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## **DFPO Limfjord Mussel and Cockle Fishery**

### **MSC No.1 Surveillance Report**

Prepared for Danish Fishermen's Producer Organisation,  
(DFPO)

Certificate No: MRAG-F-50

**MRAG Americas, Inc.**

26<sup>th</sup> May 2017

Authors: R.C. Wakeford and C. Grieve



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# 1 Introduction

The DFPO Limfjord Mussel and Cockle Fishery was certified in January 2016, and this report contains the findings of the first annual surveillance cycle under this assessment. As part of this assessment, a single condition was placed to develop a research plan for the Limfjord cockle fishery. No recommendations were made.

The client's responses to the conditions of certification were set out in the Client Action Plan (CAP). Progress associated with the actions set forth in the CAP was examined as a part of this surveillance audit (see section 4). This progress has been evaluated by MRAG Americas Audit Team (set out below as "Progress on Condition") against the commitments made in the CAP.

The purpose of the annual surveillance report is to:

- a) **Establish and report** on whether or not there have been any material changes to the circumstances and practices affecting the original complying assessment of the fishery;
- b) **Monitor** the progress made to improve those practices that have been scored as below "good practice" (a score of 80 or above) but above "minimum acceptable practice" (a score of 60 or above) – as captured in any "conditions" raised and described in the Public Report and in the corresponding Action Plan drawn up by the client;
- c) **Monitor** any actions taken in response to any (non-binding) "recommendations" made in the Public Report;
- d) **Re-score** any Performance Indicators (PIs) where practice or circumstances have materially changed during the intervening year, focusing on those PIs that form the basis of any "conditions" raised.

## 2 General Information

### 2.1 Certificate holder details

Fishery name	DFPO Limfjord Mussel and Cockle Fishery		
Unit(s) of assessment	Limfjord Mussels and Cockles		
Date certified	5 <sup>th</sup> January 2016	Date of expiry	4 <sup>th</sup> January 2021
Surveillance level and type	Surveillance level 6, on-site surveillance audit.		
Date of surveillance audit	24 <sup>th</sup> March 2017		
Surveillance stage (tick one)	1st Surveillance	✓	
	2nd Surveillance		
	3rd Surveillance		
	4th Surveillance		
	Other (expedited etc)		
Surveillance team	Lead assessor: Robert Wakeford Assessor(s): Chris Grieve		
CAB name	MRAG Americas		
CAB contact details	Address	8950 Martin Luther King Jr St. N, Suite 202 St. Petersburg, FL 33702 USA	
	Phone/Fax	Tel: (727) 563-9070 Fax: (727) 563-0207	
	Email	<a href="mailto:mrag.americas@mragamericas.com">mrag.americas@mragamericas.com</a>	
	Contact name(s)	Amanda Stern-Pirlot	
Client contact details	Address	Danish Fishermen's Producer Organisation (DFPO) Nordensvej 3, DK-7000 Fredericia, Denmark	
	Phone/Fax	+45 7010 4040	
	Email	<a href="mailto:oll@dkfisk.dk">oll@dkfisk.dk</a>	
	Contact name(s)	Ole Lundberg Larsen	

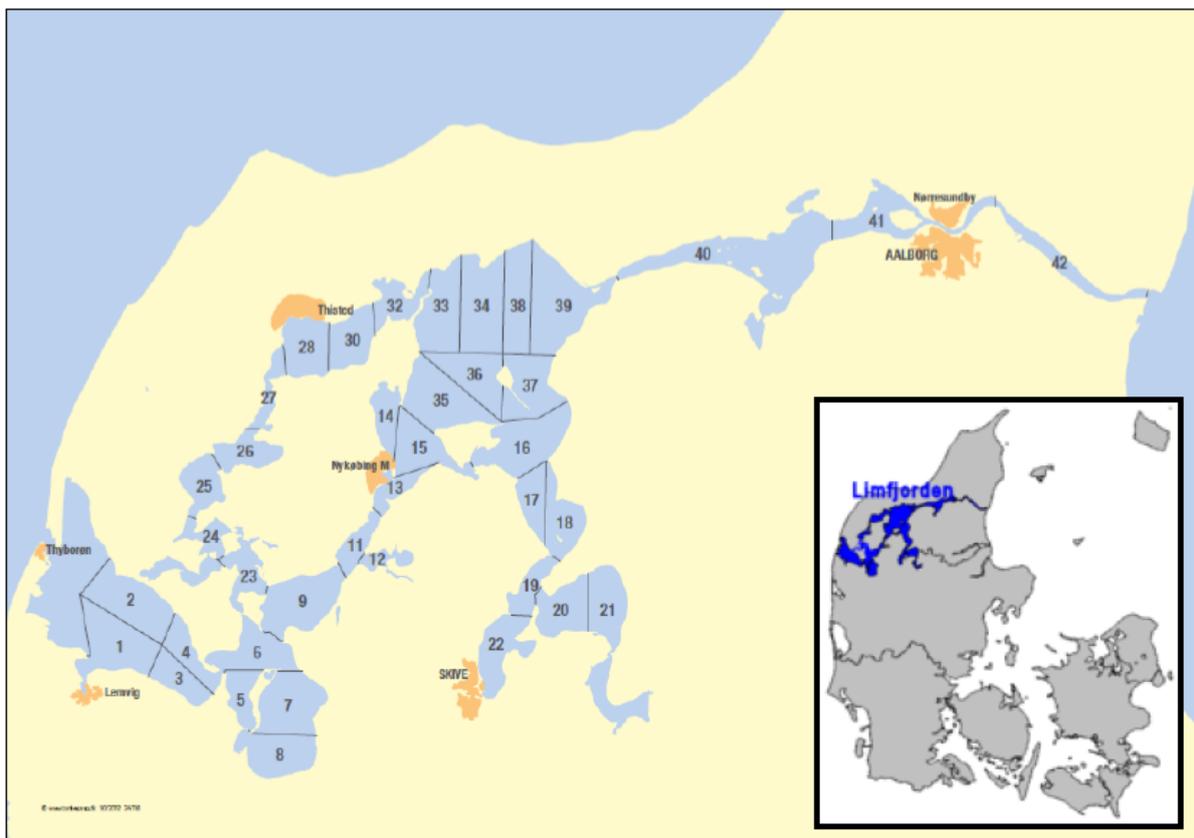
### 3 Background

#### 3.1 Description of the fishery

The blue mussel (*Mytilus edulis*) is an important resource in the Danish fisheries and the most important fishing area for mussels in Denmark is the Limfjord (Figure 1). All vessels within the Unit of Certification are mussel dredgers, all of a similar size and power, and all of which are required to use the same type of fishing gear. The fishery issues 50 licenses per year, of which there are currently 26 active vessels during 2016 (Table 1). A new lightweight type of fishing gear was introduced in the fishery in 2010 and is now used throughout the fishery.

At certain times mussel dredging vessels will incorporate a smaller mesh net in their dredges to target cockles (*Cerastoderma edule*) in the Limfjord mussel fishery. Catches are highest during the spring and autumn months, when the cockles (which are normally buried in the seabed) may emerge on to the surface of the seabed and become amenable to capture in mussel dredges.

Whilst the mussel dredging vessels are clearly targeting cockles at certain times of the year, the Danish AgriFish Agency (NaturErhvervstyrelsen) does not permit a directed fishery solely for cockles and mussel dredging vessels are only permitted to retain cockles providing that they weigh no more than 49% of the total landings from a vessel per day.



**Figure 1: Map of designated shellfish production areas in the Limfjord, northern Denmark. The unit of certification includes all of the production areas 1-42. Inset map shows the location of the Limfjord in Denmark.**

**Table 1: List of active vessels in the Unit of Certification during 2016**

Registration	Vessels
A60	Frida
E63	Sine
HM911	Elias
L54	Mads Vester
L154	Tambosund
L158	Heidi Bach
L253	Laura
L491	Berit
L500	Jens Sund
L929	Michokon
L933	Blackie
L935	Sandra Pedersen
L941	Musse II
SK18	Broberg
SK100	Morton Thomas
SK919	Margrethe P
SK920	Nitsen
SK925	Joan Kiss
T9	Lille Maj
T121	Balder
T132	Frk S0E
T192	Elly
T194	Rikke
T229	Liden Kirsten
T300	Betina Kærgaard
T301	Edith Kærgaard

### 3.2 Changes in the management system

There has not been any significant changes adopted in the management system since the initial certification.

During 2017, the Mussel Policy will be evaluated and updated by the AgriFish Agency. To date, preliminary discussions have been held by the Mussel Committee and stakeholders were invited to submit comments by 27 March 2017. But the main work will happen between June and September and therefore remains an open and active process that will not yield any changes to the management system during 2017. Given the importance of the natural resources within Limfjord, the review cycle has been designed to coincide with the evaluation of the Water Directive, every six years.

### 3.3 Changes in relevant regulations

Since the full assessment certification in January 2106, there have been a number of changes to the regulation of the Limfjord mussel and cockle fishery, which includes changes to vessel licensing, gear and the maximum size of vessels, and changes to eelgrass areas within Natura 2000 sites. These are briefly summarized below:

(i) **Vessel licensing** – To date, the total number of licenses issued (named individual) and therefore number of vessels remain at 50 although the number of active vessels in the fishery has reduced to 25. Since 2014, vessel owners have been permitted to rent other

licenses to enable them to increase their annual catch of mussels and cockles. A new ruling has been introduced that allows individuals to obtain more than one license, or rent a license, to increase quota. The overall level of fishing effort has remained unchanged as the TAC is allocated per license holder.

(ii) **Vessel size** – Due to the reduction in the number of active vessels in the fishery and the subsequent aggregation of licenses, the current vessel size limits (12 m long x 5 m beam) are now considered too small. Since July 2016, the maximum size of vessels licensed to operate within the Limfjord region has been harmonized with the Danish fleet operating on the East coast (16 m long x 6 m beam). The engine size remains unchanged. To date, few if any vessels have undergone this modification.

(iii) **Vessel gear** - As part of a 'simplification of rules' program, the Mussel Ordinance and the Oyster Ordinance have now been combined into a joint Ordinance<sup>1</sup>. With this, only minor changes have been introduced. Most importantly, the 'light dredge' previously only used within the Natura 2000 sites is required for fishing in all areas of the Limfjord.

(iv) **Eelgrass areas** – recent improvements to mapping of eelgrass beds within Natura 2000 sites has led to a better understanding of their distribution. In consequence, the blanket restriction of fishing in waters less than 5 m has been relaxed in some parts of the Lovns Bredning and Løgstør Bredning. Mussel licenses now specify areas that are permissible to operate where neither eelgrass nor algae are present. It is noted that these revisions will be kept under review by the Advisory Committee on mussel production.

The assessment team considers that these changes will not affect the ongoing certification of the fishery.

### **3.4 Changes to personnel involved in science, management or industry**

It was noted that Jonathan B. Jacobsen had planned to leave DFPO in April and was replaced by Ole Lundberg Larsen. In addition, the manager responsible for administration and control of the Limfjord shellfishery at AgriFish Agency in Copenhagen, Søren Palle Jensen, was due to retire during 2017.

### **3.5 Changes to scientific base of information including stock assessment**

An assessment of the mussel stock status is conducted on an annual basis by DTU Aqua. The assessment does not include areas with water less than 3 meters and are likely to be precautionary estimates for the entire population.

A new geostatistic assessment model has been developed in connection with the EFF funded project to develop new methods and models to assess blue mussels using GPS data. This uses the same input data as previous models, but now estimates the population's spatial structure with associated uncertainties (Petersen et al., 2015). Based on this, the total biomass can be calculated within a finite area to determine stock status.

#### **3.5.1 Mussel stock status**

An assessment of the mussel stock status is conducted on an annual basis by DTU Aqua. The assessment does not include areas with water less than 3 meters and are likely to be precautionary estimates for the entire population.

Previous surveys indicate the mussel stock biomass in Limfjord during 2009 and 2013 to be between 400,000 and 500,000 tonnes, whereas the 2014 survey had shown a decline to 265,400t, which was attributed to poor environmental conditions. In 2015, the stock had begun to recover and was estimated at 347,300t. The stock continues to increase as noted

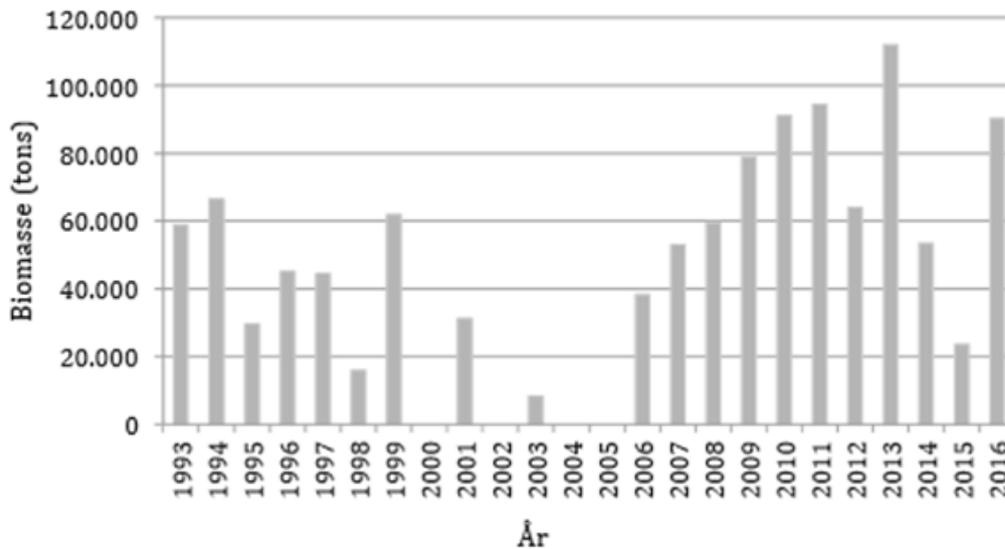
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<sup>1</sup> <https://www.retsinformation.dk/Forms/R0710.aspx?id=185261>

in the detailed surveys carried out for the Løgstør Bredning and Lovns Bredning Natura 2000 sites within the UOC area.

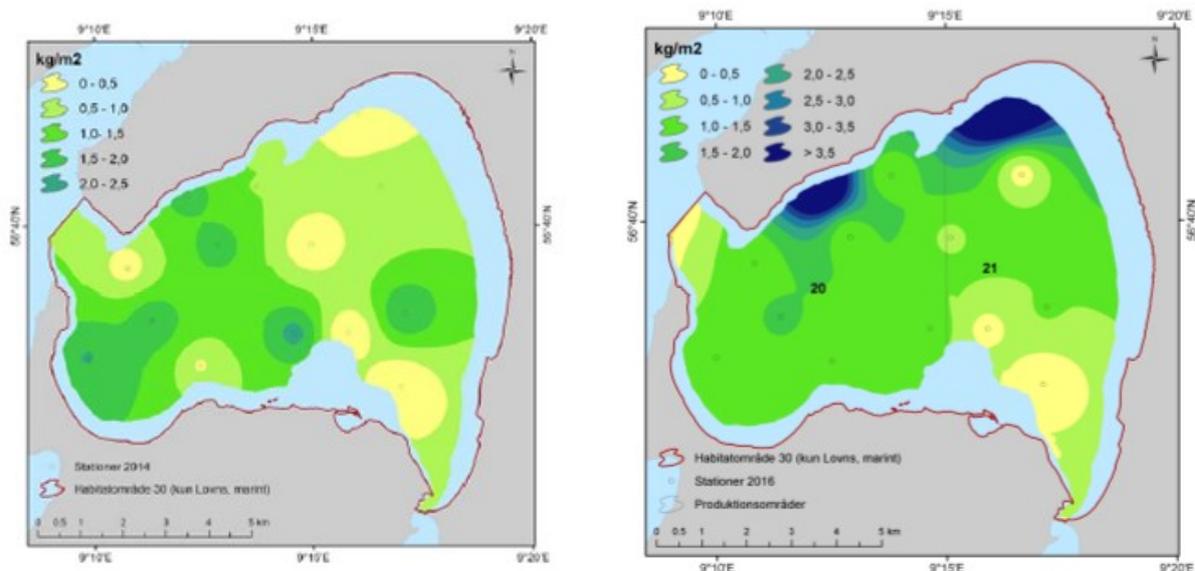
### Lovns Bredning

The mussel stock in Lovns Bredning was surveyed in April 2016 and indicates a stock biomass at depths greater than 3 m of approx. 90,000t (Figure 2). This shows the biomass has almost quadrupled in this area since the previous year, as Lovns Bredning did not suffer the same level of oxygen depletion as 2015.



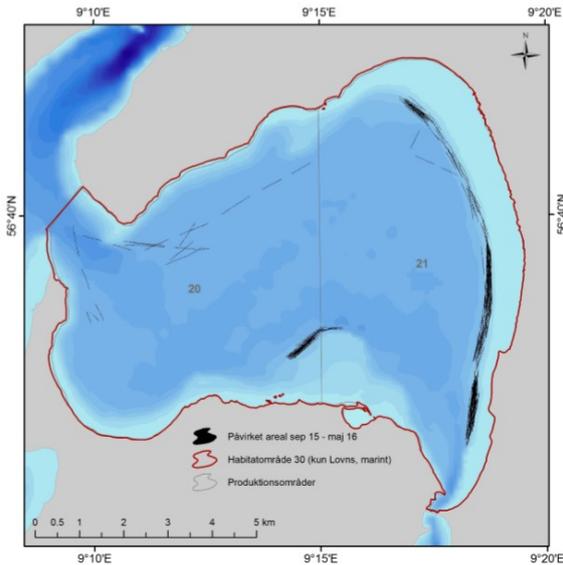
**Figure 2: Biomass of mussels in surveys of the Lovns Bredning Natura 2000 site, 1993-2014. Surveys were not undertaken in 1998, 2000, 2002, 2004 and 2005 (Source: Nielsen et al, 2016a).**

The changes in the spatial distribution of the stock between March 2014 and April 2016 is shown in Figure 3. The average biomass throughout Lovns Bredning during 2016 is estimated at 2.34 kg.m<sup>-2</sup> (where biomass stations are included greater than 1 kg.m<sup>-2</sup>).



**Figure 3: The distribution and abundance of mussel at depths greater than 3m in Lovns Bredning in (a) March 2014 and (b) April 2016 (Source: Canal-Vergés et al, 2014; Nielsen et al, 2016a)**

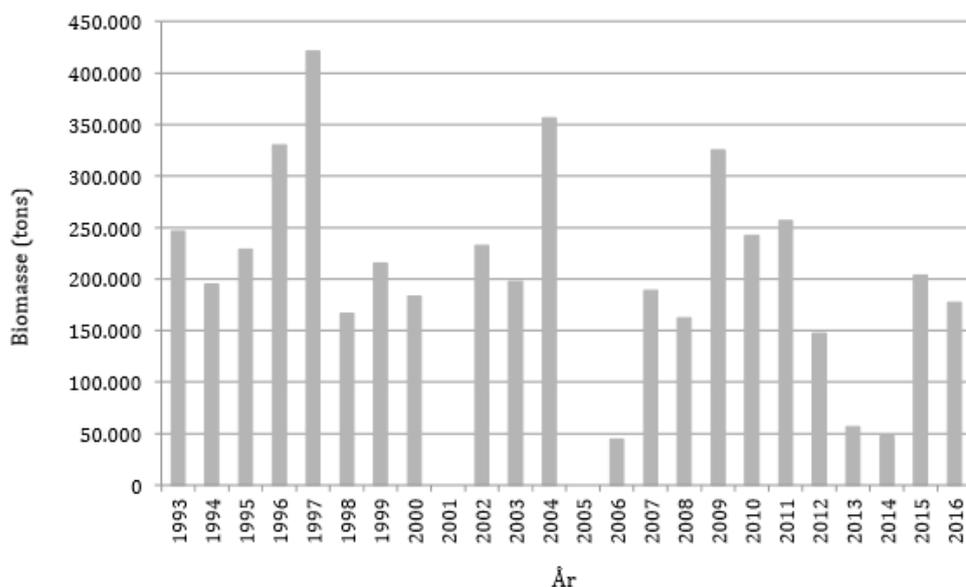
In addition to the latest estimate of stock biomass, the assessment now includes aggregated “black box” data from fishing vessels that shows the exact locations of all fishing activity between September 2015 and May 2016 (Figure 4). This illustrates the finite spatial distribution of fishing activities that exist mainly in the eastern boundary and to a lesser extent in the south of Lovns Bredning.



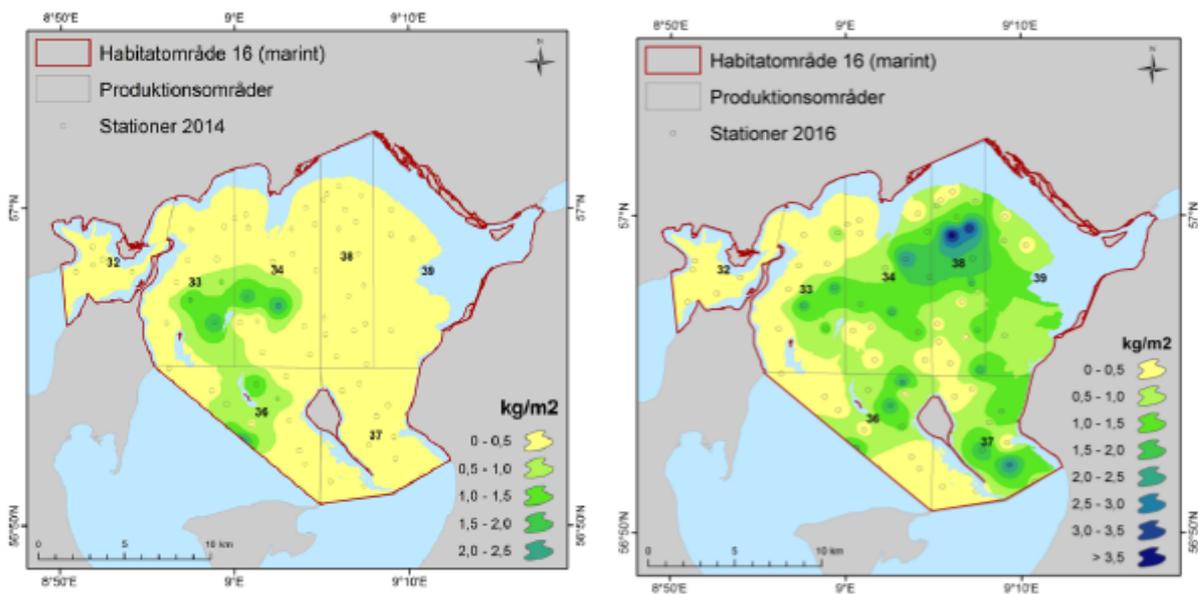
**Figure 4: Distribution of mussel fishing activity in the Lovns Bredning Natura 2000 site between September 2015 and May 2016 (Source: Nielsen et al, 2016a).**

### Løgstør Bredning

The mussel stock in Løgstør Bredning was surveyed in April 2016 and indicates a stock biomass at depths greater than 3 meters of approx. 177,000t (Figure 5). The mussel stock has slightly declined since 2015, while the average mussel density is 1.84 kg.m<sup>-2</sup> (where biomass stations are included greater than 1 kg.m<sup>-2</sup>) (Figure 6).

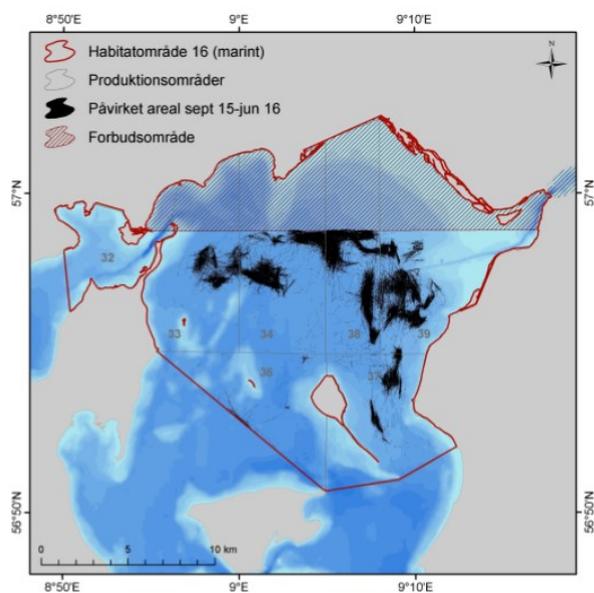


**Figure 5: Biomass of mussels in surveys of the Løgstør Bredning Natura 2000 site, 1993-2016. Surveys were not undertaken in 1998, 2000, 2002 and 2005. [Source: Nielsen et al, 2016]**



**Figure 6: The distribution and abundance of mussel at depths greater than 3m in Løgstør Bredning in March 2014 (Source: Nielsen et al, 2016b).**

Similar to Lovns Bredning, the assessment shows the cumulative spatial distribution of fishing within Løgstør Bredning using “black box” data. This is illustrated for all fishing activities between September 2015 and June 2016 (Figure 7). The total affected area was estimated at approx. 25.6 km<sup>2</sup>, which accounts for 8.1% of the area of the Natura 2000 area in Løgstør Bredning. While the total area has increased during 2015/2016 season, this remains below the 15% cap set by the Mussel Policy.



**Figure 7: Distribution of mussel fishing activity in the Løgstør Bredning Natura 2000 site between September 2015 and June 2016 (Source: Nielsen et al, 2016b).**

### 3.5.2 Cockle stock status

No formal stock assessment for the cockle stock was presented at this audit. Information about cockle distribution and abundance in the Limfjord can be inferred from the landings data for the different production areas, which indicate that cockles can be present in

densities that are economically viable for fishing over a large part of the Limfjord but abundant populations are patchily distributed, both spatially and temporally.

### 3.6 Updates on enhanced fishery's position in relation to scope criteria

The fishery is not an enhanced fishery.

### 3.7 Developments or changes within the fishery which impact traceability

To date, there have been no changes in the fishery that could impact traceability.

### 3.8 TAC Calculation

The most recently available TAC and catch data for the mussel and cockle fisheries are set out in the tables below. It is noted that the fishing season runs from September – June. As such the last available total catch data is for 2015/2016 fishing season. A summary of the impact assessment for fishing opportunities during the 2016/2017 is also given.

#### 3.8.1 Mussel fishery

At present, the AgriFish Agency continue to set a weekly TAC of 45 tonnes per fishing licence (voluntarily reduced to 30 tonnes by the fishing industry body) which is well within the implicit reference point of 50% of the stock biomass. In addition, the TAC within Natura 2000 sites must take in to account the food requirements for birds and the total cumulative impact (proportion of total area), for blue mussels, benthic fauna, macro algae and eelgrass must not exceed 15% as set by the Mussel Policy.

#### Lovns Bredning

The cumulative area impact for blue mussel, macroalgae, bottom fauna and eelgrass in proportion of the total area of the marine part of habitat area between 2012/2013 and 2016/2017 in Lovns Bredning is shown in Table 2. The total cumulative impact for the of a fishery of 7,000 tonnes of blue mussels during the fishing season 2016/2017 is estimated at 8.0% for blue mussels, 5.5% for macroalgae and 7.8% for bottom fauna and 0% for eelgrass.

**Table 2: Cumulative area of impact for blue mussel, macroalgae, bottom fauna and eelgrass as a percentage of the total area of the marine part of habitat area in Lovns Bredning (source Nielsen et al, 2016a).**

	Gendannelsestid (år)	2012/13 (%)	2013/14 (%)	2014/15 (%)	2015/16 (%)	Kumuleret +2016/17
<b>Blåmusling</b>	3			0,2	1,1	8,0
<b>Makroalger</b>	>5	0,97	0,97	0,1	0,5	5,5
<b>Bundfauna</b>	2				1,1	7,8
<b>Ålegræs</b>	>20	0	0	0	0	0

The quota (7,000t) for 2016/2017 is estimated to be sustainable at an ecosystem level within Lovns Bredning.

#### Løgstør Bredning

The cumulative effect of fishing 30,000t of blue mussels in 2016/2017 season in Løgstør Bredning is shown to exceed the maximum allowed limit of 15% for all three ecosystem components set by the Mussel Policy (Table 3). In addition, cumulative effects are also

calculated in three different scenarios with varying quotas (8,000, 7,000 and 3,000 t) depending on the densities of the fishery. For all three remaining scenarios, the maximum permitted limit of 15% area impact is not exceeded for ecosystem components blue mussels, macroalgae and bottom fauna. The TAC for 2016/2017 has been reduced from 30,000 t to 8,000 t.

**Table 3: Cumulative area of impact for blue mussel, macroalgae, bottom fauna and eelgrass as a percentage of the total area of the marine part of habitat area in Løgstør Bredning (source Nielsen et al, 2016b).**

	Gendan- nelsestid (år)	2012/13 (%)	2013/14 (%)	2014/15 (%)	2015/16 (%)	Kumuleret Ansøgt 30.000 t (%)	Kumuleret Sc 1 8.000 t (%)	Kumuleret Sc 2 7.000 t (%)	Kumuleret Sc 3 3.000 t (%)	Sø- stjerner (%)
<b>Blåmusling</b>	3			3,2	8,1	19,3	13,4	13,5	13,2	0
<b>Makroalger</b>	>5	0,5	1,0	2,4	6,0	15,8	11,4	11,5	11,3	3
<b>Bundfauna</b>	2-4		1,3	3,2	8,1	20,6	14,7	14,8	14,5	0
<b>Ålegræs</b>	>20	0	0	0	0	0	0	0	0	0

A summary of the TAC and associated landings for the Limfjord mussel fishery is shown in Table 4.

**Table 4: TAC and catch data for the Limfjord mussel fishery (Source: NaturErhvervstyrelsen database).**

<b>TAC</b>	<b>Year</b>	<b>2015/ 2016</b>	<b>Amount</b>	<b>45t per licence per week (30t voluntarily) Lovns Bredning: 10,000t Løgstør Bredning*: 30,000t</b>
<b>UoA share of TAC</b>	<b>Year</b>	<b>2015/ 2016</b>	<b>Amount</b>	<b>100% of TAC</b>
<b>UoC share of TAC</b>	<b>Year</b>	<b>2015/ 2016</b>	<b>Amount</b>	<b>100% of TAC</b>
<b>Total green weight catch by UoC</b>	<b>Year (most recent)</b>	<b>2015/ 2016</b>	<b>Amount</b>	<b>21,723t Of which Lovns Bredning: 0t Løgstør Bredning: 13,615</b>
	<b>Year (second most recent)</b>	<b>2014/ 2015</b>	<b>Amount</b>	<b>22,548t</b>

\* Note: TAC for 2016/2017 (Sept. 2016 – June 2017) has been reduced from 30,000t to 8,000t.

### 3.8.2 Cockle fishery

The total annual catch of cockles is limited to 49% of the catch aboard a licensed mussel fishing boat on any fishing trip (i.e. a formal limit of 22.05t per week and a voluntary limit of 14.7t per week) (Table 5). Within the Lovns Bredning and Løgstør Bredning Natura 2000 sites, the cockle bycatch is limited to 10% of the total catch. This will be 500t in Lovns Bredning and 800t in Løgstør Bredning for 2016/2017 fishing season.

**Table 5: TAC and catch data for the Limfjord cockle fishery (Source: NaturErhvervstyrelsen database).**

<b>TAC</b>	<b>Year</b>	<b>2015/ 2016</b>	<b>Amount</b>	<b>49% of mussel catch (10% in Natura 2000 sites)</b>
<b>UoA share of TAC</b>	<b>Year</b>	<b>2015/ 2016</b>	<b>Amount</b>	<b>100% of TAC</b>
<b>UoC share of TAC</b>	<b>Year</b>	<b>2015/ 2016</b>	<b>Amount</b>	<b>100% of TAC</b>
<b>Total green weight catch by UoC</b>	<b>Year (most recent)</b>	<b>2015/ 2016</b>	<b>Amount</b>	<b>5,745t Of which Lovns Bredning: 0t Løgstør Bredning: 14.4t</b>
	<b>Year (second most recent)</b>	<b>2014/ 2015</b>	<b>Amount</b>	<b>5,594t</b>

### 3.9 Summary of Assessment Conditions

There was only 1 condition, summarised below.

**Table 6: Summary of Assessment Conditions**

<b>Condition number</b>	<b>Performance indicator (PI)</b>	<b>Status</b>	<b>PI original score</b>	<b>PI revised score</b>
1	3.2.4	Open	70	70

### 3.10 Recommendations

There were no recommendations from the full assessment.

## 4 Assessment Process

### 4.1 Scope & History of the Assessment

#### 4.1.1 Surveillance team details

The MSC require that surveillance audits shall be carried out by a team of two or more individuals with expertise comparable to the members of the original team (that conducted the assessment of the fishery). If different from the original assessment team, the MSC also require that the selection of individuals to conduct audits shall be justified in writing and their relevant skills and/or expertise documented. This information is documented below.

The original assessment team for the fishery comprised Robert Wakeford (Team Leader, Principle 2), Julian Addison (Principle 1) and Chris Grieve (Principle 3). This surveillance audit was carried out two of the original three assessment team. Robert Wakeford participated on-site, and Chris Grieve participated off-site. Brief resumes of the team's experience are set out below.

#### **Dr Robert Wakeford (Assessment Team Leader)**

Robert Wakeford is a Director at MRAG and has over nineteen years' experience with a broad range of multi-disciplinary skills in fisheries resource management and policy, including fish stock assessment, eco-labelling, survey design and analysis, statistical and empirical modelling, international observer programmes, database design and project management. He has gained considerable experience with the Marine Stewardship Council and associated Certification Requirements, and has conducted numerous MSC pre-assessments for a number of private clients. In addition to pre-assessments, he was Lead Assessor and P2 expert for the successful Mexican Caribbean spiny lobster fishery (Banco Chinchorro and Sian Ka'an fishery), and was responsible for testing the MSC's original Risk Based Framework (RBF) in 2006/07, prior to becoming P2 expert for the certification of the Cornwall sardine fishery. Since 2007, he has worked closely with WWF to develop a framework for implementing Fisheries Improvement Projects (FIPs) based on the Marine Stewardship Council Standard. Robert has previously conducted assessments on freshwater fish populations, and was Team Leader to conduct a fish biodiversity and fisheries survey in Sierra Leone as part of an EIA during 2006. More recently, he is working in Liberia and Sierra Leone as part of the World Bank Funded Regional Fisheries Programme (WARFP) on scientific research, stock assessment and curriculum development and is currently Project Director and Principal Investigator on numerous EU-funded projects to conduct retrospective and prospective evaluations of the Common Fisheries Policy.

Robert has completed MSC training in the use of the RBF methodology and MSC assessment team leader.

#### **Ms Chris Grieve**

Chris has 25+ years' experience in fisheries management and policy-making from local to global levels. She was first a research assistant to Australian stock assessment scientists, then as manager of complex Australian demersal fisheries. She moved to the UK in 2000 to lead the Sustainable Fisheries Policy Research Programme for IEEP, a London-based think tank where the vision was to influence change in the EU's Common Fisheries Policy. In 2002, Chris became the International Policy Director for the MSC, leading the organisation's work on standards, certification and accreditation, governing bodies and developing world fisheries. From 2005-2010, Chris's role evolved to Associate Director after she established Meridian Prime as a consulting company with a diverse portfolio of work. Chris led and participated in work on the development, evolution and implementation of the MSC standard and certification requirements. She also led and participated in sustainable fisheries projects for client organisations in Europe and the USA. As a consultant, Chris is Executive Director of EDGE Certified Foundation: a Swiss-based, global certification scheme dedicated to

gender equality in Fortune 500 companies. Chris is Director of the GrowHouse Initiative Ltd: a UK company that helps businesses explore beyond the boundaries of their current practice to create compelling, unique and sustainable futures. Chris is a member of the Board of Directors for WOCAN (a non-profit focusing on gender equality in natural resource management in the global south) and on the Advisory Board of Ocean Outcomes (a US-based non-profit focusing on sustainable fisheries). Chris was a founding Trustee and Vice Chair of the ISEAL Alliance, the global sustainability standards organization; and a statutory-appointed member of two Australian fisheries management public boards.

#### 4.1.2 Date & Location of surveillance audit

The surveillance audit was held remotely with DSC/DTU Aqua and on-site with the AgriFish Agency and DFPO offices in Copenhagen, Denmark on 24<sup>th</sup> March, 2017 (Appendix 6).

#### 4.1.3 Stakeholder consultation & meetings

Thirty days prior to the surveillance audit, all stakeholders from the full assessment and previous surveillance audits were informed of the meeting and the opportunity to provide information to the auditors in advance of, or during, the meeting. No requests from outside stakeholders were received to take part in the meeting or provide information remotely.

The following participants were in attendance:

Name	Affiliation
Robert Wakeford	MRAG Ltd., assessment team
Chris Grieve	Meridian Prime, assessment team
Jonathan B. Jacobson	DFPO, client
Anja Gadegaard Boye, Søren Palle Jensen	AgriFish Agency, Policy AgriFish Agency, Control
Jens K. Petersen	Danish Shellfish Centre/ DTU Aqua

The table below summarizes the agenda for the meeting, held on March 24<sup>th</sup>, 2017 in Copenhagen, Denmark.

Time	Item	Lead	Supporting documents
08:30	Telephone call to Jens K. Petersen: update on fishery management and cockle research plan	RW and JP	Research Plan for Limfjord Cockles (Draft 0.1) Previous full assessment report
Break			
10:30	Meeting with AgriFish Agency	RW, AGB, SPJ and CG (via Skype)	Research Plan for Limfjord Cockles (Draft 0.1) Previous full assessment report
12:15	Lunch		
13:30	Meeting with client	JJ and RW	Research Plan for Limfjord Cockles (Draft 0.1) Previous full assessment report
14:15	Closing of meeting	JJ and RW	
14:30	End of site visit		

#### **4.1.4 Standards and Guidelines used:**

MSC Certification Requirements version 2.0 (for process requirements)

MSC Certification Requirements version 1.3 (for performance requirements, including assessment tree)

Guidance to the MSC Certification Requirements version 2.0 (for process requirements)

Guidance to the MSC Certification Requirements version 1.3 (for performance requirements, including assessment tree)

MSC Surveillance Reporting Template version 1.0

#### **4.1.5 Harmonisation**

An identical Unit of Assessment and Unit of Certification was re-certified in 2015 for Vilsund Blue A/S by Acoura Marine. During the 2016 full assessment by MRAG Americas for DFPO, new information became available that resulted in two of the original three conditions identified under the Vilsund Blue assessment being no longer valid. It is noted that the 2015 annual surveillance audit report for Vilsund Blue repeals these two conditions so that both fisheries were fully harmonized. However, the Vilsund Blue dredge fishery has now withdrawn from the MSC assessment from 28<sup>th</sup> February 2017, and officially joined the DFPO client group since their activity was covered under this UoA. To date no other fisheries are required to be harmonised.

## 5 Results

### 5.1 Condition 1

The following table contains information on the agreed client action plan, milestones set, and progress against the fishery's condition. There was only one condition of certification, summarized in the table below. There were no recommendations made.

**Table 7: Outline of condition 1**

	Insert relevant PI number(s)	Insert relevant scoring issue/ scoring guidepost text	Score
<b>Performance Indicator(s) &amp; Score(s)</b>	3.2.4	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
<b>Condition</b>	A research plan should be prepared for the Limfjord cockle fishery that is designed to provide the management system with reliable and timely information about the effects of the fishery on the cockle stock and the components of the marine environment.		
<b>Milestones</b>	<p><b>Year 1</b> – a draft research plan should be prepared in collaboration with relevant organisations and institutions. Resulting score: 70</p> <p><b>Year 2</b> – the research plan should be agreed and implemented. Resulting score: 70</p> <p><b>Years 3-4</b> – evidence of implementation of the research plan and initial research results should be provided. Resulting score: 80</p>		
<b>Client action plan</b>	<p>The DFPO will ensure that a research plan for the cockle fishery is developed and implemented. Work plan:</p> <p><b>Year 1:</b> A draft research plan will be produced in collaboration with DTU-Aqua.</p> <p><b>Year 1 or Year 2:</b> The research plan will be agreed and implemented.</p> <p><b>Year 2 to Year 4:</b> Evidence of implementation will be provided, as well as results of research carried out as according to the plan.</p>		
<b>Progress on Condition [Year 1]</b>	<p>At the time of the site visit there had been progress with this condition. The client worked with DTU-Aqua to develop and draft a plan for research in the cockle fishery and submitted this to the surveillance team.</p> <p>The document begins with contextual background that explains some of the marine environment, biological and behavioural factors that confound understanding of the impact of the cockle fishery on cockle biomass. As burrowing animals, cockles are only available to dredge (i.e., vulnerable to fishing pressure) when they are exposed on the sea bed. Thus, the plan is to first study the proportion of the cockle population that is exposed to fishing pressure. The outcome of such a study will give the client, scientists and management stakeholders an idea of the magnitude of the issues in relation to fishery/cockle dynamics, and this will help them determine together which research options to pursue next. If, for example, a large proportion of the stock is vulnerable to fishing pressure, then understanding the biological mechanisms and their influence on cockle behaviour would become a priority for study under the plan. If, on the other hand, only a very small proportion is ever vulnerable to</p>		
Document: DFPO Limfjord mussel and cockle surveillance report		page 19	
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	<p>fishing pressure, conclusions may be drawn about the effect of fishing on cockle biomass, which in turn may influence decisions about the value of pursuing further research.</p> <p>The draft plan states the intention for DFPO and the Danish Shellfish Centre (DSC) to apply together to the government for research funds for the initial scoping study.</p> <p>With increasing interest in the cockle fishery and its management by a range of stakeholders, AgriFish staff interviewed for this audit confirmed that there is also increasing interest from a management perspective in understanding cockle/fishery dynamics and therefore in principle support for funding research into cockles that is relevant to the combined interests of fishers, managers, scientists and other stakeholders.</p> <p><b>Conclusion</b></p> <p>Progress with this condition is on target.</p>
<b>Status of Condition</b>	This condition remains open.

## 6 Conclusion

The client is on target with the single condition of certification on PI 3.2.4 for the cockle fishery. The condition remains open and the score remains the same (70), in accordance with the agreed client action plan accepted by the initial assessment team and the milestones established under the PCDR.

The Limfjord Blue Mussel and Cockle fisheries shall continue to be certified.

## 7 References

- Canal-Vergés, P., Nielsen, P., Fomsgaard Nielsen, C., Geitner, K. & Kjerulf Petersen, J. (2014) Konsekvensvurdering af fiskeri på blåmuslinger og søstjerner i Lovns Bredning 2014/2015. DTU Aqua-rapport No. 284.
- MRAG Americas, 2016. DFPO Limfjord Mussel and Cockle Fishery. Public Certification Report. 262pp. Available from: [https://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/northeast-atlantic/dfpo-limfjord-mussel-and-cockle/assessment-downloads-1/20151230\\_PCR\\_MUS507.pdf](https://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/northeast-atlantic/dfpo-limfjord-mussel-and-cockle/assessment-downloads-1/20151230_PCR_MUS507.pdf)
- Nielsen, P., Canal-Verges, P, Geitner, K., & Nielsen, C.F., 2016a. Notat vedrørende fiskeri efter blåmuslinger og søstjerner i Lovns Bredning 2016/2017. Danmarks Tekniske Universitet Institut for Akvatiske Ressourcer – Dansk Skaldyrcenter. 20pp.
- Nielsen, P., Canal-Verges, P, Geitner, K., & Nielsen, C.F., 2016b. Notat vedrørende fiskeri efter blåmuslinger og søstjerner i Løgstør Bredning 2016/2017. Danmarks Tekniske Universitet Institut for Akvatiske Ressourcer – Dansk Skaldyrcenter. 20pp.
- Petersen, J.K., Høgsbro, U., Saurel, C., Stage, B., Nielsen, P., Canal-Verges, P., Kristensen, K., Brida, J., Pedersen, E.V., Geitner, K. & Nielsen, C.F., 2015. Estimering af bestande af blåmuslinger. Test af nye metoder og modeller. Danmarks Tekniske Universitet Institut for Akvatiske Ressourcer – Dansk Skaldyrcenter. 64pp

## 8 Appendices

### Appendix 1. Rescoring evaluation tables

Not applicable. Progress by the client on the condition for PI 3.2.4 is on track. This means that the score remains the same, in accordance with the milestones set for the agreed client action plan.

There were no other PIs that have been re-scored.

## **Appendix 2. Stakeholder submissions**

Separate stakeholder meetings were held with representatives from a) the client, DFPO; b) principal scientist, DTU-Aqua; and c) managers, AgriFish Agency.

### **DFPO**

Surveillance team leader Robert Wakeford met with Jonathan Jacobsen of DFPO at the client's offices in Copenhagen at 13:30 hrs on 24<sup>th</sup> March 2017.

The main purpose of the meeting was to discuss progress on the Client Action Plan and to re-affirm information provided by DTU-Aqua and the AgriFish Agency during the surveillance audit. Mr Jacobsen informed Dr Wakeford of his planned departure from DFPO and that his colleague, to be appointed, would provide ongoing support for the fishery.

In addition to a verbal submission, the client also submitted updated information relating to the 2016 fishing year, as well as the fishing plan and decisions made in relation to the 2017 fishing year. The client also submitted the draft research plan for cockles in accordance with the single certification condition – referred to in this report in the relevant section/s.

### **Danish Shellfish Centre, DTU-Aqua**

Surveillance team leader Robert Wakeford spoke with Jens Petersen of DTU-Aqua by Skype at 08:30 hrs on Friday 24<sup>th</sup> March, 2017.

In summary, discussion focussed on the stock assessment methods and current status of the mussel and cockle populations within Limfjord. In particular, this included the results of the impact assessments for each fishing plan submitted for operations within Lovns Bredning and Løgstør Bredning Natura 2000 sites (Nielsen et al, 2016a; Nielsen et al, 2016b). Use of the “black box” vessel monitoring system over past five years has now enabled new geostatistical models to be developed for the assessment of the mussel population, which includes estimates of uncertainty. In addition, due to high mussel densities, which can affect quality and size of the meat, the level of re-seeding and therefore area fished has slightly increased.

Current research supported by EMFF funding is looking at the behaviour of cockles to the gear (selectivity), as unlike mussels, they are only caught when they emerge from the seabed. This may be due to life-cycle characteristics (e.g. spawning behaviour), which may make the population more vulnerable to over-exploitation. An assessment of the distribution of macroalgae and eelgrass continues every three years and has enabled the fishery to operate in some areas below three meters, where no interactions are feasible.

### **NaturErhvervstyrelsen (AgriFish Agency)**

Surveillance team leader Robert Wakeford (in person) and Chris Grieve (via Skype) met with Anya Gadegaard Boye and Søren Palle Jensen representing the policy-making and compliance-enforcement functions of AgriFish, the Danish government agency within the overarching Ministry for Food, Agriculture and Fisheries responsible for regulating Denmark's fisheries at 10:30 hrs on 24<sup>th</sup> March, 2017.

In summary, discussion focused on any changes to management arrangements in the mussel fishery in the last year. Discussion also focused on AgriFish's desire to become more proactive on research and management of cockle fishing, in part because of an appeal that has prompted an independent administrative review of management decisions that currently prohibit a directed (i.e., targeted) fishery for cockles.

Changes to quota arrangements for the Løgstør Bredning outlined by the client were confirmed by Ms Boye and Mr Jensen, as were the enactment of the newly combined mussel-oyster regulation, the ability for fishers to pool quota shares (two per vessel) and to own two licenses, the harmonisation of vessel lengths nationally in July 2016 to 16 metres, the ability to use the lighter dredge gear inside and outside Natura 2000 areas, and finally, the plans for the 2017 review of the overarching Mussel Policy. Ms Boye indicated that a May 2017 meeting with stakeholders offers a good opportunity to discuss cockle research plans with fishers and scientists.

A Road Map for the Mussel Policy Review sets the timeframe and activities during 2017 for the conduct of the review by AgriFish. Danish law requires the review to be complete by the end of 2017. To that end, stakeholder comments were due to be submitted by 27 March 2017.

Interactions between the mussel fishery and starfish populations were discussed. Ms Boye observed that a change to an EU Council regulation to allow starfish to be used in animal feed, along with infrastructure changes in processing, now makes it economical for starfish to be substituted for soya in animal feeds. The early conclusion is that removals of starfish from higher density areas will be good for mussel populations due to reduced predation.

### **Appendix 3. Surveillance audit information**

The first annual surveillance audit for this certification period was performed by Team Leader Robert Wakeford of MRAG Ltd, and Chris Grieve of Meridian Prime. The surveillance team leader travelled to Denmark and met with the client representative and managers. Chris Grieve joined the meeting with managers via Skype. While in country, the team leader also spoke with the principal scientist for the fishery via teleconference. In addition, the team leader corresponded by email with the client, scientists and managers before and after the surveillance visit.

The client provided a written submission updating relevant information about the 2016 fishing year and plans and decisions for the 2017 fishing year, as well as the draft research plan, as already described in the relevant sections of this report. The principal scientist and management representatives gave verbal accounts to update scientific understanding and management actions that are relevant to an MSC surveillance audit. Summaries of such 'submissions' are provided in Appendix 2.

Further updated information (e.g., catch, vessel, and management data) relevant to the mussel and cockle fisheries was provided to the team leader after the surveillance visit.

#### **Appendix 4. Additional detail on conditions/actions/results**

Not applicable. All relevant information provided in appropriate sections of this report.

**Appendix 5. Revised surveillance program**

Not applicable.

## Appendix 6: Notification of surveillance audit



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MRAG-MS-108-v1

### Marine Stewardship Council Surveillance Announcement

<b>Name of Fishery</b>	DFPO Limfjord Mussel and Cockle fishery	
<b>Surveillance level and type</b>	Level 6, onsite audit	
<b>Surveillance number (tick one)</b>	1st Surveillance	X
	2nd Surveillance	
	3rd Surveillance	
	4th Surveillance	
	Other (expedited etc.)	
<b>Proposed Team Leader</b>	<p><b>Dr. Robert Wakeford</b> would lead this surveillance audit. Robert Wakeford is Director of Fisheries at MRAG Ltd. and has over nineteen years' experience with a broad range of multi-disciplinary skills in fisheries resource management and policy, including fish stock assessment, eco-labelling, survey design and analysis, statistical and empirical modelling, international observer programmes, database design and project management. He has gained considerable experience with the Marine Stewardship Council and associated Certification Requirements, and has conducted numerous MSC pre-assessments for a number of private clients. In addition to pre-assessments, he was Lead Assessor and P2 expert for the successful Mexican Caribbean spiny lobster fishery (Banco Chinchorro and Sian Ka'an fishery), and was responsible for testing the MSC's original Risk Based Framework (RBF) in 2006/07, prior to becoming P2 expert for the certification of the Cornwall sardine fishery. Since 2007, he has worked closely with WWF to develop a framework for implementing Fisheries Improvement Projects (FIPs) based on the Marine Stewardship Council Standard. Robert has previously conducted assessments on freshwater fish populations, and was Team Leader to conduct a fish biodiversity and fisheries survey in Sierra Leone as part of an EIA during 2006. More recently, he is working in Liberia and Sierra Leone as part of the World Bank Funded Regional Fisheries Programme (WARFP) on scientific research, stock assessment and curriculum development and is currently Project Director and Principal Investigator on numerous EU-funded projects to conduct retrospective and prospective evaluations of the Common Fisheries Policy. MRAG Americas confirms that Dr. Wakeford meets the competency criteria in Annex PC for team leaders as follows:</p> <ul style="list-style-type: none"> <li>• <i>He has an appropriate university degree and more than five years' experience in management and research in fisheries;</i></li> </ul>	

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	<ul style="list-style-type: none"> <li>• <i>He has passed the MSC team leader training;</i></li> <li>• <i>He has the required competencies described in Table PC1, section 2;</i></li> <li>• <i>He has undertaken at least two fishery assessments as a team member in the last five years; and</i></li> <li>• <i>He has experience in applying different types of interviewing and facilitation techniques and is able to effectively communicate with clients and other stakeholders.</i></li> </ul> <p>In addition, he has the appropriate skills and experience required to serve as a Principle 2 assessor as described in FCR Annex PC table PC3.</p> <ul style="list-style-type: none"> <li>• MRAG Americas confirms that Robert Wakeford has no conflicts of interest in relation to the fishery under assessment.</li> </ul>
<p><b>Proposed team members [remove if not applicable]</b></p>	<p><b>Chris Grieve.</b> Chris Grieve has 25+ years' experience in fisheries management and policy-making from local to global levels. First as research assistant to Australian stock assessment scientists, then the manager of some complex Australian demersal fisheries. She moved to the UK in 2000 to lead the Sustainable Fisheries Policy Research Programme for a London-based think tank where the vision was to influence change in the European Union's Common Fisheries Policy. In 2002, Chris became the International Policy Director for the Marine Stewardship Council (MSC), responsible for leading the MSC's work on standards, certification and accreditation, governing bodies and developing world fisheries. Chris's role evolved to become Associate Director between 2005 and 2010 after she established Meridian Prime as a consulting company with a diverse portfolio of work. Chris has led and participated in work on the development, evolution and implementation of the MSC standard and certification requirements. She has also led and participated in sustainable fisheries-related projects for client organisations in Europe and the USA. On a consultancy basis, Chris is the Executive Director of the EDGE Certified Foundation: a Swiss-based, global certification scheme dedicated to pursuing gender equality in Fortune 500 companies. Chris is an associate of the GrowHouse Initiative: a company that helps businesses explore beyond the boundaries of their current practice to create compelling, unique and sustainable futures. Chris is a member of the Board of Directors for WOCAN (a non-profit focusing on gender equality in natural resource management in the global south) and on the Advisory Board of Ocean Outcomes (a US-based non-profit focusing on sustainable fisheries). Chris was a founding Trustee and Vice Chair of the ISEAL Alliance, the global sustainability standards organization; and a statutory-appointed member of two Australian fisheries management public boards.</p> <p>MRAG Americas confirms that Chris Grieve meets the competency criteria in Annex PC for team members as follows:</p> <ul style="list-style-type: none"> <li>• <i>She has an appropriate university degree and more than five years' experience in management and research in fisheries,</i></li> <li>• <i>She has undertaken at least two MSC fishery assessments or surveillance site visits in the last five years</i></li> <li>• <i>She is able to score a fishery using the default assessment tree and</i></li> </ul>

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	<i>describe how conditions are set and monitored.</i>
<b>Audit/review time and location</b>	In addition, she has the appropriate skills and experience required to serve as a Principle 3 assessor as described in FCR Annex PC table PC3, and MRAG Americas confirms he has no conflicts of interest in relation to the fishery under assessment.  The surveillance will take place on March 24th, 2017 in Copenhagen, Denmark.
<b>Assessment/ review activities</b>	The surveillance will review any changes in science and management, and will monitor progress in closing out conditions.

MRAG Americas invites stakeholders to provide any information considered relevant to the surveillance and of this fishery. The MSC has developed a guide for stakeholder input, available at <http://www.msc.org/documents/get-certified/stakeholders> and a template for stakeholder response available at <https://www.msc.org/documents/scheme-documents/forms-and-templates/template-for-stakeholder-input-into-fishery-assessments-v2.0/view>.

You may use the template or provide your response in any other format. All comments and inquiries should be directed to MRAG Americas. MRAG will schedule meetings with stakeholders if requested. To schedule a meeting please provide:

- your name and contact details
- your association with the fishery
- the issues you would like to discuss
- where and when you would like to meet

We request that stakeholders provide written information or request a meeting by 5pm PST on 23 March 2017.

More information on the fishery is available at <https://fisheries.msc.org/en/fisheries/dfpo-limfjord-mussel-and-cockle-fishery/@@view>.

Please send any documentation, requests for meetings, or inquiries to:

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