

Marine Stewardship Council 4th Surveillance Report

For The

Northern Ireland Bottom Grown Mussel Fishery

And The Linked

Ireland Bottom Grown Mussel Fishery

Facilitated By

Aquaculture Initiative EEIG

And The

Bord Iascaigh Mhara (BIM)

Assessors: Sam Dignan, Lead Assessor
Deirdre Hoare, Assessor
Fergal Guilfoyle, Assessor
Conor Donnelly, Assessor

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SAI Global

3rd Floor, Block 3,
Quayside Business Park,
Mill Street, Dundalk,
Co. Louth, Ireland.
T + 353 42 932 0912
F + 353 42 938 6864
www.saiglobal.com



Foreword

The MSC Fisheries Standard sets out requirements that a fishery must meet to enable it to claim that its fish come from a well-managed and sustainable source. The standard applies to wild-capture fisheries that meet the scope requirements. The MSC Fisheries Standard comprises three core principles:

Principle 1: Sustainable target fish stocks

A fishery must be conducted in a manner that does not lead to over-fishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery.

Principle 2: Environmental impact of fishing

Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.

Principle 3: Effective management

The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable.

A full description of the MSC Fisheries Certification Requirements and Processes followed during this assessment can be found in MSC Fisheries Certification Requirements and Guidance. This assessment uses the version of the MSC Standard outlined in the MSC Certification Requirements (CR) v1.3 published on January 14th 2013 but follows the processes outlined in the MSC Fisheries Certification Requirements (FCR) v2.0 re-released on 1st October, 2015, the definitive version of all documents are maintained on the MSC's website www.msc.org. Any discrepancy between copies, versions or translations shall be resolved by reference to the definitive English version.

Readers should verify that they are using the copy of the MSC CR/FCR (and other documents) that are relevant to this assessment. Updated documents, together with a master list of all available MSC documents, can be found on the MSC's website.

Glossary

AA	Appropriate Assessment
AFBI	Agri Food and Biosciences Unit
BGMCF	Bottom Grown Mussel Consultative Forum
BIM	Bord Iascaigh Mhara – Irish Sea Fisheries Board
CAB	Conformity Assessment Body - Certifier
DAFM	Department of Agriculture Food and the Marine
DAERA	Department of Agriculture and Rural Development (formerly Department of Agriculture, Environment and Rural Affairs (DARD))
EEIG	European Economic Interest Grouping
HCRs	Harvest Control Rules
MSC	Marine Stewardship Council
NI	Northern Ireland
PI	Performance Indicator
ROI	Republic of Ireland
SAC	Special Area of Conservation
SPA	Special Protection Area
VMS	Vessel Monitoring System

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1. Executive Summary

This report contains the findings of the 4th surveillance audit in relation to the Aquaculture Initiative certificate of the Northern Ireland Bottom Grown Mussel Fishery which is closely linked to the Bord Iascaigh Mhara (BIM) certificate of the Ireland Bottom Grown Mussel Fishery. This 4th surveillance audit focused on any changes to the fishery and its management since the 3rd surveillance audit in 2016, and monitored continuing compliance with the MSC Principles and Criteria.

The assessment team also evaluated progress against the four open conditions (PI 2.5.2 Ecosystem Management Strategy, PI 2.5.3 Ecosystem Information/Monitoring, PI 3.2.2 Decision Making Processes and PI 3.2.4 Research Plan). Four further conditions (PI 1.2.2. Harvest Control Rules and Tools, PI 2.2.3 Bycatch Species Information/Monitoring, PI 2.4.2 Habitats Management Strategy and PI 2.4.3 Habitats Information/Monitoring) were closed at the 3rd Surveillance Audit in 2016.

SAI Global determines that:

- **The Northern Ireland Grown Bottom Mussel Fishery continues to operate as a well-managed and sustainable fishery; therefore, continued certification to the MSC Principles and Criteria for Sustainable Fishing is awarded.**

Table 1 below summarises the status, Performance Indicator (PI) and Principle level score changes related to currently open conditions; note conditions 1, 2 3, and 4 were closed at the 3rd surveillance audit. Evaluation tables for PIs re-scored during this 4th Surveillance Audit can be found in [Appendix 1](#); equivalent tables for PIs re-scored during previous surveillance audits can be found in the corresponding section of the relevant surveillance report.

Table 1. Conditions status and original and revised Performance Indicator (PI) and Principle level scores.

Condition	PI	Status	Performance Indicator		Principle		
			Original score	Revised Score	Original score	Revised Score	
						Surveillance 3 (2016)	Surveillance 4 (2017)
1	1.2.2	Closed (Surveillance 3)	65	80	81.5	83.3	83.3
2	2.2.3	Closed (Surveillance 3)	75	80			
3	2.4.2	Closed (Surveillance 3)	70	80	83.1*	84.2	86.1
4	2.4.3	Closed (Surveillance 3)	75	80			
5	2.5.2	Closed (Surveillance 4)	75	85			
6	2.5.3	Closed (Surveillance 4)	75	90			
7	3.2.2	Closed (Surveillance 4)	75	80	86.3	86.3	87.8
8	3.2.4	Closed (Surveillance 4)	70	80			

*The original Principle level score for P2 was originally incorrectly calculated as 83.3.

On behalf of the MSC clients, the Aquaculture Initiative and Bord Iascaigh Mhara (BIM), SAI Global would like to extend thanks to the management organisations and stakeholders who took part in this surveillance audit.

The assessment team was made up of:

- Sam Dignan (Assessment team lead and P1 assessor)
- Deirdre Hoare, (P2 Assessor)
- Conor Donnelly, (P2 Assessor)
- Fergal Guilfoyle, (P3 Assessor)

The Northern Ireland Bottom Grown Mussel Fishery was originally certified by SAI Global Assurance Services (latterly SAI Global) in July 2013 and surveillance audits have all been conducted by SAI Global; the on-going re-assessment of the fishery is also being undertaken by SAI Global.

There have been numerous changes to the assessment team across the certification cycle and none of the current team members were part of the original assessment team. However, Fergal Guilfoyle has been part of the team for the 1st, 2nd and 3rd surveillance audits and Sam Dignan was part of the team for the 3rd surveillance audit (and attended the 2nd surveillance audit meetings although not in an official capacity).

When the 4th surveillance audit was originally announced on 14th September 2017, the assessment team was to be made up of Sam Dignan (as Team lead and P1 assessor), Deirdre Hoare (as P2 assessor) and Fergal Guilfoyle (as P3 assessor) but, having joined SAI Global in early-October, Conor Donnelly (as P2 assessor) was added as additional team member on 19th October 2017; this change to the assessment team was communicated to stakeholders at this time.

The skills and experience of the assessment team are summarised below.

Sam Dignan (Lead Assessor and Responsibilities on Principle 2)

Sam Dignan is a fisheries scientist who has previously worked with the Department of Environment, Food and Agriculture (DEFA), Isle of Man and Bangor University Fisheries and Conservation Science Group (Wales). He has a BSc in Biological and Chemical Sciences with Zoology from University College Cork and an MSc in Marine Environmental Protection from Bangor University. He has experience conducting stock assessments, from the survey design and implementation phases through to final analysis and report presentation; from 2013 to 2015 he was a member of the ICES working group on scallop stock assessment. He has been involved in providing scientific data to ensure fishery compliance with the Marine Stewardship Council's (MSC) certification framework and has participated in MSC surveillance audits from a client's perspective. Sam has extensive experience of interacting directly with fishers and their representative organisations as well as members of scientific and government institutions. He was previously an advisor to the Isle of Man Queen Scallop Management Board that manages the MSC certified Isle of Man queen scallop fishery. He has also worked on the spatial analysis of fishing activity, using Vessel Monitoring System (VMS) and logbook data, to spatially quantify fishing activity and fisheries-ecosystem interactions. Sam is an ISO approved lead auditor.

Deirdre Hoare (Assessor, Responsibilities in P2)

Deirdre Hoare is an independent fisheries consultant with more than 10 years of experience working in a wide range of projects associated with marine biodiversity and the sustainable use of living aquatic resources. Her principal area of expertise is in relation to stock assessment and ecosystem impacts of both artisanal and commercial fisheries. Her work currently involves evaluation and verification of fisheries management and sustainability against international standards. She also performs fish stock assessments, evaluates data and outlines the limitations. She previously worked as a Fisheries Assessment Analyst and as a Scientific and Technical Officer for the Marine Institute in Ireland. This work involved fisheries research and stock assessment for ICES working groups. The work also involved coordination and management of a Fisher Self sampling program in the Irish Sea, with particular emphasis on spatial and temporal discard measurement tools. As well as having worked as a researcher, she completed many trips on commercial fishing vessels in the capacity of scientific observer in the NAFO area, North West Atlantic and Irish Coast. She has also experience on finfish and shellfish aquaculture that she gained working in Scotland. She also works as an assessor for SAI Global in FAO Responsible Fisheries Management and Marine Stewardship Council assessments in both Iceland, Alaska and Ireland.

Conor Donnelly (Assessor, Responsibilities in P2)

Conor is an MSC approved Fisheries Team Leader for SAI Global. He is an experienced marine ecologist and environmental manager with a background of over 17 years at the UK's statutory nature conservation body, Natural England, where he was Senior Marine Adviser responsible for marine delivery across the East Midlands, Norfolk and Suffolk. Conor has particular experience of shellfisheries and their management, Marine Protected Areas including their designation, conservation advice and monitoring, conservation legislation and policy and working with partners and stakeholders to deliver positive environmental outcomes.

Fergal Guilfoyle (Assessor, Responsibilities in Principle 3)

Fergal has a degree in Marine Biology from Trinity College Dublin, a Masters in Fisheries and Marine Science from Aberdeen University and a postgraduate Diploma in Environmental Management from the University of Ulster. Fergal is currently managing director of Treanbeg Shellfish Ltd, a small oyster farming business based in Mayo. Treanbeg Shellfish also trades as Treanbeg Marine Consulting which is a business focusing on Environmental Impact Assessment for finfish farms. Fergal is a member of the Chartered Institute of Ecology and Environmental Management, and he is an invited member of the National Inland Fisheries Forum (NIFF) which advises IFI and the minister in matters relating to inland fisheries resources in Ireland. Fergal has worked as a research scientist in Ireland for BIM and the Marine Institute. As an Aquaculture Development/Quality Officer in Co. Mayo, Fergal has gained a thorough understanding of all aspects of the aquaculture industry in Ireland. Since 2009 Fergal has been working extensively with the Aquaculture Industry as a shellfish producer and as a consultant working on EIA projects in the finfish sector.

2. General Information

Table 2. General fishery information.

Fishery name	<p>Northern Ireland Grown Bottom Mussel Fishery*</p> <p>*Note this fishery is closely linked to the Bord Iascaigh Mhara (BIM) certificate of the Ireland Bottom Grown Mussel Fishery.</p>
Unit(s) of assessment	<p>There is a single Unit of Assessment (UoA) covering all fishing activity related to the bottom grown mussels industry on the island of Ireland. There are two potential Units of Certification (UoCs) depending on whether the harvesting activity takes place within the 12nm Territorial Waters of Northern Ireland or the Republic of Ireland; the UoC covered by this report relates to harvesting activities in Northern Ireland waters.</p> <p><u>Target species:</u> Blue mussel (<i>Mytilus edulis</i>)</p> <p><u>Stock</u> Blue mussels around the island of Ireland</p> <p><u>Geographic area</u> All fishing activity takes place within FAO Major Fishing Area 27 Northeast Atlantic (ICES Areas VIa, VIIa, VIIg, VIIj and VIIb) and is split between seed and harvest locations.</p> <p>Seed location Coastal waters of Northern Ireland and the Republic of Ireland within their respective 12 nautical mile Territorial Seas.</p> <p>Harvest locations Permitted harvest areas in identified bays of Northern Ireland and the Republic of Ireland coastal waters including:</p> <p><i>Northern Ireland</i> Belfast Lough Lough Foyle Carlingford Lough (NI portion)</p> <p><i>Republic of Ireland</i> Lough Swilly Castlemaine (Cromane) Wexford harbour Lough Foyle Carlingford Lough (ROI portion)</p> <p><u>Method of Capture:</u> Modified Dutch Bottom Dredge (with limited hand raking)</p> <p><u>Management system</u> <i>Northern Ireland</i> Department of Agriculture, Environment and Rural Affairs (DAERA)</p> <p><i>Republic of Ireland</i> Department of Agriculture Food and Marine (DAFM) and the Sea Fisheries Protection Agency (SFPA)</p>

	<p><u>Client group and other eligible fishers</u></p> <p>The Aquaculture Initiative and Bord Iascaigh Mhara (BIM) representing all members of the bottom mussel industry on the island of Ireland.</p> <p>All members of the Bottom Grown Mussel Industry, eligible to fish in the relevant jurisdiction, will be eligible to access the certificate; however, only those entities that have contributed financially to the MSC process will be considered to be part of the client group for the purpose of Certification. The most up to date client group will available on the MSC this will be updated where any changes have occurred.</p> <p>There are currently no other eligible fishers. Potential other eligible fishers would be any fishers, eligible to fish in Republic of Ireland waters, not on the most up to date client group list.</p>	
Date certified	30 th July 2013	
Certificate expiry date	29 th July 2018	
Surveillance level and type	Surveillance level 6, on-site surveillance audit	
Date of surveillance audit	29 th and 30 th November 2017	
Surveillance stage	1 st Surveillance	
	2 nd Surveillance	
	3 rd Surveillance	
	4 th Surveillance	X
	Other (expedited etc.)	
Surveillance team	Lead assessor:	Sam Dignan
	Assessor(s):	Deirdre Hoare Fergal Guilfoyle Conor Donnelly
CAB name	SAI Global	
CAB contact details	Address	Quayside Business Park, Dundalk, Ireland
	Phone/Fax	+353429320912
	Email	Donna.Sweeney@saiglobal.com
	Contact name(s)	Donna Sweeney
Client contact details	Address	Bord Iascaigh Mhara (BIM) P.O. Box 12 Dun Laoghaire, Co. Dublin, Ireland
	Phone	+353 1 2144100
	Contact name(s)	Joanne Gaffney

3. Introduction

The Aquaculture Initiative certificate of the Northern Ireland Bottom Grown Mussel Fishery is closely linked to the Bord Iascaigh Mhara (BIM) certificate of the Ireland Bottom Grown Mussel Fishery. To be awarded an MSC certificate for the fishery, the applicants agreed in a written contract to develop an action plan for meeting the required 'Conditions' against the performance indicators that scored below 80% in the initial assessment. Action Plans for each Condition were submitted by each fishery client and these were approved by SAI Global Assurance Services as the certification body of record.

The applicant also agreed in a written contract to be financially and technically responsible for surveillance visits by an MSC accredited certification body, which would occur at a minimum of once a year, or more often at the discretion of the certification body (based on the applicant's action plan or by previous findings by the certification body from annual surveillance audits or other sources of information).

The fishery is comprised of two parts; 1) a seed mussel fishery (during which seed mussels are fished from ephemeral beds and re-laid for ongrowing in specifically licensed areas) and 2) the harvesting of market sized mussels from on-growing areas. Due to recent legal developments the activities covered by this certificate currently take place within a single jurisdictions namely those of Northern Irish waters.

Only catches of seed mussels, caught by members of the client group using modified Dutch dredges, within Northern Irish waters (i.e. the area shaded bright green in Figure 1) and ongrown in designated bays of Northern Ireland (i.e. the areas shaded red in Figure 1) are included in the Unit of Certification (UoC) and are ultimately eligible for Certification.

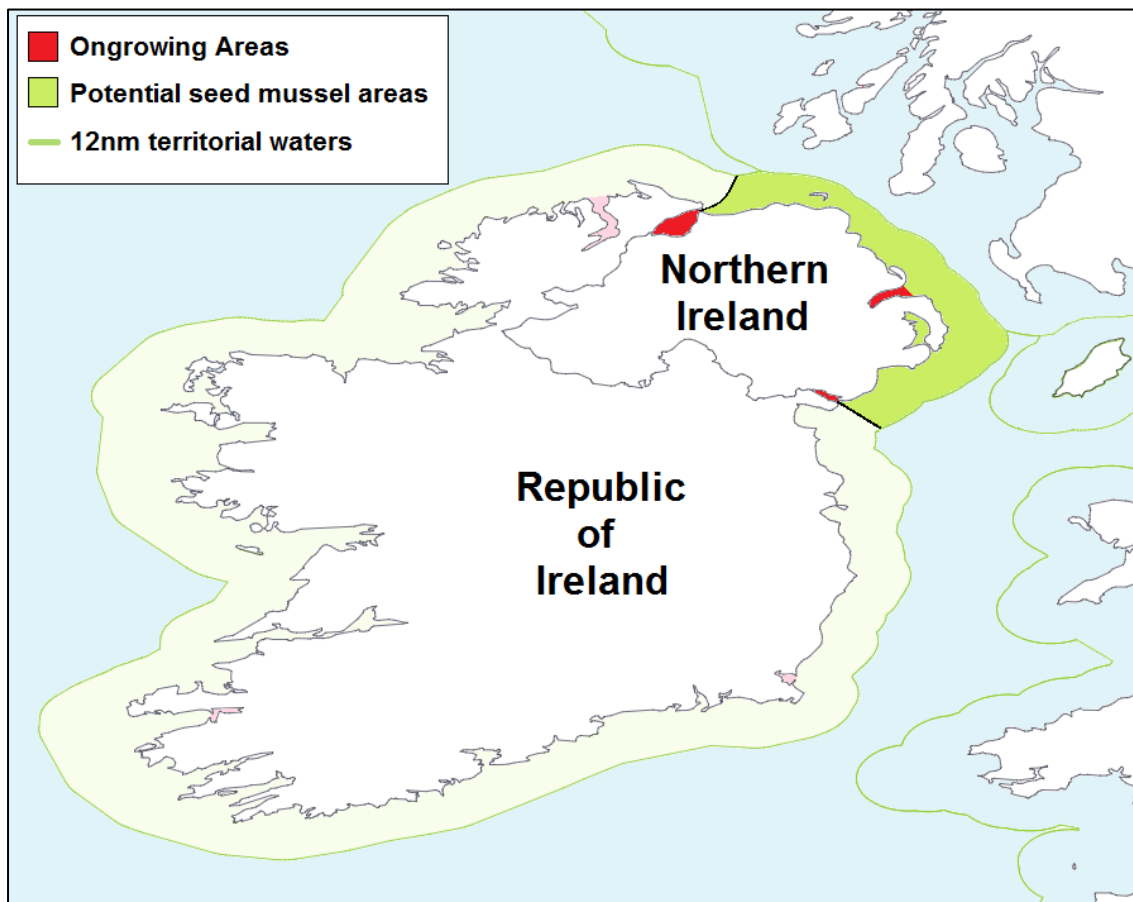


Figure 1. Potential seed mussel and ongrowing areas within coastal waters of Northern Ireland (Areas in which Northern Irish vessels may currently fish for seed mussels are shaded in bright green).

Announcement of Surveillance Audit

An announcement of the surveillance site visit was published on the MSC website on the 14th September 2017 to provide an opportunity to stakeholders to meet with or submit information on the fishery to the assessment team. Additionally, written notification was sent to the list of stakeholders representing the consultation plan during the initial assessment of this fishery and in many cases follow up mails were also made to ensure that stakeholders had been provided with sufficient opportunity to participate in consultation.

As previously discussed, a change was made to the assessment team with the addition of Conor Donnelly on 19th October 2017 and this was communicated to stakeholders at the time.

Table 8 provides a list of the stakeholders and management organisations engaged in the process either through meetings, conference call or submission of information. These consultations focused on the questions and evidence that demonstrates the performance of the fishery throughout the year and measures that supported the fulfilment of the Conditions of Certification placed upon the Northern Ireland Bottom Grown Mussel fishery at the time of initial certification.

Meetings were held with the members of the following management, industry and scientific organisations involved in the Northern Ireland Bottom Grown Mussel fishery (and the closely linked Ireland Bottom Grown Mussel fishery):

- Bord Iascaigh Mhara (BIM) (Republic of Ireland)
- The Bottom Grown Mussel Consultative Forum
- The Loughs Agency (Cross-border agency)
- Department of Agriculture, the Environment and Rural Affairs (DAERA) (Northern Ireland)
- The Marine Institute (Republic of Ireland)
- Industry members
- The Sea Fisheries Protection Authority (Republic of Ireland) (SFPA)

A number of scientific and meeting reports were also examined by the surveillance team in producing this report, as detailed in the [References](#) section.

4. Background

4.1. Fishery Observations

During the year 2016, the total net tonnages of seed fished in Northern Irish and Irish waters were 1,961 t and 7,536 t respectively. Table 3 details Northern Ireland and Republic of Ireland catches of seed mussels and their subsequent re-laying locations in 2016. A total of 6,002 t of finished mussels (end product) were produced by members of the client group in 2016.

Table 3. Gross and net tonnages of mussel seed fished and re-laid by Irish and Northern Irish and boats in 2016 (Fished and re-laid rows relate to where seed was fished and re-laid).

Fished	NI		IE		IE		NI		NI		IE		Total	
Re-laid	NI		IE		NI		IE		Foyle		Foyle			
Vessel	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net
Irish	683	579	5,526	4,511	1,645	1,310	104	73	280	208	1,095	855	9,333	7,536
Northern Irish	225	177	1,675	1,345	170	170	262	203	102	66	0	0	2,434	1,961
Total	908	756	7,201	5,856	1,815	1,480	366	275	382	274	1,095	855	11,767	9,496

A chronology of key actions during the 2017 seed mussel season on the Island of Ireland is presented in Table 4 below.

Table 4. Chronology of key actions during the 2017 seed mussel season on the Island of Ireland.

01/03/2017	Notification of BGMCF Meeting 20 issued to all industry members, invitation for agenda items.
13/03/2017	Fisheries Natura Declaration No. 1 of 2017 (Castlemaine Harbour) published
29/03/2017	BGMCF Meeting – seed fishing dates proposed
05/05/2017	Update letter circulated to all industry members
30/05/2017 and 02/06/2017	Castlemaine/Cromane Survey
21/06/2017	DAFM issued Supreme Court Judgment – Authorisations for the 2017 Mussel Seed Fishery
29/06/2017	DAERA issued paperwork to industry members including Supreme Court Judgment – Authorisations for the 2017 Mussel Seed Fishery to IE registered vessels
07/07/2017	Final AFBI Seed Survey in NI
26/07/2017	Alien species screening conducted at only identified bed – Rosslare
03/08/2017	Outer Ards Seed mussel Stock Assessment survey June/July 2017 submitted to DAERA
04/08/2017	<p>Clarification issued by DAFM on Lough Foyle</p> <p><i>“The mussel seed fishery has operated on an all-island management basis between this jurisdiction and Northern Ireland. Following the Supreme Court judgment on 27 October 2016 (Barlow & ors -v- Minister for Agriculture, Food and the Marine & ors [2016] IESC 62, 27th October 2016), the Department had been engaged on determining the application of the judgment to the fishery from which it was recommended that authorisations only be issued to Irish sea-fishing boats to relay on to aquaculture sites which are subject to domestic legislation.</i></p> <p><i>An in-depth review has been undertaken of the particular situation in Lough Foyle in view of the fact that domestic legislation does not currently afford the mussel producers there an opportunity to secure an appropriate consent for their aquaculture sites. Of particular relevance is that mussel producers there have been active for a considerable period of time and have been previously afforded fishing opportunities.</i></p> <p><i>Following the review, the Minister has determined that authorisations to fish for mussel seed can be issued to eligible operators previously facilitated under the administrative arrangements to relay at Lough Foyle on an interim basis.</i></p> <p><i>This means the expression of interest already submitted by you on the basis of an aquaculture operation in Lough Foyle can be considered. We will be in touch regarding this paperwork in due course.”</i></p>

15/08/2017 to 25/08/2017	Glassgorman Seed Survey
18/08/2017	SMS - Seed surveys are ongoing and it appears that there may be sufficient seed to support a fishery in 2017. However it is unlikely that sufficient data will be available to inform a recommendation to the Minister in advance of the 28th Aug. Therefore the earliest date of an opening in the Irish Sea -Subject to Ministerial Approval - will be the 13th September
18/08/2017	SMS - DAERA are currently reviewing seed survey data from AFBI. No final decision has been made on a fishery but it is clear that any fishery will not open before the 13th of September. Industry members will be provided with a further update once a decision has been made
30/08/17	Email to Departments and SFPA - Secretariat to the BGMCF recommended that the Autumn seed fishery in the Irish Sea open on the 13th of September. This recommendation was agreed by industry members of the Forum (30/08/2017), following a review of available seed mussel survey reports. The seed survey report for the Glassgorman area will be placed on the BIM website later today.
30/08/2017	NI Seed Survey report published
31/08/2017	SMS - Glassgorman seed survey available on the BIM website - http://www.bim.ie/our-publications/aquaculture/
31/08/2017	SMS - NI seed survey available on the DAERA website - https://www.daera-ni.gov.uk/publications/outer-ards-seed-mussel-stock-assessment-survey-junejuly-2017
31/08/2017	Wicklow south survey
05/09/2017 to 06/09/2017	Seed Survey Castlemaine
07/09/2017	New Fishery Natura Plan for Seed Mussel fishing in the Irish Sea submitted to DAFM by the BGMCF Secretariat.
07/09/2017	SMS - DAERA intend to open the NI seed fishery on the 13th. The Chief Fisheries Officer has indicated that licences will be issued in the coming days
07/09/2017	Client group members requested to monitor catches for Spider crab
08/09/2017	SI published opening fishery in IE waters in line with suitable tides in authorisations
13/09/2017	Fishery opened in the Irish Sea, Castlemaine and in NI at the Feathers and Burial Island
15/09/2017	Fishery closed in NI waters
26/09/2017	Fishery opened and the closed at Feathers and Burial Island
12/10/2017	Fishery opened and closed at Burial Island

4.2. Stock status update

4.2.1. Seed survey update – Northern Ireland

Research Survey and Assessment

In most years AFBI conducts preliminary surveys of the Ards Peninsula Beds during March/April, utilising both dredge and acoustics before a more extensive stock assessment survey is carried out in June/July. The Spring 2017 survey provided some evidence of recent settlement on all beds and the presence of previous year(s) recruitment. Preliminary conclusions were that while there may be some stock on the Feathers waste levels will be high and in the others there would be a positive benefit in allowing newer settlement to develop further. AFBI did not recommend a spring fishery in NI waters.

The June/July 2017 seed mussel stock assessment survey was undertaken between 13th of June and the 3rd and 7th of July. The purpose of the June/July seed mussel stock assessment survey is to undertake acoustic and dredge surveys within areas identified within the Spring 2017 Seed mussel stock assessment survey. The 2017 surveys covered three areas off the Ards Peninsula known to have previously yielded seed mussels, Burial Island, Skullmartin and The Feathers.

Burial Island

Following acoustic and ground truthing surveys (dredge and towed video) undertaken in June and July 2017 an area of seed mussels was identified within the Burial Island area. From all the information collected during the June and July 2017 surveys, AFBI estimate that approx., 1,000 t of seed mussel was available within the Burial Island Seed Fishery Area and recommended the area be opened to fishing on the next suitable tide.

It should be noted that the seaward edge of the Fishery area is been constrained by an 80 m buffer applied to protect adjacent *Modiolus modiolus* beds. During the video survey an area of sand eel habitat was also identified and as a result the seed mussel fishery area was drawn so as to avoid this habitat.

Skullmartin

Following acoustic and ground truthing surveys (dredge and towed video) undertaken in June and July 2017 an area of seed mussels was identified within the Skullmartin area. As there had not been a seed mussel bed identified within this area since 2007 and as this is the first sign of recruitment to this once large seed mussel bed (producing approx. 3,900 t of mussels in 2006) AFBI determined not to recommend opening the bed in 2017. AFBI proposed to undertake further surveys in early 2018 to monitor the development of the seed mussel bed. At this time if a significant seed bed is discovered then an assessment of the tonnages within this area will be undertaken and the bed boundaries defined.

The Feathers

Following acoustic and ground truthing surveys (dredge and towed video) undertaken in June and July 2017 an area of seed mussels was identified within The Feathers. From all the information collected during the June and July 2017 surveys, AFBI estimate that approx., 900 t of seed mussel was available within the Feathers Island Seed Fishery Area and recommended the area be opened to fishing on the next suitable tide.

4.2.2. Seed survey updates – Ireland

Research Survey and Assessment

Surveys are conducted annually by BIM to determine the estimated amount of seed mussels available in a given year and to provide the Irish Bottom Grown Mussel Industry with current information on the beds. The aim of the surveys is to locate and survey seed mussel beds around the Irish coast and report the location and description of the beds on a seasonal basis when the seed is suitable for transplanting. 2017 BIM surveys reports are available for Rosslare, the South Glassgorman Banks Area and Castlemaine

Rosslare

Rosslare's South Shear is a historical place for seed mussel settlement and an area of 72 hectares was fished in 2016. As part of the regular seed mussel survey, the zone was checked using the side scan sonar between 22nd and 28th June 2017. A number of features were marked and investigated and a total of 10 tows of half-grown mussels were found in the similar area to the 2016 fishery. The mussels spread over approx. 34 hectares. Other known mussel seed areas in the locality were also checked but no seed or spat were found. Following all the data collected from the area, the total tonnage available was estimated to be between 500 and 800 t.

The mussels were distributed in patches with density varied from 4.5 kg/ m² to 19 kg/m². The average size was slightly over 44 mm (129 pieces/Kg) with over 70% being between 40 and 48 mm. A bit of 2017 seed, with an average size of around 14 mm, had settled on the north side along the edge of the sand. A large quantity of large starfish was observed in the middle of the settlement but the rest of the bed was clear of them.

South Glassgorman Banks Area

A survey was carried out between 15th and 25th August 2017 in response to industry reports of seed in the area. Following dredge tows, side scan sonar and grab sampling, three main settlement areas were identified. Combining the grab results and the sonar data, the estimated tonnage for the entire area was 3000 metric tonnes. Density was calculated as varying from 1.5 kg/m² to 6 kg/m².

The quality and density of the seed was found to vary throughout the area with seed in the two southern areas having weaker shells and some evident starfish damage. Grab samples showed that 62% of the seed was in the size range 26 to 34 mm. On the northern settlement the seed was a bit bigger (65% of the population was in the size range of 30 to 36mm) and the shell a bit harder. The settlement was found to be in average condition and suitable for fishing with a starfish threat mainly in the southern area.

Castlemaine Harbour/ Cromane

A seed mussel survey was conducted in Castlemaine Harbour/Cromane between 30th May and 2nd June 2017 but no viable seed mussel fished was found. The small amount of spat identified early in the season did not produce a seed bed. Evidence of a recent spat fall, ranging from a few weeks old to a month and a half after settling, were found but considering the size of the spat, it was too soon to estimate extent or biomass or whether in fact the spat would even survive to produce a bed.

4.3. Consultation and Engagement – Update

The Bottom Grown Mussel Consultative Forum met for the 20th time on 29th March 2017 in BIM, Dun Laoghaire. A brief synopsis of some of the main items discussed is presented in the following paragraphs.

The 2016 seed fishery was discussed including preliminary seed data indicating that 11,767 t (gross) of seed was fished in 2016 with 86.25% being sourced from Republic of Ireland waters and 13.74% from Northern Ireland waters.

Arrangements for the upcoming 2017 seed fishery were also discussed with DAERA and DAFM indicating that they did not intend amending allocations for the 2017 seed season. Potentially suitable tides were discussed and subject to seed availability it was agreed that any Spring opening should take place from 31/05/2017 to 06/06/2017 while any Autumn Fishery should commence on 29/08/2017.

Industry members queried access to the seed fishery, given the Supreme Court judgement in late 2016. It was confirmed that at present ROI vessels can fish in NI waters but that NI vessels not currently permitted to fish in ROI waters. It was further confirmed that an amendment had been proposed to allow NI vessels access to IE waters but this is now going through the Oireachtas and that no one could predict the outcome of this

process. Industry members were advised that they could track the process including suggested amendments through the Oireachtas website – <http://www.oireachtas.ie/viewdoc.asp?DocID=34521&&CatID=59>.

Arrangements for 2017 seed mussel surveys were discussed and industry members were reminded that with regard to industry surveys in ROI waters the SFPA must be notified and in NI waters the industry must liaise with DARD Fisheries with regard to observers etc.

The use of SMS to submit fishing records was discussed and industry members were reminded that the use of the system is a condition of the seed authorisations in ROI waters.

A new fishing plan Castlemaine Harbour to cover an 8 year period has been accepted by the Minister. The new fishing plan draft includes the potential for taking in seed from outside the area and that such movements will be permitted subject to a prior assessment of the seed beds for the presence of Invasive Alien Species (IAS). Arrangements for IAS screening of mussel seed were also discussed.

The current MSC Certification (to which this report pertains) was discussed. BGMCF members were updated on the current situation regarding MSC certification and would be subject to a recertification audit in 2017, if industry members still see a value in the MSC label. Industry members indicated that certification is still required and is important.

Other issues discussed included mussel husbandry reviews, carrying capacity assessments, microbial source tracking, water quality issues, licensing aquatic animal health (including TTX and Norovirus) and fish health authorisations.

4.4. Enforcement – Update

There were no issues with enforcement in 2017. DAERA did confirm that on one occasion a single vessel did stray into the Modiolus buffer zone at the Burial Island. As this was a minor offence it was dealt with by way of asking the vessel to leave the fishing area for the remainder of the day.

4.5. Relevant changes to Legislation and Regulations

There have not been any changes to legislation or regulations with implications for the Northern Ireland Bottom Grown Mussel Fishery since the 3rd surveillance.

As discussed previously the issue with the Voisinage agreement has yet to be resolved. As it stands at present ROI vessels can fish mussel seed in NI waters but NI vessels are not currently permitted to fish seed in ROI waters and in addition it is not currently permitted to re-lay seed fished in ROI waters in NI waters.

4.6. Relevant changes to the Management Regime

There have been a number of structural and personnel changes to the agencies involved in managing bottom grown mussel fisheries on the Island of Ireland but these are not likely to have any material impact on the management of the fisheries.

There have not been any new closed areas likely to impact either fishery.

4.7. Relevant changes to the Client Group

The Client Group is composed of the Cross Border Aquaculture Initiative (CBAIT) and BIM representing all members of the bottom mussel industry on the island of Ireland. Therefore, all members of the Bottom Grown Mussel Industry, eligible to fish in the relevant jurisdiction, are eligible to access the certificate; however, only those entities that have contributed financially to the MSC process are considered to be part of the client group. The most up to date client group will be made available on the MSC website and this will be updated where any changes have occurred.

The Client Group at the time of the 4th surveillance audit is formed by:

- Cloughmore Shellfish Ltd
- Lough Garman Harbour Mussels Ltd
- Down Mussels Ltd
- Emerald Mussels Ltd
- Dougold Mussels Ltd
- Crescent Seafood's
- Carlingford Lough Mussels Ltd
- O'Sullivan McCarthy Mussel Development Ltd
- Cromane Seafood's Ltd
- Lenger Seafood's Ltd
- Wexford Mussels Ltd
- Tully Shellfish

The addition of Tully Shellfish represents an addition to the Client Group since the 3rd surveillance audit in 2016. Further additional members may be added before recertification.

4.8. The General Conditions of Certification

The general 'Conditions' set out for the Cross Border Aquaculture Initiative (CBAIT) and Bord Iascaigh Mhara (BIM) as the certificate holders at initial full assessment were as follows:

- The Client must recognise that MSC standards require regular monitoring inspections at least once a year, focusing on compliance with the 'Conditions' set forth in this report (as outlined below) and continued conformity with the standards of certification;
- The Client must agree by contract to be responsible financially and technically for compliance with required surveillance audits by an accredited MSC certification body, and a contract must be signed and verified by SAI Global prior to certification being awarded;
- The Client must recognise that MSC standards require a full re-evaluation for certification (as opposed to yearly monitoring for update purposes) every five years;
- Prior to receiving final certification, the Clients fulfilled the requirement to document an 'Action Plan' (in this case, one for each of the client groups) for Meeting the Conditions for Continued Certification' and have these approved by SAI Global; and
- The Client must provide a list of all the entities eligible for certification as well as a list of active vessels fishing under one the certificate. This list must be updated annually prior to each annual surveillance audit activity.

Fulfilment of General Conditions – 4th Surveillance Audit:

- An Action Plan was submitted and accepted prior to the initial certification of the Northern Ireland Bottom Grown Mussel Fishery and actions undertaken against the milestones of each Condition in the intervening period are reported upon in the next following sections.
- An up-dated list of members of the client group has been provided and a list of active vessels during the 2016/2017 fishery.

4.9. The Specific Conditions of Certification

During the initial assessment of the Northern Ireland Bottom Grown Mussel Fishery, a conditional score was allocated for eight PIs (PI 1.2.2. Harvest Control Rules and Tools, PI 2.2.3 Bycatch Species Information/Monitoring, PI 2.4.2 Habitats Management Strategy, PI 2.4.3 Habitats Information/Monitoring, PI 2.5.2 Ecosystem Management Strategy, PI 2.5.3 Ecosystem Information/Monitoring, PI 3.2.2 Decision Making Processes and PI 3.2.4 Research Plan).

Condition 1 (PI 1.2.2. Harvest Control Rules and Tools), Condition 2 (PI 2.2.3 Bycatch Species Information/Monitoring), Condition 3 (PI 2.4.2 Habitats Management Strategy) and Condition 4 (PI 2.4.3 Habitats Information/Monitoring) were closed at the 3rd Surveillance Audit in 2016 meaning that, as of the start of this 4th surveillance audit, four conditions remain open; Condition 5 (PI 2.5.2 Ecosystem Management Strategy), Condition 6 (PI 2.5.3 Ecosystem Information/Monitoring), Condition 7 (PI 3.2.2 Decision Making Processes) and Condition 8 (PI 3.2.4 Research Plan).

Table 5 below shows the state of play with respect to the 8 conditions and the overall Principle level scores at the conclusion of the 3rd surveillance audit (2016) (i.e. at the commencement of the 4th surveillance audit (2017)).

Table 5. Summary of the status of conditions as of the end of the 3rd surveillance audit (2016).

Condition #	PI	Status	Performance Indicator (PI)		Principle	
			Original score	Revised Score	Original score	Revised Score
1	1.2.2	Closed (Surveillance 3)	65	80	83.1*	83.3
2	2.2.3	Closed (Surveillance 3)	75	80		
3	2.4.2	Closed (Surveillance 3)	70	80	83.1*	84.2
4	2.4.3	Closed (Surveillance 3)	75	80		
5	2.5.2	Open (On target)	75			
6	2.5.3	Open (On target)	75		86.3	n/a
7	3.2.2	Open (On target)	75			
8	3.2.4	Open (On target)	70			

*The original Principle level score for P2 was originally incorrectly calculated as 83.3.

5. Assessment Process

The Surveillance Audit followed the current version of MSC procedures implemented by SAI Global's accredited MSC Procedures (QP) using the MSC scheme documents outlined in Table 6.

Table 6. MSC scheme documents used during audit activities.

MSC Scheme Document	Issue Date	Implementation
MSC Certification Requirements v1.3	January 14 th , 2013	Standard
MSC FCR and Guidance v2.0	October 1 st , 2014	Process
General Certification Requirements v.2.1	February 20 th , 2015	Process
Surveillance Reporting Template v1.0	October 8 th , 2014	Process

During the full assessment the surveillance level was set by the assessment team as shown in Table 7.

Table 7. Fishery Surveillance Program.

Surveillance Level	Year 1	Year 2	Year 3	Year 4
Level 6	On-site surveillance audit	On-site surveillance audit	On-site surveillance audit	On-site surveillance audit & re-certification site visit.

The 4th surveillance audit was conducted as a normal onsite audit. Surveillance Audit activities were designed in general to:

- To review any changes in the management of the fishery, including regulations, key management or scientific staff or stock evaluation.
- To evaluate the progress of the fishery against any Conditions of Certification raised during the full-assessment.
- To review any developments or changes within the fishery which impact traceability and the ability to segregate MSC from non-MSC products.
- To review any other significant changes in the fishery.

The surveillance audit consisted of the announcement to stakeholders and interested parties through the MSC website and more direct stakeholder contact. Stakeholders contacted directly included those stakeholders that took part in the initial assessment and management organisations that comprise the management system and regime for the bottom grown mussel industry on the island of Ireland.

Emails and information on objectives of the surveillance audit were sent to stakeholders and management agencies. From this, a surveillance on-site meeting plan was organised and appointments for each individual meeting set. Due to the nature of the management of the bottom grown mussel industry on the island of Ireland and the geographic location of the respective clients and stakeholders, the on-site audit meetings were proposed to be at the BIM Offices in Dun Laoghaire, Ireland.

- On site Surveillance Audit dates were 29th and 30th November 2017.
- On-site audits were performed by Sam Dignan (Lead Assessor), Deirdre Hoare (Assessor), Conor Donnelly (Assessor) and Fergal Guilfoyle (Assessor).

The surveillance audit meeting was informed by a pre-determined agenda. The agenda was set out so as to allow specific stakeholder interests and concerns to be covered through a structured approach.

Information and notes from the consultation phase of the assessment were combined with a review of formal documentation from scientific and management agencies, regulatory amendments and the direct evidence collected during each of the client consultation meetings.

5.1. Summary of stakeholder and client meetings

Arising out of the stakeholder consultation plan preparation a considerable number of stakeholders were contacted directly by e-mail and a final direct consultation plan for the audit was prepared. Table 8 details the dates, meeting locations and organisations that were consulted through direct meetings during the on-site surveillance assessment.

The assessment team was made aware that a number of stakeholder organisations had met with representatives of BIM in late-2017 to express concerns about the bottom mussel industry. While a number of these stakeholders had previously been identified, and thus would have been contacted directly via email, none responded requesting to meet with the Assessment Team.

In addition, while Friday 17th November 2017 was originally supposed to be the closing date for stakeholders to express their interest in meeting the team, due to a poor response rate, it was decided to extend this deadline until Wednesday 22nd November. An additional email was also sent to all previously identified stakeholders advising of the extension and requesting that they contact SAI Global if they wished to meet with the assessment team. Unfortunately the response rate was again low.

The meeting with BIM on 30th November 2017 was attended by the full assessment team. Due to unforeseen circumstances Fergal Guilfoyle was unable to attend the meeting on the 29th November 2017.

Table 8. Consultation Meetings during the On Site Surveillance Assessment of the Northern Ireland Bottom Grown Mussel Fishery.

Organisation	Present at Meeting	Location	Venue	Date/Time	Purpose
Bord Iascaigh Mhara (BIM)	BIM staff Joanne Gaffney Dónal Maguire Nicholas Chopin Assessment team Sam Dignan Deirdre Hoare Conor Donnelly	Dun Laoghaire, Ireland	BIM Offices	29 th November 2017 09:30 AM	<ul style="list-style-type: none"> Discussion of the evidence pack Update on 2017 fishery Changes to fishery in 2016/2017
Members of: The Bottom Grown Mussel Consultative Forum, BIM, the Loughs Agency, DAERA, BIM, Marine Institute, Industry and SFPA	BIM staff Joanne Gaffney Michael Murphy Vicky Lyons Francis O'Brien (Marine Institute) Barry Fox (Loughs Agency) John McGuigan (DAERA) Declan Quigley (SFPA) Industry/BGMCF members Michael Havelin Raymond Dougal William Dingemanse Bryan Hyland Authur McCarty Brian Cunningham Assessment team Sam Dignan Deirdre Hoare Conor Donnelly Fergal Guilfoyle	Dun Laoghaire, Ireland	BIM Offices	30 th November 2017 10:30 AM	<ul style="list-style-type: none"> Changes to Management personnel, policies and regulations Science Update: Stock status, survey results, new initiatives Resource Management Update Highlights of 2017 seed mussel fishery Conservation and Protection Update Enforcement outcomes for 2017 fishery Bycatch species and bycatch program Habitats impacts Stocking density, Ecosystem impacts, strategy, Appropriate Assessments decision-making processes Research Plan Progress against milestones contained in the Action Plan approved for the currently open conditions attached to this fishery.

6. Results

To evaluate each condition the assessment team has reviewed information gathered during the site visit for each of the currently open conditions; to avoid confusion the scoring tables for previously closed conditions are also interspersed throughout. Following the site visit the assessment team has evaluated each open condition against the Year 4 milestones laid out at the time of the initial audit or subsequent surveillance audits (where those milestones have been revised) and MSC Certification Requirements v1.3. The tables below include the Conditions written during the full assessment, the client action plan established for each one and the observations from evidence collected during the 3rd Surveillance Audit.

6.1. Evaluation tables for Conditions during the 4th Surveillance Audit 2017.

6.1.1. Condition 1 (Closed at surveillance 3)

Table 9. Evaluation table – Condition 1 (PI 1.2.2).

Condition 1 (Closed at surveillance 3)			
Performance Indicator(s) & Score(s)	Relevant PI	Relevant scoring guidepost (scoring issue) text	Score
	PI 1.2.2. There are well defined and effective harvest control rules in place.	SG 80 (SIa) Well defined harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached. SG 80 (SIb) The selection of the harvest control rules takes into account the main uncertainties.	65
Condition	There is a need for explicit harvest control rules relating to the timing of harvesting, the viability of harvested seed, and the process by which the fishery may be open or closed. Ideally such explicit harvest control rules should form part of a wider fishery management plan which explicitly states the rationale and assumptions underlying the harvest strategy and the harvest control rules.		
Client action plan and agreed Milestones	Client Action Plan BIM/Aquaculture Initiative will liaise with the statutory authorities of NI and IE to ensure that the necessary fishery dependent and independent information is obtained to support the development of the HCR and the necessary institutional processes are put in place by the Departments to provide the mechanism to test and implement the condition. The client through the BGMCF will also support the acquiring of any additional information that may be required to support the activities required to develop, test and implement the condition. The client will provide documentary evidence of the requests and support provided on this condition. Upon completion of stakeholder consultations the final harvest control rules will be made available to all stakeholders and the CAB. Documentary evidence will be supplied to demonstrate that these rules have been implemented. Milestones (Original) By the first surveillance audit or earlier, the assessment team shall be provided with documentary evidence that suitable harvest control rules consistent with the harvest strategy are defined by the management organisations.		

Condition 1 (Closed at surveillance 3)	
	<p>By the second surveillance audit or earlier, the assessment team shall be provided with documentary evidence that the defined harvest control rules have been implemented on a trial basis and the main uncertainties are considered.</p> <p>By the third surveillance audit or earlier, the assessment team shall be provided with documentary evidence that harvest control rules are explicitly defined by the management system, implemented and align harvests to provide for optimum sustainability and productivity of the resource.</p> <p>Note the fishery fell behind its target for surveillance 2 and a revised surveillance 3 milestone was written to bring the fishery back on track (see below).</p> <p>Revised Year 3 Milestone By the third surveillance audit or earlier, the assessment team shall be provided with documentary evidence that the defined harvest control rules have been implemented on a trial basis and the main uncertainties are considered. Also, the assessment team shall be provided with documentary evidence that harvest control rules are explicitly defined by the management system, implemented and align harvests to provide for optimum sustainability and productivity of the resource.</p>
Conclusion and Outcome on Condition 1 from 3rd surveillance audit (2016)	The 3 rd year milestone was met for this condition. The PI was re-scored to 80, and the condition was closed. For further details and full re-scoring table see the Surveillance 3 report.
Progress on Condition [Year 4]	Not applicable. The condition was closed at the 3 rd surveillance. During the 4 th surveillance audit there was no evidence to support the re-opening of this condition. For further details and full re-scoring table see the Surveillance 3 report.
Evidence for Year 4	Not applicable. The condition was closed at the 3 rd surveillance. During the 4 th surveillance audit there was no evidence to support the re-opening of this condition. For further details and full re-scoring table see the Surveillance 3 report.
Conclusion and Outcome on Condition 1 from 4th surveillance audit (2017)	Not applicable. The condition was closed at the 3 rd surveillance. During the 4 th surveillance audit there was no evidence to support the re-opening of this condition. For further details and full re-scoring table see the Surveillance 3 report.
Status of condition	Closed – Surveillance 3 (2016)

6.1.2. Condition 2 (Closed at surveillance 3)

Table 10. Evaluation table – Condition 2 (PI 2.2.3).

Condition 2 (Closed at surveillance 3)			
Performance Indicator(s) & Score(s)	Relevant PI	Relevant scoring guidepost (scoring issue) text	Score
	PI 2.2.3. Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch.	SG 80 (SIc) Sufficient data continue to be collected to detect any increase in risk to main bycatch species (e.g., due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the strategy).	75
Condition	Detailed information on bycatch should be collected over the appropriate spatial and temporal scales, with respect to the extent of fishing activities, to verify existing information on bycatch levels over seed mussel beds as well as over cultivation areas. Following this, a baseline monitoring programme needs to be considered and adopted to ascertain quantitative bycatch data to monitor and confirm the current bycatch impacts from the fishery and in the future.		
Client action plan and agreed Milestones	<p>Client Action Plan BIM/Aquaculture Initiative will undertake to facilitate information, data and research from the scientific advisors in NI and IE to support the close out of this condition.</p> <p>The client will provide documentary evidence of the requests and support provided on this condition.</p> <p>Bycatch monitoring will be undertaken by scientific authorities and industry. Results and procedures will be made available to the CAB.</p> <p>Milestones By first surveillance audit or earlier, the assessment team shall be provided with documentary evidence that a bycatch monitoring program has been planned for all bycatch species at seed and harvest sites.</p> <p>By the second surveillance audit or earlier, the assessment team shall be provided with documentary evidence that a bycatch monitoring program has been adopted/implemented successfully for all bycatch species.</p> <p>By the third surveillance audit or earlier, the assessment team shall be provided with documentary evidence that a bycatch monitoring program has been adopted that will produce sufficient data to monitor and confirm the impacts of the fishery for all bycatch species over time.</p> <p>Note the fishery fell behind its target for surveillance 2 and a revised surveillance 3 milestone was written to bring the fishery back on track (see below).</p> <p>Revised Year 3 Milestone By the third surveillance audit or earlier, the assessment team shall be provided with documentary evidence that a bycatch monitoring program has been adopted/implemented successfully for all bycatch species. Also, the assessment team shall be provided with documentary evidence that a bycatch monitoring program has been adopted that will produce sufficient data to monitor and confirm the impacts of the fishery for all bycatch species over time.</p>		
Conclusion and Outcome on Condition 1 from 3rd surveillance audit (2016)	The 3 rd year milestone was met for this condition. The PI was re-scored to 80, and the condition was closed. For further details and full re-scoring table see the Surveillance 3 report.		

Condition 2 (Closed at surveillance 3)	
Progress on Condition [Year 4]	Not applicable. The condition was closed at the 3 rd surveillance. During the 4 th surveillance audit there was no evidence to support the re-opening of this condition. For further details and full re-scoring table see the Surveillance 3 report.
Evidence for Year 4	Not applicable. The condition was closed at the 3 rd surveillance. During the 4 th surveillance audit there was no evidence to support the re-opening of this condition. For further details and full re-scoring table see the Surveillance 3 report.
Conclusion and Outcome on Condition 1 from 4th surveillance audit (2017)	Not applicable. The condition was closed at the 3 rd surveillance. During the 4 th surveillance audit there was no evidence to support the re-opening of this condition. For further details and full re-scoring table see the Surveillance 3 report.
Status of condition	Closed – Surveillance 3 (2016)

6.1.3. Condition 3 (Closed at surveillance 3)

Table 11. Evaluation table – Condition 3 (PI 2.4.2).

Condition 3 (Closed at surveillance 3)			
Performance Indicator(s) & Score(s)	Relevant PI	Relevant scoring guidepost (scoring issue) text	Score
	PI 2.4.2. There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types.	SG 80 (SIb) There is some objective basis for confidence that the partial strategy will work, based on information directly about the fishery and/or habitats involved	70
Condition	A decision process that incorporates a clear management strategy for seed exploitation must be adopted with includes a mechanism that prevents the accidental damage to sensitive habitats, particularly for any new or unsurveyed areas.		
Client action plan and agreed Milestones	<p>Client Action Plan</p> <p>BIM/Aquaculture Initiative will undertake to liaise between the authorities of NI and IE to facilitate the information and institutional arrangement required to fulfil this condition.</p> <p>The client through the BGMCF will support the acquiring of any additional information that may be required to support these activities.</p> <p>The client will provide documentary evidence of the requests and support provided on this condition.</p> <p>Documentary evidence will be supplied to demonstrate that measures have been implemented</p> <p>Milestones</p> <p>By first surveillance audit or earlier, the assessment team shall be provided with documentary evidence that a strategy had been established.</p> <p>By the second surveillance audit or earlier, the assessment team shall be provided with documentary evidence that a strategy had been adopted.</p> <p>By the third surveillance audit or earlier, the assessment team shall be provided with documentary evidence that that a strategy had been implemented successfully.</p> <p>By the fourth surveillance audit or earlier, the assessment team shall be provided with documentary evidence that a strategy achieves the Habitat Outcome 80 level of performance or above.</p>		
Conclusion and Outcome on Condition 1 from 3rd surveillance audit (2016)	The 3 rd year milestone was met for this condition. In the assessment team evaluated the fishery against PI 2.4.2 and determined that there is some objective basis for confidence that the partial strategy will work, based on information directly about the fishery and/or habitats involved. PI 2.4.2 was re-scored to 80, and the condition was closed. For further details and full re-scoring table see the Surveillance 3 report.		
Progress on Condition [Year 4]	Not applicable. The condition was closed at the 3 rd surveillance. During the 4 th surveillance audit there was no evidence to support the re-opening of this condition. For further details and full re-scoring table see the Surveillance 3 report.		
Evidence for Year 4	Not applicable. The condition was closed at the 3 rd surveillance. During the 4 th surveillance audit there was no evidence to support the re-opening of this condition. For further details and full re-scoring table see the Surveillance 3 report.		
Conclusion and Outcome on Condition 1 from 4th surveillance audit (2017)	Not applicable. The condition was closed at the 3 rd surveillance. During the 4 th surveillance audit there was no evidence to support the re-opening of this condition. For further details and full re-scoring table see the Surveillance 3 report.		
Status of condition	Closed – Surveillance 3 (2016)		

6.1.4. Condition 4 (Closed at surveillance 3)

Table 12. Evaluation table – Condition 4 (PI 2.4.3).

Condition 4 (Closed at surveillance 3)			
	Relevant PI	Relevant scoring guidepost (scoring issue) text	Score
Performance Indicator(s) & Score(s)	PI 2.4.3. Information is adequate to determine the risk posed to habitat types by the fishery and the effectiveness of the strategy to manage impacts on habitat types.	SG 80 (SIc) Sufficient data continue to be collected to detect any increase in risk to habitat (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).	75
Condition	A monitoring programme of habitats with respect to seed collection and an assessment of the potential impact of the collection of seed needs to be established and used to inform the management decision process for seed exploitation that prevents the accidental damage to sensitive habitats, particularly for any new or unsurveyed areas.		
Client action plan and agreed Milestones	<p>Client Action Plan</p> <p>BIM/Aquaculture Initiative have undertaken to liaise with the statutory authorities in NI and IE to facilitate the information and institutional processes as necessary in fulfilment of this condition.</p> <p>The client through the BGMCF will support the acquiring of any additional information that may be required to support these activities.</p> <p>The client will provide documentary evidence of the requests and support provided on this condition.</p> <p>Documentary evidence will be supplied to demonstrate that measures have been implemented.</p> <p>Milestones</p> <p>By first surveillance audit or earlier, the assessment team shall be provided with documentary evidence that a program had been established.</p> <p>By the second surveillance audit or earlier, the assessment team shall be provided with documentary evidence that a program had been adopted.</p> <p>By the third surveillance audit or earlier, the assessment team shall be provided with documentary evidence that that the program has been implemented successfully.</p>		
Conclusion and Outcome on Condition 1 from 3rd surveillance audit (2016)	The 3 rd year milestone was met for this condition. The PI was re-scored to 80, and the condition was closed. For further details and full re-scoring table see the Surveillance 3 report.		
Progress on Condition [Year 4]	Not applicable. The condition was closed at the 3 rd surveillance. During the 4 th surveillance audit there was no evidence to support the re-opening of this condition. For further details and full re-scoring table see the Surveillance 3 report.		
Evidence for Year 4	Not applicable. The condition was closed at the 3 rd surveillance. During the 4 th surveillance audit there was no evidence to support the re-opening of this condition. For further details and full re-scoring table see the Surveillance 3 report.		
Conclusion and Outcome on Condition 1 from 4th surveillance audit (2017)	Not applicable. The condition was closed at the 3 rd surveillance. During the 4 th surveillance audit there was no evidence to support the re-opening of this condition. For further details and full re-scoring table see the Surveillance 3 report.		
Status of condition	Closed – Surveillance 3 (2016)		

6.1.5. Condition 5 (1 of 4 currently open conditions)

Table 13. Evaluation table – Condition 5 (PI 2.4.1).

Condition 5 (1st of 4 currently open conditions)			
Performance Indicator(s) & Score(s)	Relevant PI	Relevant scoring guidepost (scoring issue) text	Score
	PI 2.5.2: There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function.	SG 80 (SIb) The partial strategy takes into account available information and is expected to restrain impacts of the fishery on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	75
Condition	The partial strategy that is in place needs to take into account all available information on the carrying capacity and productivity of individual cultivation bays and have a direct influence on the overall management of the cultivation sites.		
Client action plan and agreed Milestones	<p>Client Action Plan</p> <p>BIM/Aquaculture Initiative have undertaken to liaise directly with the scientific advisors in NI and IE as to the information and institutional arrangements and support required fulfilling this condition.</p> <p>The client will provide documentary evidence of the requests and support provided on this condition.</p> <p>Data arising from site audits and requirements under the habitats directive will also serve to inform this.</p> <p>Results and procedures will be made available to the CAB</p> <p>Milestones</p> <p>By first surveillance audit or earlier, the assessment team shall be provided with documentary evidence that available information (e.g. relevant site specific evidence, models) is identified for consideration of developing a partial strategy aimed at restraining the impacts of the fishery on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance</p> <p>By the second surveillance audit or earlier, the assessment team shall be provided with documentary evidence that information available has been considered with respect to the overall management of the cultivation site stocking densities.</p> <p>By the third surveillance audit or earlier, the assessment team shall be provided with documentary evidence that information available is influencing the strategy for overall management of the cultivation site stocking densities.</p> <p>By the fourth surveillance audit or earlier, the assessment team shall be provided with documentary evidence that the partial strategy continues to be implemented and effective within the licensing scheme for the cultivation sites.</p>		
Conclusion and Outcome on Condition 5 from 3rd surveillance audit (2016)	The assessment team concluded that the fishery had met the milestone for surveillance audit 3 and was on target. The PI was not rescored as SG 80 for SIb was not yet fully met; the Condition was not closed out since the original score for this PI remains unchanged.		
Progress on Condition [Year 4]	There are measures in place that require monitoring and assessments of the carrying capacity and productivity of individual cultivation bays. Research is ongoing and where assessments haven't been completed risk is mitigated by not increasing activity.		
Evidence for Year 4	<p>Reports presented:</p> <ul style="list-style-type: none"> Review of the current allocation system and carrying capacity indicators for mussel on-growing areas 2017 		

Condition 5 (1st of 4 currently open conditions)

- Lough Swilly Appropriate Assessment
- Castlemaine Appropriate Assessment Conclusion statement
- Draft Fisheries Natura Plan - Seed Mussel Amended
- Draft Fisheries Natura Plan - Castlemaine
- Fisheries Natura Declaration No. 1 of 2017
- Appropriate Assessment Conclusion Statement by Licensing Authority for aquaculture activities in Galway Bay Complex Special Area of Conservation (SAC)(000268). Inner Galway Bay Special Protection Area (SPA)(4031) (Natura 2000 sites)
- Report supporting Appropriate Assessment of the impact of seed mussel fishing and relaying on Castlemaine Harbour SAC and SPA
- Regulation 6(1) Determination, Fisheries Natura Plan for Mussel Seed Fishing in Castlemaine Harbour 2016-2023
- NPWS (2012) Conservation Objectives: Wexford Harbour and Slob SPA 004076. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- Aquaculture in Wexford Harbour

The Review of the current allocation system and carrying capacity indicators for mussel on-growing areas 2017 presents the existing data sources for assessing ecological carrying capacity in the on-growing bays. The information that has been gathered is appropriate for the management of individual cultivation sites or an overall management of those sites.

The information from this review is useful when looking at the overall individual and cumulative impacts of the operation of the cultivating sites on the ecosystem of the bays in which they are located and on the carrying capacity of those bays.

This review outlines how operators have been allowed to seek a review of their situation regarding the allocation of the seed resource. These anomalous allocation reviews are conducted by application to the relevant Department, assessment of the case by a sub-committee of the BGMCF, and in IE consideration of recommendations by the relevant Minister.

As an added level of precaution, the reference formula for allocations was revised to 30 t/ha over a three year growing cycle. As a result allocations have increased in some areas and decreased in others (see Table 14 below).

Table 14. Total 2016 and 2017 mussel allocations.

Bay	2016 allocations	2017 allocations
Castlemaine	5,550	5,150
Wexford	8,145	9,259
Carlingford	6,121	7,556
Belfast	6,969	6,049
Foyle	12,915	11,355
Swilly	250	950
Larne	185	185
Total	40,135	40,504

Existing data sources for assessing ecological carrying capacity in the on-growing bays were presented in the review. This includes data on the seed fishery, seed imports, relayed seed and full grown product (Table 15).

Table 15. Existing data sources for assessing ecological carrying capacity in ongrowing bays.

Jurisdiction	Data Type	Data source
NI	Seed fishery data in NI	DAERA monitor all seed fishing activities in NI and record volumes prior to vessels leaving fishing grounds
NI	Seed fishery data in NI	DAERA collect log sheets and spat sheets from all vessels fishing in NI this includes source and relay information
ROI	Seed Fishery in IE	BIM collect SMS data from vessels prior to the vessel leaving the fishing grounds – this includes source and relay information
ROI	Seed fishery data in IE	SFPA collect log sheets and spat sheets from IE registered vessels - this includes source and relay data
NI	Relayed seed from NI	DAERA relayed Section 13 permit – permission to relay, inspections of the movements to confirm stated tonnage
NI	Seed imports	Tracked through TRACES health certification system which is issued in the country of origin , inspections also take place
ROI	Seed imports	Tracked through TRACES health certification system which is issued in the country of origin
NI	Full grown product	TRACES Health Certs issued by DAERA. All movements (half or full grown) also have to be accompanied by Shellfish gatherers documents, this is generally monitored by the local EHO/Council/FSA
ROI	Full grown product	SFPA - Gatherers documents
NI	Annual production	DAERA – Documentary Interview and site inspection in addition to annual production statistic returns for EU
ROI	Annual production	BIM – Annual returns data for submission to the EU

This information was useful when investigating the Carrying Capacity of the harvesting sites and bays overall but no systematic mathematical carrying capacity models were presented for any of the cultivation bays in the south of Ireland. Indicators of ecosystem carrying capacity will be considered in the licencing system and allocations will not be allowed to breach ‘ecosystem carrying capacity’ limit in each bay. Limits will be calculated using available technical and industry input”. As an added level of precaution, the reference formula for allocations was revised to 30t per hectare over a three year growing cycle. All bays currently under certification are subject to a range of research projects of relevance to the various elements of carrying capacity. Principal among these have been data collected in support of the Water Framework Directive (WFD), aquaculture carrying capacity models and the appropriate assessments completed in support of aquaculture licencing.

The current allocation strategy is therefore based on a precautionary approach and the well understood relationship between the growing areas and other components of the ecosystem. The strategy has been implemented successfully for a number of years in that there is no evidence or concern that the activity poses a risk of serious or irreversible harm to ecosystem structure and function.

Appropriate Assessments of cultivation licenses in SACs:

- Appropriate Assessment of the impact of mussel fishing and mussel, oyster and clam aquaculture on Castlemaine Harbour SAC and SPA 2016
- Article 6 Assessment of Fisheries, including a Fishery Natura Plan for Seed Mussel (2013 – 2017), in the Irish Sea, Marine Institute Rinvile, Oranmore, Co. Galway. July, 2014.
- Appropriate Assessment for licencing and managing activities in Lough Swilly SAC and SPA (Natura 2000 sites).

Condition 5 (1st of 4 currently open conditions)

Evidence was presented on the Appropriate Assessments of the cultivation sites in the South of Ireland which is part of a large body of work being carried out largely by the Marine Institute. The Appropriate Assessment of the Castlemaine SAC and SPA has been completed and found that there was no significant impact from the mussel fishery on the SAC and SPA. No specific assessment of the carrying capacity of the site was made but by limiting the impact on any one habitat type to 15% this should in effect limit the impact of the mussel cultivation on the overall site integrity.

The Appropriate Assessment of the Fisheries and Aquaculture in Lough Swilly SAC and SPA has been finalised and was presented. The overlap of aquaculture and fishery activities is greater than the 15% threshold which has been set.

The Appropriate Assessment of Wexford Harbour has commenced but no report was presented and no timeline was offered. Research and data are available but more data is required to complete the assessment in the meantime the risk is being mitigated by no increase in activity until assessment completed. While a number of bird species are stable or increasing in the harbour, which indicates a stable supporting ecosystem, species specific disturbance cannot be discounted and thus additional data is required.

There are a number of monitoring sites associated with the Wexford harbour areas under the WFD, Wexford harbour, North Slob channels and the lower Slaney estuary, all are classified as moderate with a range of parameters indicating nutrient enrichment in the area, this is measured through DO, BOD and phytoplankton biomass. Wexford harbour is further listed as being at risk due to nutrient input. The assessment in relation to the SAC does acknowledge that there are historical, ecological and eutrophication mitigation benefits provided by mussel culture in the harbour.

Northern Ireland

- SMILE Carrying Capacity Project – Lough Foyle and Carlingford
- Stocking Density Assessment – Belfast Lough
- Cumulative Impact Assessment – Carlingford Lough

In Northern Ireland Appropriate Assessments have been completed on the cultivating sites in Belfast Lough, Cumulative Impact Assessment: Belfast Lough aquaculture 2014. AFBI continually update the model and verify findings. Model runs in 2017 have looked at E. coli transport and proposed developments in the Lough.

The carrying capacity of Belfast Lough was assessed by AFBI in 2014 and enhanced in 2016 using the SMILE (Sustainable Mariculture in northern Irish Lough Ecosystems) model of carrying capacity. The Appropriate Assessment concluded the carrying capacity of Belfast Lough was not likely to be breached.

Previously in cases where large allocations were sought for an individual bay, decisions taken on the maximum capacity of the bay were based on historical “best harvest” figures and any other technical data available at that time. The rationale for this was that if it could be demonstrated that a bay could produce a certain quantity of mussels at an acceptable meat yield within a given time, and without any significant negative ecosystem impacts being observed then that loading was below the “carrying capacity” of the bay and therefore permitting at such a level would not “overload” an individual water body and therefore not impact on the eco-system in the bay.

Carlingford Cumulative Assessment

Aquaculture species reduce the overall ecosystem phytoplankton biomass and hence food availability for other organisms within Carlingford Lough by up to 40%. This data indicates that mussel production within all model boxes is currently at the ecological threshold whilst there is limited potential for the controlled expansion of intertidal oyster culture in certain areas.

Condition 5 (1st of 4 currently open conditions)	
	<p>A cumulative assessment of the Natura 2000 conservation status for the NI protected sites found that there is no evidence to suggest that aquaculture activities within Carlingford Lough are negatively impacting the conservation objectives of designated features. A cumulative assessment specific to the IE protected sites has yet to be but this is scheduled in 2017.</p> <p>Studies relating to The IE Natura 2000 assessment in Carlingford Lough will commence in Q4 2017.</p> <p>Lough Foyle Lough Foyle has also been subject to the SMILE model. The model runs found no evidence of ecosystem overload as a result of shellfish culture at the scenarios investigated; however it did find that cultured shellfish are providing an important service in terms of top-down control of eutrophication in the Lough.</p>
Conclusion and Outcome on Condition 5 from 4th surveillance audit (2017)	<p>By the fourth surveillance audit or earlier, the assessment team shall be provided with documentary evidence that the partial strategy continues to be implemented and effective within the licensing scheme for the cultivation sites.</p> <p>The scoring guidepost that the fishery failed to meet at the time of initial certification and which ultimately resulted in the application of this condition was SG 80 for Scoring Issue b: <i>"The partial strategy takes into account available information and is expected to restrain impacts of the fishery on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance."</i></p> <p>Following the assessment team's determination that there are measures in place that require monitoring and assessments of the carrying capacity and productivity of individual cultivation bays. Research is ongoing and where assessments haven't been completed risk is mitigated by not increasing activity. Therefore, there is a partial strategy in place that takes into account available information and is expected to restrain impacts of the fishery on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance now being achieved; SG80 is met.</p> <p>As the assessment team has concluded that the information is now available, and PI 2.5.2 has been rescored. The fishery now meets SG80 for all scoring indicators under PI 2.5.2 and the condition is closed. A full evaluation table for the re-scored PI 2.5.2 is included in Appendix 1.</p>
Status of condition	Closed – Surveillance 4.

6.1.6. Condition 6 (2 of 4 currently open conditions)

Table 16. Evaluation table – Condition 6 (PI 2.5.3).

Condition 6 (2nd of 4 currently open conditions)			
Performance Indicator(s) & Score(s)	Relevant PI	Relevant scoring guidepost (scoring issue) text	Score
	PI 2.5.3. There is adequate knowledge of the impacts of the fishery on the ecosystem.	SG 80 (Sle) Sufficient data continue to be collected to detect any increase in risk level (e.g., due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).	75
Condition	A procedure or mechanism with a scientific basis for the continued collection of sufficient data that would detect any increase in risk levels to the ecosystem due to changes in current cultivation practices is required. This data should relate to the performance indicator for achieving an 80 score for PI 2.5.2 b.		
Client action plan and agreed Milestones	<p>Client Action Plan The client will provide documentary evidence of the requests and support provided on this condition. Data arising from site audits and requirements under the habitats directive will also serve to inform this. Results and procedures will be made available to the CAB.</p> <p>Milestones By first surveillance audit or earlier, the assessment team shall be provided with documentary evidence of the type and extent of information to be considered for the objective/science based detection of any increase in risk level due to the overall management of the cultivation sites.</p> <p>By the second surveillance audit or earlier, the assessment team shall be provided with documentary evidence of the procedure or mechanism for information collection and review for informing of risk level associated with the management of the cultivation sites.</p> <p>By the third surveillance audit or earlier, the assessment team shall be provided with documentary evidence of how information available from scientific evidence and is influencing the overall management of the cultivation sites to ensure that increase in risk levels of the impacts of the cultivation sites on the ecosystem can be managed so as to achieve outcome indicator score 80 for PI 2.5.3.</p> <p>Note the fishery fell behind its target for surveillance 2 and a revised surveillance 3 milestone was written to bring the fishery back on track (see below).</p> <p>Revised Year 3 milestone By the third surveillance audit or earlier, the assessment team shall be provided with documentary evidence of the procedure or mechanism for information collection and review for informing of risk level associated with the management of the cultivation sites. Also, the assessment team shall be provided with documentary evidence of how information available from scientific evidence and is influencing the overall management of the cultivation sites to ensure that increase in risk levels of the impacts of the cultivation sites on the ecosystem can be managed so as to achieve outcome indicator score 80 for PI 2.5.3.</p> <p>By the fourth surveillance audit or earlier, the assessment team shall be provided with documentary evidence that the procedure/mechanism for information collection and review is adopted for detecting increase in risk levels due to changes in the outcome scores or the operation of the fishery or the effectiveness of the measures.</p>		
Conclusion and Outcome on Condition 6 from 3rd surveillance audit (2016)	The assessment team concluded that the fishery had met the milestone for surveillance audit 3 and was on target. The PI was not rescored as SG 80 for Sle was not yet fully met; the Condition was not closed out since the original score for this PI remains unchanged.		

Condition 6 (2nd of 4 currently open conditions)	
Progress on Condition [Year 4]	There are measures in place that require monitoring and assessments of the carrying capacity and productivity of individual cultivation bays, which result in sufficient data being collected to detect any increase in risk level. Research is ongoing and where assessments haven't been completed risk is mitigated by not increasing activity.
Evidence for Year 4	<p>The Review of the current allocation system and carrying capacity indicators for mussel on-growing areas 2017 presents the existing data sources for assessing ecological carrying capacity in the on-growing bays. The information that has been gathered is appropriate for the management of individual cultivation sites or an overall management of those sites.</p> <p>The information from this review will be useful when looking at the overall individual and cumulative impacts of the operation of the cultivating sites on the ecosystem of the bays in which they are located and on the carrying capacity of those bays. As an added level of precaution, the reference formula for allocations was revised to 30t per hectare over a three year growing cycle. As a result allocations have increased in some areas and decreased in others (Table 22).</p> <p>Existing data sources for assessing ecological carrying capacity in the on-growing bays were presented in the review. This includes data on the seed fishery, seed imports, relayed seed and full grown product (Table 21). Evidence was presented on the Appropriate Assessments of the cultivation sites in the South of Ireland which is part of a large body of work being carried out largely by the Marine Institute. The current allocation strategy is therefore based on a precautionary approach and the well understood relationship between the growing areas and other components of the ecosystem. The strategy has been implemented successfully for a number of years in that there is no evidence or concern that the activity poses a risk of serious or irreversible harm to ecosystem structure and function.</p> <p>Documentary evidence must be proportionate to the level of risk associated with fishery. Historical experience of the fishery has shown that over the years the fishery has been productive and areas continue to be productive in recent years. Scientific opinion is taken into account and there is a close relation between science and fishery management, there are measures in place based on scientific data such as: water quality, density, mapping of productive areas, detection of non-productive areas by controlling of seed stocking density, seed bed surveys and agreements to determinate the open/closed seasons. By comparison with similar fisheries it can be confirmed that data collection is commensurate with the level of risk to the ecosystem posed by the fisheries.</p> <p>During surveillance audit 3 the assessment team have determined that another year was required before the continuity and consistency of data collection could be fully verified. In light of the information gathered at the 4th surveillance audit, the assessment team can confirm that there is adequate knowledge of the impacts of the fishery on the ecosystem. Therefore SG 80 is now fully met and the PI has been rescored at this surveillance audit.</p>
Conclusion and Outcome on Condition 6 from 4th surveillance audit (2017)	<p>By the fourth surveillance the assessment team shall be provided with documentary evidence that the procedure/mechanism for information collection and review is adopted for detecting increase in risk levels due to changes in the outcome scores or the operation of the fishery or the effectiveness of the measures.</p> <p>The scoring guidepost that the fishery failed to meet at the time of initial certification and which ultimately resulted in the application of this condition was SG 80 for Scoring Issue e: <i>"Sufficient data continue to be collected to detect any increase in risk level (e.g., due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures)."</i></p>

Condition 6 (2nd of 4 currently open conditions)	
	<p>Following their determination that there are measures in place that require monitoring and assessments of the carrying capacity and productivity of individual cultivation bays, the assessment team is confident that sufficient data continues to be collected to detect any increase in risk level so as to achieve the Ecosystem Outcome 80 level of performance.</p> <p>As the assessment team has concluded that the information sufficient to detect any increase in risk level continues to be collected, Sle is now met and PI 2.5.3 has been rescored. The fishery now meets SG80 for all scoring indicators under PI 2.5.3 and the condition is closed. A full evaluation table for the re-scored PI 2.5.3 is included in Appendix 1.</p>
Status of condition	Closed – Surveillance 4.

6.1.7. Condition 7 (3 of 4 currently open conditions)

Table 17. Evaluation table – Condition 7 (PI 3.2.2).

Condition 7 (3rd of 4 currently open conditions)			
Performance Indicator(s) & Score(s)	Relevant PI	Relevant scoring guidepost (scoring issue) text	Score
	PI 3.2.2. The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives and has an appropriate approach to actual disputes in the fishery under assessment.	SG 80 (SIc) Decision-making processes use the precautionary approach and are based on best available information.	75
Condition	The decision making process that set the harvest cap was set on historical information. A formal review of the harvest cap within the definition of a precautionary approach suitable for mussel stock sustainability is required and the precautionary approach to decision making is formally adopted by the management agencies.		
Client action plan and agreed Milestones	<p>Client Action Plan BIM/Aquaculture Initiative have undertaken to liaise directly with the scientific advisors and authorities in NI and ROI as to the information and institutional arrangements and support required to fulfil this condition.</p> <p>The client through the BGMCF will support the acquiring of any additional information that may be required to support these activities.</p> <p>The client will provide documentary evidence of the requests and support provided on this condition.</p> <p>Documentary evidence will be supplied to demonstrate that measures have been implemented</p> <p>Milestones By first surveillance audit or earlier, the assessment team shall be provided with documentary evidence of the available information which will be considered to support and inform a precautionary management approach to decision making on stock densities for cultivation beds.</p> <p>By the second audit or earlier, the assessment team shall be provided with documentary evidence of how this information is being used to inform the decisions for stocking densities and that a precautionary approach is being adopted with respect to meeting the objectives of the fishery (and of Principle 2 with respect to managing risks to ecosystem effects).</p> <p>By the third surveillance audit or earlier, the assessment team shall be provided with documentary evidence that the client has formally committed to a precautionary approach in decision making, using best available information and aligned to the specific objectives of the fishery and those of MSC Principles 1 and 2. This may be formulated within a fishery management plan.</p> <p>Note the fishery fell behind its target for surveillance 2 and a revised surveillance 3 milestone was written to bring the fishery back on track (see below).</p> <p>Revised Year 3 milestone By the third audit or earlier, the assessment team shall be provided with documentary evidence of how this information is being used to inform the decisions for stocking densities and that a precautionary approach is being adopted with respect to meeting the objectives of the fishery (and of Principle 2 with respect to managing risks to ecosystem effects). Also, the assessment</p>		

Condition 7 (3rd of 4 currently open conditions)	
	team shall be provided with documentary evidence that the client has formally committed to a precautionary approach in decision making, using best available information and aligned to the specific objectives of the fishery and those of MSC Principles 1 and 2. This may be formulated within a fishery management plan.
Conclusion and Outcome on Condition 7 from 3rd surveillance audit (2016)	The assessment team concluded that the fishery had met the milestone for surveillance audit 3 and was on target. The PI was not rescored as SG 80 for S1e was not yet fully met; the Condition was not closed out since the original score for this PI remains unchanged.
Progress on Condition [Year 4]	The ongoing Appropriate Assessment for the last remaining ongrowing area without one in the Republic of Ireland has yet to be finalised. In the interim BIM have produced an Ecosystem Risk Assessment of the Irish sea Bottom Grown Mussel Fishery (an explanation of the contents of this document is provided in the box below). In addition a review of the current allocation system and carrying capacity indicators for mussel ongrowing areas which expands on the carrying capacity review presented in 2016 has also been produced.
Evidence for Year 4	<p>The following evidence was presented:</p> <ul style="list-style-type: none"> ▪ Schedule of Arrangements ▪ Ecosystem Risk Assessment ▪ Review of the current allocation system and carrying capacity indicators for mussel ongrowing areas <p>Schedule of Arrangements, Seed Mussel Fishery (Northern Ireland and the Republic of Ireland) outlining the arrangements in place for the seed mussel fishery up to and including the 2017 fishing season.</p> <p>This document compiles, into a single document, the management arrangements, decision making procedures and legal framework for the seed fishery and harvesting sites, both in the Irish Sea and Northern Irish Waters. From the minutes of the BGMCF meeting the assessment team were made aware that the industry is briefed by the relevant authorities on the controls and decision making processes, the industry has an input into the decisions and the industry has the opportunity to influence certain decisions which may impact the management of the fisheries, e.g. Force Majeure – where predation pressure may impact the seed resource the industry can request harvesting be brought forward.</p> <p>Ecosystem Risk Assessment – Irish sea Bottom Grown Mussel Fishery</p> <p>This document details a risk assessment which was conducted on all perceived risks to ecosystem function in the mussel harvesting areas. The outcomes of the risk assessment directly influence the decision making strategy. The review of risks is an ongoing process and will be revisited annually to ensure that harvest site stocking densities continue to limit risks to overall ecosystem function.</p> <p>Existing management measures were deemed sufficient to manage the potential impact from all but two of the identified risks, disturbance and invasive alien species (IAS).</p> <p>Risk of disturbance: the two areas where this is a concern are Lough Foyle and Wexford Harbour. Appropriate Assessment will further investigate this pressure and in the meantime no intensification has been permitted.</p> <p>Invasive Alien Species: Industry members have been trained in IAS identification and further research and monitoring of seed beds and harvesting areas is planned. This was considered sufficient to manage the risk.</p> <p>Review of the current allocation system and carrying capacity indicators for mussel ongrowing areas – 2017</p> <p>This document expands on the carrying capacity review which had been presented in 2016. The historical process of seed allocation was detailed. This process, carried out by the Seed Mussel</p>

Condition 7 (3rd of 4 currently open conditions)	
	<p>Advisory Committee (SMAC) in 2005 established the allocation of seed in reference to criteria which included productivity measurements, a maximum relay volume per individual bay and a stocking density cap per site (40 t per ha over 3 years), the purpose of which was to prevent overstocking which may have impacted negatively on the ecosystem of the bay.</p> <p>Allocations have largely remained static since 2005, although a review can be requested to the authorities. The stocking density cap, for each individual site, has been reduced to 30t per ha as a precautionary harvest site measure.</p> <p>The areas closed to seed fishing were presented as evidence of a precautionary conservation measure which protects designated areas from potential damage.</p> <p>The seed beds fished are ephemeral in nature and therefore are not managed through total allowable catches (TACs) as would many fisheries stocks.</p> <p>For each of the harvest bays indicators of ecosystem management were presented, including Water Framework Directive (WFD) assessments, Carrying Capacity models (for Northern Irish Bays) and Appropriate Assessments. These assessments indicate that the risk of serious or irreversible harm to ecosystem function, from the culture of bottom mussels in these bays, is managed. In many of the bays the culture of mussels provides a beneficial service, improving water quality.</p>
Conclusion and Outcome on Condition 7 from 4th surveillance audit (2017)	<p>Based on the documents and assessments presented there is evidence that that fishery is managed in a way which prevents serious damage to ecosystem function in the seed fishing and harvesting bays. The client has provided documents which indicate that there is sufficient data available to inform decisions on stocking densities in the ongrowing bays. In the absence of productivity assessments for individual sites a precautionary stocking density cap has been established.</p> <p>According to the documentary evidence presented to the assessment team, the client has formally committed to a precautionary approach in decision making. The information available on the fishery is sufficient to inform the decisions on stocking densities in the harvesting sites in order to prevent serious and irreversible harm to the ecosystem.</p> <p>The assessment team has re-evaluated the fishery against PI 3.2.2 and concluded that the fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives. The fishery has been rescored and PI 3.2.2 now meets SG80.</p> <p>The assessment team has concluded that the fishery now meets all scoring indicators under PI 3.2.2 and this condition is therefore closed. A full evaluation table for the re-scored PI 2.5.2 is included in Appendix 1.</p>
Status of condition	Closed – Surveillance 4 (2017).

6.1.8. Condition 8 (4 of 4 currently open conditions)

Table 18. Evaluation table – Condition 8 (PI 3.2.4).

Condition 8 (4th of 4 currently open conditions)			
Performance Indicator(s) & Score(s)	Relevant PI	Relevant scoring guidepost (scoring issue) text	Score
	PI 3.2.4. The fishery has a research plan that addresses the information needs of management.	SG 80 (Sla) A research plan provides the management system with a strategic approach to research and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.	70
Condition	A research plan that provides the management system with a strategic approach to research and provided reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2 is required.		
Client action plan and agreed Milestones	<p>Client Action Plan BIM/Aquaculture Initiative have undertaken to liaise directly with the scientific advisors and authorities in NI and IE as to the research priorities and institutional arrangements and support required to fulfil this condition. Funding options will be explored.</p> <p>The client through the BGMCF in consultation with the national scientific advisors, technical experts and industry members will highlight areas requiring research</p> <p>The client will provide documentary evidence of the consultation and research priorities</p> <p>Documentary evidence will be supplied to demonstrate that a Research Plan has been implemented</p> <p>Milestones By first surveillance audit or earlier, the assessment team shall be provided with documentary evidence of a management review of the fisheries research requirements that is aligned with the strategies and objectives of the fishery, and conforms to MSC Principles 1 and 2. Where research planning coincides with information requirements identified in conjunction with conditions raised under Principle 1 and 2 of this assessment, these should be identified and indication as to how they will be implemented.</p> <p>By the second surveillance audit or earlier, the assessment team shall be provided with documentary evidence of the adoption of the Research Plan and priority /on-going research/information requirements.</p> <p>By the third and fourth surveillance audit or earlier, the assessment team shall be provided with documentary evidence that adoption/progress of the Research Plan is providing reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.</p>		
Conclusion and Outcome on Condition 8 from 3rd surveillance audit (2016)	The assessment team concluded that the fishery had met the milestone for surveillance audit 3/4 and was on target. The PI was not rescored as SG 80 for Sla was not yet fully met; the Condition was not closed out since the original score for this PI remains unchanged		
Progress on Condition [Year 4]	<p>The Client Group has produced the MSC Research Plan 2017 which compiles and summarises ongoing research related to the mussel fishery, be it mussel fishery specific or primarily advanced for other purposes but with areas of overlap with the mussel fishery.</p> <p>A list of ongoing research activities is presented in the below box.</p>		

Condition 8 (4th of 4 currently open conditions)	
Evidence for Year 4	<p>The following evidence was presented:</p> <p>MSC Research Plan 2017</p> <p>This document compiled and summarised the ongoing research which is collecting information on the mussel fishery, its management or is being collected for other purposes which have overlaps with the mussel fishery.</p> <p>The research that is ongoing includes:</p> <ul style="list-style-type: none"> ▪ Mussel Seed Survey reports ▪ Mussel Larval Survey reports ▪ Research on mussel seed collection ▪ Risk assessment for IAS ▪ Carrying Capacity – NI ▪ Appropriate Assessment and data collection ▪ Irish Sea Portal Project – seed collection ▪ Bluefish – modelling mussel seed and climate change ▪ Aquaspace – spatial planning for aquaculture (Carlingford) ▪ Bycatch sampling reports ▪ Report on Wexford Harbour aquaculture activity <p>The research plan highlights many new and ongoing research projects which are feeding data into the management of the fishery. This information (e.g. seed surveys) is used annually to establish the seed resources and target areas.</p>
Conclusion and Outcome on Condition 8 from 4th surveillance audit (2017)	<p>The assessment team was presented with a wide range of research outputs which feed into the management of the fishery. Much of this is used for short term planning (e.g. annual seed surveys and carrying capacity models) to set allocations and to ensure that the harvesting areas are not overstocked, which could result in a negative impact to the ecosystem. This is timely and reliable information which is used to ensure that the fishery is sustainably managed and does not seriously impact on the ecosystem within which the fishery exists.</p> <p>Some of the research has longer term aims. Projects such as Bluefish are modelling mussel seed production and forecasting the changes which may be influenced by climate change. This is a long term project with a far reaching goal and is evidence of a strategic approach.</p> <p>From the minutes of the consultative forum (BGMCF) meetings it is evident that the industry is actively involved in setting the research goals, assisting with the collection of data (e.g. by-catch monitoring), ensuring that the research is communicated and that the industry are trained (e.g. IAS training).</p> <p>The assessment team concluded that the condition does meet the milestone for surveillance audit 4 and is on target. However the assessment team has re-evaluated the fishery against PI 3.2.4 and have concluded that the fishery has a research plan that addresses the information needs of management. The fishery has been rescored on PI 3.2.4 and now meets SG80 (Guidepost 80 states: A research plan provides the management system with a strategic approach to research and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2).</p> <p>The assessment team has concluded that the fishery meets all scoring indicators under PI 3.2.4 and this condition is therefore closed. A full evaluation table for the re-scored PI 2.5.2 is included in Appendix 1.</p>
Status of condition	Closed – Surveillance 4 (2017).

6.2. Summary of Status of Conditions

A summary of the status of conditions as of the end of the 4th surveillance audit is present in Table 19 below.

Table 19. Summary of the status of conditions as of the end of the 4th surveillance audit (2017).

Condition	Performance Indicator		Status
1	1.2.2	Harvest Control Rules and Tools	Closed – Surveillance 3 (2016)
2	2.2.3	Bycatch Species Information/Monitoring	Closed – Surveillance 3 (2016)
3	2.4.2	Habitats Management Strategy	Closed – Surveillance 3 (2016)
4	2.4.3	Habitats Information/Monitoring	Closed – Surveillance 3 (2016)
5	2.5.2	Ecosystem Management Strategy	Closed – Surveillance 4 (2017)
6	2.5.3	Ecosystem Information/Monitoring	Closed – Surveillance 4 (2017)
7	3.2.2	Decision Making Processes	Closed – Surveillance 4 (2017)
8	3.2.4	Research Plan	Closed – Surveillance 4 (2017)

6.3. Revised milestones

Not Applicable. No milestones were revised during the 4th surveillance audit (2017).

7. Conclusion

The assessment team conducting this 4th surveillance audit confirms that Bord Iascaigh Mhara (BIM) and the Cross Border Aquaculture Initiative (CBAIT) have met the general requirements for continued certification to the MSC Principles and Criteria for Sustainable Fishing.

Furthermore, the assessment team has concluded that:

There is sufficient evidence and information provided by the client and substantiated through the course of the consultation meetings during the surveillance audit to confirm that sufficient progress has been made such that the Year 3/4 Milestones for condition 5 (PI 2.5.2), condition 6 (PI 2.5.3), condition 7 (PI 3.2.2) and condition 8 (PI 3.2.4) of certification have been met.

The assessment team recommends that continued certification be awarded to the respective client fishery:

- **Northern Ireland Grown Bottom Mussel fishery.**

7.1. Outcome of SAI Global Decision

SAI Global has determined that:

- **The Northern Ireland Grown Bottom Mussel fishery (and the linked Ireland Bottom Grown Mussel fishery) continue to operate well-managed and sustainable fisheries and therefore, continued certification to the MSC Principles and Criteria for Sustainable Fishing is awarded.**

8. References

AFBI documents:

AFBI (2017). Outer Ards Seed mussel Stock Assessment survey Spring 2017.

AFBI (2017). Outer Ards Seed mussel Stock Assessment survey June/July 2017.

BGMCF documents:

BGMCF (2017). Bottom Grown Mussel MSC Bycatch Sampling Plan 2017

BGMCF (2017). Bycatch Monitoring Report *Mytilus edulis* Seed and Harvest Areas 2017

BGMCF (2017). Bottom Grown Mussel MSC Research Plan 2017.

BGMCF (2017). Research Plan (Excel doc identifying current and future research activities relating to the bottom grown mussel fishery.

BGMCF (2017). Review of the current allocation system and carrying capacity indicators for mussel ongrowing areas.

BGMCF (2017). Seed mussel fishery data for 2016.

BGMCF (2017). Ecosystem Risk Assessment.

BGMCF (2017). Chronology of key actions around the 2017 Seed Season.

BGMCF (2017). Draft Minutes BGMCF 20 Final.

BGMCF (2017). Seed Mussel Fishery IE and NI - Schedule of Arrangements 2017

BIM documents:

BIM (2017). Seed Mussel Survey Report for Rosslare – 22/06/2017 to 28/06/2017.

BIM (2017). Seed Mussel Survey Report for the South Glassgorman Banks Area – 15/08/2017 to 25/08/2017.

BIM (2017). Seed Mussel Survey report for Castlemaine Harbour/ Cromane 30/05/2017 and 2/06/2017

DAERA (formerly DARD) documents

A multi-disciplinary study of the blue mussel seed resource in the north Irish Sea and ongrowing strategies for the Northern Ireland bottom mussel industry [Ref: CO/009292/02] FINAL REPORT Prepared for The Department of Agriculture and Rural Development for Northern Ireland By N. McQuaid, D. Roberts, C. McMinn, L Browne and N McDonough.

DAFM documents

DAFM (2017). Supreme Court Judgment – Authorisations for the 2017 Mussel Seed Fishery.

SI No 398 of 2017 Sea-Fisheries and Maritime Jurisdiction (Mussel Seed) (Opening of Fisheries) Regulations 2017

Draft Fisheries Natura Plan (*Mytilus edulis*) Castlemaine harbour 2016 – 2026.

Loughs Agency documents:

Loughs Agency Aquaculture and Shellfisheries Management Strategy November 2010

Marine Institute documents:

Marine Institute (2006) Sea Change: A Marine Knowledge, Research & Innovation Strategy for Ireland.

Other documents:

Status of Irish Aquaculture 2007. A compilation report of information on Irish Aquaculture. Marine Institute, Bord Iascaigh Mhara and Údarás na Gaeltachta. *Report compiled and prepared by:* MERC Consultants Ltd. December 2008

9. Appendices

9.1. Appendix 1. Re-scoring evaluation tables

9.1.1. Re-scoring evaluation table – Condition 5

Original rationale is in **BLACK** (or **GREY** if it has been superseded) while revised rationale is in **BLUE** and notes are in **RED**.

Table 20. Re-scoring evaluation table – Condition 5.

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	There are measures in place, if necessary.	There is a partial strategy in place, if necessary.	There is a strategy that consists of a plan, in place.
	Met?	Y	Y	N
	Justification	<p><u>SG60 and SG 80 Rationale</u></p> <p>The main aspect of the fisheries that has the potential to alter the functioning of ecosystems is the cultivation of mussels within closed bays. There is the potential that if overstocking over the carrying capacity of the system were to occur, this might have adverse effects on other ecosystem components. The licensing scheme is a partial strategy aimed to prevent any uncontrolled extension of the fishery and thus aims to avoid the utilisation of bays above the carrying capacity.</p> <p>There is less of a concern with respect to the impact on ecosystems with respect to the seed extraction. As most mussel seed beds are ephemeral habitats that will not survive winter conditions, the associated fauna, is mainly comprised of mobile predatory or scavenging species that have been attracted to the area due to the surplus of food in form of mussel seed. Due to the stochastic occurrence of mussel beds in time and space these predatory or scavenging species are not directly reliant on this food resource to maintain their local populations (i.e. the seed beds do not contribute to the establishment of mature ecological communities due to their ephemeral nature). Furthermore, past mussel seed beds have been found in depth of 20-30 metre and are thus outside the reach of most diving birds. There is a survey strategy in place in NI and ROI to screen mussel beds for quality (i.e. size and age structure) that should be able to inform about the nature of the mussel seed beds once found (i.e. ephemeral bed or overwintering bed). There is explicit protection of ecosystems for Natura designations, either through a test of significance/screening and appropriate assessment if required to ensure the conservation objectives are not at risk by the fishery as is the case in NI and Cromane, or by virtue of them not being available for seed fishing until the required assessments are completed, as in the case of other Natura designated areas in ROI; therefore SG 80 is met.</p> <p>According to MSC CR 27.10.5.3: “if all of the SG80 scoring issues are met, the PI must achieve at least an 80 score and the team shall assess each of the scoring issues at the SG100 level.” As the fishery failed to meet SG80 for SIb, the team should not have moved on to assess the fishery against SG100 for any of the Scoring Issues but the original Assessment Team did still include rationale for why SG100 was not met (see below). With SG80 now being met for all SIs this rationale is now relevant.</p> <p><u>SG100 Rationale</u></p> <p>There is a partial strategy but elements are not in place in an explicit sense by way of a documented plan that addresses all potential impacts of this fishery on ecosystems. Therefore SG 100 is not met.</p>		

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function		
b	Guidepost	The measures take into account potential impacts of the fishery on key elements of the ecosystem.	The partial strategy takes into account available information and is expected to restrain impacts of the fishery on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	<p>The strategy, which consists of a plan, contains measures to address all main impacts of the fishery on the ecosystem, and at least some of these measures are in place. The plan and measures are based on well-understood functional relationships between the fishery and the Components and elements of the ecosystem.</p> <p>This plan provides for development of a full strategy that restrains impacts on the ecosystem to ensure the fishery does not cause serious or irreversible harm.</p>
	Met?	Y	Y	N
	Justification	<p>SG60 and SG 80 Rationale</p> <p>The partial strategy takes into account available information and is expected to restrain impacts of the fishery on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.</p> <p>The licensing of cultivation areas was identified as the main strategy adopted to limit cultivation areas and through this maximum stocking densities.</p> <p>The partial strategy does take into account local knowledge of historical performance and growing conditions and knowledge about the carrying capacity of bays acquired through the development of modelling techniques for carrying capacity in some bays has been acquired and no adverse effects on the ecosystem were reported in the literature.</p> <p>Research on modelling approaches for carrying capacity have been investigated both in NI and ROI and may form part of the basis for management decisions if proven to be sufficiently robust for this purpose. However recent stocking densities have been less than this maximum allowable allocation and whilst originally, maximum allocations were based on historical performance and technical input, the system of allocation requires review as new information is likely available based on more recent performance that may inform the partial strategy on the likely ecosystem effects and confirm that the fishery does not pose a risk of long term irreversible harm; SG80 was not met.</p> <p>The Review of the current allocation system and carrying capacity indicators for mussel on-growing areas 2017 presents the existing data sources for assessing ecological carrying capacity in the on-growing bays. The information that has been gathered is appropriate for the management of individual cultivation sites or an overall management of those sites.</p> <p>This information was useful when investigating the Carrying Capacity of the harvesting sites and bays overall but no systematic mathematical carrying capacity models were assessment was presented for any of the cultivation bays in the south of Ireland. Indicators of ecosystem carrying capacity will be considered in the licencing system. A carrying capacity assessment of each production bay is planned, "Allocations will not be allowed to breach 'ecosystem carrying capacity' in each bay. Indicators will be assessed using available technical and industry input".</p>		

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function		
		<p>As an added level of precaution, the reference formula for allocations was revised to 30t per hectare over a three year growing cycle. All bays currently under certification are subject to a range of research projects of relevance to the various elements of carrying capacity. Principal among these have been data collected in support of the Water Framework Directive (WFD), aquaculture carrying capacity models and the appropriate assessments completed in support of aquaculture licencing.</p> <p>The current allocation strategy is therefore based on a precautionary approach and the well understood relationship between the growing areas and other components of the ecosystem. The strategy has been implemented successfully for a number of years in that there is no evidence or concern that the activity poses a risk of serious or irreversible harm to ecosystem structure and function.</p> <p>Following the assessment team's determination that there are measures in place that require monitoring and assessments of the carrying capacity and productivity of individual cultivation bays. Research is ongoing and where assessments haven't been completed risk is mitigated by not increasing activity. Therefore, there is a partial strategy in place that takes into account available information and is expected to restrain impacts of the fishery on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance now being achieved; SG80 is met.</p> <p>According to MSC CR 27.10.5.3: "if all of the SG80 scoring issues are met, the PI must achieve at least an 80 score and the team shall assess each of the scoring issues at the SG100 level." As the fishery failed to meet SG80 for S1b, the team should not have moved on to assess the fishery against SG100 for any of the Scoring Issues but the original Assessment Team did still include rationale for why SG100 was not met (see below). With SG80 now being met for all SIs this rationale is now relevant.</p> <p>SG100 Rationale There is a partial strategy but elements are not in place in an explicit sense by way of a documented plan that addresses all potential impacts of this fishery on ecosystems. Therefore SG 100 is not met.</p>		
c	Guidepost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ecosystems).	The partial strategy is considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ecosystems).	The measures are considered likely to work based on prior experience, plausible argument or information directly from the fishery/ecosystems involved.
	Met?	Y	Y	Y
	Justification	<p>SG80 Rationale Yes, following the arguments 80a above the strategy of licensing sites and setting a maximum amount of transferable seed is likely to work. Similarly, the strategy of conservation, through designation of environments with special features that may be sensitive is considered effective and the partial strategy in place that allows a fishery to exist in these areas should ensure the fishery does not pose a risk of serious or irreversible harm. For non-designated areas, the exploitation of ephemeral seed beds to date again, is considered likely to work and not pose a risk of serious or irreversible harm. Therefore SG 80 is met.</p> <p>According to MSC CR 27.10.5.3: "if all of the SG80 scoring issues are met, the PI must achieve at least an 80 score and the team shall assess each of the scoring issues at the SG100 level." As the fishery failed to meet SG80 for S1b, the team should not have moved on to assess the fishery against SG100 for any of the Scoring Issues but the original Assessment Team did still include rationale for why SG100 was not met (see below). With SG80 now being met for all SIs this rationale is now relevant.</p>		

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function																																				
		<p>SG100 Rationale</p> <p>There is a partial strategy but elements are not in place in an explicit sense by way of a documented plan that addresses all potential impacts of this fishery on ecosystems; SG 100 was not met.</p> <p>In cases where large allocations were sought for an individual bay, decisions taken on the maximum capacity of the bay were based on historical “best harvest” figures and any other technical data available at that time. The rationale for this was that if it could be demonstrated that a bay could produce a certain quantity of mussels at an acceptable meat yield within a given time, and without any significant negative ecosystem impacts being observed then that loading was below the “carrying capacity” of the bay and therefore permitting at such a level would not “overload” an individual water body and therefore not impact on the eco-system in the bay.</p> <p>All bays currently under certification are subject to a range of research projects of relevance to the various elements of carrying capacity. Principal among these have been data collected in support of the Water Framework Directive (WFD), aquaculture carrying capacity models and the appropriate assessments completed in support of aquaculture licencing.</p> <p>The key data source in measuring carrying capacity is reliable data on the cultured stock. Data is collected by a number of agencies for various statutory and licensing purposes; see Table 21 below for data collection procedures. The measures are considered likely to work based on prior experience, plausible argument or information directly from the fishery/ecosystems involved; SG 100 is met.</p> <p>Table 21. Data sources</p> <table><tr><th>Jurisdiction</th><th>Data Type</th><th>Data source</th></tr><tr><td>NI</td><td>Seed fishery data in NI</td><td>DAERA monitor all seed fishing activities in NI and record volumes prior to vessels leaving fishing grounds</td></tr><tr><td>NI</td><td>Seed fishery data in NI</td><td>DAERA collect log sheets and spat sheets from all vessels fishing in NI this includes source and relay information</td></tr><tr><td>IE</td><td>Seed Fishery in IE</td><td>BIM collect SMS data from vessels prior to the vessel leaving the fishing grounds – this includes source and relay information</td></tr><tr><td>IE</td><td>Seed fishery data in IE</td><td>SFPA collect log sheets and spat sheets from IE registered vessels - this includes source and relay data</td></tr><tr><td>NI</td><td>Relayed seed from NI</td><td>DAERA relayed Section 13 permit – permission to relay, inspections of the movements to confirm stated tonnage</td></tr><tr><td>NI</td><td>Seed imports</td><td>Tracked through TRACES health certification system which is issued in the country of origin , inspections also take place</td></tr><tr><td>IE</td><td>Seed imports</td><td>Tracked through TRACES health certification system which is issued in the country of origin</td></tr><tr><td>NI</td><td>Full grown product</td><td>TRACES Health Certs issued by DAERA. All movements (half or full grown) also have to be accompanied by Shellfish gatherers documents, this is generally monitored by the local EHO/Council/FSA</td></tr><tr><td>IE</td><td>Full grown product</td><td>SFPA - Gatherers documents</td></tr><tr><td>NI</td><td>Annual production</td><td>DAERA – Documentary Interview and site inspection in addition to annual production statistic returns for EU</td></tr><tr><td>IE</td><td>Annual production</td><td>BIM – Annual returns data for submission to the EU</td></tr></table>	Jurisdiction	Data Type	Data source	NI	Seed fishery data in NI	DAERA monitor all seed fishing activities in NI and record volumes prior to vessels leaving fishing grounds	NI	Seed fishery data in NI	DAERA collect log sheets and spat sheets from all vessels fishing in NI this includes source and relay information	IE	Seed Fishery in IE	BIM collect SMS data from vessels prior to the vessel leaving the fishing grounds – this includes source and relay information	IE	Seed fishery data in IE	SFPA collect log sheets and spat sheets from IE registered vessels - this includes source and relay data	NI	Relayed seed from NI	DAERA relayed Section 13 permit – permission to relay, inspections of the movements to confirm stated tonnage	NI	Seed imports	Tracked through TRACES health certification system which is issued in the country of origin , inspections also take place	IE	Seed imports	Tracked through TRACES health certification system which is issued in the country of origin	NI	Full grown product	TRACES Health Certs issued by DAERA. All movements (half or full grown) also have to be accompanied by Shellfish gatherers documents, this is generally monitored by the local EHO/Council/FSA	IE	Full grown product	SFPA - Gatherers documents	NI	Annual production	DAERA – Documentary Interview and site inspection in addition to annual production statistic returns for EU	IE	Annual production	BIM – Annual returns data for submission to the EU
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PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function																												
d	Guidepost		There is some evidence that the measures comprising the partial strategy are being implemented successfully.	There is evidence that the measures are being implemented successfully.																										
	Met?		Y	Y																										
	Justification	<p><u>SG80 Rationale</u></p> <p>Yes, the licensing scheme for the cultivation sites has been fully implemented and can be seen as a success as there has been no further extension of the cultivation areas in the absence of a full review of the seed resource and its fate. Licences can be revoked under circumstances specified in the licence agreement. The management measures comprising the partial strategy are in place and implemented for seed fisheries; SG80 is met.</p> <p>Site allocations are approved by the Minister in IE and by DAERA in NI in line with an agreed common allocation policy. Operators have been allowed in recent years to seek a review of their situation. These anomalous allocation reviews are conducted by application to the relevant Department, assessment of the case by a sub-committee of the BGMCF, and in IE consideration of recommendations by the relevant Minister. As an added level of precaution, the reference formula for allocations was revised to 30t per hectare over a three year growing cycle.</p> <p>There is also evidence of appropriate data collection and research into the monitoring and assessment of the carrying capacity and productivity of individual cultivation bays. Research is ongoing and where assessments haven't been completed risk is mitigated by not increasing activity. Therefore SG 100 is met.</p> <p>Table 22. Total 2016 and 2017 mussel allocations.</p> <table><tr><th>Bay</th><th>2016</th><th>2017</th></tr><tr><td>Castlemaine</td><td>5,550</td><td>5,150</td></tr><tr><td>Wexford</td><td>8,145</td><td>9,259</td></tr><tr><td>Carlingford</td><td>6,121</td><td>7,556</td></tr><tr><td>Belfast</td><td>6,969</td><td>6,049</td></tr><tr><td>Foyle</td><td>12,915</td><td>11,355</td></tr><tr><td>Swilly</td><td>250</td><td>950</td></tr><tr><td>Larne</td><td>185</td><td>185</td></tr><tr><td>Total</td><td>40,135</td><td>40,504</td></tr></table> <p>According to MSC CR 27.10.5.3: “if all of the SG80 scoring issues are met, the PI must achieve at least an 80 score and the team shall assess each of the scoring issues at the SG100 level.” As the fishery failed to meet SG80 for SIb, the team should not have moved on to assess the fishery against SG100 for any of the Scoring Issues but the original Assessment Team did still include rationale for why SG100 was not met (see below). With SG80 now being met for all SIs this rationale is now relevant.</p> <p><u>SG100 Rationale</u></p> <p>There is a partial strategy but elements are not in place in an explicit sense by way of a documented plan that addresses all potential impacts of this fishery on ecosystems. Therefore SG 100 is not met.</p>			Bay	2016	2017	Castlemaine	5,550	5,150	Wexford	8,145	9,259	Carlingford	6,121	7,556	Belfast	6,969	6,049	Foyle	12,915	11,355	Swilly	250	950	Larne	185	185	Total	40,135
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		Lough Swilly Appropriate Assessment																												
		Castlemaine Appropriate Assessment Conclusion statement																												

PI 2.5.2	There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function	
	<p>Draft Fisheries Natura Plan - Seed Mussel Amended</p> <p>Draft Fisheries Natura Plan – Castlemaine</p> <p>Fisheries Natura Declaration No. 1 of 2017</p> <p>Appropriate Assessment Conclusion Statement by Licensing Authority for aquaculture activities in Galway Bay Complex Special Area of Conservation (SAC)(000268). Inner Galway Bay Special Protection Area (SPA))(4031) (Natura 2000 sites)</p> <p>Report supporting Appropriate Assessment of the impact of seed mussel fishing and relaying on Castlemaine Harbour SAC and SPA</p> <p>Regulation 6(1) Determination, Fisheries Natura Plan for Mussel Seed Fishing in Castlemaine Harbour 2016-2023</p> <p>NPWS (2012) Conservation Objectives: Wexford Harbour and Slobs SPA 004076. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.</p> <p>Aquaculture in Wexford Harbour. BIM</p>	
OVERALL PERFORMANCE INDICATOR SCORE:		85
CONDITION NUMBER (if relevant):		

9.1.2. Re-scoring evaluation table – Condition 6

Original rationale is in **BLACK** (or **GREY** if it has been superseded) while revised rationale is in **BLUE** and notes are in **RED**.

Table 23. Re-scoring evaluation table – Condition 6.

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Information is adequate to identify the key elements of the ecosystem (e.g., trophic structure and function, community composition, productivity pattern and biodiversity).	Information is adequate to broadly understand the key elements of the ecosystem.	
	Met?	Y	Y	
	Justification	<u>SG60 and SG 80 Rationale</u> The mechanisms of potential impacts of the fishery on other ecosystem components are broadly understood. Information available on ecosystem components and carrying capacity is adequate and has shown to be sufficient to undertake research into the development of modelling approaches to carrying capacity of cultivation areas both in NI and RoI. Therefore SG 80 is met.		
b	Guidepost	Main impacts of the fishery on these key ecosystem elements can be inferred from existing information, and have not been investigated in detail.	Main impacts of the fishery on these key ecosystem elements can be inferred from existing information and some have been investigated in detail.	Main interactions between the fishery and these ecosystem elements can be inferred from existing information, and have been investigated.
	Met?	Y	Y	Y
	Justification	<u>SG60 and SG 80 Rationale</u> The main impact of the fishery has been investigated in detail through scientific literature reviews and modelling approaches as outlined above (see 80a). Therefore SG 80 is met. According to MSC CR 27.10.5.3: “if all of the SG80 scoring issues are met, the PI must achieve at least an 80 score and the team shall assess each of the scoring issues at the SG100 level.” As the fishery failed to meet SG80 for Sle, the team should not have moved on to assess the fishery against SG100 for any of the Scoring Issues but the original Assessment Team did still include rationale for why SG100 was not met (see below). With SG80 now being met for all SIs this rationale is now relevant. <u>SG100 Rationale</u> Historical review of evidence of site specific productivity which reflects the ecosystem elements within these bays and modelling studies on carrying capacities of cultivation bays have been undertaken both in NI and ROI and while not all bays have been investigated to the same extent, it can be said that the main interactions between the fishery and these ecosystem elements can be inferred from existing information, and have been investigated, therefore SG100 is met.		
c	Guidepost		The main functions of the Components (i.e., target, Bycatch, Retained and ETP species and Habitats) in the ecosystem are known.	The impacts of the fishery on target, Bycatch, Retained and ETP species are identified and the main functions of these Components in the ecosystem are understood.
	Met?		Y	Y
	Justification	<u>SG 80 Rationale</u> The functions of all relevant ecosystem components are well understood and have been summarised in various reports about this fishery. Therefore SG 80 is met.		

PI	2.5.3	There is adequate knowledge of the impacts of the fishery on the ecosystem		
		<p>According to MSC CR 27.10.5.3: “if all of the SG80 scoring issues are met, the PI must achieve at least an 80 score and the team shall assess each of the scoring issues at the SG100 level.” As the fishery failed to meet SG80 for S1e, the team should not have moved on to assess the fishery against SG100 for any of the Scoring Issues but the original Assessment Team did still include rationale for why SG100 was not met (see below). With SG80 now being met for all SIs this rationale is now relevant.</p> <p><u>SG100 Rationale</u></p> <p>No, the impacts of this fishery on target, Bycatch and ETP species are not precisely understood. While there is general knowledge about these components the impact on these by the fishery has not been investigated and thus there is little to no information on functional changes that might have occurred due to the fishery.</p> <p>During the autumn and winter of 2016 the BIM Bycatch monitoring began and samples were taken from the main seed areas of the Irish Sea by BIM personnel and the harvest areas were sampled by industry members with the assistance of BIM regional staff. Seven areas were sampled and a total of 37 dredges were analysed to define the bycatch and the species composition.</p> <p>The results of the bycatch programme for 2016 confirms that the fishery has a negligible impact on non-target species populations, the bycatch program should be monitored annually following the same methodology as in 2016. By-catch monitoring continued in 2017 and the Bycatch plan will be followed over the years to obtain more quantitative data and historical series that allow a complete analysis of the bycatch in the fishery.</p> <p>Assessment of the fishery against protected habitats and species in the Irish Sea is ongoing through the appropriate assessments and where risks cannot be discounted closed areas will be proposed. Therefore, the impacts of the fishery on target, Bycatch, Retained and ETP species are identified and the main functions of these Components in the ecosystem are understood and SG 100 is met.</p>		
d	Guidepost		Sufficient information is available on the impacts of the fishery on these Components to allow some of the main consequences for the ecosystem to be inferred.	Sufficient information is available on the impacts of the fishery on the Components and elements to allow the main consequences for the ecosystem to be inferred.
	Met?		Y	Y
	Justification	<p><u>SG 80 Rationale</u></p> <p>The functions of all relevant ecosystem components are well understood and the information available is sufficient to scale the impact of the fishery on these components and the wider ecosystem (see 80a-c). Therefore SG 80 is met.</p> <p>According to MSC CR 27.10.5.3: “if all of the SG80 scoring issues are met, the PI must achieve at least an 80 score and the team shall assess each of the scoring issues at the SG100 level.” As the fishery failed to meet SG80 for S1e, the team should not have moved on to assess the fishery against SG100 for any of the Scoring Issues but the original Assessment Team did still include rationale for why SG100 was not met (see below). With SG80 now being met for all SIs this rationale is now relevant.</p> <p><u>SG100 Rationale</u></p> <p>No, the impacts of this fishery on target, Bycatch and ETP species are not precisely understood. While there is general knowledge about these components the impact on these by the fishery has not been investigated and thus there is little to no information on functional changes that might have occurred due to the fishery.</p>		

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem		
		Investigations have been carried out in the form of Bycatch sampling, Appropriate Assessments and carrying capacity of bays in order to understand the impact of the fishery. Therefore, sufficient information is now available on the impacts of the fishery on the Components and elements to allow the main consequences for the ecosystem to be inferred. SG100 is met.		
e	Guidepost		Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).	Information is sufficient to support the development of strategies to manage ecosystem impacts.
	Met?		Y	N
	Justification	<p>SG 80 Rationale</p> <p>It is unclear if sufficient data continue to be collected that would detect any increase in risk levels to the ecosystem due to changes in current cultivation practices; SG80 was not met.</p> <p>The Review of the current allocation system and carrying capacity indicators for mussel on-growing areas 2017 presents the existing data sources for assessing ecological carrying capacity in the on-growing bays. The information that has been gathered is appropriate for the management of individual cultivation sites or an overall management of those sites.</p> <p>Documentary evidence must be proportionate to the level of risk associated with fishery. Historical experience of the fishery has shown that over the years the fishery has been productive and areas continue to be productive in recent years. Scientific opinion is taken into account and there is a close relation between science and fishery management, there are measures in place based on scientific data such as: water quality, density, mapping of productive areas, detection of non-productive areas by controlling of seed stocking density, seed bed surveys and agreements to determinate the open/closed seasons. By comparison with similar fisheries it can be confirmed that data collection is commensurate with the level of risk to the ecosystem posed by the fisheries.</p> <p>In light of the information gathered at the 4th surveillance audit, the assessment team can confirm that there is adequate knowledge of the impacts of the fishery on the ecosystem. =Therefore SG 80 is met.</p> <p>According to MSC CR 27.10.5.3: "if all of the SG80 scoring issues are met, the PI must achieve at least an 80 score and the team shall assess each of the scoring issues at the SG100 level." As the fishery failed to meet SG80 for SIb, the team should not have moved on to assess the fishery against SG100 for any of the Scoring Issues but the original Assessment Team did still include rationale for why SG100 was not met (see below). With SG80 now being met for all SIs this rationale is now relevant.</p> <p>SG100 Rationale</p> <p>While there have been historical review of evidence of site specific productivity which reflects the ecosystem elements within these bays and modelling studies on carrying capacities of cultivation bays have been undertaken both in NI and ROI not all bays have been investigated to the same extent. In addition, the impacts of this fishery on target, Bycatch and ETP species are not precisely understood. While there is general knowledge about these components the impact on these by the fishery has not been investigated and thus there is little to no information on functional changes that might have occurred due to the fishery.</p> <p>Until all appropriate assessments are complete it cannot be said that information is sufficient to support the development of strategies to manage ecosystem impacts; SG 100 is not met.</p>		

PI 2.5.3	There is adequate knowledge of the impacts of the fishery on the ecosystem	
References	<p>Review of the current allocation system and carrying capacity indicators for mussel on-growing areas 2017. BIM</p> <p>Lough Swilly Appropriate Assessment</p> <p>Castlemaine Appropriate Assessment Conclusion statement</p> <p>Draft Fisheries Natura Plan - Seed Mussel Amended</p> <p>Draft Fisheries Natura Plan – Castlemaine</p> <p>Fisheries Natura Declaration No. 1 of 2017</p> <p>Appropriate Assessment Conclusion Statement by Licensing Authority for aquaculture activities in Galway Bay Complex Special Area of Conservation (SAC)(000268). Inner Galway Bay Special Protection Area (SPA)(4031) (Natura 2000 sites)</p> <p>Report supporting Appropriate Assessment of the impact of seed mussel fishing and relaying on Castlemaine Harbour SAC and SPA</p> <p>Regulation 6(1) Determination, Fisheries Natura Plan for Mussel Seed Fishing in Castlemaine Harbour 2016-2023</p> <p>NPWS (2012) Conservation Objectives: Wexford Harbour and Slob SPA 004076. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.</p> <p>Aquaculture in Wexford Harbour. BIM</p>	
OVERALL PERFORMANCE INDICATOR SCORE:		95
CONDITION NUMBER (if relevant):		

9.1.3. Re-scoring evaluation table – Condition 7

Original rationale is in **BLACK** (or **GREY** if it has been superseded) while revised rationale is in **BLUE** and notes are in **RED**.

Table 24. Re-scoring evaluation table – Condition 7.

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	There are some decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.	There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.	
	Met?	Y	Y	
	Justification	<p>SG60 Rationale</p> <p>There are a number decision making processes within the fishery. Some stem from the overall fishery management framework in operation for all fisheries in Ireland and stem partly from the European Common Fisheries Policy regulations and other European environmental legislation such as Natura 2000. There are several responsible regulatory and support organisations on the Island identified with specific roles of implementation of European legislation for the fishery. Government Departments of DAFM, DARD, SFPA, Loughs Agency, BIM (client) EIGG (client), AFBI, MI play a role in well-defined areas of the fishery. The majority of these agencies come together with industry to consult collectively. The 2007 Rising Tide Review outlined key priorities for the bottom grown mussel fishery. A key recommendation now fulfilled was the establishment of the BGMCF which has become a key fishery specific decision making process, with participation, from both Northern Ireland and ROI management regimes and industry. Acting on behalf of government, the BGMCF provides a fishery objective specific process for consultation prior to decisions being taken. Whilst it is the departments that are responsible for ultimately taking management decisions, it is clear from minutes that agreements on policy, issues and decisions taken are consulted upon at the Forum.</p> <p>The SMAC made decisions in 2004 regarding fishery-specific objectives and was comprised of representatives from DAFM, DARD, Loughs Agency (LA), BIM and Aquaculture Initiative (EEIG). The Loughs Agency has developed a Wild Shellfish & Aquaculture Management Plan for its areas of responsibility. The aims of this management plan are to promote sustainable wild shellfish and aquaculture industries based on best scientific information and ensure a balance between economic and environmental considerations; SG60 is met.</p> <p>SG80 Rationale</p> <p>There are established government departmental decision making processes and a fishery specific forum (BGMCF) that has demonstrably resulted in measures and strategies to achieve the fishery-specific objectives.</p> <p>The 2011 annual review provides an up-date of the decisions taken.</p> <p>Seed surveys are carried out and decision making processes are established, informed by the Forum and taken by the Departments of each jurisdiction. It is a little less clear of the exact process of decisions regarding HCR and some environmental components already raised under P1 and P2 as conditions. However, the Forum and Departments are established for this purpose, the Forum meets regularly (twice per year minimum) and minutes from meetings are available on CBAIT website; SG80 is met.</p>		

b	Guidepost	Decision-making processes respond to serious issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take some account of the wider implications of decisions.	Decision-making processes respond to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.	Decision-making processes respond to all issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.
	Met?	Y	Y	N
	Justification	<p><u>SG60 Rationale</u></p> <p>BGMCF respond to serious issues that are within its terms of reference. Outside of these terms there is no role (e.g. not CFP, higher fishery framework legislative review and Voisinage). These were documented within the 2007 Rising Tide report and were formulated in to the priority areas or objectives for the collective management agencies with consultation from industry to review. For example, an issue identified was the lack of a Stock tracking system, this seems to be partly in place as described in an explanatory note on DARDs website.</p> <p>‘As part of the stock tracking system, information obtained from the SMS reporting will be provided to the Departments in both jurisdictions and to the Loughs Agency to assist in the review of the allocation system. This is in keeping with the policy objectives of the Rising Tide report.’</p> <p>Details of the progression in responding to these and other priorities are reviewed annually by the Secretariat (EEG) of the BGMCF. (e.g. 2010 and 2011 Progress Reports of the Secretariat); SG60 is met.</p> <p><u>SG80 Rationale</u></p> <p>Minutes from the Forum meetings demonstrate that serious and other important issues identified are responded too. These minutes are made available on website of CBAIT who act as Secretariat. (http://www.aquacultureinitiative.eu/page24.html). The Forum is represented by the relevant government departments (DAFF, DARD, SFPA, Loughs Agency) and industry members elected on 3 year terms.</p> <p>The terms of reference express the framework for the Forum’s review to be undertaken. ‘For the purposes of this Review, it is taken as a given that the Voisinage Agreement; the Common Fisheries Policy and associated EU legislation; the Fisheries Amendment Act 1997 (RoI legislation) and the Sea Fisheries & Maritime Jurisdiction Act 2006 as amended (RoI legislation); the Fisheries Act (Northern Ireland) 1966, as amended (NI legislation) Sea Fisheries Act 1968 and the Sea Fish (Conservation) Act 1967, as amended (UK legislation) and the Foyle and Carlingford Fisheries Order 2007, provide the basis for the regulatory framework for the BG mussel sector.’</p> <p>Minutes of meetings indicate that relevant research organisations (Marine Institute, AFBI funded research institutes such as Universities), monitoring agencies (SFPA) and industry consultation may present at meetings and the Forum makes recommendations and takes decisions on these issues in an adaptive and timely manner with account of wider implications; SG80 is met.</p> <p>According to MSC CR 27.10.5.3: “if all of the SG80 scoring issues are met, the PI must achieve at least an 80 score and the team shall assess each of the scoring issues at the SG100 level.” As the fishery failed to meet SG80 for SIa, the team should not have moved on to assess the fishery against SG100 for any of the Scoring Issues but the original Assessment Team did still include rationale for why SG100 was not met (see below). With SG80 now being met for all SIs this rationale is now relevant.</p>		

		SG100 Rationale It is not clear that decision-making processes respond to all issues identified in all these manners. It is not clear how issues identified in relevant research, monitoring, evaluation and consultation are reflected in the annually seed mussel management allocation and whether this information is reflected in the review of how the fishery is managed; SG100 is not met.		
c	Guidepost		Decision-making processes use the precautionary approach and are based on best available information.	
	Met?		Y	
	Justification	SG80 Rationale <p>Since the bottom grown mussel fishery is not assessed in a classic 'stock assessment' approach the PA is not implemented within targets and limits for biomass and fishing rate. However, a cap on total harvest of seed was set based on site carrying capacity information available to the SMAC in 2004. There is also inherent precaution within the fishery since harvests of seed do not result in mortality to the fishery since relocation and on-growing ensures that a considerable number survive (since this is the intention) and contribute to the overall spawning biomass of mussel stocks around the coastline of Northern Ireland and Ireland. There is also an overriding consensus presented in literature that to the most part, seed not fished from many locations is washed out during winter storms and does not survive. Additionally, there is no fishing within Natura 2000 sites in Ireland or Northern Ireland without permits or without carrying out a test of significance/screening and an appropriate assessment if required so this also extends to a precautionary approach in these areas where there has been national elevation of the conservation status.</p> <p>The Loughs Agency has developed a Wild Shellfish & Aquaculture Management Plan for its areas of responsibility. The aims of this management plan are to promote sustainable wild shellfish and aquaculture industries based on best scientific information and ensure a balance between economic and environmental considerations.</p> <p>However, it is not explicitly stated within the management system that decision making processes always respond within a precautionary approach and that the original cap on mussel seed, although based on best available information at that time is now due for review given that new information is likely available; SG80 was not met.</p> <p>Appropriate assessments have been completed for a number of sites and are on-going and planned for others as legally binding commitments of States</p> <p>By the 4th surveillance audit the assessment team have been presented with documents which establish the management regime and decision making processes. These documents indicate that decision making is based on precautionary principles with the objective of ensuring that stocking densities on individual sites and overall within bays do not cause serious or irreparable harm to ecosystem function. The stocking density cap has been reduced and this is a precautionary limit.</p> <p>Appropriate Assessments have been carried out on a number of the harvesting bays and this has led to some reduction in growing area and curtailment of new licenses. Without an appropriate assessment (e.g. Wexford Harbour and Lough Foyle) there has been no expansion of licensed area allowed. This is precautionary and based on best available information.</p> <p>Other assessments have been available, e.g. Water Framework Directive assessments, which indicate that mussel culture is having a positive impact on ecosystem function in bays subject to eutrophication. No evidence of negative ecosystem impact has been forthcoming. The stocking densities are generally lower than international standards for similar fisheries (Welsh, Netherlands, Danish mussel fisheries) which is indicative of a precautionary approach.</p>		

		The assessment team has concluded that information presented indicates that the fisheries “decision-making processes use the precautionary approach and are based on best available information”; SG80 is met.		
d	Guidepost		Explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research	Formal reporting to all interested stakeholders describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
	Met?		Y	N
	Justification	<p><u>SG80 Rationale</u></p> <p>Explanations are provided through the BGMCF minutes for all actions taken on proposals or issues raised in those fora. This is not an all –encompassing forum but by definition in the terms of reference originally presented in the 2007 Review, items not included within the Forum remit are noted.</p> <p>These additional areas of management include: for all the management system and would not take into account findings and relevant recommendations emerging from research, monitoring, evaluation and review activity; SG80 is met.</p> <p>According to MSC CR 27.10.5.3: “if all of the SG80 scoring issues are met, the PI must achieve at least an 80 score and the team shall assess each of the scoring issues at the SG100 level.” As the fishery failed to meet SG80 for Sla, the team should not have moved on to assess the fishery against SG100 for any of the Scoring Issues but the original Assessment Team did still include rationale for why SG100 was not met (see below). With SG80 now being met for all SIs this rationale is now relevant.</p> <p><u>SG100 Rationale</u></p> <p>There is no clear evidence of this type of formal reporting taking place. The current advisory committee process would be the most likely vehicle but this, understandably, appears to address only the most pressing issues; SG100 is not met.</p>		
References		<p>Policy 2004: Joint arrangements for management of seed mussel stocks in relation to Irish and Northern Ireland vessels: http://www.aquacultureinitiative.eu/page24.html</p> <p>Loughs agency aquaculture and shellfisheries management strategy November 2010.</p> <p>Ecosystem Risk Assessment – Irish sea Bottom Grown Mussel Fishery</p> <p>Schedule of Arrangements, Seed Mussel Fishery (Northern Ireland and the Republic of Ireland) outlining the arrangements in place for the seed mussel fishery up to and including the 2017 fishing season.</p>		
OVERALL PERFORMANCE INDICATOR SCORE:				80
CONDITION NUMBER (if relevant):				

9.1.4. Re-scoring evaluation table – Condition 8

Original rationale is in **BLACK** (or **GREY** if it has been superseded) while revised rationale is in **BLUE** and notes are in **RED**.

Table 25. Re-scoring evaluation table – Condition 8.

PI 3.2.4		The fishery has a research plan that addresses the information needs of management		
Scoring Issue		SG 60	SG 80	SG 100
a	Appropriateness of reference points			
	Guidepost	Research is undertaken, as required, to achieve the objectives consistent with MSC's Principles 1 and 2	A research plan provides the management system with a strategic approach to research and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.	A comprehensive research plan provides the management system with a coherent and strategic approach to research across P1, P2 and P3, and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.
	Met?	Y	Y	N
	Justification	<p>SG60 rationale</p> <p>There has been considerable research by many different agencies associated with the mussel fisheries in ROI and Northern Ireland which relate to achieving objectives of MSC's Principles 1 and 2. The research is not always coordinated through a fishery specific management plan but has been accessible to management and industry and some of which as a consequence of Rising Tide Report</p> <p>List research plan from Rising Tide here:</p> <ul style="list-style-type: none"> ▪ Carrying capacity projects ▪ Stock tracking system ▪ Annual large scale seed mussel spat fall survey, together with a possible secondary targeted survey for confirmatory purposes later in the season. <p>ROI:</p> <p>Within the ROI research community, there also a strategic planning approach taken not only to commissioning research, but also in determining infrastructure requirements and funding streams. As such the scientific capacity in Ireland is well aligned to the needs of resource management and industry.</p> <p>The Marine Institute, Sea Change document – strategy for research, set out the strategic planning requirements for marine research in Ireland.</p> <p>Aquaculture research and Resource and Risk Assessment of Mussel Seed is undertaken by industry, third-level institutions and both the Irish state sectors and Northern Ireland State sectors with funding from National and EU programmes.</p> <p>Irish Research Partners - Aquaculture Development Centre, UCC (Lead Partner), South East Shellfish Co-Op Ltd. (Co. Waterford), Aqua-Fact International Services Ltd. (Galway), Seabed Surveys International Ltd. (Cork), Department of Zoology (UCD), School of Biology and Biochemistry, Queen's University Belfast.</p> <p>In an applied research sense; assessments were carried out by the Loughs Agency to consider Plans and Projects Affecting European Sites under the Habitats Directive;</p> <ul style="list-style-type: none"> ▪ Appropriate Assessment of the Transfer of Regulations to license marine aquaculture and wild shellfisheries within Carlingford Lough and the transfer of licensing of freshwater aquaculture within the Carlingford area. 		

PI 3.2.4	The fishery has a research plan that addresses the information needs of management
	<ul style="list-style-type: none"> ▪ Appropriate Assessment of the introduction of Regulations to license marine aquaculture and wild shellfisheries within Lough Foyle and the transfer of licensing of freshwater aquaculture within the Foyle system. <p>All assessments must be carried out with due regard to the precautionary principle, which can be summarised as saying “Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation” (Principle 15, Rio Declaration 1992). In other words...act, despite lack of scientific proof, to avoid the worst possible scenario.</p> <p>Cross Border IBIS - Integrated Aquatic Resource Management Between Ireland, Northern Ireland and Scotland The Loughs Agency is in partnership with colleagues from the University of Glasgow and Queens University Belfast the agency as Lead Partner applied for funding to INTERREG IV A under Priority 2 Co-operation for a more sustainable cross-border region. The European Union’s INTERREG IVA Programme, managed by the Special EU Programmes Body (SEUPB) has provided funding of over £6 million to establish a new cross-border project (IBIS – Integrated Aquatic Resource Management Between Ireland, Northern Ireland and Scotland) that will help to protect aquatic resources across Northern Ireland, the Border Region of Ireland and Western Scotland.</p> <p>The Project aims to deliver 70 years of applied research through doctoral and masters projects, 16 Continuing Professional Development courses and 12 Knowledge Transfer workshops between now and June 2015. This will ensure that the project leaves a legacy of expertise in the sustainable management of aquatic resources in the three jurisdictions. Research, education and training will be provided at The Scottish Centre for Ecology and the Natural Environment (University of Glasgow) SCENE on Loch Lomond and at the Marine Laboratory in Portaferry (Queen’s University).</p> <p>PHD projects with relevance to the Bottom Grown Mussel Sector include; Blue Mussel PhD based in Portaferry <i>Major constraints on benthic mussel production are sourcing seed mussels for relaying, losses to predators and maximising harvest to seed ratios. In many cases harvest to seed ratios can be 1:1 or less. Most of the current management of ongrowing mussel beds is based on the experience of practitioners with limited scientific input. While it is recognised that practitioner experience is considerable, it is felt that mussel harvest yield could be improved by better scientific understanding of food availability and density dependent factors influence the growth and development of mussel crops. Producers could then apply such information to develop best practice to maximise yields and reduce environmental impacts. The project will experimentally investigate mussel production under different management practices and help producers develop points of stock audit to better manage mussel crops and increase returns. Using seabirds to monitor intertidal ecosystem health</i></p> <p>The consequences of Marine Protected Areas (including de facto MPAs in marine renewable generation areas) as sources or sinks of prey and predator fishes</p> <p>Masters programmes have also been assigned for seabird distribution in sub tidal areas of Carlingford and Foyle with capacity available to assign additional masters programmes related to the Bottom Grown Mussel Sector</p> <p>Northern Ireland AFBI role is to provide the scientific data upon which stock assessments can be performed for marine fish and shellfish species through the ICES forum. These assessments contribute to the scientific advice underlying the formulation of fisheries policy. This project lies at the core of all fisheries research performed by AFBI.</p>

PI 3.2.4	The fishery has a research plan that addresses the information needs of management
	<p>Centre for Marine Resources and Mariculture (C-Mar) is a university research and outreach centre established in June 1994 on the shores of Strangford Lough by Queen's University Belfast with support from the International Fund for Ireland.</p> <p>Queens University Belfast Queen's is a broadly based, research –driven university with a dynamic world-class research and education portfolio and strong international connections. The University's priority is to achieve nationally and internationally recognised research excellence in all of its many and varied disciplines, with world-class research in distinctive niches and thematic areas. An emphasis is placed on the expansion of interdisciplinary and multi-disciplinary activities .e.g. Effects Of epibiotic algae on the survival, biomass and recruitment of mussels, Mytilus L. (Bivalvia: Mollusca) Nessa E. O'Connor , Tasman P. Crowe a, David McGrath; SG60 is met.</p> <p><u>SG80 rationale</u> DARD – Shellfish Aquaculture Management plan 2001 Seed surveys are regularly carried out to determine locations, size of seed and quantities. E.g, Survey data relating to the location and size of seed found at Skullmartin was utilised by DARD to open and close areas of Skullmartin where seed could be fished particularly in 2005. By allowing the seed in the closed areas time to grow, the harvestable biomass was significantly increased and no doubt contributed to 2005 harvest yield, the highest to date, of 9,495 t (gross).</p> <p>Research priorities were set out in the 2007 Review in a broad sense and a clear objective to improve the fishery specific research activity in response to key requirements covering MSC principles. Also, there are clear research activities on-going which generate reliable information which are reported in minutes of the Forum. However, the fishery does not have a specific documented research plan and hence it is not totally defined if these research themes are always strategic to industry needs and conducted in a timely fashion; SG80 was not met.</p> <p>By the 4th surveillance audit the assessment team were presented with a wide range of research outputs which feed into the management of the fishery. There are short term, annual reports which are used to decide on the opening of the seed fishing. There are longer term strategic research projects such as Bluefish, which is modelling mussel seed settlement and ongrowing and forecasting the changes which may be influenced by climate change.</p> <p>From the minutes of the consultative forum (BGMCF) meetings it is evident that the industry is actively involved in setting the research goals, assisting with the collection of data (eg by-catch monitoring), ensuring that the research is communicated and that the industry are trained (eg IAS training). The assessment team concluded that the fishery has a research plan that addresses the information needs of management; SG80 is met.</p> <p>According to MSC CR 27.10.5.3: “if all of the SG80 scoring issues are met, the PI must achieve at least an 80 score and the team shall assess each of the scoring issues at the SG100 level.” As the fishery failed to meet SG80 for SIa, the team should not have moved on to assess the fishery against SG100 for any of the Scoring Issues but the original Assessment Team did still include rationale for why SG100 was not met (see below). With SG80 now being met for all SIs this rationale is now relevant.</p> <p><u>SG100 Rationale</u> The research activities that are conducted in support of bottom grown mussels do not extend to constitute a comprehensive research plan with a coherent and strategic approach to research across the 2 P's.</p>

PI 3.2.4	The fishery has a research plan that addresses the information needs of management		
	Therefore, while a research plan is in place that provides the management system with a strategic approach to research it cannot be said that it represents a comprehensive research plan; SG100 is not met.		
b	Level of limit reference point		
	Guidepost	Research results are available to interested parties.	Research results are disseminated to all interested parties in a timely fashion.
	Met?	Y	N
	<p>Justification</p> <p>SG60 Rationale The research documents produced by the agencies directly responsible for the mussel fisheries and connected agencies with environmental remits (EPA, IFI, MI, AFBI) and universities, centres of excellence are all readily available on websites and libraries of those agencies. Key reports from the seed surveys which to some extent are researching seed mussel dynamics are undertaken annually are available on the BIM and AFBI websites and reported on in minutes of the Forum meetings; SG60 is met.</p> <p>SG80 Rationale The documents produced annually are disseminated through industry associations and made directly available, without charge on the BIM and AFBI websites. They are also explained to and discussed with, industry and others at the BGMCF. 100 a No A comprehensive research; SG80 is met.</p> <p>According to MSC CR 27.10.5.3: "if all of the SG80 scoring issues are met, the PI must achieve at least an 80 score and the team shall assess each of the scoring issues at the SG100 level." As the fishery failed to meet SG80 for Sla, the team should not have moved on to assess the fishery against SG100 for any of the Scoring Issues but the original Assessment Team did still include rationale for why SG100 was not met (see below). With SG80 now being met for all SIs this rationale is now relevant.</p> <p>SG100 Rationale The Loughs Agency has an aquaculture and shellfisheries management strategy in place which mentions a strategy for monitoring. The results of this are widely and publicly available. However, a dedicated research plan is not available and hence cannot be disseminated as prescribed by this scoring issue.</p> <p>Therefore, while results are disseminated to all interested parties in a timely fashion and are widely and publicly available a dedicated research plan is not widely and publically available; SG100 is not met.</p>		
References	<p>Marine Institute (2006) Sea Change: A Marine Knowledge, Research & Innovation Strategy for Ireland.</p> <p>Status of Irish Aquaculture 2007. A compilation report of information on Irish Aquaculture. Marine Institute, Bord Iascaigh Mhara and Údarás na Gaeltachta. <i>Report compiled and prepared by:</i> MERC Consultants Ltd. December 2008</p> <p>Loughs Agency Aquaculture and Shellfisheries Management Strategy November 2010</p> <p>A multi-disciplinary study of the blue mussel seed resource in the north Irish Sea and ongrowing strategies for the Northern Ireland bottom mussel industry [Ref: CO/009292/02] FINAL REPORT Prepared for The Department of Agriculture and Rural Development for Northern Ireland By N. McQuaid, D. Roberts, C. McMinn, L Browne and N McDonough.</p>		

PI 3.2.4	The fishery has a research plan that addresses the information needs of management
	Mussel Seed Survey reports – BIM/AFBI
	Mussel Larval Survey reports – BIM
	Research on mussel seed collection – BIM
	Risk assessment for IAS – BGMCF
	Carrying Capacity – NI - AFBI
	Appropriate Assessment and data collection – Marine Institute
	Irish Sea Portal Project – seed collection – BIM
	Bluefish – modelling mussel seed and climate change – BIM
	Aquaspace – spatial planning for aquaculture (Carlingford)
	Bycatch sampling reports – BGMCF
	Report on Wexford Harbour aquaculture activity - BGMCF
OVERALL PERFORMANCE INDICATOR SCORE:	
80	
CONDITION NUMBER (if relevant):	

9.2. Appendix 2. Stakeholder submissions

Not Applicable. No stakeholder submissions, written or verbal, were received during the 4th surveillance audit.

A number of submissions were received in early January 2018 and these will be included in and addressed during the ongoing re-assessment of the fishery.

9.3. Appendix 3. Surveillance audit information

Not Applicable.

9.4. Appendix 4. Additional detail on conditions/actions/results

Not Applicable.

9.5. Appendix 5. Revised Surveillance Program

Not Applicable. The next step is a full re-assessment of the fishery.