 July 2011) parties from Africa, Central and South America, Asia, Oceania and Europe. The Convention acknowledges the importance of protecting migratory species being endangered including seabirds. Species are included in Appendix I (for immediate protection) or Appendix II (to conclude international agreement), as for example Southern Hemisphere albatrosses and several petrel species. A resolution on bycatch was adopted at the Sixth Meeting of the Parties of the Bonn Convention, which reaffirms the obligation on all Parties to protect migratory species against bycatch, including seabirds (Resolution 6, November 1999)⁸⁴.

One multilateral Agreement that has been concluded to date under the auspices of CMS is the Agreement on the Conservation of Albatrosses and Petrels (ACAP)⁸⁵. This is a legally binding international treaty whose objective is to achieve and maintain a favourable conservation status for albatrosses and petrels through mitigation measures to reduce incidental bycatches of these species in fisheries. This agreement aims to tackle, through international cooperative action, the incidental catch of seabirds during longline and trawl fishing operations, which is considered the most significant threat to albatrosses. It entered into force on 1 February 2004 and has 13 member countries and covers 29 species of albatrosses and petrels. Among EU Member States, France, Spain and the UK are signatories to this agreement. This Agreement is relevant for the EU Member States long-distance fishing vessels and is key to biodiversity strategies in some of the Overseas Countries and Territories of the EU Member States.

The Convention on Biological Diversity

For reasons of consistency between its internal and external action, the EU is committed to international cooperation for the protection of biodiversity in accordance with Article 5 of the United Nations Convention on Biological Diversity (CBD)⁸⁶ and decisions taken at the Conference of the Parties. Of particular relevance for seabirds is the global target agreed at the Tenth meeting that envisages that by 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained. In addition, the fisheries target envisages that by 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on

⁸³ <http://www.cms.int/about/intro.htm>

⁸⁴ http://www.cms.int/documents/appendix/Appendices_COP9_E.pdf

⁸⁵ http://www.cms.int/pdf/en/summary_sheets/acap.pdf

⁸⁶ Council Decision 93/626/EEC of 25 October 1993 concerning the conclusion of the Convention on Biological Diversity, OJ L 309, 13.12.1993, p. 1.

threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.

A consistent approach between fisheries and environment external policies is needed in order to develop adequate measures that require engagement pursuant to the CBD targets agreed in Nagoya. Successful marine conservation and management at international level require sustained actions in different bodies, in line with EU action plans and strategies, to ensure coherence and complementarities between RFMOs, fisheries agreements and environment conventions, such as CITES, CMS, Regional Seas Conventions, UNSDC (Rio+20), as well as support to ongoing work on the conservation of marine biodiversity in areas beyond national jurisdiction.

International Agreements

The United Nations Convention on the Law of the Sea (UNCLOS)⁸⁷ is the comprehensive regime of law and order covering the world's oceans and seas. Within UNCLOS are rules governing all uses of the oceans and their resources. The Convention establishes the requirements for signatories to conserve and manage targeted and associated species within EEZ waters and to cooperate with other States in the conservation and management of living resources in the areas of the high seas.

International-level action is also taking place under the UN framework to promote and to put into place new implementing measures to cover marine biodiversity in areas beyond national jurisdiction (such as the high seas and the deep sea bed), aiming to create marine protected areas, environment impact assessment and strategic environment assessment of human activities and fair and equitable sharing of genetic and biological resources.

The United Nations Fish Stock Agreement (UNFSA)⁸⁸ is an implementing agreement for provisions of UNCLOS regarding the conservation and management of straddling stocks and highly migratory fish stocks. UNFSA carries an obligation to apply the precautionary approach and ecosystem-based management when managing fisheries on the high seas and in waters under the jurisdiction of coastal states.

⁸⁷ http://www.un.org/Depts/los/convention_agreements/convention_historical_perspective.htm

⁸⁸ <http://www.tuna-org.org/Documents/TRFMO2/19%20ANNEX%205.11%20ENG.pdf>

**ANNEX VII NATIONAL MEASURES INTRODUCED INTO CASE STUDY
FISHERIES**

Area	Gear Type	Member States Involved	Measures Introduced	Effectiveness
Western Mediterranean	Pelagic & Demersal Longlines	Spain, Italy, France	No mandatory fisheries measures except for fishing effort restrictions. Evidence of voluntary use of line weighting, thawing bait, offal & night-setting Spain has 14 marine protected areas to protect breeding colonies of several seabird species	No impact on seabird bycatch Not know although night setting thought to be somewhat effective. Not know although fishermen believe them to be ineffective as seabirds often forage for food far from their breeding colonies
Eastern Mediterranean	Pelagic & Demersal Longlines	Malta, Greece	No mandatory fisheries measures but evidence of some limited voluntary use of Mitigation measures e.g. line weighting, night setting, offal discharge management	Not known Not known
Gran Sol in North-east Atlantic	Demersal longlines	Spain, France	National legislation introduced in Spain as well as a Code of Conduct adopted for longline vessels	Measures reported to be effective by fishermen but this has not been fully corroborated
Eastern Baltic	Static Nets	Latvia, Estonia, Lithuania	Estonia: At least two of Estonia's national parks (Matsalu and Vilsandi) have fishing regulations in certain areas or times established, at least in part, for protection of bird populations. Some evidence of the use of alternative gears (longlines and pots). Lithuania: a State Reserve was created in 2005 with a purpose to safeguard their wintering and migratory aggregations of several species. In the coastal zone of this area, fishers are prohibited from using gillnets with a mesh size greater than 55 mm from 16 November – 15 April. Some evidence of the sue of alternative gears (longlines and pots) Latvia – no measures reported	Some evidence of measures being effective but no formal assessment carried out No assessment
Western Baltic	Static Nets	Sweden, Denmark, Germany	No mandatory fisheries measures in place except for fishing effort restrictions and use of alternative gears	Unknown

			(longlines) in Sweden Development underway to develop fisheries management measures in the Pomeranian Bay SPA (EMPAS project)	Measures not in place yet
Eastern North Sea	Static Nets	Netherlands, Germany	Management plan is in place for the SAC Voordelta with measures limiting the use of static nets within the area Development of fisheries management measures in several NATURA 2000 sites in Netherlands, notably the Frisian Front SPA Permit scheme in the Wadden Sea to reduce effort by static net vessels Code of Conduct for net fisheries operating in the IJsselmeer and the Markermeer Lakes	No assessment for seabirds Measures not in place yet Unknown Effective overall reduction in bird bycatch of 87% reported

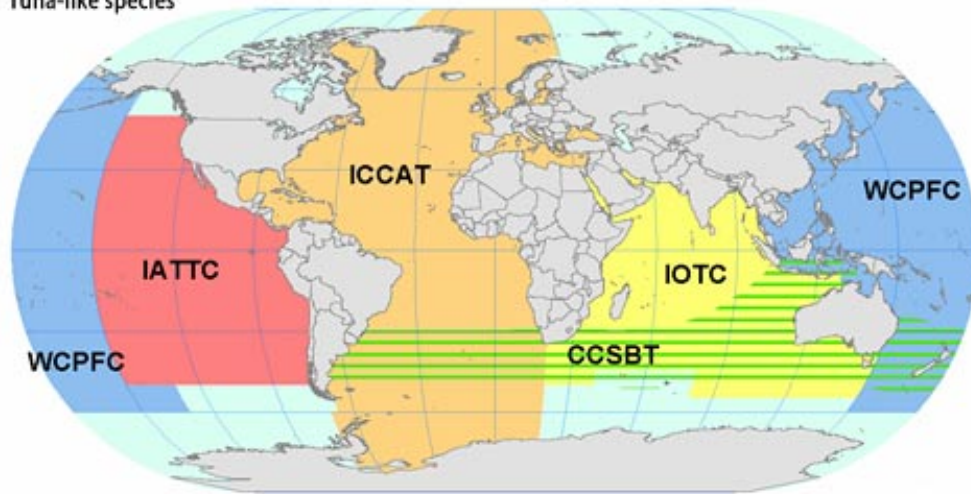
Source: MRAG study & BirdLife International⁸⁹

⁸⁹

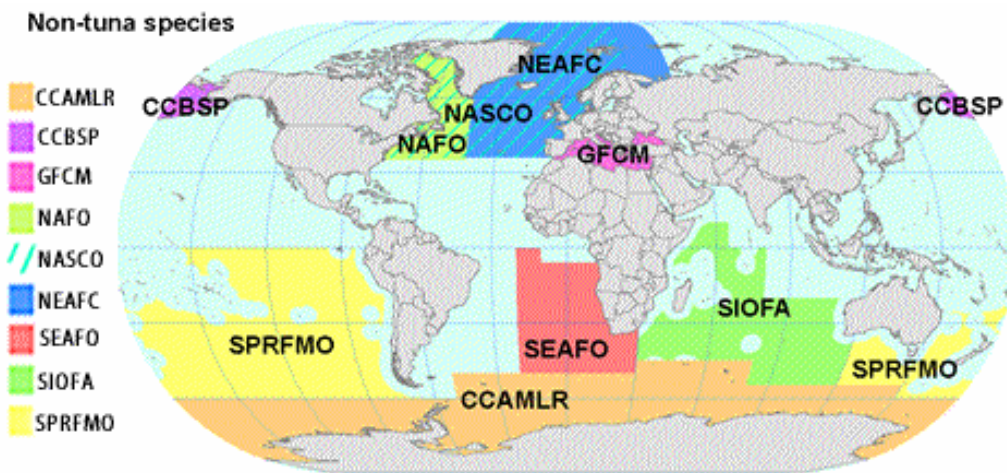
BirdLife International. 2009. European Community Plan of Action (ECPOA) for reducing incidental catches of seabirds in fisheries. Proposal by BirdLife International. September 2009. 28pp.

ANNEX VIII - MAPS SHOWING THE AREAS MANAGED BY RFMOs

Tuna-like species



Non-tuna species



Source: COM(2011) 424 final

ANNEX IX - MITIGATION MEASURES INTRODUCED BY TUNA RFMOS

	CCBST	IATTC	ICCAT	IOTC	WCPFC
	Tori line decision (1997) and CCBST Recommendation to Mitigate the Impact on Ecologically Related Species of Fishing for Southern Bluefin Tuna (2008)	Resolution C-05-01	Recommendation 07/07 ⁹⁰	Resolution 10/10	Conservation and Management Measure 2007-04
Key Provisions					
4.1 Binding	Yes & No	No	Yes	Yes	Yes
4.2 Stated Management objective	Mitigate harm to ecologically related species	No	Seek to achieve reductions in all seabird bycatch	Seek to achieve reductions in all seabird bycatch	No
4.3 Implementation of IPOA	Yes	Yes	No	No	Yes
4.4 Prescribed vessel applicability and area of application	Yes, within IOTC and WCPFC areas	No	Yes, based on distribution of seabirds	Yes, based on distribution of seabirds	Yes, based on distribution of seabirds
4.5 Use of multiple mitigation measures	Yes, IOTC and WCPFC measures when within IOTC and WCPFC waters	No	Required use of one or two measures	Required use of two measures and sinking of hooklines	Required use of two measures
4.6 Standards for mitigation measures	Yes, IOTC and WCPFC measures when within IOTC and WCPFC waters	No	Required use of specifications	Required use of minimum technical standards	Required use of minimum technical standards
4.7 Reporting on implementation and	Yes, collect and report	Yes, collect	Required to develop mechanisms to record and	Required annually	Required annually on which measures will be required,

⁹⁰

A supplemental recommendation was made by ICCAT at the meeting of 9 December 2011 requiring longline vessels to use a minimum of two mitigation measures south of 25 degrees.

information sharing		and provide	required to report	including technical specifications to be used and any changes in use
4.8 Research and review of mitigation measures	Encouraged	No	Yes	Not explicit Encouraged for the purposes of developing and refining measures
4.9 Estimate bycatch and/or assess impacts	Yes	Yes, when appropriate and feasible	Yes, required to collect and provide all information	Yes, reporting of all information available to estimate bycatch
4.10 Review for effectiveness and revision	Yes	No	Yes, required with respect to area of application and other provisions in light of future information	Yes, annual review of new information, including observer data and revision of measures, including technical specifications
4.11 Safe handling and live release	Yes, IOTC and WCPFC measures when within IOTC and WCPFC waters	No	No	Encouraged
4.12 Collection and use of observer data	Not explicit	No	Not explicit	Regional observer program will consider data needs for analyses of impacts and on effectiveness of measures
4.13 Phased-in implementation	No	No	No	Yes, for different sized vessels in different areas
4.14 Compliance requirements	Yes, IOTC and WCPFC measures when within IOTC and WCPFC waters	No	No	Yes, requirement specific to compliance
4.15 Consultation or cooperation w/other RFMOs and IGOs	Yes, IOTC and WCPFC measures when within IOTC and WCPFC waters	No	No	No

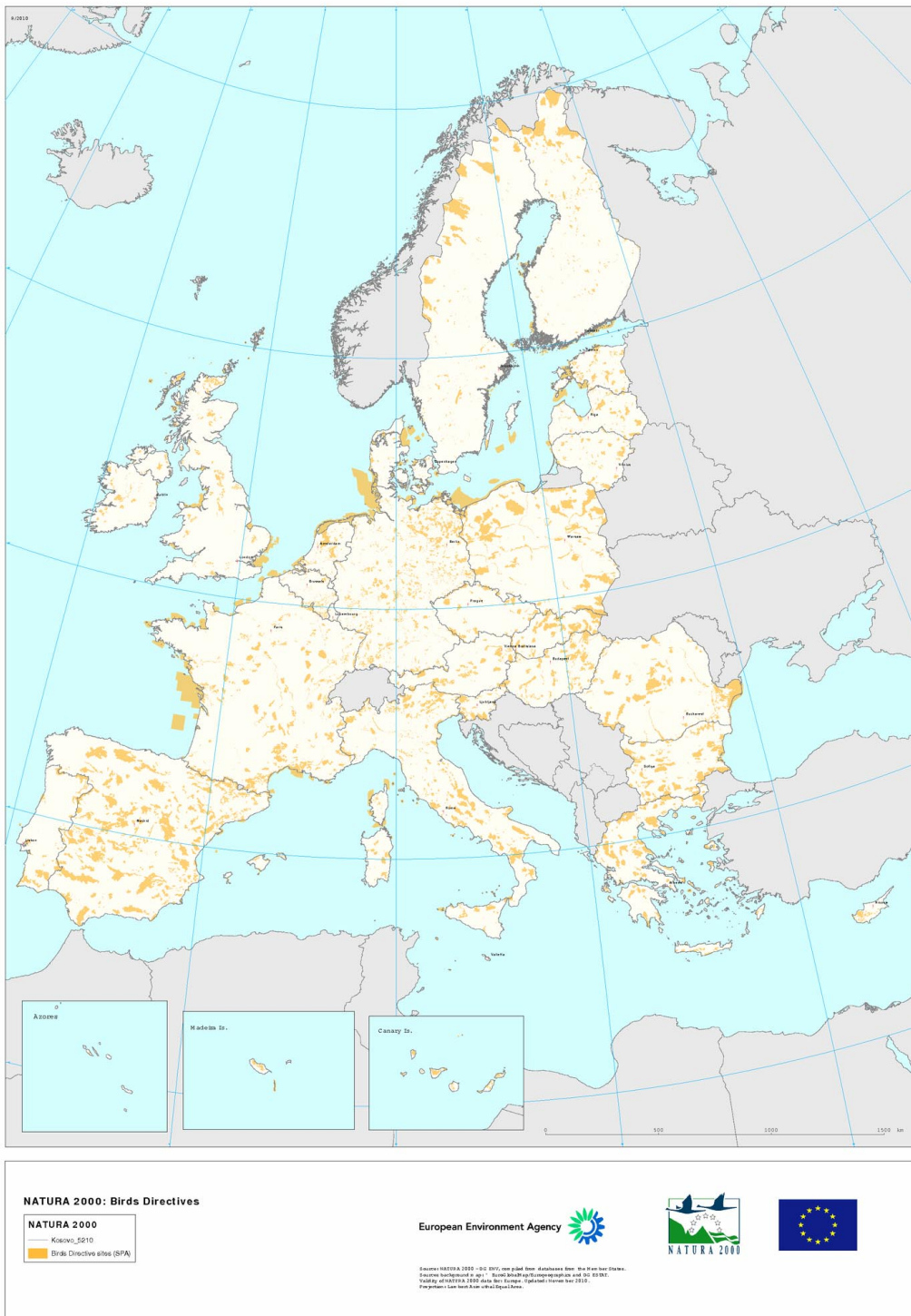
Source: KOBE II Bycatch Workshop Background Paper

MITIGATION MEASURES INTRODUCED BY OTHER RFMOS

	CCAMLR	SEAFO	GFCM
	Resolution 22/XXV & Conservation Measures 24-02 (2008), 25-02 (2009) & 25-03 (2009)	Conservation Measure 15/09	Recommendation GFCM/35/2011/ to adopt ICCAT Recommendation 07/07
Key Provisions			
4.1 Binding	Yes	Yes	Yes
4.2 Stated Management objective	Minimisation of the incidental mortality of seabirds	Seek to achieve reductions in all seabird bycatch	Seek to achieve reductions in all seabird bycatch
4.3 Implementation of IPOA	Yes	In the process	No
4.4 Prescribed vessel applicability and area of application	Yes, within Convention Area	Yes, within Convention Area	Yes, based on distribution of seabirds
4.5 Use of multiple mitigation measures	Required use of multiple measures e.g. tori lines, weighted lines, offal discharge (also includes measures for trawl fisheries)	Required use of multiple measures e.g. tori lines, weighted lines, offal discharge (also includes measures for trawl fisheries)	Required use of one or two measures
4.6 Standards for mitigation measures	Required use of specifications	Guidelines for design and deployment of Tori Lines and line weighting	Required use of specifications
4.7 Reporting on implementation and information sharing	Yes, collect and report	Yes, collect and provide	Required to develop mechanisms to record and required to report
4.8 Research and review of mitigation measures	Yes	No	Yes
4.9 Estimate bycatch and/or assess impacts	Yes, required for annual analysis	Yes, when appropriate and feasible	Yes, required to collect and provide all information
4.10 Review for effectiveness	Yes, reviewed annually	No	Yes, required with respect to area of

and revision			application and other provisions in light of future information
4.11 Safe handling and live release	Yes	Yes	No
4.12 Collection and use of observer data	Yes	Yes	Not explicit
4.13 Phased-in implementation	No	No	No
4.14 Compliance requirements	Yes	No	No
4.15 Consultation or cooperation w/other RFMOs and IGOs	Yes	Yes	No

ANNEX X - MAP OF SPAS ESTABLISHED UNDER THE BIRDS DIRECTIVE



Source: DG ENV

ANNEX XI – DESCRIPTION OF MITIGATION MEASURES

(Taken from the FAO review by Lokkeborg, 2008⁹¹)

Description of mitigation measures in longline fisheries

This annex gives a description of different mitigation measures. Only measures that have been developed, tested and proved to have potential in reducing incidental capture of seabirds are included.

Avoid fishing in areas and at times when seabird interactions are most intense – As seabird mortality in longline fisheries is related to the feeding activity of the birds, mortality rates will vary with area and season, and have been shown to be higher close to breeding colonies⁹² and during breeding seasons^{93, 94}. Avoiding fishing activities close to breeding colonies during the breeding season, i.e. area and seasonal closures, therefore reduces the number of foraging seabirds congregating around the fishing vessels.

Night setting – Most seabirds are visual feeders and forage during daylight hours. Therefore, setting longlines at night reduces the number of birds attacking baited hooks. Night setting also reduces the ability of seabirds to see and seize baits.

Streamer line (bird-scaring line, tori line) – A line attached to a high point at the stern and towed behind the vessel while longlines are being set. The end of the line has a towed device (e.g. buoys) to create tension and streamers are attached to its aerial portion above the sinking longline. The movements of the streamers deter seabirds from attacking baited hooks.

Weighted lines – Longlines with added weights sink faster and thus reduce the time they remain close to the surface and are available for seabirds to seize baits. Extra weight can be added to longlines either by attaching (i.e. tying) external weights to the mainline, or by including strands of lead inside each of the strands of the mainline (integrated weight line).

Underwater setting funnel (chute) – A stern-mounted tube through which the baited hooks are set (Figure 2). This device delivers baited hooks underwater, thereby reducing the time they remain close to the surface and are visible and within the reach of seabirds. Both the mainline and the branchline are set through the underwater setting funnel developed for demersal longlining, whereas in pelagic longlining, only the branchline and the hook are fed through the device (named the “chute”). The chute designed for pelagic longline vessels deliver baited hooks deeper (4–5 m) than the funnel used by demersal vessels (1–2 m). A second emerging method for setting pelagic longlines is the underwater setting capsule. The

⁹¹ Lokkeborg, S. Review and assessment of mitigation measures to reduce incidental catch of seabirds in longline, trawl and gillnet fisheries. FAO Fisheries and Aquaculture Circular. No. 1040. Rome, FAO. 2008. 24p.

⁹² Moreno, C.A., Rubilar, P.S., Marschoff, E. and Benzaquen, L. 1996. Factors affecting the incidental mortality of seabirds in the *Dissostichus eleginoides* fishery in the southwest Atlantic (Subarea 48.3, 1995 season). CCAMLR Sci. 3: 79-91.

⁹³ Ashford, J.R. and Croxall, J.P. 1998. An assessment of CCAMLR measures employed to mitigate seabird mortality in longlining operations for *Dissostichus eleginoides* around South Georgia. CCAMLR Sci. 5: 217-230.

⁹⁴ Reid, T.A., Sullivan, B.J., Pompert, J., Enticott, J.W. and Black, A.D. 2004. Seabird mortality associated with Patagonian Toothfish (*Dissostichus eleginoides*) longliners in Falkland Islands waters. Emu 104: 317-325.

baited hook is placed in a capsule that carries it underwater where it is released. The capsule is then returned on board to be loaded with the next hook.

Line shooter – This device is designed to set longlines without tension. During traditional setting, lines are set with tension, which is believed to delay line sinking and keep baits available to birds for longer compared to lines set with slack. A line shooter consists of opposing rubber and metal sheaves through which the line is pulled at a constant speed slightly faster than the vessel speed during line setting.

Bait-casting machine (bait thrower) – This device is used only in pelagic longlining to prevent entangling of the long branchlines with the mainline. Bait-casting machines throw baited hooks to the side far outside propeller wash and hull turbulence. Throwing baits into the propeller wash is likely to cause delayed line sinking.

Side setting – Side setting, as opposed to traditional stern setting, reduces the time baited hooks remain within the reach of seabirds due to two factors. First, side-set longlines are set to the side of the propeller wash thereby increasing the sink rate. Second, lines set at the side of the vessel enter the water several meters in front of the stern and thus commence sinking sooner and are deeper when they emerge clear of the vessel.

Strategic offal discharge – Homogenized offal is more easily accessible and thus attractive to seabirds than baits. Dumping of offal may therefore reduce incidental bird capture by attracting birds away from the baited longline to the area to the side of the vessel where the dumping occurs. *Blue-dyed bait* – Baits dyed blue are less visible to seabirds with blue ocean as background. These baits will become invisible to seabirds at shallower depth and therefore sooner than baits with clearer contrast.

Closure of areas and fishing time limitation – May affect the efficiency of the fishing operation. Therefore it is recommended that both, management mitigation measures and technical mitigation measures are introduced in a balanced matter. This mitigation method is only applicable in fisheries where line setting is short and allows dumping throughout the setting operation.

Description of mitigation measures in trawl fisheries

Studies to determine the effectiveness of seabird mitigation measures in trawl fisheries are scarce, and accordingly few mitigation devices have been developed and tested. This review has identified only three such devices, which all have been described and tested⁹⁵.

Streamer line – This mitigation method is similar to the streamer lines used on longliners. To adapt these for use on trawlers and deter seabirds from collision with the warp cables, streamer lines are suspended on each side of the warps.

Warp scarer – This device consists of a series of rings joined by a length of netting forming a hose around the aerial part of the warp. Streamers hang from each ring to the sea surface, deterring seabirds from colliding with the warp.

⁹⁵ Sullivan, B.J., Brickle, P., Reid, T.A., Bone, D.G. and Middleton, D.A.J. 2006. Mitigation of seabird mortality on factory trawlers: trials of three devices to reduce warp cable strikes. *Polar Biol.* 29: 745-753.

Brady baffle – The baffle is design to prevent seabirds scavenging for offal from congregating at the stern where the warp cables enter the water. It is attached to each of the two quarters of the stern gantry and consists of two horizontal steel arms, one aft of the stern and one outboard. Ropes with plastic cones at the seaward end hang from the arms.

Description of mitigation measures in gillnet fisheries

Very few mitigation measures have been tested in gillnet fisheries. This review identified only two technological solutions and one case where gear operation was altered in an effort to reduce seabird bycatch^{63,96}.

Visual alerts – Traditional gillnets are modified with visual alerts to increase their visibility, e.g. by dying the nets with an opaque colour. Seabirds should be able to detect these nets at longer distances and may thus avoid collision and entanglement however, increased visibility of gillnets may also lead to reduced catches.

Acoustic alerts – Acoustic pingers that emit a sound signal within the hearing frequency of seabirds are attached to traditional gillnets. The sound signal serves to scare off seabirds from gillnets.

Subsurface setting – Setting gillnets at greater depth could potentially reduce seabird interactions and bycatch.

Table 1 below gives an overview of the measures available and indicates whether they are currently in commercial usage or not.

Table 1 Mitigation measures available and their current commercial usage

Longlines		Static nets		Both Gear Types	
Measure	Commercially used	Measure	Commercially used	Measure	Commercially used
Increase weight of lines	<i>Yes – used extensively in external waters & in some EU fisheries voluntarily in the Mediterranean</i>	Multifilament coloured twine in top 20 meshes	No evidence of use in any fisheries	Offal discharge	<i>Yes used extensively in both EU and external fisheries. Defined measures in external waters</i>
Circle Hooks	<i>Yes - used extensively in external waters but mainly to protect turtles</i>	Buoys with visual bird-scaring deterrents	No evidence of use in any fisheries	Closed areas or seasons	<i>Yes used in some EU fisheries mainly as closed areas or fishing restrictions in SPAs or SACs</i>
Make bait sink quicker (thaw	Yes – used in many longline	Red corks spaced throughout	No evidence of use in any fisheries	Spatial fishing	<i>Yes but IBAs generally used</i>

⁹⁶ Trippel, E., Holy, N.L., Palka, D.L., Shepherd, T.D., Melvin, G.D. and Terhune, J.M. 2003. Nylon barium sulphate gillnet reduces porpoise and seabird mortality. *Mar. Mam. Sci.* 19: 240-243.

bait, puncture swim bladder)	fisheries in external waters and voluntarily in fisheries in the Mediterranean	netting		restrictions (IBA)	<i>to define SPAs or SACs</i>
Dyed bait	No used only in trials	Acoustic pingers	<i>Yes (but mainly to protect cetaceans in EU fisheries)</i>		
Streamer lines	<i>Yes – used extensively in external waters to agreed specifications & cruder versions used voluntarily in some EU fisheries (Mediterranean and Gran Sol)</i>	Increase setting depth of nets	No evidence of use in any fisheries		
Side-setting	No – not often used in any fishery	Set nets only in waters > 20m	No evidence of use in any fisheries		
Bird scaring curtain (used during hauling)	No – not often used except in CCALMR where specifications are defined				
Night-setting with reduced deck lighting	<i>Yes – used extensively in external waters to defined standards & in some EU fisheries voluntarily (Mediterranean and Gran Sol – reduced deck lighting)</i>				
Underwater setting devices	Yes in some external fisheries although no requirement in legislation and line weighting preferred as a better and cheaper option				

Source: MRAG Study (The measures are italics are currently included in Regulations. All other measures are used voluntarily)

ANNEX XII - INTERNATIONAL AGREEMENTS

Agreement	Number of longline licences
Cape Verde	48
Cote d'Ivoire	15
Faroe Islands	10
Gabon	16
Greenland	Not specified
Guinea-Bissou	23
Kiribati	12
Madagascar	76 + 5 exploratory licences
Mauritania	22
Morocco (pending agreement)	61
Mozambique	45
Norway	Not specified

Source: http://ec.europa.eu/fisheries/cfp/international/agreements/index_en.htm

ANNEX XIII - ADMINISTRATIVE AND MANAGEMENT COSTS

Administrative costs are those that are defined as "the costs incurred by enterprises, the voluntary sector, public authorities and citizens in meeting legal obligations to provide information on their action or production, either to public authorities or to private parties" (EC Impact Assessment Guidelines, 2009 update). Management costs essentially cover the cost of implementation or research.

- As option 1 relates to the "status quo", no net change to administrative or management costs are anticipated.
- For option 2, the "Plan of Action", there will be some additional administrative costs for reporting and education and awareness raising and management costs for additional monitoring.
- For sub-option 3a, "stand-alone regulation", there will be increased administration costs for reporting and management costs for monitoring and enforcing the measures.
- For sub-option 3b, "stand-alone" regulation", as per option 2, there will be some additional administrative costs for reporting and education and awareness raising and management costs for additional monitoring.
- The management and administrative costs were estimated using the EU Standard Cost Model for options 2 and sub-option 3a and 3b and the results of the analysis are shown in Tables 1-3.

The following data from EUROSTAT⁹⁷ was used as the basis for calculations:

Hourly tariff

Eurostat data on EU 27 labour costs (excluding apprentices) per employee per hour were collated using the following categories to distinguish costs for target groups:

Labour costs for the private sector (industry organisation) were based on category K-N (administrative and support services).

Labour costs for the public sector (member state fishery departments, RFMO secretariats and RAC secretariats) were based on category O-J (public administration)

Labour costs for DG MARE were based on the figures included in table tps 00175 (public administration) for Belgium.

Labour costs data were from 2008. To bring these up to date an annual inflation rate of 1.55% was applied based on the Harmonised Indices of Consumer Prices (HICPs) for EU27.

A 25% overhead figure was applied across all groups to derive the following hourly tariffs: private sector: €32.79/hour; public sector €27.88/hour; DG MARE €43.35/hour.

⁹⁷ <http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/>

In assessing the magnitude of observer costs on EU vessels, for the purpose of this assessment an average of €300/day is estimated per observer⁹⁸. This includes all overheads such as insurance, training, travel and equipment

Time

The number of hours spent on a specific action is estimated based on expert assessment. The most significant time costs are assumed for observer programmes and for Member State fishery departments for additional collation and reporting in excess of requirements under the DCF and Regulation 812/2004.

Once-off administration costs are assumed for RFMO (only option 2), RAC secretariats and industry representatives in setting up meetings and providing information to fishermen on the new regulations.

Administrative costs for DGMARE for disseminating information on the new measures, as well as annual costs for collating and analysing reports received from Member States are assumed. This is estimated at 30 days per year.

Equipment costs

No additional equipment costs are expected as a result of the proposed measures as any new monitoring equipment would be funded under the EMFF.

Frequency of Actions

Private sector reporting for the Producer Organisations was assumed to be a once off cost. This was assumed constant for both options 2 and sub-options 3a and b.

For additional administration costs for Member State fishery departments are associated with costs for dissemination of information to the fishing industry and collation and reporting of information for DGMARE. The initial dissemination would be on a once-off basis, while the reporting would be an annual requirement. Costs for inspections were estimated at 10% of the longline and static net fleet being monitored at least once a year specifically in relation to seabird bycatch. Given inspections would also cover a range of measures, 25% of these costs have been estimated as being solely in relation to seabird bycatch. These costs would be the same for options 2 and sub-options 3a and 3b.

For option 2 additional observers coverage over and above that carried out under existing monitoring programmes required for option 2 and sub-option 3b were estimated at a rate of 100 days per year covering 50 individual vessels. For sub-option 3a observer costs were based on 1% of the total longline and static net fleets for 30% of their total operating time, estimated at 220 days/year (i.e. 66 days per vessel per year).

Number of entities

The number of vessels was derived from data within the EC Fleet Register (<http://ec.europa.eu/fisheries/fleet/index.cfm>) for all gear types.

⁹⁸ Based on a range of observer costs in other fisheries

The number of Producer Organisations (214) was taken from the list of recognised Producers Organisations in the fishery and aquaculture sector (2008/C 163/05) based on Article 6 of Council Regulation (EC) 104/2000 (situation on 26 June 2008).

The number of RFMO secretariats (13) relates to the marine RFMOs where EU vessels may operate, namely: APFC, CCAMLR, CCSBT, CECAF, GFCM, IATTC, ICCAT, NEAFC, NAFO, SEAFO, SWIOFC, WECAFC, and WCPFC.

There are currently seven RACs, each of relevance to the proposed measures: Baltic, Mediterranean, North Sea, NW Waters, SW Waters, Pelagic Stocks and Distant Waters

Table 1: Administrative and Management Costs associated with option 2 using the EU Standard Cost Model

EU-Plan of Action – Option 2		Tariff (€ per hour)	Time (minutes)	Price (per action)	Freq (per year)	Nbr of entities	Total number of actions	Total Administrative Costs	Business As Usual Costs (% of AC)	Total Administrative Burdens (AC - BAU)	Regulatory origin (%)			
No.	Description of required action(s)	Target group									Int	EU	Nat	Reg
1	Designing information material	DGMARE	43	450,00	325	1	1	325	0%	325		100%		
2	Familiarising with the information obligation	MS Fishery Departments	28	210,00	98	27	108	10.539	0%	10.539		100%		
3	Familiarising with the information obligation	Industry Organisations	33	210,00	115	214	866	98.239	0%	98.239		100%		
4	Familiarising with the information obligation	RAC secretariats	28	210,00	98	7	28	2.732	0%	2.732		100%		
5	Familiarising with the information obligation	RFMO secretariats	28	210,00	98	13	52	5.074	0%	5.074		100%		
6	Inspecting and checking	MS Fishery Department	40	450,00	300	50	5.000	1.500.000	0%	1.500.000		100%		
7	Inspecting and checking	MS Fishery Departments	28	450,00	209	5.433	65.196	13.632.484	75%	3.408.121		100%		
8	Submitting information	MS Fishery Departments	28	450,00	209	27	675	141.143	0%	141.143		100%		
9	Submitting information	RFMO secretariats	28	210,00	98	13	52	5.074	0%	5.074		100%		
10	Filing forms and tables	DGMARE	43	450,00	325	1	30	9.754	0%	9.754		100%		

Total Administrative Costs €15.456.363

Total Administrative Burden €5.181.661

Table 2: Administrative and Management Costs associated with sub-option 3a using the EU Standard Cost Model

Stand-Alone Regulation – Option 3		Tariff (€ per hour)	Time (minutes)	Price (per action)	Freq (per year)	Nbr of entities	Total number of actions	Total Administrative Costs	Business As Usual Costs (% of AC)	Total Administrative Burdens (AC - BAU)	Regulatory origin (%)			
No.	Description of required action(s)	Target group									Int	EU	Nat	Reg
1	Information material	DGMARE	43	450,00	32	1	1	325	0%	325		100%		
2	Dissemination	MS Fishery Departments	28	210,00	98	27	108	10.539	0%	10.539		100%		
3	Dissemination	Industry Organisations	33	210,00	115	214	856	98.239	0%	98.239		100%		
4	Dissemination	RAC	28	210,00	98	7	28	2.732	0%	2.732		100%		
5	Producing new data	MS Fishery departments	40	450,00	300	383	25.258	7.583.400	0%	7.583.400		100%		
6	Producing new data	MS Fishery departments	40	450,00	300	18	1.193	356.400	0%	356.400		100%		
7	Producing new data	MS Fishery departments	40	450,00	300	131	8.637	2.593.800	0%	2.593.800		100%		
8	Producing new data	MS Fishery departments	40	450,00	300	12	772	237.600	0%	237.600		100%		
9	Inspecting and checking	MS Fishery Departments	28	450,00	209	5.433	65.196	13.632.484	75%	3.408.121		100%		
11	Submitting information	MS Fishery Departments	28	450,00	209	27	675	141.143	0%	141.143		100%		
12	Filing forms and tables	DGMARE	43	450,00	325	1	30	9.754	0%	9.754		100%		

Total Administrative Costs €24.666.415

Total Administrative Burden €14.442.052

Table 3: Administrative and Management Costs associated with sub-option 3a using the EU Standard Cost Model

Stand-Alone Regulation – Option 3		Description of required action(s)	Target group	Tariff (€ per hour)	Time (minutes)	Price (per action)	Freq (per year)	Nbr of entities	Total number of actions	Total Administrative Costs	Business As Usual Costs (% of AC)	Total Administrative Burdens (AC - BAU)	Regulatory origin (%)			
No.													Int	EU	Nat	Reg
1	Information	DGMARE	43	450,00	325	1	1	1	325	0%	325	100%				
2	Familiarising with the information obligation	MS Fishery Departments	28	210,00	98	4	27	108	10.539	0%	10.539	100%				
3	Familiarising with the information obligation	Industry Organisations	33	210,00	115	4	214	856	98.239	0%	98.239	100%				
4	Familiarising with the information obligation	RAC secretariats	28	210,00	98	4	7	28	2.732	0%	2.732	100%				
5	Inspecting and checking	MS Fishery Department	40	450,00	300	100	50	5.000	1.500.000	0%	1.500.000	100%				
6	Inspecting and checking	MS Fishery Departments	28	450,00	209	12	5.433	65.196	13.632.484	75%	3.408.121	100%				
7	Submitting information	MS Fishery Departments	28	450,00	209	25	27	675	141.143	0%	141.143	100%				
8	Submitting information	RFMO secretariats	28	210,00	98	4	13	52	5.074	0%	5.074	100%				
9	Filing forms and tables	DGMARE	43	450,00	325	30	1	30	9.754	0%	9.754	100%				

Total Administrative Costs €15.456.363
Total Administrative Burden €5.176.587