

**EQ-CNO-0015-18** 

**June 2018** 



## **TABLE OF CONTENTS**

1	Introduction	5
2	Environmental Assessment Update	6
2.1	Scope of Approved Environmental Assessments	6
2.2	Geographic Scope	7
2.3	Temporal Scope	7
2.4	Planned Activities for 2018	8
3	Environmental Aspects	8
3.1	Commercial Fisheries	
3.2	Engagement	14
3.3	Research Vessel Surveys by Fisheries and Oceans Canada	14
3.4	Corals and Sponges	15
3.5	Species at Risk	16
3.5.1.1	North Atlantic Right Whale	16
3.5.1.2	Northern Bottlenose Whale (Scotian Shelf Population)	16
3.5.1.3	Northern and Spotted Wolffish	16
3.6	Refuge Areas	16
3.7	Mitigations	18
4	Concluding Statement	18
5	References	19
Append	lix 1 – Fishing Activity Maps for Cod, American Plaice and Redfish	21
Append	lix 2 – Post Season Crab Survey Locations	25
Append	lix 3 – Listing of SARA and COSEWIC Listed Species in the Project Area	27



# **LIST OF FIGURES**

Figure 1. 2008 Drilling EA Project Area	7
Figure 2. Pattern of Canadian fishing activity for 2016 for all commercial species in relation to the Drilling EA	Project
Area (Canadian data only)	10
Figure 3. Pattern of Greenland Halibut Fishing Activity for 2016 (Canadian data only)	11
Figure 4. Pattern of Snow Crab Fishery in 2016 (Canadian data only)	12
Figure 5. Pattern of Northern Shrimp Fishery in 2016 (Canadian data only)	13
Figure 6. Locations of Special Areas within and near the Project Area	17
Figure 7. Canadian domestic fishing activity for Atlantic Cod in 2016 from DFO data	22
Figure 8. Canadian domestic fishing activity for American Plaice in 2016 from DFO data	23
Figure 9. Canadian domestic fishing activity for Redfish in 2016 from DFO data	24
Figure 10. Locations of Industry-DFO Collaborative Post-Season Snow Crab Survey Stations – 2017	26



#### LIST OF ACRONYMS

**ASP** Association of Seafood Producers

**AUV** Autonomous Underwater Vehicle

CEAR Canadian Environmental Assessment Registry

**C-NLOPB** Canada-Newfoundland and Labrador Offshore Petroleum Board

**COSEWIC** Committee on the Status of Endangered Wildlife in Canada

**DFO** Fisheries and Oceans Canada

**EA** Environmental Assessment

EBSA Ecologically and Biologically Significant Area

**EIS** Environmental Impact Statement

**EEZ** Exclusive Economic Zone

**EL** Exploration Licence

**FFAW** Fish, Food and Allied Workers

**FLO** Fisheries Liaison Officer

**GEAC** Groundfish Enterprise Allocation Council

km Kilometres

km² Kilometres squared

MBES Multi Beam Echo Sounder

NAFO Northwest Atlantic Fishing Organization

**NEFSC** Northeast Fisheries Science Centre

NOAA National Oceanic and Atmospheric Administration

NM Nautical Miles



OCI Ocean Choice International

**ROV** Remotely Operated Vehicle

**SAR** Species at Risk

SARA Species at Risk Act

SSS Side Scan Sonar

**SBP** Sub-Bottom Profiler

SDL Significant Discovery Licence

TAC Total Allowable Catch

t Tonnes

VSP Vertical Seismic Profile



## 1 Introduction

Environmental assessments (EA) for offshore oil and gas exploration and production activities are scoped for multiple activities that are typically carried out over multiple years. The Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB), in its EA decisions, requires that operators, when applying for various Authorization (e.g. Operations, Geophysical Program, Geological, Geotechnical, Environmental Programs, Vertical Seismic Profile [VSP] Program, etc.) submit information confirming that the proposed activities fall within the scope of the previously approved EA, indicate if the EA predictions remain valid, and provide an update on species at risk (SAR). The information provided herein provides the information to support the above requirements and notes any changes that need to be addressed.

The scope of the activities planned in 2018 (see Section 2.4) were assessed under the approved EAs and associated amendments noted in Table 1.

Table 1 - Existing EA Approvals

Table 1 - Existing EA Approvals						
EA Report Title	Temporal Scope	C-NLOPB Reference No.				
Environmental Assessment of StatoilHydro	Year-round, 2008-	Canadian Environmental				
Canada Ltd. Exploration and	2019 inclusive	Assessment Registry (CEAR)				
Appraisal/Delineation Drilling Program for		No. 07-01-32083				
Offshore Newfoundland, 2008-2016 (LGL						
Limited 2008) and associated amendments						
and updates						
Environmental Assessment of Statoil's	Between April 1	N/A				
Geophysical Program for Jeanne d'Arc and	and October 31,					
Central Ridge/Flemish Pass Basins, 2011-	2011-2019					
2019 (LGL Limited 2011) and associated						
amendments and updates						

This document provides the necessary update to the existing EAs for the proposed 2018 activities by ensuring that the scope of the assessment and mitigations committed to in the EA remain valid. Similar to previous annual updates, the purpose of this 2018 EA update is to:

- Provide an overview of planned activities for the upcoming year:
- Update any applicable environmental baseline information for key environmental components that has become available since the EA and previous updates were produced;
- Describe any public and/or stakeholder consultation activities undertaken; and
- Confirm that the nature and scope of the planned activities are within the scope of the original EA Report, including the appropriateness and adequacy of the associated environmental effects predictions and mitigation measures.



#### 2 **Environmental Assessment Update**

#### **Scope of Approved Environmental Assessments** 2.1

Table 2 below outlines the activities included in the original EA Reports and associated amendments, and includes references to the applicable EA Report.

Table 2 - Scope of Approved FA Reports

Activity	Applicable EA Report	Page Reference
Geohazard or wellsite surveys including the use of remotely operated	Drilling Program <sup>1, 2</sup>	1, 14, 20
vehicles (ROVs), sub-bottom profiler (SBP), multi beam echo sounder (MBES) and side scan sonar (SSS)	Geophysical Program <sup>3</sup>	1, 9, 13
Geotechnical testing (e.g. borehole drilling, sediment sampling)	Drilling Program <sup>1</sup>	1, 14, 20
ROV surveys	Drilling Program <sup>1</sup>	14, 20
	Geophysical Program 2015 Update <sup>4</sup>	3, 7
Environmental Surveys	Drilling Program 2016 EA Amendment <sup>5</sup>	8
	Drilling Program 2017 EA Update <sup>6</sup>	2,3, 5
Drilling up to 40 exploration and/or delineation wells from semi-submersible or jack-up mobile drilling units, or drill ships, including drill stem testing	Drilling Program and 2016 EA Amendment <sup>1,5</sup>	1, 14
VSP	Drilling Program <sup>1</sup>	1, 14, 20
Well abandonment and/or suspension	Drilling Program <sup>1</sup>	14

#### Notes:

- Environmental Assessment of StatoilHydro Canada Ltd. Exploration and Appraisal/Delineation Drilling Program for Offshore Newfoundland, 2008-2016 (LGL Limited 2008) and associated amendments and updates.
- 2. Drilling Program EA Report does not specifically mention the use of ROV, SBP, MBES or SSS; this is however, included in the Geophysical Program EA Report.
- 3. Environmental Assessment of Statoil's Geophysical Program for Jeanne d'Arc and Central Ridge/Flemish Pass Basins, 2011-2019 (LGL Limited 2011) and associated amendments and updates.
- The 2015 EA Update included environmental surveys (Statoil 2015).
   The 2016 EA Amendment included the increase of exploration and appraisal/delineation wells, and environmental surveys (Statoil 2017a).
- 6. The 2017 EA Update included environmental surveys (Statoil 2017b).



# 2.2 Geographic Scope

The Project Area, as defined in the original EA Report is illustrated in Figure 1. The coordinates of the Project Area from the original EA are as follows:

- 49° North & 49.5° West;
- 49° North & 45.5° West;
- 46° North & 49.5° West; and
- 46° North & 45.5° West.

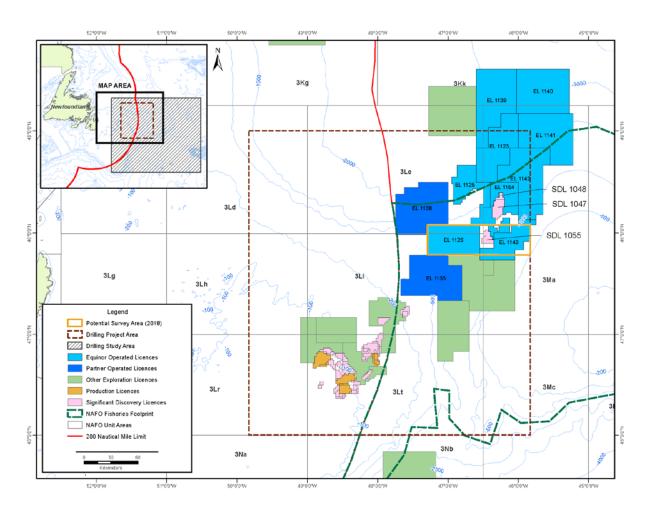


Figure 1. 2008 Drilling EA Project Area

# 2.3 Temporal Scope

All activities scoped in the original EA Report associated with the drilling program (LGL Limited 2008) and associated amendments could be carried out year-round from 2008 through to the end of 2019.



All activities scoped in the original EA Report associated with the geophysical program (LGL Limited 2011) and associated amendments could be carried out between April 1 and October 31 from 2011 to the end of 2019.

#### 2.4 Planned Activities for 2018

The following activities may occur within the Project Area in exploration licences (ELs) 1126, 1143 and 1154, and significant discovery licence (SDL) 1055, in 2018 (Figure 1):

- Detailed bathymetry survey using MBES and SSS mounted on an autonomous underwater vehicle (AUV):
- Coral and sponge surveys which includes interpreting the above MBES and SSS data to identify
  potential targets where corals and sponges may be likely, and using a camera-equipped ROV
  and/or AUV to collect video and still pictures;
- Collection of sediment and water samples; and
- Deployment of one or two instrumentation moorings.

It is anticipated that the AUV would be active in the water for periods of up to 48-hours. After each 48-hour period the AUV will be retrieved for maintenance and data retrieval. While the AUV is operational in the water, the vessel will maintain a position directly above the AUV to ensure communications with the device. Prior to commencing the survey, field trials are carried out to test the communication systems of the AUV and its recovery with the vessel. In addition, during these sea trials, the camera equipped ROV will be deployed to test the functionality of the cameras and lights. The MBES/SSS/SAS will not be functioning and no data will be collected. Sea trials may take between 1-2 days to complete. The location for the sea trials has not yet been determined, but will likely occur off the coast of NL, approximately 30 kilometres (km) east of Bay Bulls, in approximately 160 m water depth. The final location will be determined in consultation with Fish, Food and Allied Workers Union (FFAW-Unifor) to ensure there is no conflict with ongoing fishing activities in the area of the sea trials.

The survey is planned to commence in mid to late summer 2018, and may take up to 45 days to complete, which falls within the temporal scope of the previously approved EAs. Weather, technical and/or operational delays may extend the survey beyond 45 days. The use of an AUV was not considered within the scope of the previously approved EA reports on file with the C-NLOPB.

# 3 Environmental Aspects

This section addresses the environmental aspects associated with the activities outlined in Section 2.4.

#### 3.1 Commercial Fisheries

Figure 2 illustrates the pattern of fishing activity in 2016 for all commercial species, based on domestic (i.e. Canadian) geospatial catch data as obtained from Fisheries and Oceans Canada (DFO) with respect to the



Study and Project Areas. This pattern of activity is consistent with that documented in the original EA report and updates.

Within offshore Newfoundland and Labrador, and within the Project and Study Areas, general fishing distribution and activity for most species has remained consistent since the original EA report. Quotas for fisheries have changed throughout fishing seasons; resulting in lower harvesting activity for some fisheries, however, general fishing trends and locations of harvesting activities for species have remained consistent. The largest change in commercial fishing activity since the time of the original EA report has occurred in the northern shrimp fishery. Commercial harvesting for northern shrimp in Shrimp Fishing Area 7 (Northwest Atlantic Fishing Organization [NAFO] Division 3L) was placed under moratoria in 2015 due to declining shrimp stocks and poor recruitment numbers (DFO 2015). The Project Area falls within NAFO Division 3L, and as illustrated in Figure 5, there was no directed domestic fishing activity for northern shrimp in Division 3L within the Canadian 200 nautical mile (NM) Exclusive Economic Zone (EEZ). Commercial harvesting activity for northern shrimp in the portion of 3L outside the EEZ, and in Division 3M, is regulated by NAFO. Northern shrimp has been placed under moratoria by NAFO for both areas, with no directed fishery being planned for 2018 and 2019 (NAFO 2017).

DFO's fishing activity information for commercial species of interest (i.e. Greenland halibut, snow crab and northern shrimp) are provided in Figures 3 to 5. Mapping for additional species of commercial interest (i.e. Atlantic cod, American plaice and redfish) are provided in Appendix 1.

With respect to international fishing, Equinor Canada Ltd. (Equinor) (formerly known as Statoil Canada Ltd.) is aware that redfish will likely be fished by NAFO fishing vessels in the area of the Flemish Pass as part of their activities within the NAFO "footprint", outside the EEZ. The footprint is an area outside the EEZ defined by the intensity of bottom-fishing activity of NAFO vessels over a 20-year period (NAFO 2009). The portion of the footprint overlapping the area of Equinor's proposed activities is shown on Figures 2 to 5, and on Figure 6 in relation to special areas, that exist within the Project Area.

The fisheries quotas allocated to NAFO vessels for 2018 are described in NAFO/FC Doc 18/01 (NAFO 2018). This document indicates total allowable catches (TAC) of 12,227 tonnes (t) for Greenland halibut and 44,800 t for redfish. Of these amounts, 1,833 t of Greenland halibut TAC and 12,592 t of redfish TAC have been allocated to Canadian Vessels. Domestically, the most recent fisheries management decision for snow crab has set the current TAC for the 2018 fishing season in NAFO Divisions 3LNO at 18,840 t (DFO 2018a). This is a 24 percent decrease from 24,787 t for the 2017 season. As mentioned above, there is no scheduled northern shrimp fishery in NAFO Division 3L for 2018 and 2019 due to the current moratorium in place. For international fishing operations, the data cannot provide definitive information as to what extent quota allocations will be taken in the Project Area. It does indicate that there will be a need to coordinate Equinor's offshore operations with both domestic and foreign fishing vessels in the Flemish Pass area using the measures committed to in the EA that govern its activities.



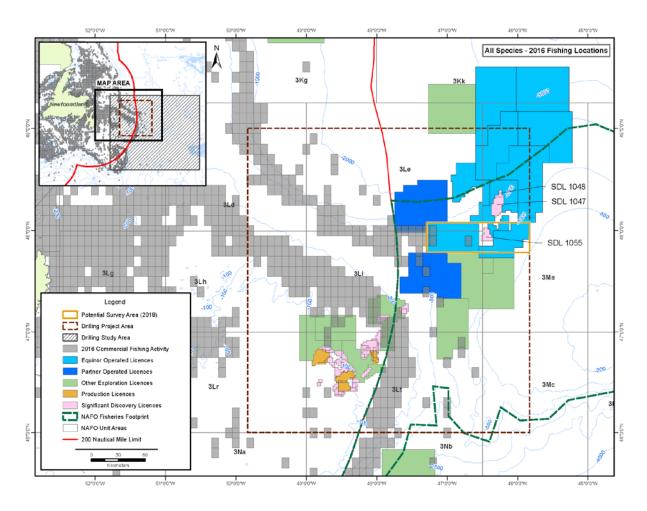


Figure 2. Pattern of Canadian fishing activity for 2016 for all commercial species in relation to the Drilling EA

Project Area (Canadian data only)





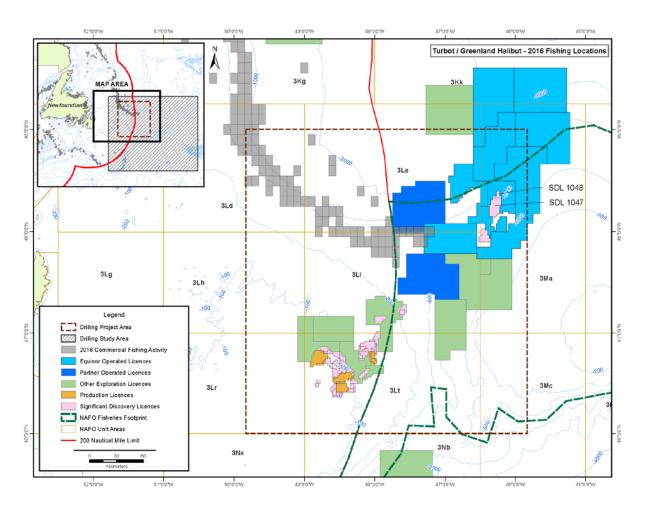


Figure 3. Pattern of Greenland Halibut Fishing Activity for 2016 (Canadian data only)

From the perspective of the current high value domestic fisheries (i.e. snow crab and shrimp) these species are harvested within the Project Area but with low activity within Equinor licences. Figures 4 and 5 show the 2016 patterns of Canadian fishing activity for snow crab and northern shrimp. The pattern of activity shown for these species is showing a decline in fishing activity in the Project Area as compared to the original EA Report. This is due to continual declines in TAC for these species, as biomass appears to be shrinking and recruitment is low in certain areas (DFO 2017a; DFO 2018a; DFO 2018b).







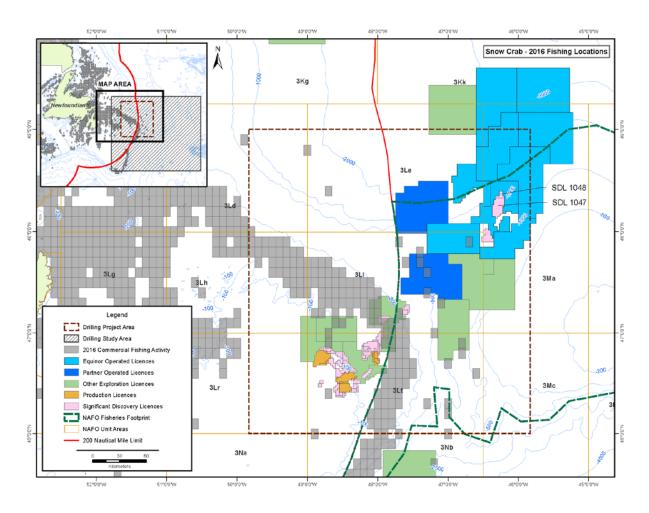


Figure 4. Pattern of Snow Crab Fishery in 2016 (Canadian data only)





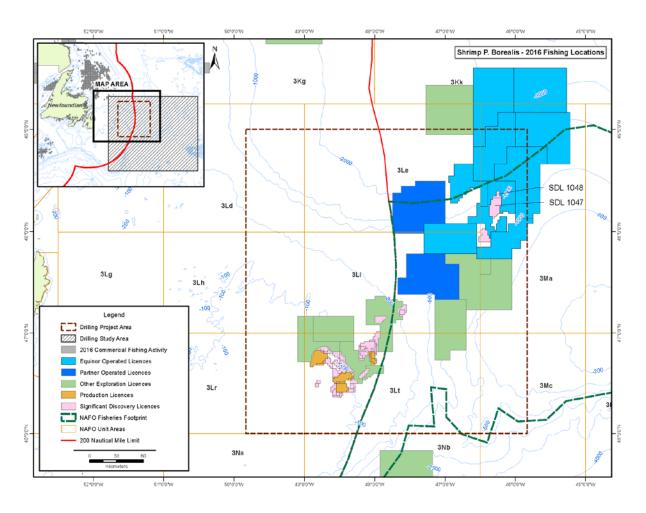


Figure 5. Pattern of Northern Shrimp Fishery in 2016 (Canadian data only)

There may be an interaction between the AUV and commercial fisheries during operations in the survey area. As the AUV is autonomous and self-propelled, it will travel at some distance from the vessel during data collection. However, the vessel will maintain position over the AUV when it is at depth. Upon retrieval, the ascent of the AUV undertaken in a controlled manner in proximity to the vessel. As there may be ongoing commercial fishing activity in the area, a Fisheries Liaison Officer (FLO) will be on board the vessel to maintain communications with fishers and to notify them regarding the presence of the AUV. *Notices to Shipping* will also be issued. As described in Section 2.4, sea trials will be carried out approximately 30 km from shore. To avoid interference with ongoing fishing activities during this 1-2 day sea trials, Equinor and its contractor will work with the FFAW-Unifor to determine a location where interference with fishing activity will be avoided. With regard to the deployment of the instrumentation moorings, *Notices to Shipping* and *Notices to Mariners* will be issued. With these operational procedures and mitigations in place, it is predicted there will be no impact to commercial fisheries and no significant effect from AUV operations on commercial fisheries.



# 3.2 Engagement

Information regarding planned 2018 activities was provided to the following fisheries organizations:

- FFAW-Unifor;
- Association of Seafood Producers (ASP);
- Groundfish Enterprise Allocation Council (GEAC);
- · Ocean Choice International (OCI); and
- One Ocean.

There is also ongoing liaison with the fishing industry through the regular meetings of the One Ocean Industry Board that includes representatives from the various operating oil and gas operators (i.e. Suncor Energy, Equinor, Husky Energy, ExxonMobil and Chevron Canada Resources) and the fishing sector (i.e. FFAW-Unifor and ASP).

Equinor recognizes that other countries fish outside Canada's 200 NM EEZ. To minimize potential conflict, Equinor will inform Canada's representative on NAFO regarding 2018 activities and will also communicate all *Notices to Shipping* to the NAFO Secretariat in Halifax, Nova Scotia via DFO.

Equinor also understands that it is important to recognize that harvesters fish a resource, and not fixed points from year to year. Fishing licenses are issued for large areas (e.g. NAFO subdivisions 3K or 3L) and fishing activity could take place anywhere within these areas and not just at the pattern of locations fished in recent years indicated by DFO data. This means that Equinor will continue to engage with the fishing industry on a regular basis to keep up to date with trends in fishing from year to year through mechanisms noted above.

Equinor will continue to keep fishing interests informed of these activities during the operational planning and execution phases. This will be done through the established One Ocean and FFAW-Unifor contacts and others as deemed necessary or as advised.

Equinor recognizes that communication and coordination between oil and gas industry activities and fishing interests are critical to avoid or minimize interference with either industries offshore operations. Key factors to achieve this from Equinor's perspective include:

- Ongoing communications with all commercial fish harvesters in the Project area including ASP, FFAW-Unifor, GEAC, OCI, One Ocean and NAFO (through DFO);
- Ensuring clear protocols for reporting with respect to any fisheries issues that may arise to Equinor, FFAW and the C-NLOPB as well as routine operational reporting; and
- Issuing Notices to Shipping.

# 3.3 Research Vessel Surveys by Fisheries and Oceans Canada

DFO undertakes annual fisheries research surveys in the Newfoundland and Labrador offshore area. Table 2 provides a tentative schedule for DFO research surveys for 2018 (L. Mello, DFO - personal



communication). Equinor will coordinate with DFO on an ongoing basis to determine if overlaps in time and space are likely and what measures are required to manage any potential interactions.

Table 2. Proposed DFO Research Vessels in 2018

Vessel	Activity	NAFO Division	Tentative Start Date	Tentative End Date
		3P	March 31	April 12
		3P	April 12	April 24
	NL Spring Survey	3P+3O	April 25	May 8
	3O+3N May 8	May 22		
0000		3L+3N	May 23	June 5
CCGS Needler	Shellfish Survey	2J+4R	August 30	September 11
Neediei		30	September 12	September 25
		3O+3N	September 25	October 9
	NII Fall Comment	3N+3L	October 10	October 23
	NL Fall Survey	3L	October 23	November 6
		3K+3L	November 7	November 20
			November 20	December 1
	NL Spring AZMP <sup>1</sup>	3L	April 3	April 24
	Capelin Survey	3KL	May 2	May 22
	NL Summer AZMP <sup>1</sup>		July 8	July 29
CCGS		2H	October 5	October 24
Teleost	t NL Fall Survey	2H+2J	October 24	November 6
		2J	November 7	November 20
		3K	November 20	December 4
		3K	December 5	December 19

Source: L. Mello, DFO-NL (2018)

There is also an annual Industry - DFO Collaborative Post-Season Trap Survey for snow crab, which is conducted using commercial and modified snow crab traps at established trap stations. The survey typically starts in late August or early September after the commercial snow crab season has ended. Appendix 2 outlines the 2017 locations of the post-season survey in relation to the Project and Study Area. Recent discussions with DFO representatives indicate that the plans for the 2018 surveys are not yet available at the time of writing and will become available later in 2018 (L. Mello, DFO - personal communication).

#### 3.4 **Corals and Sponges**

The planned survey is not anticipated to contact the seabed; therefore, it is not anticipated that there will be any interaction with benthic habitat, including corals and sponges. If sediment samples are obtained it will be in areas where corals and sponges are not present.



### 3.5 Species at Risk

Appendix 3 outlines SAR as designated by the *Species at Risk Act* (SARA) and Committee on the Status of Endangered Wildlife in Canada (COSEWIC) (Government of Canada 2018), as well as the provincial *Endangered Species Act* (Government of Newfoundland and Labrador 2018), for the Grand Banks and Flemish Pass areas.

A review of the SARA species-specific recovery plans and the two critical habitat statements, as noted in Appendix 3, do not indicate that any new or modified mitigation measures are required beyond those already committed to by Equinor for the scope of the operations addressed by the EA relevant to the activities described in this update.

### 3.5.1.1 North Atlantic Right Whale

It is noted that the North Atlantic Right Whale has a Critical Habitat Protection Statement pursuant to SARA (DFO 2009), however, based on known sightings to date, it is an infrequent visitor to the Project Area. The critical habitat designated for this species is in the Grand Manan Basin in the Bay of Fundy, which is outside the Project Area. The National Oceanic and Atmospheric Administration (NOAA) Northeast Fisheries Science Centre (NEFSC) has an interactive North Atlantic Right Whale Sightings Map and most reported sightings between January 2010 and mid-March 2018 have been along the United States eastern seaboard, southwest of Nova Scotia and east of New Brunswick (NOAA NEFSC 2018). Minimal observations occurred off Newfoundland and Labrador and none were reported within the Project Area (NOAA NEFSC 2018). Minimal observations were also documented in the Flemish Pass Exploration Drilling Environmental Impact Statement (EIS) (Statoil 2017c).

#### 3.5.1.2 Northern Bottlenose Whale (Scotian Shelf Population)

The Northern Bottlenose Whale (Scotian Shelf population) has a Critical Habitat Protection Statement pursuant to SARA (DFO 2010a), however, the critical habitat is outside the Project Area and in the Scotian Shelf area (Statoil 2017c).

#### 3.5.1.3 Northern and Spotted Wolffish

The draft "Recovery Strategy for the Northern Wolffish and Spotted Wolffish and Management Plan for the Atlantic Wolffish" (DFO 2015) identifies critical habitat for the Northern and Spotted Wolffish. DFO has not issued a Critical Habitat Protection Statement for these species. The critical habitat identified falls within the EA Project Area but does not appear to overlap with Equinor activities in the Flemish Pass area.

### 3.6 Refuge Areas

Since the 2017 EA update, the Government of Canada has designated four areas offshore Newfoundland and Labrador as "Marine Refuge Areas", to help meet federal commitments to protect Canadian waters and



the ecological functions that they provide. These four refuge areas have been designated primarily to protect sensitive benthic habitat, including aggregations of corals and sponges. Bottom contact fishing activities are prohibited in these marine refuge areas. DFO notes that no other human activities that take place in these areas are incompatible with the conservation interests of the areas (DFO 2018c).

One of these Marine Refuge Areas, the Northeast Newfoundland Slope Closure, overlaps with the Project Area. The Northeast Newfoundland Slope Closure is approximately 46,833 kilometres squared (km²) and is designated primarily to protect corals and sponges that are present along the continental shelf. These corals and sponges provide habitat to marine species and help provide a productive marine environment. The Northeast Newfoundland Slope Closure also overlaps with the Orphan Spur, an existing Ecologically and Biologically Significant Area (EBSA), which also has a high concentration or corals, and is known to provide habitat to species of shark, grenadier, wolffish, American plaice, and redfish. Figure 6 illustrates the location of the Northeast Newfoundland Slope Closure, along with other special areas within the Project Area such as EBSAs and sponge, coral, and sea pen closure areas.

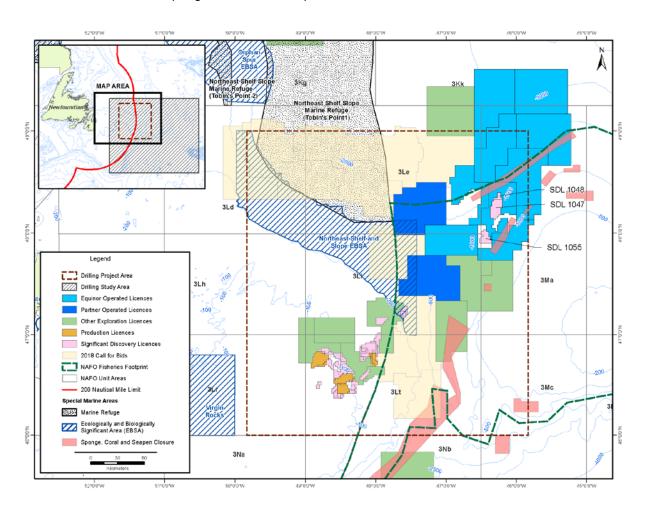


Figure 6. Locations of Special Areas within and near the Project Area



# 3.7 Mitigations

Equinor regards the environmental predictions, consequent mitigations and subsequent significance determination as cited in the original EA Report and approved amendments as valid and re-commits to implementing these mitigation measures for the activities to be carried out under the scope of this assessment this year.

Mitigations to be implemented, as stated in the original EA and approved amendments:

- Communication procedures with commercial fishers to avoid conflicts with fishery;
- Notices to Shipping;
- Gear and vessel compensation program;
- · Marine mammal and seabird observations;
- Fisheries Liaison Officer;
- Handling and release of stranded seabirds; and
- For geohazard/wellsite surveys, mitigations will follow those defined in Appendix 2 of Geophysical, Geological, Environmental and Geotechnical Program Guidelines (C-NLOPB 2017) as applicable to the use of acoustic equipment such as MBES and SSS.

# 4 Concluding Statement

The proposed 2018 scope to be executed by Equinor have been reviewed and assessed to be within the scope of the original EA and approved amendments currently in place to address those activities, specifically:

- The scope and nature of activities planned and addressed under the original EA and approved amendments have not changed;
- The nature and extent of the fishing activities being undertaken in the Project Area have been validated and have not changed such that project activities pose any potential effects not previously assessed;
- The nature of the SAR in the Project and Study areas have been validated and no new species has been added to Schedule 1 of SARA nor to COSEWIC listings;
- As noted previously in this update, no critical habitats for any of these species defined pursuant to the SARA occur in the EA Study Area;
- The mitigation measures defined and committed to in the original EA are still valid and will continue to be implemented; and
- Equinor continues to consult with stakeholders directly affected by the activities planned under the original EA and approved amendments.

The environmental effects predicted in the original EA reports and amendments remain valid. Equinor reaffirms its commitment to implement the mitigation measures proposed in these assessments and in the Screening Decisions made by the C-NLOPB.



### 5 References

C-NLOPB (Canada-Newfoundland and Labrador Offshore Petroleum Board). 2017. Geophysical, Geological, Environmental and Geotechnical Program Guidelines. Available online: <a href="http://www.cnlopb.ca/pdfs/guidelines/ggegpg.pdf?lbisphpreq=1">http://www.cnlopb.ca/pdfs/guidelines/ggegpg.pdf?lbisphpreq=1</a>. Accessed March 2018.

DFO (Fisheries and Oceans Canada). 2009. North Atlantic Right Whale in Canada: Critical Habitat Protection Statement. Available online:

http://www.sararegistry.gc.ca/virtual\_sara/files/chs\_north\_atlantic\_right\_whale\_1209\_e.pdf. Accessed May 2018.

DFO. 2010a. Northern Bottlenose Whale, Scotian Shelf Population: Critical Habitat Protection Statement. Available online:

http://www.sararegistry.gc.ca/virtual\_sara/files/chs\_northern\_bottlenose\_whale\_1110\_e.pdf. Accessed May 2018.

DFO 2018a. Decisions for Atlantic Canada, Quebec, and the Arctic – 2018. Available online: <a href="http://www.dfo-mpo.gc.ca/decisions/fm-2018-gp/index-atl-eng.htm">http://www.dfo-mpo.gc.ca/decisions/fm-2018-gp/index-atl-eng.htm</a>. Accessed May 2018.

DFO 2018b. An Assessment of Northern Shrimp (*Pandalus borealis*) in Shrimp Fishing Areas 4-6 and of Striped Shrimp (*Pandalus montagui*) in Shrimp Fishing Area 4 in 2015. Available online: <a href="http://waves-vagues.dfo-mpo.gc.ca/Library/365625.pdf">http://waves-vagues.dfo-mpo.gc.ca/Library/365625.pdf</a>. Accessed May 2018.

DFO 2018c. List of Marine Refuges: Northeast Newfoundland Slope Closure. Available online: <a href="http://www.dfo-mpo.gc.ca/oceans/oeabcm-amcepz/refuges/northeastnewfoundlandslope-talusnordestdeterreneuve-eng.html">http://www.dfo-mpo.gc.ca/oceans/oeabcm-amcepz/refuges/northeastnewfoundlandslope-talusnordestdeterreneuve-eng.html</a>. Accessed May 2018.

Government of Canada. 2018. Species at Risk Public Registry. Species Search. Available online: <a href="http://www.sararegistry.gc.ca/search/SpeciesSearch\_e.cfm">http://www.sararegistry.gc.ca/search/SpeciesSearch\_e.cfm</a>. Accessed March 2018.

Government of Newfoundland and Labrador. 2018. Fisheries and Land Resources. Species at Risk. Available online: http://www.flr.gov.nl.ca/wildlife/endangeredspecies/index.html. Accessed March 2018.

LGL Limited. 2008. Environmental Assessment of StatoilHydro Canada Ltd. Exploration and Appraisal/Delineation Drilling Program for Offshore Newfoundland, 2008-2016. LGL Rep. SA947b. Rep. by LGL Limited, Canning & Pitt Associates Inc., and Oceans Ltd., St. John's, NL, for StatoilHydro Canada Ltd., St. John's, NL. 292 p. + appendices. Available online: <a href="http://www.cnlopb.ca/pdfs/nhdrill/shearpt.pdf?lbisphpreq=1">http://www.cnlopb.ca/pdfs/nhdrill/shearpt.pdf?lbisphpreq=1</a>. Accessed March 2018.

LGL Limited. 2011. Environmental Assessment of Statoil's Geophysical Program for Jeanne d'Arc and Central Ridge/Flemish Pass Basin, 2011-2019. LGL Rep. SA1121. Rep. by LGL Limited, in association with Canning & Pitt Associates Inc., and Oceans Ltd., St. John's, NL, for Statoil Canada Ltd., St. John's,



NL. 227 p. +appendices. Available online: <a href="http://www.cnlopb.ca/assessments/statoilgeo.php#">http://www.cnlopb.ca/assessments/statoilgeo.php#</a>. Accessed March 2018.

L. Mello, DFO - personal communication.

NAFO (Northwest Atlantic Fisheries Organization). 2009. Delineation of Existing Bottom Fishing Areas in the NAFO Regulatory Area. NAFO/FC Doc. 09/20 Serial No. N5712. Available online: <a href="https://archive.nafo.int/open/fc/2009/fcdoc09-20.pdf">https://archive.nafo.int/open/fc/2009/fcdoc09-20.pdf</a>. Accessed May 2018.

NAFO. 2017. Stock Advice: Northern Shrimp. Available online: <a href="https://www.nafo.int/Science/Stocks-Advice">https://www.nafo.int/Science/Stocks-Advice</a>. Accessed May 2018.

NAFO. 2018. Conservation and Enforcement Measures NAFO/FC Doc. 18/01 Serial No. N6638. Available online: <a href="https://www.nafo.int/Portals/0/PDFs/COM/2018/CEM-2018-web.pdf?ver=2017-12-21-133002-477">https://www.nafo.int/Portals/0/PDFs/COM/2018/CEM-2018-web.pdf?ver=2017-12-21-133002-477</a>. Accessed May 2018.

NOAA NEFSC (National Oceanic and Atmospheric Administration – Northeast Fisheries Science Center). 2018. Interactive North Atlantic Right Whale Sightings Map. Accessed March 2018.

Statoil (Statoil Canada Ltd.). 2015. 2015 Environmental Assessment Review – Flemish Pass Geophysical Survey. Available online: <a href="http://www.cnlopb.ca/pdfs/statoilgeo/2015eaupdate.pdf?lbisphpreq=1">http://www.cnlopb.ca/pdfs/statoilgeo/2015eaupdate.pdf?lbisphpreq=1</a>. Accessed May 2018.

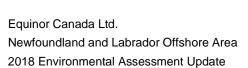
Statoil. 2017a. 2016 Amendment to the Environmental Assessment – Exploration and Appraisal/Delineation Drilling Program for Offshore Newfoundland, 2008-2016. Available online: <a href="http://www.cnlopb.ca/pdfs/nhdrill/reveaamend.pdf?lbisphpreq=1">http://www.cnlopb.ca/pdfs/nhdrill/reveaamend.pdf?lbisphpreq=1</a>. Accessed May 2018.

Statoil. 2017b. 2017 Environmental Assessment Update. Available online: <a href="http://www.cnlopb.ca/pdfs/nhdrill/2017drilleaupdate.pdf?lbisphpreq=1">http://www.cnlopb.ca/pdfs/nhdrill/2017drilleaupdate.pdf?lbisphpreq=1</a>. Accessed May 2018.

Statoil. 2017c. Flemish Pass Exploration Drilling Program – Environmental Impact Statement. Available online: http://ceaa-acee.gc.ca/050/evaluations/document/121309?culture=en-CA. Accessed March 2018.



# Appendix 1 – Fishing Activity Maps for Cod, American Plaice and Redfish





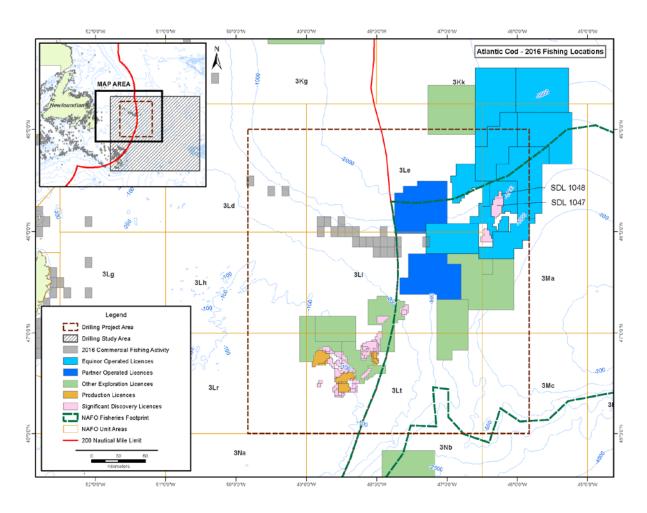


Figure 7. Canadian domestic fishing activity for Atlantic Cod in 2016 from DFO data





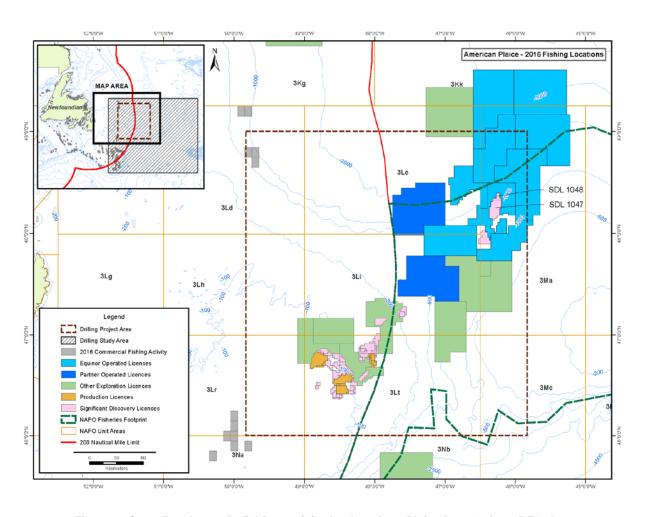


Figure 8. Canadian domestic fishing activity for American Plaice in 2016 from DFO data



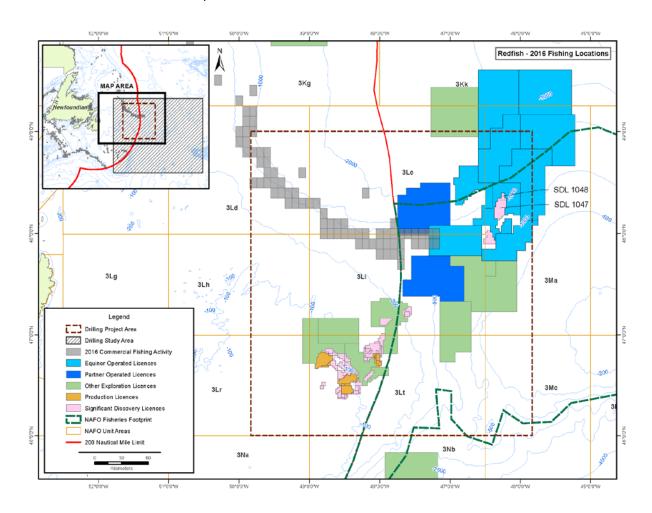


Figure 9. Canadian domestic fishing activity for Redfish in 2016 from DFO data



# **Appendix 2 – Post Season Crab Survey Locations**



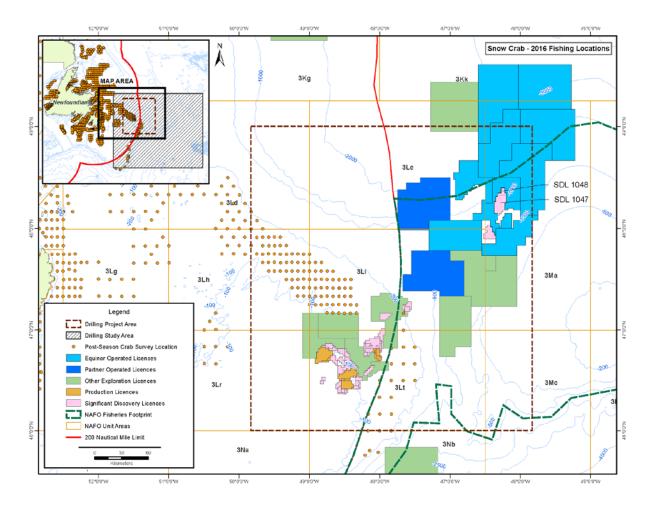


Figure 10. Locations of Industry-DFO Collaborative Post-Season Snow Crab Survey Stations – 2017



# Appendix 3 – Listing of SARA and COSEWIC Listed Species in the Project Area



	Species		Federal		Provincial	
Family	Common Name	Scientific Name	SARA Status (Schedule 1) <sup>1</sup>	COSEWIC Designation	Designation	
Marine Fish						
Anarhichadidae	Atlantic wolffish	Anarhichas lupus	Special Concern <sup>2</sup>	Special Concern		
Anarhichadidae	Northern wolffish	Anarhichas denticulatus	Threatened <sup>2,3</sup>	Threatened		
Anarhichadidae	Spotted wolffish	Anarhichas minor	Threatened <sup>2</sup>	Threatened		
Anguillidae	American eel	Anguilla rostrate		Threatened	Vulnerable	
Cetorhinidae	Basking shark	Cetorhinus maximus		Special Concern		
Cyclopteridae	Lumpfish	Cycopterus lumpus		Threatened		
Gadidae	Atlantic cod (Newfoundland and Labrador population)	Gadus morhua		Endangered		
Gadidae	Cusk	Brosme		Endangered		
Lamnidae	Porbeagle	Lamna nasus		Endangered		
Lamnidae	Shortfin mako	Isurus oxyrinchus		Special Concern		
Lamnidae	White shark	Carcharodon carcharias	Endangered	Endangered		
Macrouridae	Roughhead grenadier	Macrourus berglax		Special Concern		
Macrouridae	Roundnose grenadier	Coryphaenoides rupestris		Endangered		
Phycidae	White hake (Atlantic and Northern Gulf of St. Lawrence population)	Urophycis tenuis		Threatened		
Pleuronectidae	American plaice (Newfoundland and Labrador population)	Hippoglossoides platessoides		Threatened		



Rajidae	Smooth skate (Funk Island Deep population)	Malacoraja senta		Endangered		
Rajidae	Thorny skate	Amblyraja radiata		Special Concern		
	Winter Skate (Eastern Scotian					
Rajidae	Shelf – Newfoundland population)	Leucoraja ocellata		Endangered		
Salmonidae	Atlantic salmon (South Newfoundland population)	Salmo salar		Threatened		
Salmonidae	Atlantic Salmon (Outer Bay of Fundy population)	Salmo salar		Endangered		
Scombridae	Atlantic bluefin tuna	Thunnus thynnus		Endangered		
Scorpaenidae	Acadian redfish (Atlantic population)	Sebastes fasciatus		Threatened		
Scorpaenidae	Deepwater redfish (Northern population)	Sebastes mentella		Endangered		
Squalidae	Spiny dogfish	Squalus acanthias		Special Concern		
Marine Birds						
Laridae	Ivory Gull	Pagophila eburnea	Endangered <sup>4</sup>	Endangered	Endangered	
Scolopacidae	Red-necked Phalarope	Phalaropus lobatus		Special Concern		
Marine Mammals and Sea Turtles						
Balaenopteridae	Blue Whale (Atlantic population)	Balaenoptera musculus	Endangered⁵	Endangered		



Balaenopteridae	Fin Whale (Atlantic population)	Balaenoptera physalus	Special Concern	Special Concern	
Balaenidae	North Atlantic Right Whale	Eubalaena glacialis	Endangered <sup>6,7</sup>	Endangered	
Ziphiidae	Northern Bottlenose Whale (Scotian Shelf population)	Hyperoodon ampullatus	Endangered <sup>8,9</sup>	Endangered	
Ziphiidae	Northern Bottlenose Whale (Davis Strait Baffin Bay, Labrador Sea population)	Hyperoodon ampullatus		Special Concern	
Ziphiidae	Sowerby's Beaked Whale	Mesoplodon bidens	Special Concern <sup>10</sup>	Special Concern	
Delphinidae	Killer Whale (Northwest Atlantic / Eastern Arctic population)	Orcinus orca		Special Concern	
Phocoenidae	Harbour Porpoise (Northwest Atlantic population)	Phocoena	Threatened	Special Concern	
Dermochelyidae	Leatherback Sea Turtle	Dermochelys coriacea	Endangered <sup>11</sup>	Endangered	
Cheloniidae	Loggerhead Sea Turtle	Caretta caretta	Endangered	Endangered	

<sup>1.</sup> Green shading means that Recovery Strategies, Action Plans and/or Management Plans have been issued for the species.



- Recovery Strategy for Northern Wolfish (*Anarhichas denticulastus*) and Spotted Wolfish (*Anarhichas minor*), and Management Plan for Atlantic Wolffish (*Anarhichas lupus*) in Canada. Available online: <a href="http://www.registrelep-sararegistry.gc.ca/virtual\_sara/files/plans/mp\_Atlantic\_Northern\_and\_Spotted\_Wolffish\_0208\_e.pdf">http://www.registrelep-sararegistry.gc.ca/virtual\_sara/files/plans/mp\_Atlantic\_Northern\_and\_Spotted\_Wolffish\_0208\_e.pdf</a>. Accessed May 2018.
- 3. Draft Recovery Strategy for Northern Wolffish (*Anarhicas denticulatus*) and Spotted Wolffish (*Anarhicas minor*), and Management Plan for Atlantic Wolffish (*Anarhicas lupus*) in Canada [Draft]. Fisheries and Oceans Canada: Newfoundland and Labrador Region. St. John's NL viii +81 p.
- 4. Recovery Strategy for the Ivory Gull (*Pagophila eburnean*) in Canada. Available online: <a href="http://www.registrelep-sararegistry.gc.ca/virtual\_sara/files/plans/rs\_ivory\_gull\_e\_final.pdf">http://www.registrelep-sararegistry.gc.ca/virtual\_sara/files/plans/rs\_ivory\_gull\_e\_final.pdf</a>. Accessed May 2018.
- 5. Recovery Strategy for the Blue Whale (*Balanoptera musculus*), Northwest Atlantic Population, in Canada. Available online: http://www.registrelep-sararegistry.gc.ca/virtual sara/files/plans/rs blue whale nw atlantic pop 0210 e.pdf. Accessed May 2018.
- 6. Recovery Strategy for the North Atlantic Right Whale (*Eubalaena glacialis*) in Canadian Waters. Available online: <a href="http://www.registrelep-sararegistry.gc.ca/virtual-sara/files/plans/rs">http://www.registrelep-sararegistry.gc.ca/virtual-sara/files/plans/rs</a> bnan narw am 0414 e.pdf. Accessed May 2018.
- 7. Proposed Action Plan for the North Atlantic Right Whale (*Eubalaena glacialis*) in Canada: Fishery Interactions. Available online: <a href="http://www.registrelep-sararegistry.gc.ca/virtual\_sara/files/plans/Ap-NARW-v00-2016Aug05-Eng.PDF">http://www.registrelep-sararegistry.gc.ca/virtual\_sara/files/plans/Ap-NARW-v00-2016Aug05-Eng.PDF</a>. Accessed May 2018.
- 8. Recovery Strategy for the Northern Bottlenose Whale (*Hyperoodon ampullatus*), Scotian Shelf population, in Atlantic Canadian Waters. Available online: <a href="http://www.registrelep-sararegistry.gc.ca/virtual\_sara/files/plans/RecoveryStrategy-NorthernBottlenoseWhale-v00-2016Jun07-Amended-Eng.pdf">http://www.registrelep-sararegistry.gc.ca/virtual\_sara/files/plans/RecoveryStrategy-NorthernBottlenoseWhale-v00-2016Jun07-Amended-Eng.pdf</a>. Accessed May 2018.
- 9. Action Plan for the Northern Bottlenose Whale (*Hyperoodon ampullatus*), Scotian Shelf population, in Atlantic Canadian Waters. Available online: <a href="http://www.registrelep-sararegistry.gc.ca/virtual\_sara/files/plans/Ap-Bottlenose-v00-2017Apr-Eng.pdf">http://www.registrelep-sararegistry.gc.ca/virtual\_sara/files/plans/Ap-Bottlenose-v00-2017Apr-Eng.pdf</a>. Accessed May 2018.
- 10. Management Plan for the Sowerby's Beaked Whale (*Mesolodon bidens*) in Canada. Available online: <a href="http://www.registrelep-sararegistry.gc.ca/virtual\_sara/files/plans/Mp-Sowerbys-v00-2017Apr-Eng.pdf">http://www.registrelep-sararegistry.gc.ca/virtual\_sara/files/plans/Mp-Sowerbys-v00-2017Apr-Eng.pdf</a>. Accessed May 2018.
- 11. Recovery Strategy for the Leatherback Turtle (*Dermochelys coriacea*) in Atlantic Canada. Available online: <a href="http://www.registrelep-sararegistry.gc.ca/virtual\_sara/files/plans/rs\_Leatherback\_turtle\_Atlantic\_population\_0207\_e.pdf">http://www.registrelep-sararegistry.gc.ca/virtual\_sara/files/plans/rs\_Leatherback\_turtle\_Atlantic\_population\_0207\_e.pdf</a>. Accessed May 2018.