

DPLUS148

Climate change resilience in the Falklands fisheries and marine  
environment

Ecosystem-based fisheries management in the Falkland Islands

Stanley, Falkland Islands - 20<sup>th</sup> February 2024

Workshop report

## Table of Contents

Summary .....	2
Background .....	3
Workshop participants and programme.....	5
Workshop outcomes.....	7
To what extent is EBFM already applied in the Falkland Islands? .....	7
Should the current effort and time invested in EBFM attributes change?.....	12
Conclusions .....	15
Annex 1 .....	16

## Summary

**Aim:** To explore the ecosystem-based fisheries management (EBFM) framework and discuss interest in further implementing key elements of EBFM in the Falkland Islands

### Findings of the workshop

Overall, many EBFM attributes are already present in the Falkland Islands, suggesting implementation is, in a way, already underway. There are two areas that are not yet well considered (indicated by -/x), which are attributes that allow the EBFM to be more extended. That is, the core EBFM attributes are present, and often discussed and integrated. It was notable that the areas the workshop participants indicated needed more work to understand the effects align with the extended EBFM attributes.

EBFM attribute	Overall score	
	Current incorporation	Future effort
Defining ecosystems and their boundaries	X/XX	0
Managing fishing mortality on target species	XX	0
Accounting for the footprint of fisheries in habitat	XX/XXX	0
Accounting for the footprint of fisheries in non-target species	XX/XXX	+
Accounting for the footprint of fisheries in trophic effects	-/X	+
Managing for environmental change and climate change adaptation	-/X	+
Integrating economic and social factors into fisheries management advice	XXX	0

## Background

The 'Climate change resilience in the Falkland Islands fisheries and marine ecosystem (DPLUS148)' project is funded by the Darwin Initiative through the UK Government. It is further supported by the Falkland Islands Government via the Environmental Studies Budget, and by the John Cheek Trust and Shackleton Fund. The aim of this project was to:

- Generate new environmental baselines
- Estimate tolerance and acclimation responses to ocean warming in inshore habitats
- Create an ecosystem model based on the Falkland Islands exclusive economic zone
- Determine the opportunity for applying ecosystem-based fisheries management in the Falkland Islands

Overall, this project establishes vulnerability of key Falkland Islands marine species to climate change, and mechanisms to assess potential climate change effects in a holistic modelling framework and discusses the opportunity for ecosystem-based fisheries management in the Falkland Islands.

The Falkland Islands, like many small island nations, are dependent on their marine environment to support their economy. The Islands manage their living marine resources via their Interim and Outer Conservation Zones (FICZ and FOCZ, respectively), covering its Exclusive Economic Zone. The regulation of fisheries since 1986 has had a dramatic impact on the Falklands economy, resulting in a 500% increase in government revenue and securing self-sufficiency in almost all areas of governance. The Falklands are, like many other small island nations, vulnerable to the impacts of environmental change, including climate change, on the marine environment. Across the globe, the effects of climate change on marine ecosystems are increasingly noticeable, including via physical, chemical, and biological changes. Changes in populations can affect biomass levels, which in turn can affect food-web interactions and thereby the ecosystem services provided by the biological community, including the support of fisheries.

Healthy biological populations and communities are more resilient to environmental changes or shocks and can maintain their key characteristics (sometimes called ecological integrity) and services. Maintaining healthy marine ecosystems during the ongoing and worsening climate crisis will therefore be important so that there is less or slower change or quicker recover. In addition, this provides more time for the opportunity for building adaptive capacity and management in the fishery system. Traditional fishing management can, however, make adaptation more difficult as the focus of such management styles are focused on single species or single species complexes and miss effects that can act on the whole food web. Ecosystem-based fisheries management is a management style that incorporates the best of the traditional fisheries management and in addition to that take a holistic approach to the management of the ecosystem. This format, described elsewhere in more detail, allows for incorporating climate change adaptation strategies and new information as it becomes available, too.

This report presents the results of a workshop hosted in the Falkland Islands focusing on 'Ecosystem-based fisheries management and climate change adaptation' with the aim to explore the ecosystem-based fisheries management (EBFM) framework and to discuss whether it is possible to further implementing key elements of EBFM in the Falkland Islands. While the Falklands Fisheries Ordinance (2005) does not mandate EBFM, it is consistent with EBFM principles and attributes. Further, the use of EBFM as a framework was agreed upon in principle by the Falkland Islands Government (ExCo 16/21), although with no estimated time for delivery. However, the implementation of EBFM is a process that does not require an end point in time. The Falkland Islands Fisheries Department has started to look at how to incorporate ecosystem effects into their management.

The workshop aim was achieved via several presentations and discussions on what the Falklands is already doing regarding key attributes of EBFM in the Falkland Islands, and where change may be necessary to further implementation.

## Workshop participants and programme

### *Workshop participants*

The aim of the workshop was to explore the ecosystem-based fisheries management framework and discuss interest in further implementing key elements of EBFM in the Falkland Islands. The workshop was held on the morning of 20<sup>th</sup> February 2024 (Annex 1). There were 15 participants in the workshop, representing industry, government, and science (Table 1). Within the industry group there were participants from different fishing companies present in the Falkland Islands, representing different commercial fisheries (finfish, toothfish, and squid fisheries).

**Table 1:** Workshop participants list

<b>Participant</b>	<b>Organisation</b>
Patricio Garces	Consolidated Fisheries Ltd
John Barton	Fortuna
Janet Robertson	Consolidated Fisheries Ltd
Joost Pompert	Fortuna
Paul Brickle	South Atlantic Environmental Research Institute
Paul Brewin	Shallow Marine Surveys Group
Al Baylis	South Atlantic Environmental Research Institute
Michael Harte	Oregon State University
Simon Morley	British Antarctic Survey
Jesse van der Grient	South Atlantic Environmental Research Institute
James Bates	Falkland Islands Fishing Companies Association
Andreas Winter	Falkland Islands Government Fisheries Department
Matt Jenkins	Falkland Islands Government Fisheries Department
Neda Matosevic	RBC Ltd
Jano Van Heerden	Argos Group Ltd

### *Workshop programme*

Dr Jesse van der Grient started with an overview of what new knowledge has been established in the Falklands marine environment within the DPLUS148 project, showing the results of her physiology and modelling efforts, which have provided new insights in climate resilience within the Falklands marine environment, as well as highlighting gaps in our understanding. Dr Michael Harte provided an introduction into the practical aspects of ecosystem-based fisheries management (EBFM). These two presentations provided the basis for discussing what the Falkland Islands is already doing with regards to EBFM and why it may be useful to continue implementing EBFM.

Dr Michael Harte led a discussion that assessed how key attributes of EBFM are already present in the Falkland Islands. These attributes are split in:

- 1) Defining ecosystems and their boundaries
- 2) Managing fishing mortality on target species
- 3) Accounting for the footprint of fisheries in:
  - a. Habitat
  - b. Non-target species
  - c. Trophic effects
- 4) Managing for environmental change and climate change adaptation
- 5) Integrating economic and social factors into fisheries management advice

The extent to which each EBFM attribute has already been applied in the Falkland Islands was scored, following a classification of not considered, under discussion, considered/implantation underway, or comprehensive considered and integrated (Table 2). The scoring was based on discussion around the different fisheries that operate in the Falkland Islands waters, providing examples of how these attributes have been applied in different areas.

**Table 2:** Scoring of current standing of an EBFM attribute in the Falkland Islands

Score	Meaning
-	Not considered
X	Under discussion
XX	Considered/implementation underway for some fisheries/dimensions
XXX	Comprehensively considered and integrated into management activities and decision making

Building on from the discussion regarding what EBFM attributes are already present in the Falkland Islands, the focus was then shifted to the future. Dr Michael Harte spoke about how to move forward with EBFM, and what tools may be required for this. The remainder of the time was used to discuss whether the group thought less, similar, or more effort (Table 3) should be applied to the different EBFM attributes scored in the previous section.

**Table 3:** Scoring of potential future effort and time for EBFM

Score	Meaning
-	Less
0	About the same
+	More

The workshop ended with a question whether EBFM was wanted in the Falkland Islands, and specifically whether it can help the Falklands establish ecosystem/climate change adaptation plans that strengthen the fishing industry's resilience in the medium and long term?

## Workshop outcomes

To what extent is EBFM already applied in the Falkland Islands?

The current standing for each EBFM attribute was scored, and the discussions around this made it clear that there can be differences in the consideration, implementation, or integration of EBFM in fisheries, with the MSC certified Patagonian toothfish longline fisheries more often showing higher scores compared to the other fisheries, as several attributes discussed align with MSC requirements. Below the different attributes and scores are discussed in more detail.

### 1) Defining ecosystems and their boundaries

The part of the ecosystem that is best known in the Falkland Islands relate to areas directly fished, while other components are less known. Meaning, offshore areas where commercial fisheries operate are well defined, and migrations of these species, especially those from far away (e.g., Argentine squid), are quite well understood. How some of these species use inshore environments, which they may do as fish larvae and young fish or squid paralarvae, is comparatively poorly understood. Inshore species, biomass pools, and biological rates are also less well understood, and how these may connect to commercial species is not always clear. Further, most inshore knowledge is restricted to the East Falkland, while the west remains poorly studied. Four main inshore habitats have been recognised in previous work, but it is not known what drives the differences between these environments, or whether these habitats respond to environmental change in a similar way.

Information on the occurrence of non-commercial species or special habitats (e.g., Vulnerable Marine Ecosystems) on the seafloor exists, often via other projects (e.g., via Environmental Impact Assessments for hydrocarbon exploration in the North Falkland basin), but such work has often been restricted to waters shallower than 2000 m. In addition, most of this information is observation data on species presence, without biomass estimates or what influences distribution. This latter is important for, for example, predicting the presence of Vulnerable Marine Ecosystems. Meaning, that potential effects of fisheries (and other impacts) are difficult to determine or predict. Deep pelagic environments are understudied (as highlighted in the project data synthesis and modelling efforts). It was recognised that terrestrial effects can act on marine environments, and this can be important for, for example, seabirds. In addition, the physiology of many animals remains poorly understood, which relates to understanding their potential responses to environmental change including climate change.

While a large part of what we know about the marine environment now may be gathered by coincidence, driven by other questions or assessments, including for example the Marine Managed Areas, rather than by design, it is recognised that now more than ever we can ask more informed questions than before. One challenge that was raised was the lack of having all data in one or few areas, where it can be easily accessed. The question was raised whether, for example, the environmental data is available on the SAERI IMS-GIS/FIG data portal. It was clarified that fisheries data held by the Falkland Islands Government Fisheries Department is available upon request.

Score	Clarification
x/xx	Most fisheries have discussed the ecosystem and their boundaries based on their target species. There is some consideration for species that are not fished, and it is recognised that areas that are not fished are less understood.

## 2) Managing fishing mortality on target species

It is important to recognise that there are differences in how the various fisheries are managed. The Patagonian toothfish fishery are managed via Total Allowable Catch quotas, most other fisheries via effort-based controls, while no such controls for *Illex* are in place.

Stock assessments are done regularly for most species, except for *Illex*. While the stock assessments for the *Loligo* fishery are difficult, they do provide useful information and an indication of what is present, at minimum. A stock assessment is conducted for grenadier, not because it is fished, but as it is a common bycatch in the toothfish fishery. The stock assessment aids in the MSC certification of the toothfish fishery. Stock assessments for hoki and hakes are hard because they are seasonal migrants to Argentine waters, and fisheries information is not shared by Argentina with the Falkland Islands.

Lessons have been learned in the past about what works well and what does not work well with regards to stock assessments, especially for the mixed finfish. Indicator species were selected for stock assessments, but this did not prevent the collapses in southern blue whiting or rock cod. The Fisheries Department is working towards other ways, but it is recognised that assessments cannot be done for every species every year because of resources, and it would not necessarily provide more useful information each time.

The MSC certification of Patagonian toothfish requires the incorporation of factors, such as accounting for ecosystem effects, that other fisheries in the Falkland Islands currently not include. For example, the toothfish stock assessment factors in that whales can predate toothfish caught on the longlines. Whether other ecosystem effects could be included is not clear, and it is possible that the main predation effects that could be considered are present in shallower waters on younger individuals.

Score	Clarification
XXX	The toothfish and <i>Loligo</i> fisheries comprehensively consider and integrate fishing mortality on the species into their management activities and decision making
XX	Most fisheries consider fishing mortality on their target species
-	Fishing mortality is not considered in the <i>Illex</i> fishery

### 3) a. Accounting for the footprint of fisheries in habitat

Habitat requirements are recognised for various species, including non-fished species. In addition, efforts are made to determine where vulnerable habitat may be present. For example, Vulnerable Marine Ecosystem assessments have been conducted within the toothfish fisheries for deep-sea habitat. However, it was noted that Vulnerable Marine Ecosystem assessments are not conducted in other fisheries, even if they could encounter Vulnerable Marine Ecosystem habitats. The Marine Managed Areas that are being established in the Falklands waters recognise certain inshore areas as being of high importance to certain species. Further, the foraging area of seabirds and seals is taken into account via the use of mitigation procedures to reduce bycatch and mortalities on these species. The area in which the skates fisheries can operate depends on the season, which has been changed in the past to protect breeding grounds. Likewise, the spatial designation of the *Loligo* Box is a form of considering habitat for target species. Last, habitat is also considered via the closure to commercial fishing of inshore waters.

Score	Clarification
XXX	Seabirds, pinnipeds, inshore habitat are all comprehensively considered and integrated into management activities and decision making
XX/XXX	Most fisheries consider and implement habitat factors, and it may be argued that it is comprehensively considered and being integrated into management activities with regards to spatial/seasonal restrictions of fisheries. There are, however, aspects such as considering VME impacts, which are not considered.

### 3) b. Accounting for the footprint of fisheries in non-target species

The discussion focused on what constitutes comprehensive, with a focus on effects on non-target species via bycatch and discards. It is known that discards have not always accurately reported and there can still be improvements in current reporting. Rock cod was mentioned as an example where bycatch reporting was likely inaccurate. Currently, the Loligo fleet has observers on all their ships, and the toothfish fishery has 50% observer coverage. Other fisheries have a lower coverage, but the question is whether coverage leads to more accurate recording of bycatch and discards. The toothfish bycatch data reporting improved in accuracy when observer coverage was increased, suggesting that observers play a role in this. It was noted that the MSC certification of the toothfish may also promote more accurate reporting in bycatch as it is a requirement for maintaining the status, while other Falklands fisheries do not have a MSC incentive. In addition, the different gear types of fishing bring their own challenges in estimating discards. For example, this is more difficult in trawl catches than for longline catches. This raised the question for whether there is a need for a comprehensive report on bycatch, meaning reporting on all catches. Effort-based systems do not always have such requirements, and it is known that incentives can affect bycatch reporting.

There is a difference in how effects of and responses to bycatch are treated. Bycatch of seabirds and marine mammals have generally led to strong implementations to reduce bycatch and mortality, with accurate reporting on bycatch of these species. This is not necessarily the case for other species. Further, while bycatch is reported, the change in biomass of bycatch species is not monitored, thus whether effects of bycatch affect non-target species populations is not known.

Score	Description
XX/XXX	Most fisheries report on bycatch, although the accuracy may vary, which limits the comprehensive integration into management activities
XXX	Toothfish fishery reports comprehensively on their bycatch, and this also has stimulated a stock assessment for grenadiers to understand effects of bycatch.

### 3) c. Accounting for the footprint of fisheries in trophic effects

The group recognised that this was minimally done, if at all. These effects are not considered in most fisheries, although the toothfish fishery considers the predation of toothfish by whales, which is a requirement under MSC. Within the Falkland Islands, trophic effects are studied, as evidenced by various diet studies from different species. This information is, however, not integrated into models that can provide support for stock assessments.

Score	Clarification
-/X	The footprint of fisheries for trophic effects are not included in management activities, resulting in a – score. However, it is recognised that trophic effects are discussed elsewhere, and that information is available.

#### 4) Managing for environmental change and climate change adaptation

Currently, the Falkland fisheries are more reactive rather than adaptive to environmental change at a management level. There is a lack of knowledge on the effects of environmental change including climate change on the marine environment within Falklands waters, although under this Darwin project a start has been made. This information is not incorporated at a management level. There are no indicator species identified that provide the sufficient and necessary knowledge to monitor for change; previous indicator species selected did not work as accurate proxies.

It was raised that the Falklands farmers are the ones driving the exploration of what climate change adaptation methods may work in terrestrial environments. This difference between fisheries and farmers may also be because environmental changes are at the moment more clearly visible on land than in the ocean. There is a risk that change may occur suddenly in the marine environment. Observing change is difficult, and one major source of knowledge is currently underused in the Falkland Islands. This is the captains of fishing vessels, which have local knowledge of the marine environment, and they may see differences, but these differences are currently anecdotally reported rather than directly to people at the management level (or science). There currently lacks a platform for captains to share their knowledge on environmental changes and previous attempts to share knowledge was not received well, which can affect trust. It would be useful to have a structure for captains to share their knowledge, but it is recognised that this requires resources that are currently not available. Exploring the potential for establishing such a platform would be useful to incorporate this local knowledge into monitoring and future modelling efforts.

Score	Clarification
-/X	While it is recognised that environmental change including climate change can have consequences for the Falklands fisheries, and there is some discussion regarding the effects, it is not incorporated at the management level.

#### 5) Integrating economic and social factors into fisheries management advice

The Falkland Islands fishing companies are very important to the Falkland Islands, and they play a significant role in various aspects of economic and social factors. The Falkland Islands obtain substantial amounts of money from the fishing companies via license fees and taxation, but it stretches further. The presence of the fishing companies directly stimulates the need and employment in maritime services. There is a critique that people within the Falkland Islands are not sufficiently employed by the fishing companies, but this likely stems from what is meant by employment. The people on the ships are indeed not representing the Falklands population, but roughly 5% of the Falklands population is employed by fishing companies, which is a similar percentage compared to other nations.

In addition, the fishing companies play a huge role in the social life of Falklanders by supporting various charities including providing sporting and science opportunities. These donations make the difference

in various people's lives, for example by supporting children to visit Chile for sport competitions. Reporting on charity support is a requirement under ITQ B.

Score	Clarification
XXX	The role that the Falklands fishing companies play in the social and economic factors for the Falkland Islands is huge and cannot be understated

Should the current effort and time invested in EBFM attributes change?

The Falkland Islands has many essential components for EBFM in place, as highlighted in the previous section. There are some discrepancies in what is considered and comprehensively integrated into management activities and decision making and what is not considered or only discussed. The areas where the Falklands scored highest are core areas of EBFM, while trophic effects and managing for ecological change under environment change are recognised as extended EBFM attributes. It is therefore useful to assess whether and where more work is wanted.

The current standing for each EBFM attribute was scored, and the discussions around this made it clear that there can be differences in the consideration, implementation, or integration of EBFM in fisheries, with the Patagonian toothfish longline fisheries more often showing higher scores compared to the other fisheries, as several factors align with MSC requirements. Below the different attributes and scores are discussed in more detail.

#### 1) Defining ecosystems and their boundaries

There is currently a lot of work ongoing with regards to defining ecosystems and boundaries, both for fished and unfished parts. Intuitively, more work is needed, but this varies per area. Importantly, it was recognised that it is not necessarily a question of doing more work, but perhaps changing the focus of some of the work. There is a lack of connection between industry and science with regards to information sharing, directing and priority building for research areas. There is a need for more joined up thinking for opportunities in applied research that support the fisheries.

It was highlighted that the development of a Science Group, which was recommended in the Fisheries Ordinance, would be able to fill this need, and provide a framework for collaboration between science and industry to prioritise research areas.

Score	Clarification
0	Much work is already ongoing, and it could potentially be more effective to change the focus rather than doing more work. Specifically, the creation of a Science Group as per the Fisheries Ordinance would be a useful step forward

#### 2) Managing fishing mortality on target species

Generally, for the toothfish and Loligo fisheries this is done well, and would not require more work, but can stay the same. There is a challenge for the finfish fisheries and especially for the long-distance migratory species as Argentina refuses to share information that would inform this. Again, there was strong agreement that rather than doing more work, the focus may perhaps need to change, and focus on making this work more efficient and accurate. This includes working opportunistically with regards to the geopolitical situation.

Score	Clarification
0	Much work is already ongoing, and it could potentially be more effective to change the focus rather than doing more work.

3) a. Accounting for the footprint of fisheries in habitat

Similar statements were made, and it was generally believed that no more work was required, but that efforts should stay the same, but perhaps change in focus to ensure efficiency and accuracy.

Score	Clarification
0	Much work is already ongoing, and it could potentially be more effective to change the focus rather than doing more work.

3) b. Accounting for the footprint of fisheries in non-target species

In the recent years, there has been an increase in observer coverage, and more effort made in reporting bycatch and better use of the data. It was recognised that more can be done with the data collected, including from surveys, which can provide essential data to inform on this aspect. Most importantly, co-ordination here between different sectors is important, and aids in sharing the load. In addition, it may be useful to think more on what it means to protect species to make spending more efficient. For example, money can be spent on protecting species or invested in ways to reduce or avoid catching vulnerable species.

Score	Clarification
+	Much data is collected but not always used, and there may be avenues for collaboration to enhance this underused resource. In addition, given that resources are scarce, some aspects of what is meant by reducing or protecting needs to have a wider focus

3) c. Accounting for the footprint of fisheries in trophic effects

The group viewed this as an area where more work should be done, with a wider scope than currently done. This includes improving our understanding of trophic positioning, changes in diet (seasonally, but also interannually), incorporating physiology, and improving our understanding of responses to productivity changes. In addition, this work would be much support if there was a specific person in the Falkland Islands that would keep an ecosystem model for the Falkland Islands updated with new information and understanding, and to provide and support the integration of a holistic perspective into management.

Score	Clarification
+	Various areas were identified that lacked information, and that would be required to support the comprehensive integration of this EBFM attribute into management

4) Managing for environmental change and climate change adaptation

This was also highlighted as an area where more work or effort would be appreciated, including more modelling and physiology work. In addition, on-ground knowledge should be used more broadly, and this is highly needed to integrate local knowledge with scientific knowledge to support the Falklands fisheries management. The specifics are not necessarily as clear about what is needed/required, but

a need that came strongly forward was that mainstreaming managing for environmental change into policy papers would be necessary.

Score	Clarification
+	Various areas were identified that lacked information, and that would be required to support the comprehensive integration of this EBFM attribute into management

#### 5) Integrating economic and social factors into fisheries management advice

The Falkland Islands fishing companies are exemplary for how much they contribute to the social and economic factors in the Falklands and perform well above average compared to other nations. In this regard, no more work is required. However, it may be useful to work on the fisheries image, especially in the assembly. Currently, there is a strong feeling that the fishing companies are viewed for their finances and not their economic contributions and influences.

Score	Clarification
0	An incredible amount of work and support is already ongoing in this EBFM attribute. However, this is not always recognised within the community, and the fisheries would benefit from how they are viewed to promote working relationships.



*Workshop participants are scoring how well EBFM attributes have already been incorporated in the Falkland Islands*

## Conclusions

The Falkland Islands has many essential components for EBFM in place and is therefore well suited towards implementing EBFM (table 4). While the Falklands Fisheries Ordinance (2005) does not mandate EBFM, it is consistent with EBFM principles and attributes. Further, the use of EBFM as a framework was agreed upon in principle by the Falkland Islands Government (ExCo 16/21), although with no estimated time for delivery. However, the implementation of EBFM does not require an end point in time and remains a process working towards the improvement of the adaptiveness within fisheries. The benefit of implementing EBFM for the Falkland Islands remains that it supports the fisheries management in becoming more adaptive to potential environmental change, which could act on target species directly or indirectly via trophic interactions.

The workshop group highlighted that the areas which lacked in consideration or discussion with regards to integrating these EBFM attributes into management activities also were the areas with the strongest support for putting more effort towards it (table 4). Several avenues were proposed to fill in these gaps, which generally underlined a need to collaborate more. Specifically, a Science Group could facilitate a platform to discuss and prioritise science gaps that would support fisheries, and potentially establish a way for sharing knowledge, and especially local knowledge. It is recognised that resources are limited, especially in the Falkland Islands, but the group also recognised that in some areas there can be improvements on efficiency, meaning that implementation should not need to require more resources necessarily.

Overall, the group felt positive towards EBFM, and wishes that it is kept in focus, although how to pursue is less clear. There remain still some important questions to answer, and it is recognised that the framework is not perfect, but that it does provide support for helping identify where the focus should be to become more adaptive, incorporating different types of knowledge, and assessing and planning for change. It was even pointed out that there are already opportunities for assessing how the Falkland Islands is doing regarding following/using EBFM, even in the absence of explicitly-stated implementation of EBFM, via P1 and P2 assessments.

**Table 4:** Overall scores of the progress made towards the implementation of EBFM attributes in the Falkland Islands fisheries system and areas where future efforts could be directed.

EBFM attribute	Overall score	
	Current incorporation	Future effort
Defining ecosystems and their boundaries	X/XX	0
Managing fishing mortality on target species	XX	0
Accounting for the footprint of fisheries in habitat	XX/XXX	0
Accounting for the footprint of fisheries in non-target species	XX/XXX	+
Accounting for the footprint of fisheries in trophic effects	-/X	+
Managing for environmental change and climate change adaptation	-/X	+
Integrating economic and social factors into fisheries management advice	XXX	0

## Annex 1

### Programme of the day

<b>Time</b>	<b>Topic</b>
8:00 – 8:30	Welcome + coffee
8:30 – 9:00	Presentation: What is known about the Falkland marine ecosystem and fishery system now and under climate change?
9:00 – 9:30	Presentation: what is ecosystem-based fisheries management (EBFM)?
9:30 – 10:00	Presentation/Activity: what components of EBFM are already present in the Falklands?
10:00 – 10:15	Coffee break
10:15 – 11:30	Activity: Assessment on management process and opportunities for EBFM in the Falklands; identify priorities
11:30 - 12:00	Activity: what comes next?
12:00 – 13:00	Lunch – provided
13:00 – 15:00	Optional: Detailed discussion following from the morning session for those interested