

Ms. Elizabeth Young
Canada-Newfoundland and Labrador Offshore Petroleum Board
5th Floor, TD Place, 140 Water Street
St. John's, NL A1C 6H6

December 20, 2012

Re: Strategic Environmental Assessment Update of Western Newfoundland and Labrador Offshore region

Dear Ms. Young,

On behalf of Attention Fragîles, David Suzuki Foundation, and SNAP-Québec, please accept the attached submissions regarding the C-NLOPB's updated Strategic Environmental Assessment of proposed oil and gas drilling in the Western Newfoundland and Labrador offshore area.

I would like to acknowledge the important researching and drafting efforts of Jessica McClay, Peter Eirikson, Emilie Morin, Alexa Mingo and Lauren Whyte, each of whom has contributed as a student in the Ecojustice Environmental Law Clinic at the University of Ottawa. I would also like to acknowledge the contributions by Susan Pinkus, Melanie Cousineau and Liat Podolsky, members of Ecojustice's science staff team, as well as those of Sylvain Archambault from SNAP-Quebec.

Respectfully,



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On behalf of:



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1. Introduction

Ecojustice is pleased to submit this document to the Canada-Newfoundland and Labrador Oil and Petroleum Board (the Board) as part of the Strategic Environmental Assessment (SEA) Update process for proposed oil and gas drilling in the Western Newfoundland and Labrador offshore area. We do so on behalf of our clients, Attention Fragîles, SNAP-Québec and David Suzuki Foundation, each of whom is a leading member of the St. Lawrence Coalition (though the views of the latter coalition are not expressed here).

We embrace the concept of SEA to the extent that it is a tool to “outline, integrate, refine and mitigate regional-scale concerns related to ecologically sensitive areas, multi-sectoral ocean use, and cumulative effects in advance of project based environmental assessments.”¹ We also appreciate that SEAs also “have the potential to consider need, purpose, and the rationale and alternatives to offshore oil and gas exploration and development before specific projects are proposed.”² Thus, the 2012 SEA presents an opportunity to quantify and characterize the risks of offshore development in this region, to engage the public in a cost-benefit analysis, and to ensure transparent decision-making.

It is our position that until the true nature and extent of drilling risks are clearly understood and articulated to the public, no further exploratory licences should be issued in the Gulf, and no drilling authorizations should be granted by any offshore regulatory body. Consistent with this position, we oppose running the SEA concurrently with any project-specific environmental assessment (EA), such as the Old Harry EA, or any further exploratory rights issuance. Allowing such concurrence effectively undermines the SEA’s stated objective of taking a broad-based approach to EA “that examines the environmental effects which may be associated with a plan, program, or policy proposal and that allows for the incorporation of environmental concerns at the earliest stages of program planning.”³ Only by completing a thorough and transparent SEA process prior to any further licensing and authorization decisions will the Board contribute to the offshore industry’s social license to operate in the Gulf.

Ultimately, offshore oil and gas development off the Western Newfoundland coast must only be contemplated if, where, and when it can be established that the risks to the environment, the economy, and the public are tolerable, and the consequences of unintended worst-case accidents are manageable. The same applies to the rest of the Gulf: no offshore development should proceed in this body of water until these things can be demonstrated.

¹ Meinhard Doelle, Nigel Bankes, and Louie Porta, “Using Strategic Environmental Assessments to Guide Oil and Gas Exploration Decisions in the Beaufort Sea: Lessons Learned from Atlantic Canada” (2012) online: Social Science Research Network <<http://www.ssrn.com>> at 1-2.

² *Ibid* at 2.

³ C-NLOPB, *Strategic Environmental Assessment Update Western Newfoundland and Labrador Offshore Area: Scoping Document* (21 February 2012), online: C-NLOPB, p. 3. <<http://www.cnlopb.nl.ca/pdfs/finalscope.pdf>> at 3. [Scoping Document]

In this submission, we:

- 1) Contextualize this process based on past SEAs and the broader regulatory framework (Section 2);
- 2) Articulate our clients' criticisms of the resources, structure, and public consultations underpinning the 2012 SEA process (Section 3);
- 3) Discuss the potential cumulative impacts and risks from worst-case oil spill scenarios that threaten the Gulf of St. Lawrence (the Gulf) provinces face related to offshore oil and gas development (Section 4);
- 4) Articulate the need for the 2012 SEA to account for the potential impacts of offshore development on species at risk in the Gulf (Section 5) and to fill gaps in existing baseline information on which future project-level EAs and authorization decisions will be based (Section 6);
- 5) Present the risk management framework (Section 7) that the Board should consider, to prevent it from authorizing any offshore operations that present unacceptable risks to the people and ecology of the Gulf;
- 6) Warn of the difficulties offshore operations have responding to spills and emergencies generally, and the need to account for these gaps in the Gulf (Section 8); and,
- 7) Conclude by critiquing the inadequacy of the liability regime that underpins offshore risk allocation in the Western Newfoundland and Labrador offshore area (Section 9).

2. SEA 2012 Context

1) The SEAs from 2005 and 2007 provide a weak foundation

In 2005, LGL Limited Environmental Associates completed a Board-commissioned SEA for the Western Newfoundland and Labrador Offshore Area. In 2007, the 2005 SEA was amended, extending the geographic coverage to include additional lands southwest of the original 2005 SEA area to include the Old Harry sector. The purpose of the 2005 and 2007 SEAs was to “provide a broad scale review and assessment of important resources in the Western Newfoundland and Labrador Offshore Area in light of potential oil and gas activities over the next five years.”⁴

These SEAs were intended to provide the Board with assistance in deciding which areas would be appropriate for offshore exploration, where exploration rights should be offered for bidding, and what areas might require special mitigation.⁵ The 2007 amendment was quite short and largely duplicative of the 2005 assessment.

Unfortunately, these earlier SEAs gave only the most cursory treatment of the risks, likelihood and effects of a worst-case spill scenario. The probability of a spill occasioned

⁴ LGL Limited Environmental Associates, *Western Newfoundland and Labrador Offshore Area Strategic Environmental Assessment* (2005) online: C-NLOPB <http://www.cnlopb.nl.ca/env_strategic.shtml>. [2005 SEA]

⁵ Scoping Document, *supra* note 3.

by a loss of well-control incident (blowout) was rated as ‘very rare’,⁶ based on an evaluation of the American spill record and without taking into account any characteristics peculiar to the region’s drilling environment. Without remarking on the less understood dimensions of Gulf aquatic ecology, the SEAs found that the effects of spills or blowouts on marine life would be relatively minimal, and restricted primarily to marine birds.⁷ Long-term harm and spill response efforts were not discussed. Harm to commercial fisheries caused by a spill was mentioned, but considered in a surprisingly perfunctory manner,⁸ given the huge impact such an event could have on the Gulf’s economy.

Perhaps most disturbingly, the SEAs approved the possibility of exploratory drilling in the face of what the Board admitted are significant knowledge gaps regarding almost all marine species found in the Study Area. In many cases, in assessing potential harms caused to the environment by drilling, the SEAs concluded by suggesting individual environmental assessments for the sites, species and/or operations being considered. Not only did this leave the nature and extent of most potential biological damage unaddressed, it also effectively deferred any robust assessment until later on in the drilling and exploration approval process. In short, these SEAs were not particularly strategic as regards the evaluation of environmental (and associated social and economic) risks.

Further, despite these reports being an assessment of the environmental impacts of oil and gas exploration, no mention is made of the effects of dispersants and other spill response techniques in the event of a blowout. Past experience, including the recent BP disaster in the Gulf of Mexico, suggests that dispersants and *in situ* burning may have serious negative impacts on environmental health.

The aforementioned issues that the 2005 and 2007 did not treat, or treat adequately, need to be examined carefully if the current SEA process is to overcome the significant shortcomings of its predecessors. Certainly, this must be done for the 2012 SEA Update to meet its stated objectives to “[d]escribe and evaluate potential environmental effects associated with offshore oil and gas development activities; identify knowledge and data gaps; [and] highlight areas that may be of concern.”⁹

2) *The current framework for EA of oil and gas exploration is insufficient*

Another significant contextual factor underlying the 2012 SEA Update is the recently established and significantly less robust federal environmental assessment regime. Under the *Canadian Environmental Assessment Act 2012* (CEAA 2012)¹⁰, exploratory activities for offshore oil and gas development (e.g. seismic surveying and exploratory drilling) are not subject to any mandatory EA process. Such activities were not included in the federal *Regulations Designating Physical Activities*¹¹, which list the types of projects subject to

⁶ 2005 SEA, *supra* note 4, p. 260.

⁷ 2005 SEA, *supra* note 4, p. 281.

⁸ 2005 SEA, *supra* note 4, p. 268.

⁹ Scoping Document, *supra* note 3, p. 4.

¹⁰ *Canadian Environmental Assessment Act, 2012* SC 2012 c 19 [CEAA 2012].

¹¹ *Regulations Designating Physical Activities*, SOR/2012-147.

federal EA pursuant to CEAA 2012. This means that EAs for offshore exploration activities are now conducted subject to the exercise of the federal Environment Minister's discretionary authority under section 14.2 of CEAA 2012. This contrasts with the previous approach under CEAA, which had required seismic surveying and exploratory drilling to undergo at least a screening-level EA.¹²

So this 2012 SEA Update may be one of the very few opportunities for civil society to engage in an EA process prior to drilling being initiated in the region. The lack of any guaranteed future EA processes for individual projects (apart from the Old Harry project, which proceeds under the old CEAA screening review rules) underscores how important it is for the SEA to be rigorous and thorough. It also justifies our position that the final SEA Update report should recommend that future offshore oil and gas activities in the Gulf be subject to a federal EA process.

Recommendation: The final SEA report should recommend that all future offshore oil and gas exploratory project activities, including drilling and seismic testing, be subject to a mandatory federal CEAA 2012 review.

3. SEA Process and Administration

1) SEA 2012 Approach and Resources

a) The SEA process fails to consider the Gulf in its entirety

The Gulf is an integrated, vital ecosystem. Ongoing SEAs underway in Newfoundland and Labrador and in Quebec¹³ arbitrarily divide this single ecosystem into several different units based on (disputed) political and regulatory boundaries. Analysis undertaken under these SEAs may be fragmented as a result, which is problematic because the impacts of oil and gas development will be felt around the entire Gulf. It is important that any SEA process incorporate, to the best of its ability, information from around the Gulf and not only from within the artificial geographical or political boundaries of its study area.

At a minimum, the Board's SEA should review and, if appropriate, incorporate the findings of the Quebec SEA Program (SEA-2), whose release is anticipated prior to March 2013, so that information vital to the Board's SEA does not get overlooked. However, even this attempt at information integration will leave important regional gaps. For instance, vital information on offshore development interactions with ecosystems in New Brunswick, Prince Edward Island and Nova Scotia will be left out. In addition, information on Gulf-wide cumulative impacts will be lacking.

Recommendation: The SEA report should acknowledge the inherent weakness of failing to (i) consider the Gulf as a single ecosystem and (ii) to evaluate the environmental

¹² *Inclusion List Regulations*, SOR/94-637, Sch ss 18, 19.1.

¹³ For preliminary information about the Quebec SEA-2 and its timeline, see: Quebec, "Strategic Environmental Assessment" (2012), online: Quebec <<http://www.ees.gouv.qc.ca/english/index.asp>>.

impacts of oil development in the entire Gulf, not simply on the area under the Board's licensing jurisdiction. The six provincial and federal governments with a stake in Gulf offshore development and ecosystems should consult with impacted First Nations and propose a comprehensive and integrated SEA process for the entire region.

b) With a budget of \$200,000, it will be challenging for AMEC to do adequate public consultation, scientific study, and risk assessment

The extensive and interdisciplinary expertise required to broadly assess the environmental risks of offshore development in the Gulf demands a substantially greater investment of resources than is contemplated in this SEA.¹⁴ To our knowledge, the current SEA budget is \$200,000 “[t]o undertake a SEA Update of offshore oil and gas exploration activities, in accordance with the Scoping Document, for the Strategic Environmental Assessment Update Western Newfoundland and Labrador Offshore Area [...]”.¹⁵

As indicated in the Scoping Document, the SEA Update's goals are to:

1. Describe and evaluate potential environmental effects associated with offshore oil and gas exploration activities;
2. Consider the potential cumulative effects of typical offshore oil and gas activities with other potential activities;
3. Identify knowledge and data gaps;
4. Make recommendations for general mitigative measures that should be employed during petroleum related activities;
5. Identify general restrictive or monitoring measures, as appropriate, that may be required for future petroleum activities; and
6. Assist the Board in determining whether exploration rights should be issued in whole or in part in the SEA Update Area.¹⁶

The SEA Update is also expected to “examine the project-environment interactions, associated with petroleum exploration activities that may occur within the SEA Update Area, such as “exploratory and delineation drilling and seismic survey activities (2D, 3D, vertical seismic profiling, geohazard surveys), and wellsite abandonment”.¹⁷

Given the scope of the assessment, it is difficult to understand how a small budget of \$200,000 could achieve these objectives. Assessing the environmental impacts of seismic profiling alone is sufficiently complex that it requires substantial research/analysis that would exceed this budget. The consultations also face important overhead costs: simply flying C-NLOPB and AMEC representatives to remote communities in the Gulf is a costly obligation, particularly if First Nations consultation recommendations provided below are acted upon.

¹⁴ Scoping Document, *supra* note 3, p. 4.

¹⁵ C-NLOPB, *Request for Proposals, Western Newfoundland and Labrador Offshore Area Strategic Environmental Assessment Update* (21 February 2012), online: C-NLOPB <<http://www.cnlopb.nl.ca/pdfs/rfpwnlsea.pdf>> at items 2.0 and 10.4.

¹⁶ Scoping Document, *supra* note 3, p. 4.

¹⁷ Scoping Document, *supra* note 3, pp. 5 and 10-11.

Recommendation: The Board and AMEC must agree to a detailed public accounting of how it will allocate this budget to successfully obtain and assess all information required to conduct a thorough and rigorous SEA.

c) The Board should have suspended offshore licensing and exploration activities in Gulf prior to finalizing the SEA report

There are doubts expressed publicly and privately among some elements of civil society that the Board is not truly committed to this SEA process, does not take the public's concerns seriously and is manifestly biased in favour of offshore development. While we do not question the Board's good faith, we do insist that the public and concerned stakeholders deserve an explanation as to why the Board has not, at least temporarily, frozen offshore licensing and exploration activity decision-making in the SEA Update Area until the SEA is complete. . In fact, the Board is concurrently assessing an extensive seismic geophysical program¹⁸ and has continued to issue calls for nomination for exploration licence parcels as the SEA runs.¹⁹ Of course, the exploratory drilling project at the Old Harry prospect is also subject to a concurrent screening review. Running the SEA concurrently with these project-level EAs necessarily implies the possibility that (time-limited) project assessments may be approved without taking into account the broader findings of the SEA and any policy or plan that results. Furthermore, it is not clear whether the current SEA process will actually result in a policy or plan governing all decisions regarding offshore oil and gas development in the Western Newfoundland portion of the Gulf. The federal Cabinet Directive on SEAs sets out that "[t]he final recommendation [for a policy, plan, or program proposal] should be informed by the results of the strategic environmental assessment."²⁰

Failure to halt further licensing serves only to engender cynicism as regards the independence of the regulator in conducting the SEA Update. At stake is the reputation of the Board and the offshore industry's social license to operate in Eastern Canada, particularly as the Board has identified in the Scoping Document that it would highlight "[s]pecific or 'non-typical' mitigations that may be required to address specific concerns."²¹ These could include the designation of areas that are unsuitable for oil and gas development. The Board's decision not to halt the issuance of exploratory licences as the SEA proceeds could threaten (or make much more expensive) the establishment of such areas.

Recommendation: The Board should halt the issuance of any further exploratory rights (including associated preparatory activities such as a call for subsurface acreage nominations) and the conduct of any project EAs (or other regulatory processes) for

¹⁸ See C-NLOPB, *2D/3D Marine Seismic Program*, online: C-NLOPB <<http://www.cnlopb.nl.ca/environment/prl.shtml>>.

¹⁹ C-NLOPB, *C-NLOPB Announces 2012 Call for Bids (Laurentian Subbasin)* (9 March 2012), online: C-NLOPB <<http://www.cnlopb.nl.ca/news/nr20120309.shtml>>.

²⁰ Canada, Privy Council Office and Canadian Environmental Assessment Agency, *Cabinet Directive on the Environmental Assessment of Policy, Plan, and Program Proposals* (Ottawa: Canadian Environmental Assessment Agency, 2010) p. 7.

²¹ Scoping Document, *supra* note 3, p. 7.

offshore exploration drilling or seismic programs until the SEA is complete and its findings are made public.

d) Without independent expert review, the SEA report will be insufficiently robust and will lack public credibility

The apprehension of a real or perceived bias is a structural impediment to any institution contracted to prepare a robust and credible SEA report that the public will accept. According to its own website, AMEC has “long-term customer relationships with a portfolio of leading national and international oil and gas operating companies,” suggesting that it, too, has an interest in oil and gas development.²² AMEC’s offshore development interests raise serious questions about AMEC’s suitability for conducting public consultations and drafting the SEA Update on behalf of C-NLOPB. Indeed, its broader business interests bring into question the impartiality and independence of AMEC.

To remedy this perception of bias, it is imperative that the SEA Report receive a full third-party review from subject-matter experts in areas such as: biology and ecology, engineering, offshore drilling safety and emergency response, environmental assessment, oil spill modeling, risk assessment, petroleum geology, and geochemistry. Further, leaders in civil society, government, and academia should have the opportunity to contribute to this expert review in order to provide their assessment of what impact offshore development would have on the region. Quebec’s first SEA process reported on the potential impacts of oil and gas development, with input from experts in fish and crustaceans, pelagic zones, the effects of seismic waves on aquatic organisms, and marine acoustics, as well as Tourisme Québec, the Société de la faune et des parcs, Parks Canada, and an anthropologist from l’Université Laval²³

Recommendation: An adequately funded, independent third-party expert review of the SEA report, beyond the review by the Working Group, is necessary. This group should include civil society, government, and academic experts.

2) Public consultation

a) Notice of public consultation sessions has been inadequate

Not only were the notice periods for the SEA Update consultation sessions too short, but some communities were given more time to prepare than others. The Board first announced on September 21, 2012, that public consultation sessions would begin September 30, 2012, less than 10 days, and merely five working days for stakeholders to

²² AMEC, “About Us” (2012), online: AMEC <http://www.amec.com/aboutus/at_a_glance.htm>.

²³ Quebec, Bureau d’audiences publiques sur l’environnement, *Rapport du comité d’experts sur les enjeux environnementaux liés aux levés sismiques dans l’estuaire et le Golfe du Saint-Laurent* (March 2004) online: <<http://bape.gouv.gc.ca>>

prepare their questions and concerns.²⁴ The October 9-11, 2012 dates were only released on September 28, allowing less than two weeks for preparation.

These notice periods are inadequate because the documentation relevant to this SEA involves hundreds of pages in multiple documents: 350 pages for the 2005 SEA,²⁵ 60 for the 2007 SEA,²⁶ and 426 for the 2011 Old Harry EA materials, not including the consolidated comments received.²⁷ Understanding many of these documents would be difficult, let alone in such a short timeframe.

Public consultation sessions have also been underpublicized and less than well-organized, making participation startlingly low at sessions.²⁸ More notice through television, newspaper and radio advertisement would have been necessary to increase participation. Civil society concerned with the future of offshore development in the Gulf is entitled to adequate notice during public consultations.

Recommendation: The consultation process should be extended, and more public consultations held, with proper notice periods and publicity of consultations in order to give members of the public in affected communities a fair chance to participate in the process.

b) Consultation sessions have overlooked important communities

The selection process for communities where public consultation took place does not appear to have been thorough or systematic. For example, Port-au-Choix, Newfoundland, a coastal community to which the SEA Update Area extends, has not been included in the consultation process. Gaspé, Québec, was only included following public outcry. In Nova Scotia and New Brunswick, consultations were held in Sydney and Miramichi, respectively, rather than in coastal communities such as Antigonish and Tracadie, or Shippagan, where there are DFO offices, commercial fisheries, and tourism.

²⁴ C-NLOPB, "Strategic Environmental Assessment Update Public Consultation Sessions (September 30 - October 4, 2012)" (21 September 2012), online: C-NLOPB <http://www.cnlopb.nl.ca/news/pdfs/nr20120921_sea.pdf>.

²⁵ 2005 SEA, *supra* note 4.

²⁶ C-NLOPB, *Western Newfoundland and Labrador Offshore Area Strategic Environmental Assessment Amendment* (November 2007), online: C-NLOPB <<http://www.cnlopb.nl.ca/environment/wNSEAC.shtml>>.

²⁷ Stantec. *Environmental Assessment of the Old Harry Prospect Exploration Drilling Program* (December 2011), online: C-NLOPB <<http://www.cnlopb.nl.ca/environment/wNSEAC.shtml>>. [Old Harry EA Report]

²⁸ Canadian Broadcasting Corporation (CBC), "C-NLOPB responds to complaints over oil consultations" (3 October 2012), online: CBC News <<http://www.cbc.ca/news/canada/newfoundland-labrador/story/2012/10/02/nl-cnlopb-public-sessions-1003.html>>; CBC, "C-NLOPB reacts to criticism of its public consultations" (3 October 2012), <<http://www.cbc.ca/player/Radio/Local+Shows/ID/2286319636/?page=29>> [interview of Max Ruelokke]; Angela Carter, "Oil boom or bust for Western Newfoundland?" (4 October 2012), online: Gulf News <<http://www.gulfnews.ca/Opinion/Letter-to-the-editor/2012-10-04/article-3092425/Oil-boom-or-bust-for-Western-Newfoundland%3F1>>.

To the Board's credit, it did respond to public outcry by adding additional sessions in particular communities. However, the limited resources available to conduct the SEA made it all but inevitable that AMEC would confront this conundrum of excluded (and frustrated) communities.

Recommendation: The Board should provide information as to how and why communities were included or excluded from the public consultation process. Furthermore, the Board should encourage Gulf communities (through advertisements in local newspapers) to request that a public consultation session be scheduled if none has been offered by AMEC.

c) Public meetings have not provided organized, substantive information

Reports from the public consultations sessions held to date raise concerns that the Board and AMEC may not be taking the public consultation process sufficiently seriously.²⁹ Concern stems from public consultation sessions which:

- Provided no official forum for debate or dialogue among those in attendance;
- Provided no official recording of any debate, dialogue, or comments;
- Provided only preliminary information about the SEA, consisting mainly of posters;
- Provided a questionnaire to participants comprising of only four general questions.

The SEA Scoping Document indicates that “[i]nformation on the SEA process will be provided and people will be encouraged to discuss issues and concerns that are relevant to the SEA [...]. Issues and concerns within the scope of the report will be taken under consideration and incorporated into the draft SEA Update Report if appropriate.”³⁰ While these commitments are important, it appears that the Board (through its contractor, AMEC) is falling short of them in delivery. The Scoping Document also commits to using a “valued ecosystem component” (VEC) approach, and that such “VECs will be determined based on consultations with interested stakeholders, the public and regulatory agencies.”³¹ It is difficult to understand how the Board believes it can identify all of the important VECs without providing a structured dialogue on this specific aspect at public sessions. This point is even more valid as relates to the collection of VEC information from First Nations communities, whose traditional knowledge may be of distinct public interest in this context.

Recommendations: Public consultations should structure debate and dialogue, provide detailed information about the SEA process and its repercussions for the Gulf, highlight

²⁹ Radio-Canada, *Exploitation des hydrocarbures : 300 Madelinots disent non* (25 October 2012), online: Radio-Canada <<http://www.radio-canada.ca/regions/est-quebec/2012/10/24/011-consultation-hydrocarbures-ilesdelamadeleine.shtml>> [Radio-Canada, 25 October 2012]; Gary Kean, *Format of oil sessions questioned* (3 October 2012), online: The Western Star <<http://www.thewesternstar.com/News/Local/2012-10-03/article-3089769/Format-of-oil-sessions-questioned/1>>.

³⁰ Scoping Document, *supra* note 3, p. 12.

³¹ Scoping Document, *supra* note 3, p. 6.

important deadlines and methods for submitting public comments, and be formally recorded.

d) The public consultation process has suffered from language barriers

Many people have been effectively excluded from the SEA Update process as a result of language barriers in the public consultations. While the Board indicated on October 5 that it would “add a bilingual Power Point presentation that provides better context for the sessions”, this is insufficient to enable a two-way discussion where everyone is understood.³² Residents of the Magdalen Islands, a largely francophone community only 80 km away from Old Harry, did not have the benefit of a formal translation from English.³³

Moreover, some of the SEA documents are only available in English, such as the Final Scoping Document. Due to the large francophone population affected by the SEA, many stakeholders would have required additional time and effort prior to attending consultation to become properly informed on the content and scope of the SEA.

Recommendation: All materials related to the SEA should be made available in French and English, so that the consultations can be inclusive of all stakeholders. For future reference, at least one bilingual Board representative, one French and one English representative, or a professional translator should be present at each session.

e) The Board has committed to release information on previous consultation sessions

To its credit, the Board has committed in many news releases to providing “detailed information regarding the public Open House sessions [...] on the C-NLOPB website and [...] in newspapers and through radio and TV stations.”³⁴ Unfortunately, no such information has been available on its website as of December 2012, nor is it clear whether the Board has published this follow-up information in the media.

Given the geographic distances between the communities in the study area, a strong online consultation presence is clearly of value. At the time of the submission, the information online includes announcements of consultation sessions, the scoping document, and the Power Point presentation and questionnaire presented during sessions, but it does not include public comments received in recent consultation sessions, such as questions asked and corresponding answers, or any follow-up information that may have been promised during these sessions.

³² C-NLOPB, “C-NLOPB making adjustments to its public consultation process for the Western Newfoundland and Labrador Strategic Environmental Assessment update” (5 October 2012), online: C-NLOPB <<http://www.cnlopb.nl.ca/news/nr201210052.shtml>>.

³³ Radio-Canada, 25 October 2012.

³⁴ See e.g. CNLOPB, “C-NLOPB announces further details regarding public consultation sessions for the Western Newfoundland and Labrador Offshore Area Strategic Environmental Assessment (SEA) Update” (16 October 2012), online: C-NLOPB <<http://www.C-NLOPB.nl.ca/news/nr20121016en.shtml>>.

Recommendation: The Board should post on its website: recordings, summaries, or transcripts of sessions, information discussed during sessions, follow-up on information requests, and any other materials that might assist the public in understanding and contributing to the SEA. If additional sessions are held, greater use of webcasting is to be encouraged.

f) The Board must do more to consult First Nations across the entire Gulf of St. Lawrence region

The Board is aware that First Nations in the Gulf region have concerns related to offshore development in the Update Study Area. Any offshore oil and gas development in the region could affect their subsistence, ceremonial, and commercial fisheries, the spiritual and heritage value of lands and waters, as well as outstanding claims processes involving marine title claims.

The constitutional duty to consult and accommodate First Nations in relation to development projects that may affect their rights is well established in Canadian law. Concrete steps towards satisfying the Crown's duties are regularly achieved through EA processes, and ought to have been taken through differentiated consultation sessions during the SEA process.

The following map provides a visual representation of the First Nations presence around the entire Gulf region and in the SEA Study Area.

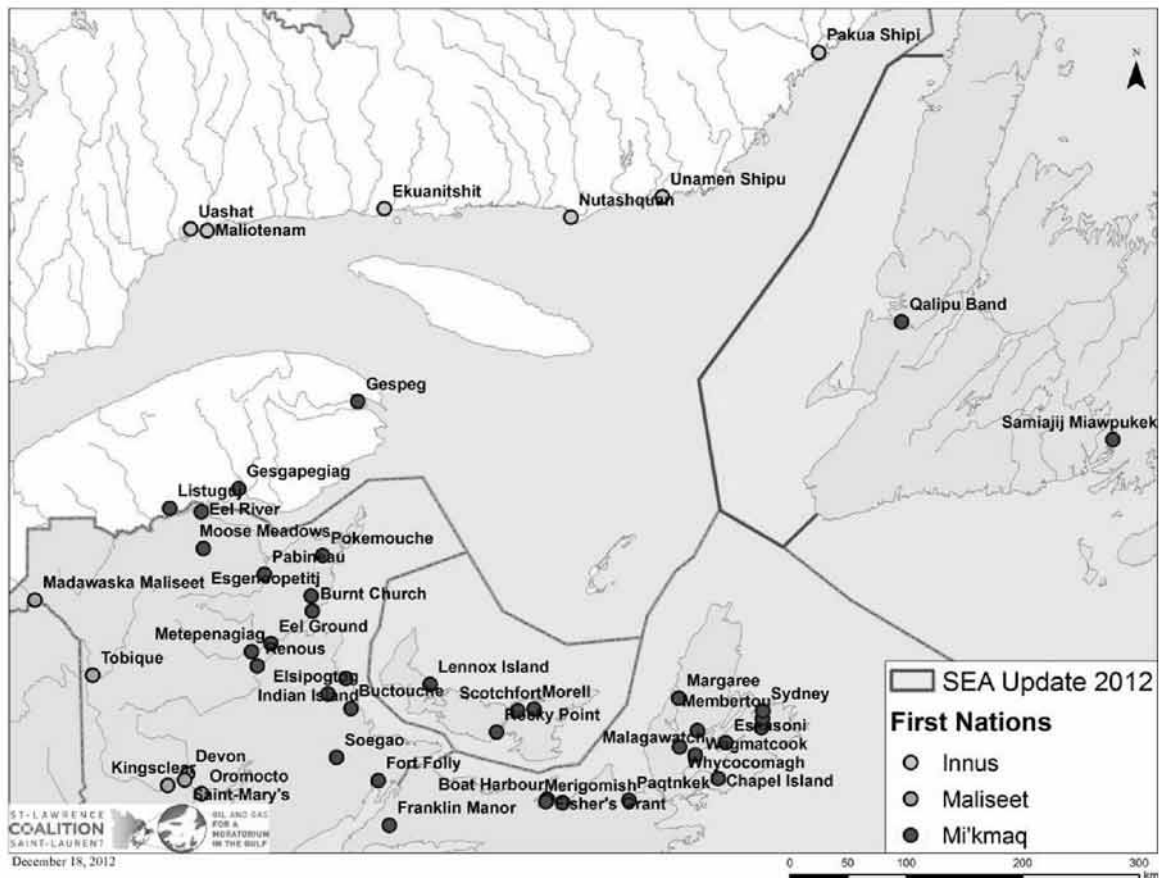
The SEA process should include consultations with all Aboriginal peoples who could be affected by offshore oil and gas development in the Gulf. A list of First Nations communities contacted by AMEC appears in Appendix 1, but there is no suggestion either from AMEC or specific First Nations communities that their engagement differed in scope and quality from that of normal public consultation sessions.

During the Old Harry EA process the Mi'kmaq Confederacy of PEI and the First Nations Chiefs in New Brunswick submitted public comments to the Board. The Mi'kmaq Confederacy of PEI formally requested consultation in a public comment on the Old Harry EA Scoping Document, stating that Old Harry would affect their food source, their ceremonial fisheries and their commercial fishing rights.³⁵ Although the Board has met with the Quebec Mi'kmaq communities, this meeting fell short of a proper consultation process according to the St. Lawrence Coalition, whose members include the Quebec Mi'kmaq.³⁶

³⁵ Letter from Mi'kmaq Confederacy of PEI (28 March 2011), online: <http://www.cnlopb.nl.ca/pdfs/corridorresinc/oh_comment25.pdf>.

All public comments sent to Corridor Resources as part of the Old Harry EA can be found on the following webpage: <http://www.cnlopb.nl.ca/environment/corridorresinc.shtml>.

³⁶ Coalition Saint-Laurent, "Une véritable consultation sur l'ensemble du golfe est réclamée" (28 November 2012), online: Gaïa Presse <<http://gaiapresse.ca/nouvelles/une-veritable-consultation-sur-lensemble-du-golfe-est-reclamee-35224.html>>.



There are three “formally recognized” communities located in the Gespe’gewa’gi district (Listuguj, Gessapegiag and Gespeg), and as part of ongoing land claims negotiations they assert marine title claims in the Gulf that extend into the SEA Study Area.³⁷ Specifically, they assert that they have “considered, used and occupied the whole of the Gaspé Peninsula and its surrounding waters and islands as part of their traditional territory.”³⁸ Along with the Ekuanitshit Innu community along Quebec’s north shore, they have requested a separate consultation with the C-NLOPB in relation to the SEA Update.

Recommendation: The Board should set up separate consultation sessions above and beyond the public consultations for First Nations groups during the SEA process. The SEA report should dedicate a specific section to articulate how offshore development is perceived by, and may impact particular First Nations communities.

g) The interests of all five Gulf provinces are better served by a Joint

³⁷ Mi’gmawei Mawiomi Secretariat, *Gespe’gewa’gi Today*, online: Mi’gmawei Mawiomi Secretariat <<http://www.migmawei.ca/gespegewagi-today>>.

³⁸ Mi’gmawei Mawiomi, *The Treaty Relationship Between Mi’gmaq of Gespe’gewa’gi and the British Crown and its Implication for the Province of Quebec* (April 2009), online: <http://www.migmawei.ca/sites/default/files/files/reports/Treaty_Report_Migmawei_Mawiomi_Secretariat_2009.pdf>.

Review Panel

Although we have made a number of recommendations with a view to improving the SEA Update's process, the underlying objectives of ensuring a robust review through adequate resources, expertise, information, consultation and third-party review are unlikely to be achieved. Ultimately, the inter-jurisdictional (5 provincial, 1 federal governments) nature of the proposed development, combined with First Nations impacts and unprecedented levels of public concern, leads to the inevitable conclusion that the more comprehensive Joint Review Panel (JRP) process is best suited to address the necessarily regional scales of offshore development EA.

As a responsible authority under CEAA 2012,³⁹ the Board may still recommend to the Minister of Environment that a JRP be established for future projects. While the Old Harry exploratory drilling project is now grandfathered and undergoing a screening review pursuant to the former CEAA rules, future drilling and seismic projects ought to benefit from this more comprehensive review process.

In view of the substantive inadequacies of the Board's SEA consultation process (discussed in greater detail in subsequent sections), and of the serious risks that all five Gulf provinces run from development, it is best to pursue JRPs for offshore projects. The "provincial" or regional focus of the Board's SEA does not lend itself to fully address the concerns of residents of all the affected provinces concerning the future of offshore development in the Gulf.

Recommendation: Respectfully, the Board should reconsider whether the SEA consultation has been sufficiently broad and comprehensive to justify moving forward with project applications. If it agrees that seeking broader input based on additional expert input, then it should conclude in favour of the referral of any future offshore drilling activities to a CEAA JRP. Alternatively, the Board should recommend that the future of offshore development in the entirety of the Gulf ought to be subject to a *sui generis* intergovernmental process, established pursuant to political agreement by the five Gulf provinces and the federal government, that engages the strategic questions of where, how and at what risk to existing Gulf ecological and economic interests.

4. Impacts of Offshore Oil and Gas in the Gulf of St. Lawrence

The scope of the SEA includes "the area within which the environmental components that could potentially be affected by the potential exploration and production activities, including accidental events, will be considered."⁴⁰ This means that the SEA must include a meaningful assessment of the potential impacts of exploration and production, in the context of other environmental stressors across the Gulf. It also means the SEA must analyze scenarios for oil spills of varying magnitudes around the Gulf, taking into account natural features such as wind, ocean currents, ice and water temperature that may affect the spread of oil from a spill or blowout. The SEA should also assess the possible

³⁹ CEAA 2012 Schedule 1 s 2.

⁴⁰ Scoping Document, *supra* note 3, p. 8.

consequences of such incidents on local industries, social and cultural values, and damage to natural resources.

1) Impacts of day-to-day operations

SEAs can be valuable exercises for planning and understanding the impacts of proposed development. Some issues, such as cumulative effects, life cycle analysis, and attention to intergenerational effects, are less amenable to project-level assessments. Such issues must be addressed in the broader analysis an SEA can offer. As leading experts in EA theory and practice articulate: “Regional cumulative effects studies, broad scenario building and comparing exercises and retrospective evaluations of sectoral [project, plan, and policy] experiences, for example, can all make important educational contributions, and produce valuable insights and data sets for project as well as strategic level undertakings.”⁴¹

In the consultation-focused section of this submission, we have seen that little information is provided on regional cumulative effects. Thus, the ability of civil society to comment on these effects is limited. For the SEA to live up to the potential of SEA processes, more detailed information on cumulative effects of routine, day-to-day oil and gas operations, based on a reasonable estimate of wells drilled in a given period, must be provided.

a) The cumulative impact of oil and gas operations: offshore activities interact with existing stressors on the Gulf ecosystem

Even without a catastrophic event of the kind described in Part 2 of this section, the daily operations of an oil exploration and exploitation program will contribute to cumulative environmental impacts on the Gulf. The disposal of drilling muds, small batch spills of marine diesel or oil in the course of routine operations, shipping, waste disposal, noise from seismic testing, and other operations can all affect wildlife and ecosystem functions.

The Old Harry EA submitted by Stantec concludes that these impacts will not be significant. However, with the authorization of an entire suite of oil and gas drilling programs in the Gulf, the impacts of individual projects’ routine operations may accumulate over time in unpredictable ways. Considering impacts independently, on a project-by-project basis, does not provide an accurate assessment of environmental impacts of offshore development in the Gulf. The SEA is an important opportunity to conduct such an assessment.

The Scoping Document for the 2012 SEA calls for consideration of “the potential cumulative effects of typical offshore oil and gas activities with other potential activities.”⁴² The following list of potential “routine” impacts was included in the Scoping Document:

⁴¹ Robert Gibson, Hugh Benevides, Meinhard Doelle, and Denis Kirchoff, “Strengthening Strategic Environmental Assessment in Canada: An Evaluation of Three Basic Options” 20 J. Env’tl L. & Prac. 175 p. 188-89.

⁴² Scoping Document, *supra* note 3, p. 4.

- Noise/disturbance (e.g., seismic survey activities; noise from drilling installations) on marine mammals, sea turtles, water birds, commercial fish/shellfish, and sensitive life stages;
- Benthic habitat disturbance;
- Coastal interactions (e.g. fish/bird habitats, sensitive areas);
- Air quality issues (including greenhouse gas emissions) associated with typical drilling and production operations;
- Operational discharges and impacts on water and sediment quality;
- Accidental events;
- Conflict with commercial, recreational, and aboriginal fisheries use caused by loss of access;
- Conflict with human use and marine commercial traffic of area;
- Attraction of seabirds to lights/flares on structures or vessels; and
- Conflict with tourism operations and impact on the aesthetic and cultural landscape.⁴³

Clearly, the Board is aware of the impacts that daily offshore operations will have on the Gulf and other economic activities, and of its obligation to consider these in the SEA context. But these cumulative impacts need also to be brought down to the specific level of individual project EAs, so that this SEA and particular projects may be assessed collectively. Thus, the following specific comments, which draw upon materials submitted by Corridor Resources for their Old Harry EA process, reflect our particular concerns vis-a-vis the cumulative impacts of offshore activities combined with existing development, in a Gulf region that is both ecologically rich and already ecologically compromised.

Noise/Disturbance: The offshore industry alone is unlikely to provide adequate information on cumulative impacts. For instance, Corridor Resources (Stantec) states in its Old Harry EA that “[s]hip strikes and noise are among the most frequently identified stressors of marine mammals in the Gulf of St. Lawrence”. However, they do not provide an approximate number of supply vessels that will be deployed for exploratory drilling operations, or other details on the equipment that will be used. Such omissions make it difficult to understand the scope of likely cumulative impacts on the environment from exploration and drilling.⁴⁴ Knowing this, the SEA must supply quantitative detail in relation to noise and disturbance issues, with a view to requesting and evaluating more specific figures from proponents such as Corridor Resources.

Conflict with other fisheries, human use, and marine commercial traffic: As Corridor Resources submits in its project description: “Because fishing will not be safe within the designated safety zones [around drilling platforms], the effect of exclusion has the potential to interact with commercial fisheries (including research and sentinel

⁴³ Scoping Document, *supra* note 3, p. 10.

⁴⁴ Corridor Resources, Inc., *Old Harry Prospect Exploration Drilling Program, 2012-2014 Environmental Assessment Report Review Comments* (April 25, 2012) p. 46. [Old Harry EA Comments]

fisheries).”⁴⁵ While there is little commercial fishing within the immediate area contemplated in the Old Harry EA, members of the fishing sector have indicated to us that they do fish around the Old Harry area. Furthermore, there is potential for access to other fishing areas within the SEA Study Area to be affected by future oil and gas development, noting the many exploration licenses that have already been issued in the region.

Recommendation: In assessing the impacts of oil and gas exploration and drilling in the Gulf, the Board must consider and address cumulative environmental impacts caused by all reasonably anticipated oil and gas operations in the coming 10-20 years, together with the cumulative impacts of all activities in the Gulf as whole. As recommended above, the cumulative impact study of this SEA must be supported by an extensive and interdisciplinary study reviewed by experts (contracted by the Board) in relevant subject areas.

2) *Impacts of a worst-case oil spill in the Gulf*

In the Scoping Document, the Board stated that the SEA Update Report will include a discussion of effects and mitigation of potential accidents and malfunctions associated with oil and gas exploration.⁴⁶ This should include a thorough discussion of the probability, effects and mitigation of a worst-case scenario spill related to a loss of well-control event (blowout).

a) *The probability and nature of a worst-case scenario spill in the Gulf are unknown*

Loss of well-control events, commonly referred to as “blowouts”, are the most severe risk created by oil and gas drilling and exploration. According to regulatory officials’ testimony before the Senate Standing Committee on Energy, Environment and Natural Resources in 2010, as of 2010 there had been four blowouts⁴⁷ out of 647 Canadian wells drilled, a rate of one blowout every 16 years. There have been 355 wells drilled in the Newfoundland and Labrador offshore area,⁴⁸ 207 in the Nova Scotia offshore area,⁴⁹ and 85 off the North Coast. So while not common, blowouts do happen.

Unfortunately, the only source of more specific information regarding spill probabilities in the SEA Study Area comes from the industry itself. To our knowledge, no public studies have been independently commissioned or authored by the Board to determine the probabilistic spill risks.

⁴⁵ Old Harry EA Report, *supra* note 27, p. 413.

⁴⁶ Scoping Document, *supra* note 3, p. 7.

⁴⁷ Standing Committee on Natural Resources, testimony of Mr. David Pryce (May 13, 2010) p. 11.

⁴⁸ Standing Committee on Natural Resources, testimony of Mr. Max Ruelokke, (C-NLOPB Chairman and CEO) (May 25, 2010).

⁴⁹ Standing Committee on Natural Resources, testimony of Mr. Stuart Pinks (CNSOPB CEO) (November 2, 2010).

In the Old Harry EA, Stantec calculated the likelihood of a blowout in that prospect as follows.⁵⁰

Type of Spill	Probability
Subsea blowout during exploration drilling	1 in every 4,800 wells
Blowout with spill of > 1,000 barrels	1 in every 10,000 wells
Blowout with spill of > 10,000 barrels	1 in every 13,000 wells
Blowout with spill of > 150,000 barrels	1 in every 25,000 wells
Non-blowout spill of 50-999 barrels	1 in every 540 wells
Non-blowout spill of 1 to 50 barrels	1 in every 37 wells
Non-blowout spill of 1L to 1 barrel	1 in every 0.59 wells

In the preceding table, Stantec reports the total blowout probability as being 1 in 4 800 wells. In its comments on the EA, the CNLOPB noted that this probability is wrong and is actually 1 in 357 wells.⁵¹

Although we do not have the resources to contract expertise to critically review the reliability and accuracy of Stantec’s spill probability research, this is a very important topic that should be the subject of independent research to inform the SEA Update. That said, we do have comments regarding blowout probabilities and spill modeling.

Second, the Corridor (Stantec) EA notes that the blowout probabilities are based on global loss of well-control data.⁵² But Environment Canada (EC), in its commentary, notes that worldwide data is unreliable because spill incidents are under-reported in many jurisdictions, and many jurisdictions have no reporting requirements. Therefore, these probabilities are likely too low and the risks of a blowout in the Gulf are being underestimated.⁵³

⁵⁰ Old Harry EA Report, *supra* note 27, p. 397. More generally, see SL Ross Environmental Research Ltd., *Modeling in Support of Corridor Resources Old Harry Exploratory Drilling Environmental Assessment* (Ottawa: SL Ross, October 2011). [SL Ross Oil Spill Modelling]

⁵¹ Department of Fisheries and Oceans, *Specific Comments on the Environmental Assessment of the Old Harry Prospect Exploration Drilling Program* (10 March 2012), online: C-NLOPB <<http://www.cnlopb.nl.ca/pdfs/corridorresinc/dfocomments.pdf>> p. 5. [DFO Old Harry EA Comments]

⁵² Old Harry EA Report, *supra* note 27, p. 396-7.

⁵³ Environment Canada, *Attachment: Environment Canada Comments on Oil Spill Trajectory Modeling* (Ottawa: Environment Canada, 2012) online <<http://www.cnlopb.nl.ca>> p. 9. [Environment Canada Oil Spill Modelling Comments]

EC further notes that for exploratory drilling, a distinction must be drawn between exploratory drilling done in a new field in which substrates are unknown, which carries a much higher risk than exploratory drilling done in a field in where the substrates are known.⁵⁴ The Macondo blowout in the Gulf of Mexico occurred in a new, unknown field.

It is commonly understood that drilling the first exploration well is the most dangerous step of the entire hydrocarbon development process because more well blowouts occur at this stage than at any other.⁵⁵ As stated by Robert G. Grace, a consultant with over 30 years of onsite experience with blowouts, deep drilling, fires and well controls in the U.S., Kuwait and beyond: “[F]or as long as oil and gas wells have been drilled, there have been kicks, blowouts, well fires, and other control problems. It is certain that these problems will continue. In fact, a recent statistical study concluded that there are as many problems today as there were in the 1960s – which is rather startling considering the emphasis on regulation and training.”⁵⁶ Thus, the appropriate question as regards the risk of a Gulf blowout (in Western Newfoundland and elsewhere) is not if, but when a blowout will occur.

As to the issue of severity, it is difficult to estimate how long a blowout would last or how many barrels of oil would be released into the Gulf environment. Estimates for the Montara blowout were on the order of 200 to 1500 barrels per day.⁵⁷ Over the course of the Macondo blowout, between 53,000 and 62,000 barrels of oil per day spilled into the Gulf of Mexico. The Montara blowout was estimated to have released about 30,000 barrels of oil in total over 74 days; the Macondo blowout about 4.9 million barrels over 87 days. By contrast, the calculations presented by SL Ross in support of Corridor’s Old Harry EA model spills in the Gulf incorporate flows of only 13,225 barrels per day,⁵⁸ and contemplate a maximum duration of only one month.⁵⁹ With respect, we aren’t so sanguine about these worst-case prospects. Only through transparent data-sharing and independent, third-party expertise can the Board deliver a sufficiently robust blowout risk assessment that civil society will trust.

Recommendations: In order to understand the probability and nature of blowouts that could result from drilling, the Board should engage independent experts to do comprehensive petrochemical geology analysis, flow rate analysis and spill modeling for the SEA Study Area. Without this information, the SEA discussion of effects and mitigation of potential accidents and malfunctions associated with oil and gas exploration will clearly be inadequate.

⁵⁴ *Ibid*, p. 9.

⁵⁵ Louie Porta and Nigel Bankes, *Becoming Arctic-Ready: Policy Recommendations for Reforming Canada’s Approach to Licensing and Regulating Offshore Oil and Gas in the Arctic* (Pew Environment Group, 2011), p. 1.

⁵⁶ Robert Grace, *Blowout and Well Control Handbook*, (Burlington, MA: Gulf Professional Publishing, 2003), p. 414.

⁵⁷ Australia, *Report of the Montara Commission of Inquiry* (Canberra: Department of Resources, Energy, and Tourism, 2010). Online: <<http://www.ret.gov.au/Department/responses/montara/report/Pages/Reports.aspx>> (Commissioner Davis Borthwick) p. 301, paragraphs 6.76-6.77. [Montara Commission Report]

⁵⁸ SL Ross Oil Spill Modelling, p. 16.

⁵⁹ *Ibid* p. 33.

b) The extent of potential oil spill impacts is unknown

No substantial regional risk analysis appears to have been independently commissioned by the Board to determine the possible scale and impacts of an oil spill in the SEA Study Area. Without such information, civil society must look to more biased and project specific information as a proxy, despite the fact that reliance upon spill information from offshore project proponents seeking Board authorizations to explore for oil and gas is clearly insufficient.

The Old Harry EA spill modelling conducted by SL Ross was plagued by misstatements and unrealistic assumptions, and was strongly criticized by the Department of Fisheries and Oceans (DFO) and EC. Both federal departments brought their own expert commentary to bear on the SL Ross spill modeling. The following criticisms speak for themselves, leading to our conclusion that there is no accurate and independent assessment of potential oil spill impacts in the SEA Study Area.

Regarding the SL Ross modeling, DFO was blunt in its assessment: “Regarding the trajectories of the oil spill, the trajectories presented in the document are unrealistic and do not serve the purpose. They should be redone with realistic winds and surface currents.”⁶⁰

EC, for its part, delivered a series of challenges to the methodology, assumptions and conclusions reached by SL Ross, each of which resonate in the present context of the SEA update and its evaluation of anticipated environmental risks:

“1. The contention that the oil studied [in SL Ross’ models], Diesel fuel and Cohasset-like oil, survive at sea for only a few hours is not correct. This requires re-examination by the proponents. Further, the authors contend that no slicks survive for long at sea. This is untrue. The whole world of oil spill research and science revolves around oil spills arriving at shore and contaminating the intertidal zone. The Deepwater Horizon oil spill is certainly an example of this. This was a very light crude oil yet much of the oil survived the rise from 1500 m depth and a month travel over water to foul the shorelines of Louisiana, Alabama and Florida. Both Diesel and Cohasset-type oils will survive in part, for at least 30 days after being spilled at the site.

2. The direction of the trajectory depends mostly on the wind in the area as the currents are relatively stable and only change slightly with the season. For the most part, the direction of the slicks are in the easterly, northerly and southerly directions. Under some conditions oil will exit via the Cabot Strait. Also, the trajectories predicted for the oil are far too short. This may be as a result of the incorrect lifetime predictions as noted above.

3. Many of the algorithms used in the [SL Ross] model are quite old and represent first attempts to model oil as in the late 1970’s and early 1980s.

4. The probability of oiling is very high for Newfoundland – particularly that portion of the coast northwest of Cabot Strait and secondly for Cape Breton,

⁶⁰ DFO Old Harry EA Comments, *supra* note 51, p. 43.

again northwest of the Cabot Strait. There is only a slight chance of oiling to the Magdalen Islands.”⁶¹

In their review of the SL Ross spill modeling, EC:

- rejects SL Ross’ statement that it used modeling input values from Environment Canada’s own database;⁶²
- notes in response to SL Ross’ use of US spill data that these spills are known to be underreported and that the data exclude spills originating from pipelines and supply ships;
- states that the risk of drilling in an unknown field such as the Old Harry Prospect is much higher than drilling in a known area.⁶³

Further, EC comments that SL Ross’ spill models assume that oil has a very limited life on the sea:

[T]his is not true and certainly there is no historical evidence that this occurs. Oil simply doesn't go away. Even in case [*sic*] where long time and travel are involved such as the Deepwater Horizon spill in the Gulf of Mexico, the oil survived to 70 km and 30 and more days.⁶⁴

It is problematic that the SL Ross spill simulation identifies only Cohasset light oil in its modeling. The simple fact is that nobody truly knows what exact type of hydrocarbons may be found at Old Harry, or in the rest of the Gulf. Given this uncertainty, the appropriate approach to worst-case scenario modeling would have assumed heavier-than-anticipated oil, if only to be sufficiently precautionary in conducting the analysis.

And while not a blowout *per se* and not an incident that occurred in the SEA Study Area, a historically relevant example of a spill reaching the coastlines of other Gulf provinces is that of the Irving Whale. This was a barge carrying 4,200 long tons of heavy fuel oil that sank in the St-Lawrence in 1970, 100 kilometres from the Magdalen Islands⁶⁵ and 60 kilometres northeast of Prince Edward Island.⁶⁶ In fact, it took only two days for the 125 tons (or about 200 long tons)⁶⁷ of oil to spill, creating a 400 square-kilometre slick in the Gulf and contaminating 35 kilometres of the Magdalen Islands’ coast.⁶⁸ Oil also washed up on the northern shores of Prince-Edward-Island and western Cape Breton Island.

⁶¹ Environment Canada Oil Spill Modelling Comments, *supra* note 53, p. 5.

⁶² *Ibid*, p. 5. See also Environment Canada database, online: <http://www.etc-cte.ec.gc.ca/databases/OilProperties/pdf/WEB_Cohasset.pdf>.

⁶³ Environment Canada Oil Spill Modelling Comments, *supra* note 53, p. 8-9.

⁶⁴ Environment Canada Oil Spill Modelling Comments, *supra* note 53, p. 7.

⁶⁵ Radio-Canada, “Gisement Old Harry: les Madelinots se souviennent de l’Irving Whale” (26 October 2012), online: Radio-Canada <<http://www.radio-canada.ca/regions/est-quebec/2012/10/26/011-old-harry-nauffrage-irving-whale.shtml>>.

⁶⁶ Environment Canada, “Irving Whale Barge” (2 November 2012), online: Environment Canada <<http://www.ec.gc.ca/ee-ue/default.asp?lang=en&n=337D8D4B>>.

⁶⁷ *Ibid*.

⁶⁸ Radio-Canada, “Gisement Old Harry: les Madelinots se souviennent de l’Irving Whale” (26 October 2012), online: Radio-Canada <<http://www.radio-canada.ca/regions/est-quebec/2012/10/26/011-old-harry-nauffrage-irving-whale.shtml>>.

Suffice it to say that spills can occur in many contexts, and many Gulf residents harbor lingering fears about the potential of another catastrophe.

Recommendation: The Board should produce revised scenarios of potential oil spills from oil and gas development in the Gulf, addressing Environment Canada's critiques of the Old Harry EA spill modeling, and have these scenarios reviewed by independent third parties. Data supporting such modeling should be rendered public.

c) An oil spill could persist longer than longer than industry models project

The spill modeling submitted by Corridor Resources for its Old Harry EA is premised on the assumption that a blowout would last only one month. Based on experience with other blowouts, this assumption is not justified. For example, the Macondo blowout lasted 87 days, the Ixtoc I incident 10 months and the Montara blowout 74 days. As part of the SEA Update, the Board must provide information that goes beyond what this proponent has provided to ensure the public is able to assess the risks involved in regional offshore development more generally.

Employing a timeframe of one month to evaluate the potential impacts of an oil spill leads to results that exclude certain important environmental effects, notably the impact of an oil spill reaching shorelines. Of course, spill response gaps (discussed below) and response management are crucial unknowns, and these variables impact the length of time a clean-up will take, as well as how likely it is for the oil to reach sensitive coastlines.

DFO offered the following critique of the Corridor timeframe:

“The duration of the trajectories presented in the document is unrealistic. [I]t is implied that all oil spills will be dispersed and absorbed in the environment at [a given level of ppm concentration]. In fact, a greater spill would make the oil go further and eventually reach a coastline. The document did not consider this issue which is a serious flaw.”⁶⁹

In sum, it would be unrealistic for the SEA report to evaluate potential environmental impacts on the basis of a one-month blowout. The Macondo blowout released 53,000 to 62,000 barrels of oil daily and was not capped for 87 days.⁷⁰ The Montara oil spill in the East Timor Sea released approximately 30,000 barrels of oil in 74 days.⁷¹ Strategic decisions on future offshore resource exploitation in the SEA Study Area must not be based on deficient models that avoid any analysis of a long-running, high-volume spill.

Recommendation: The research identified by the Board in preparing the SEA report should include modeling of a major spill from potential Western Newfoundland offshore

⁶⁹ DFO Old Harry EA Comments, *supra* note 51, p. 44.

⁷⁰ National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, *Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling* (Washington: Jan 2011), online: <<http://www.oilspillcommission.gov>> [*Deepwater Horizon* National Commission Report].

⁷¹ Montara Commission Report, *supra* note 57.

sites. Such modeling should contemplate several time frames, including one that matches the 87-day Macondo blowout. Independent experts should review blowout or spill probabilities provided to the Board. Given the various models used to predict accidents and events, the expert advice in making a decision on the accuracy of spill or blowout probability forecasts is essential. The information from this model should be taken into account in risk management, for instance, in assessing response gaps.

d) An oil spill could affect Canadians in five provinces, stigmatizing and harming important economic sectors, quality of life and natural resources

Harm caused by an oil spill to the SEA Study Area's ecosystems, tourism, and fisheries must be contemplated as part of a broader discussion of sustainable development in the region. The Deepwater Horizon (Macondo) disaster clearly demonstrates the price that people, the environment, and industry pay when things go wrong: US\$16.3 billion in natural resource damages, US\$19.3 billion dollars in individual liability, US\$5 billion in environmental damage, and US\$14 billion in response costs.⁷²

The following sections provide a brief discussion of the assets at risk from a blowout, not only in terms of physical impacts but also in terms of reputational (stigma) damage.

Tourism: According to the Canadian Parks and Wilderness Society, tourism generates more revenue than any other sector of the economy in the Gulf region. For instance, in the Gros Morne (NL) sector alone, tourism generates \$35 million in annual revenues, and employs 1,300 people.⁷³

For obvious reasons, this industry is highly dependent on the Gulf's reputation for its clean waters, healthy marine animals, and pristine shorelines. An oil spill could be the source of significant "stigma" or public relations damages, as tourists tend not to flock to spoiled coastlines, oiled birds, and poisoned fish. If the Gulf of Mexico experience is any guide, operators of sport fishing, whale watching, and boat cruise ventures would be adversely impacted. Gros Morne National Park, a UNESCO World Heritage Site, and a major tourist draw on the west coast of Newfoundland, could see a decline in visitors.

Fisheries: The fisheries industry in the SEA Study Area includes mackarel, herring and shrimp which, together, represent over 70% of the total catch. Lobster, snow crab and cod are also harvested, although in lesser quantities.⁷⁴ An oil spill could put these resources, which represent both an economic driver and cultural tradition in the region, in real jeopardy. Although we cannot provide fisheries industry statistics that are specific to the Western Newfoundland Gulf region, the total value of commercial fisheries in the entire Gulf was \$1.5 billion in 2011.⁷⁵ As mentioned above, reputational or stigma damages associated with an oil spill could ruin this industry.

⁷² Reuters, "Factbox: What's BP's potential pricetag for Macondo?" (3 March 2012), online: Reuters < <http://www.reuters.com/article/2012/03/03/us-bp-costs-idUSTRE8220R320120303>>.

⁷³ Canadian Parks and Wilderness Society, *The State of Canada's Parks 2012 Report*, online: CPAWS <http://cpaws.org/uploads/cpaws_parksreport_2012.pdf>.

⁷⁴ 2005 SEA, *supra* note 4.

⁷⁵ Department of Fisheries and Oceans, Newfoundland and Labrador Region, *Gulf of St.*

The Deepwater Horizon disaster resulted in closures of 37% of federal waters in the Gulf of Mexico.⁷⁶ And despite regulator assurances of product safety, six months after the spill nearly half of consumers surveyed reported eating less Gulf of Mexico seafood, with 18.4% of consumers surveyed stating they did not eat any Gulf seafood at all.⁷⁷

Corridor Resources (Stantec) asserts in its Old Harry EA report that commercial fishing is not likely to take place in the project area, resulting in insignificant impacts on the regional fishery⁷⁸. However, this EA only assessed impacts in the immediate area of the Old Harry project. Since a large oil spill could have severe Gulf-wide impacts, further information, modeling, and assessment is required, again with the input of independent expertise.

Property values: The occurrence of a worst-case oil spill impacting shorelines would cause coastal property values to decline. Shorelines that have been contaminated by oil, or are near to those contaminated by oil, are impacted by the same stigma and reputational harm as mentioned in the tourism and fisheries contexts.

Quality of Life: Recreational and natural areas throughout the Gulf region bring together vacationers and locals alike to enjoy themselves and lead happy lives. Whether it is through fishing, swimming, or boating, the Gulf enables a variety of beneficial recreational pursuits. As such, the quality of life of users of the Gulf would be greatly diminished should an oil spill damage this source of enjoyment.

Natural Resource Damages: A worst-case oil spill could have severe consequences on the diverse and productive ecosystems that are central to the economy in the Gulf. This ecosystem has already been put under immense pressure by marine shipping, overfishing, pollution, and climate change.

In illustrating the effect on the Gulf of Mexico's ecosystems from the Macondo disaster, the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling noted the connection between ecological and economic values.⁷⁹ Unlike the offshore liability regimes applicable in Canada (see Section 9 below), a natural resource damages assessment program exists in the United States that measures ecological harms against carefully established baseline conditions. The purpose of these natural resource damage rules is to "identify, assess, and restore damages to: (1) public natural resources, (2) the ecosystem services they provide (e.g. oysters provide water filtration) and (3) the public's lost use of those resources."⁸⁰ Such an assessment can include damage to shorelines,

Lawrence: Human Systems Overview Report, Oceans, Habitat and Species at Risk Publication Series, (Ottawa: Department of Fisheries and Oceans, 2010), online: <<http://www.dfo-mpo.gc.ca/Library/340113.pdf>>.

⁷⁶ National Commission on the BP *Deepwater Horizon* Oil Spill and Offshore Drilling, *Rebuilding an Appetite for Gulf Seafood After Deepwater Horizon*, Staff Working Paper No. 16 (Washington: not dated) p 4, online: <<http://www.oilspillcommission.gov>>.

⁷⁷ *Ibid* pp. 15-16.

⁷⁸ Old Harry EA Report, *supra* note 27.

⁷⁹ *Deepwater Horizon* National Commission Report, *supra* note 70, p. 176.

⁸⁰ National Commission on the BP *Deepwater Horizon* Oil Spill and Offshore Drilling, *Natural Resources Damage Assessment: Evolution, Current Practice, and Preliminary Findings Related*

aquatic vegetation, fisheries, shellfish, corals, marine mammals, birds, terrestrial species, and human use of the affected areas.⁸¹ Also, it would enable the jurisdictions and individuals affected by a spill to seek redress from the industry for the damage suffered, in order to remediate and restore the affected areas.

Simply put, a spill in the SEA Study Area could destroy great quantities of natural capital upon which much of the region's economic activity directly or indirectly depends.

Recommendation: The SEA should present information on all the potential impacts of a significant oil spill on the tourism, aquaculture, fisheries, other relevant industries, together with impacts on health, quality of life, ecosystems and natural capital resources. It should incorporate economic data and lessons from other oil spill incidents, as well as relevant local data on the ecosystems and fisheries around the Gulf. The SEA should consider the economic value of natural resource damages that may potentially be impacted by the spill scenarios modelled.

A more comprehensive understanding of baseline environmental conditions, potential trajectories of spilled oil, and their impacts on Gulf ecosystems is necessary. Independent, peer-reviewed data is essential to reducing uncertainties about what damage may be caused. As such, we submit that it would be irresponsible for the Board to determine in its SEA report that it is appropriate to move forward with offshore development prior to having obtained adequate baseline data.

5. Threats from Oil and Gas Development to Species at Risk in the Gulf of St. Lawrence

A total of thirty-four taxa (species or populations) at risk are known to be present in the Gulf of St. Lawrence, either as permanent residents or during some period of their life cycle (migration, winter resident, etc.) These include seventeen fish species, six marine mammals, one reptile and ten bird species (see Appendix 2).

Most of these species or populations at risk are either rare or declining and all are under various threats which make their long term presence in the Gulf uncertain. Any additional threat, such as posed by the oil and gas industry, can only add to the pressure and make their long-term presence even more uncertain.

Specific threats faced by these species from offshore oil and gas development include the risk of oil spills, contaminated drilling discharges, disruption from ship traffic, noise from seismic testing, as well as direct impacts with oil drilling structures. These direct effects also impact species indirectly, through habitat destruction, displacement, and by limiting access to fishing grounds. While some of the effects have been well studied, there are many at-risk species that occur in the Gulf of St. Lawrence for which the potential impacts of offshore oil exploration and production remain unstudied and unknown.

to the Deepwater Horizon Oil Spill (Washington: 2011) pp. 3-4, online: <<http://www.oilspillcommission.gov>>.

⁸¹ *Ibid* pp. 9-10.

Various governmental reports (COSEWIC Status Reports, SARA Recovery Strategies and Management Plans, Department of Fisheries and Oceans Recovery Potential Assessments) document the current or possible threats jeopardizing the presence of these species in the Gulf of St. Lawrence (see Appendix 3 for a tabular breakdown).

1) Oil and gas exploration poses myriad risks to species at risk in the Gulf

The following section lists some of the specific threats that oil and gas exploration in the Gulf of St. Lawrence may pose to the thirty-four at-risk taxa identified.

a) Oiling from oil spills

Oil spills release petrochemicals and dissolved metals into the marine environment. Oil can affect marine mammals and turtles that surface to breathe, as well as seabirds that dive under the water to search for food. Direct effects of oil spills can occur via ingestion, inhalation and absorption. Indirect effects include the relocation of home ranges as animals search for new sources of food, increases in the amount of time animals must spend foraging, and disruptions of natural life cycles.⁸²

Oil spills and habitat disturbance are listed as threats for all six at-risk marine mammals frequenting the St. Lawrence Estuary (see Appendix 3): the North Atlantic Right Whale (*Eubalaena glacialis*)⁸³, the Blue Whale (Atlantic population) (*Balaenoptera musculus*)⁸⁴, the Fin Whale (Atlantic population) (*Balaenoptera physalus*)⁸⁵, the Beluga (St. Lawrence Estuary population) (*Delphinapterus leucas*)^{86,87}, the Killer Whale (Northwest Atlantic population) (*Orcinus orca*)⁸⁸, and the Harbour Porpoise (Northwest Atlantic population) (*Phocoena phocoena*)⁸⁹. Though whales may not be as vulnerable to oiling as other

⁸² JK Ober, Effects of Oil Spills on Marine and Coastal Wildlife, Report WEC285 (2010) Wildlife Ecology and Conservation Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida.

⁸³ DFO, Recovery potential assessment for right whale (Western North Atlantic population) Rep. 2007/027 (Ottawa: DFO Can. Sci. Advis. Sec. Sci. Advis.: 2010). [Right Whale 2010 RPA]

⁸⁴ DFO, Recovery Strategy for the blue whale (*Balaenoptera musculus*), Northwest Atlantic population, in Canada by J Beauchamp, H Bouchard, P de Margerie, N Otis, JY Savaria (Ottawa: DFO, 2009) 62 pp. [Blue Whale 2009 RS]

⁸⁵ COSEWIC, COSEWIC assessment and update status report on the fin whale *Balaenoptera physalus* in Canada, (Ottawa: Committee on the Status of Endangered Wildlife in Canada, 2005). ix + 37 pp. [Fin Whale 2005 Status Report]

⁸⁶ Beluga Whale 2012 Recovery Strategy.

⁸⁷ DFO. Recovery Potential Assessment of Cumberland Sound, Ungava Bay, Eastern Hudson Bay and St. Lawrence beluga populations (*Delphinapterus leucas*). DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2005/036. (Ottawa: DFO, 2005). [Beluga Whale 2005 RPA]

⁸⁸ COSEWIC. COSEWIC assessment and update status report on the Killer Whale *Orcinus orca*, Southern Resident population, Northern Resident population, West Coast Transient population, Offshore population and Northwest Atlantic / Eastern Arctic population, in Canada. (Ottawa, Committee on the Status of Endangered Wildlife in Canada, 2008). viii + 65 pp. [Killer Whale 2008 Status Report]

⁸⁹ COSEWIC. COSEWIC assessment and update status report on the harbour porpoise *Phocoena phocoena* (Pacific Ocean population) in Canada. (Ottawa: Committee on the Status of Endangered Wildlife in Canada, 2003). vi +22 pp. [Harbour Porpoise 2003 Status Report]

species as they do not rely on their fur for insulation, if oil from a spill is caught in cracks in the ice, whales may be forced to breathe air containing toxic petroleum vapours.⁹⁰ In general, mammals that must come to the surface to breathe face an increased risk of exposure to inhalation of volatile compounds.⁹¹

Of the ten bird species at risk, seven are described as having the potential to be affected by oil spills (see Appendix 3): the Red Knot rufa subsp. (*Calidris canutus rufa*)⁹², the Piping plover melodus subsp. (*Charadrius melodus melodus*)⁹³, the Horned grebe (Magdalen Islands population) (*Podiceps auritus*)⁹⁴, the Roseate Tern (*Sterna dougallii*)⁹⁵, the Ivory Gull (*Pagophila eburnea*)⁹⁶, the Harlequin Duck (*Histrionicus histrionicus*)⁹⁷, and the Barrow's Goldeneye (Eastern population) (*Bucephala islandica*)⁹⁸. The Red Knot⁹⁹, the Piping Plover¹⁰⁰, and the Roseate Tern¹⁰¹ can also be affected specifically through habitat degradation (wetlands, coastal habitats, etc.). In addition to habitat degradation, birds that spend some time at sea can be oiled during oil spills originating either from accidental spills or routine discharges. Oiling is extremely dangerous for birds, as even minute amounts of hydrocarbons can reduce the water repellency of their feathers, leading to hypothermia and death.¹⁰² Birds whose feathers have been in contact with oil are likely to have reduced survival rates because of

⁹⁰ St. Aubin 1990a, Geraci 1990 In Mosbeck, A. (Ed.) *National Environmental Research Institute – Denmark. Potential environmental impacts of oil spills in Greenland. An assessment of information status and research needs*. NERI technical report no. 415 (2002). 118 pp.

⁹¹ Ober, *supra* note 82.

⁹² COSEWIC. *COSEWIC assessment and status report on the Red Knot Calidris canutus in Canada* (Ottawa: Committee on the Status of Endangered Wildlife in Canada, 2007). vii + 58 pp.

⁹³ Environment Canada, *Recovery Strategy for the Piping Plover (Charadrius melodus melodus) in Canada*, Species at Risk Act Recovery Strategy Series (Ottawa: Environment Canada, 2012). v + 29 pp. [Piping Plover 2012 Recovery Strategy]

⁹⁴ COSEWIC, *COSEWIC Assessment and Status Report on the Horned Grebe Podiceps auritus, Western population and Magdalen Islands population, in Canada* (Ottawa: Committee on the Status of Endangered Wildlife in Canada 2009). vii + 42 pp. [Horned Grebe 2009 Status Report]

⁹⁵ COSEWIC, *COSEWIC assessment and update status report on the Roseate Tern (Sterna dougallii) in Canada* (Ottawa: Committee on the Status of Endangered Wildlife in Canada, 2009). vii+48 pp.

⁹⁶ COSEWIC, *COSEWIC Assessment and Update Status Report on the Ivory Gull Pagophila eburnea in Canada*. (Ottawa: Committee on the Status of Endangered Wildlife in Canada, 2009). vi + 42 pp.

⁹⁷ Environment Canada. *Management Plan for the Harlequin Duck (Histrionicus histrionicus) Eastern Population, in Atlantic Canada and Québec*. Species at Risk Act Management Plan Series. (Ottawa: Environment Canada, 2007). vii + 32 pp.

⁹⁸ COSEWIC. *COSEWIC status appraisal summary on the Barrow's Goldeneye Bucephala islandica Eastern Population, in Canada* (Ottawa: Committee on the Status of Endangered Wildlife in Canada, 2011). xii pp.

⁹⁹ *Supra* note 92.

¹⁰⁰ *Supra* note 93.

¹⁰¹ *Supra* note 95.

¹⁰² PD O'Hara and LA Morandin, "Effects of sheens associated with offshore oil and gas development on the feather microstructure of pelagic seabirds" (2010) 60:5 Marine Pollution Bulletin pp. 672–678.

difficulties obtaining food and escaping from predators.¹⁰³ The Horned Grebe¹⁰⁴, the Ivory Gull¹⁰⁵, the Harlequin Duck¹⁰⁶ and Barrow's Goldeneye¹⁰⁷ are all described as being particularly susceptible and sensitive to oiling at sea.

Critical habitat has been identified for the Piping Plover in numerous coastal locations within the Gulf.¹⁰⁸ Oil spills are identified as a threat through habitat loss or degradation, harm to the birds themselves, and harm to the availability of their invertebrate prey; impacts may be most significant for chicks, which are unable to fly to other foraging grounds.¹⁰⁹ Chick survival is already a key issue for the recovery of the Piping Plover; a catastrophic oil spill, or even chronic spills, would further increase mortality of chicks. In addition, oil spills pose a risk to foraging adults and may reduce hatching success.¹¹⁰ The SARA recovery strategy for this species recommends that review of project proposals should in particular consider the effects on the Piping Plover of any activity that could result in oil spills, and notes that cumulative effects from multiple such projects are of concern.¹¹¹ It also recommends that oil spill contingency plans include measures specific to mitigating impacts on the Piping Plover.¹¹² The strategy identifies the accidental discharge of oil and toxic chemicals as activities likely to result in the destruction of critical habitat.¹¹³

Studies have shown that sea turtles are highly sensitive to oil, and are at particular risk because of a lack of avoidance behavior, indiscriminate feeding in convergence zones, and large pre-dive inhalations.¹¹⁴ Because adult sea turtles have a habit of ingesting floating objects, regardless of their nutritional value, they are most susceptible to oil spills through inhalation when they surface to breathe, or through ingestion of oil-fouled food and floating tar balls they mistake for food.¹¹⁵ Individuals surfacing in an oil slick to breathe are also susceptible to breathing in toxic volatile fumes. Eggs and hatchlings are susceptible through absorption of oil, which may result in mortality and developmental defects.¹¹⁶

Fish also readily take up oil components into their tissues after exposure to oil in water, food or sediment, and although concentrations of oil that are lethal to adult fish are

¹⁰³ Ober, *supra* note 82.

¹⁰⁴ Horned Grebe 2009 Status Report, *supra* note 94.

¹⁰⁵ *Supra* note 96.

¹⁰⁶ *Supra* note 97.

¹⁰⁷ *Supra* note 98.

¹⁰⁸ Piping Plover 2012 Recovery Strategy, *supra* note 93.

¹⁰⁹ *Ibid* p. 9.

¹¹⁰ *Ibid* p. 10.

¹¹¹ *Ibid* p. 14.

¹¹² *Ibid* p. 15.

¹¹³ *Ibid* p. 18.

¹¹⁴ S Milton, P Lutz, and G Shigenaka, *Oil and Sea Turtles: Biology, planning and response. Chapter 4: Oil Toxicity and Impacts on Sea Turtles.* (Washington: US Department of Commerce. Oceanic and Atmospheric Administration. National Ocean Service. Office of Response and Restoration, 2003).

¹¹⁵ Ober, *supra* note 82.

¹¹⁶ *Ibid*.

unlikely to build up in the open sea following an oil spill, sub-lethal oil concentrations may stress fish, especially during long term exposure, resulting in increased mortality, reduced growth, and susceptibility to parasites.¹¹⁷ Cod eggs and larvae appear to be particularly sensitive to oil.¹¹⁸ Further, oil can foul fish from commercial fisheries destined for consumption.

b) Air and water contamination from drilling discharges

Produced water is the main discharge from the offshore oil industry and contains oil-derived compounds such as hydrocarbons, heavy metals and added chemicals. Studies suggest that produced water discharges may affect biota over larger areas from oil drilling sites at sea than originally predicted.¹¹⁹

Of the species at risk found in the Gulf of St. Lawrence, physical disturbance of habitat, either from drill cuttings or drilling discharges and oil spills, can affect the: Northern Wolffish (*Anarhichas denticulatus*)¹²⁰, the Atlantic Wolffish (*Anarhichas lupus*)¹²¹ and the Spotted Wolffish (*Anarhichas minor*)¹²², the Atlantic Cod (Laurentian north and Laurentian south populations) (*Gadus morhua*)¹²³, the Deepwater Redfish (*Sebastes mentella*)¹²⁴, the American Plaice (Maritime population) (*Hippoglossoides platessoides*)¹²⁵, and the Atlantic Bluefin Tuna (*Thunnus thynnus*)¹²⁶. For example, exposure to oil and gas-produced pollutants may result in direct mortality or a host of sub-lethal impairments to the three species of Wolffish, including slower growth and decreased resistance to disease.¹²⁷

¹¹⁷ Mosbeck, *supra* note 90.

¹¹⁸ *Ibid.*

¹¹⁹ JC Perez-Casanova, D Hamoutene, S Samuelson, K Burt, T King, and K Lee, “The immune response of juvenile Atlantic cod (*Gadus morhua* L.) to chronic exposure to produced water” (2010) 70 *Marine Environmental Research*, pp. 26-34.

¹²⁰ DFO, *Recovery Strategy for Northern Wolffish (*Anarhichas denticulatus*) and Spotted Wolffish (*Anarhichas minor*), and Management Plan for Atlantic Wolffish (*Anarhichas lupus*) in Canada* by D Kulka, C Hood, and J Huntington (St. John’s NL: Fisheries and Oceans Canada: Newfoundland and Labrador Region, 2007). x + 103 pp. [Northern and Spotted Wolffish 2007 Recovery Strategy, Atlantic Wolffish 2007 Management Plan]

¹²¹ *Ibid.*

¹²² *Ibid.*

¹²³ DFO, *Recovery Potential Assessment for the Laurentian South Designatable Unit of Atlantic Cod (*Gadus morhua*)*. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2011/028 (DFO, 2011).

¹²⁴ COSEWIC, *COSEWIC assessment and status report on the Deepwater Redfish/Acadian Redfish complex *Sebastes mentella* and *Sebastes fasciatus*, in Canada*. (Ottawa: Committee on the Status of Endangered Wildlife in Canada, 2010). x + 80 pp. [Redfish 2010 Status Report]

¹²⁵ DFO, *Recovery Potential Assessment of American Plaice (*Hippoglossoides platessoides*) in Newfoundland and Labrador*. DFO Can. Sci. Advis. Sec., Sci. Advis. Rep. 2011/030. (DFO, 2011).

¹²⁶ DFO, *Recovery Potential Assessment for Western Atlantic Bluefin Tuna (*Thunnus thynnus*) in Canadian Waters*. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2011/056 (DFO, 2011). [Western Atlantic Bluefin Tuna 2011 RPA]

¹²⁷ DFO, *Recovery Strategy for Northern Wolffish (*Anarhichas denticulatus*) and Spotted Wolffish (*Anarhichas minor*), and Management Plan for Atlantic Wolffish (*Anarhichas lupus*) in Canada*

Current threats to the stability and recovery of Atlantic Cod populations include directed commercial fishing and bycatch from other fisheries for bottom-dwelling species as well as unfavourable environmental conditions leading to increased mortality of older individuals.¹²⁸ Further, a recent study found that in the event of a major oil spill from offshore wells or supertankers, hydrocarbons in the water can disrupt reproduction in Atlantic cod and eventually affect inshore populations inhabiting the cold subarctic waters in Newfoundland and Labrador.¹²⁹

c) Noise from seismic testing

Marine seismic surveys produce some of the most intense man-made noises in the oceans. Most marine mammals depend on sound waves for a variety of vital activities such as communication, prey location, navigation and echolocation, and so any disturbance of the underwater sound environment is bound to affect them by leading to, for example, disruption of foraging, avoidance of particular areas, altered dive and respiratory patterns, and disruption of mating systems.¹³⁰ In addition, sensitive ear organs can be severely affected by powerful seismic sound waves. For these reasons, seismic surveys are an important threat to the North Atlantic Right Whale^{131,132,133}, the Blue Whale¹³⁴, the Fin Whale¹³⁵, the Killer Whale¹³⁶, the Beluga^{137,138}, and the Harbour Porpoise¹³⁹. The Northern Wolffish, Atlantic Wolffish and Spotted Wolffish¹⁴⁰, as well as the Deepwater Redfish¹⁴¹ and the Atlantic Bluefin Tuna¹⁴² may also be potentially

by D Kulka, C Hood, and J Huntington (St. John's NL: Fisheries and Oceans Canada: Newfoundland and Labrador Region, 2007). x + 103 pp.

¹²⁸ COSEWIC, *COSEWIC assessment and status report on the Atlantic Cod *Gadus morhua* in Canada* (Ottawa: Committee on the Status of Endangered Wildlife in Canada, 2010). xiii + 105 pp.

¹²⁹ RA Khan, "Effects of polycyclic aromatic hydrocarbons on sexual maturity of Atlantic cod, *Gadus morhua*, following chronic exposure" (2013) 2:1 *Environment and Pollution*, online.

¹³⁰ Gordon et al, "A review of the effects of seismic surveys on marine mammals" (2004) 37 *Marine Technology Society Journal* pp. 16-34.

¹³¹ COSEWIC, *COSEWIC assessment and update status report on the North Atlantic right whale *Eubalaena glacialis* in Canada* (Ottawa: Committee on the Status of Endangered Wildlife in Canada 2003). vii + 28 pp.

¹³² DFO, *Recovery Strategy for the North Atlantic Right Whale (*Eubalaena glacialis*) in Atlantic Canadian Waters* [Final] by MW Brown, D Fenton, K Smedbol, C Merriman, K Robichaud-Leblanc, JD Conway. *Species at Risk Act Recovery Strategy Series* (Ottawa: DFO, 2009). vi + 66p. [North Atlantic Right Whale 2009 RS]

¹³³ Right Whale 2010 RPA, *supra* note 83.

¹³⁴ Blue Whale 2009 RS.

¹³⁵ Fin Whale 2005 Status Report.

¹³⁶ *Supra* note 88, Killer Whale 2008 Status Report.

¹³⁷ DFO, *Recovery Strategy for the beluga whale (*Delphinapterus leucas*) St. Lawrence Estuary population in Canada*. *Species at Risk Act Recovery Strategy Series* (Ottawa: Fisheries and Oceans Canada, 2012). 88 pp + X pp. [Beluga Whale 2012 Recovery Strategy]

¹³⁸ Beluga Whale 2005 RPA.

¹³⁹ Harbour Porpoise 2003 Status Report.

¹⁴⁰ *Supra* note 127, Northern and Spotted Wolffish 2007 Recovery Strategy, Atlantic Wolffish 2007 Management Plan.

¹⁴¹ *Supra* note 126, Western Atlantic Bluefin Tuna 2011 RPA.

affected by seismic surveys. For example, the Deepwater Redfish has biological characteristics that make it highly vulnerable to human activities, and has a collapsed population that makes it unlikely to be resilient to additional threats.¹⁴³ Evidence suggests that seismic exploration may cause sub-lethal effects at the individual level.¹⁴⁴

Of particular concern is the endangered northwest Atlantic population of the Blue Whale. There are at most 250 individuals in the population; activities affecting even a small number may significantly threaten the species' survival.¹⁴⁵ There appears to be both a resident and migratory population in the Gulf¹⁴⁶, indicating that offshore activities could impact blue whales at any time of year. Noise from seismic surveys poses a high risk to this species.¹⁴⁷ In response to anthropogenic noise, blue whale reactions can range from a brief interruption of normal activities, such as rest, feeding, social interaction, nurturing their calves, vocalizations, breaths, and dives, to avoiding noisy areas for a short or long period¹⁴⁸, and changing navigation routes¹⁴⁹. Seismic testing is likely to jeopardize recovery of the species in the northwest Atlantic¹⁵⁰, thus it may not be possible to grant a SARA permit for incidental harm from seismic testing, since no permit may be granted unless the minister is of the opinion that it will not jeopardize survival or recovery. Further, as a result of the effects of climate change on marine pH in the St. Lawrence Estuary, noise resulting from offshore activities will likely propagate over a larger area than existing impacts from seismic and other noise, possibly affecting cetacean communication even further, making it impossible to predict future impacts from currently observed impacts of offshore developments.¹⁵¹

A search of the academic literature shows that killer whales have been found to be significantly further from large airgun arrays during periods of seismic shooting than when the airguns were silent¹⁵², and that displacement of populations of Beluga Whales has been reported in association with seismic exploration.¹⁵³

d) Attraction to structures

Light attraction for seabirds is well known. Seabirds aggregate around oil drilling platforms and rigs in above average numbers due to attraction to night lighting, flaring,

¹⁴² *Ibid.*

¹⁴³ *Supra* note 124, Redfish 2010 Status Report, p. i.

¹⁴⁴ *Ibid.*, p. 17.

¹⁴⁵ Blue Whale 2009 RS, p. iv.

¹⁴⁶ *Ibid.*, pp. 2-4.

¹⁴⁷ *Ibid.*, p. 18.

¹⁴⁸ McDonald, et al., 1995; Richardson, et al., 1995; National Research Council, 2003; DFO, 2004; Bejder, et al., 2006; Weilgart, 2007. *In* Blue Whale 2009 RS, p. 10.

¹⁴⁹ Stone, 2003. *In* Blue Whale 2009 RS, p. 11.

¹⁵⁰ Blue Whale 2009 RS, p. 11.

¹⁵¹ *Ibid.*, p. 10.

¹⁵² CJ Stone. The effects of seismic activity on marine mammals in UK waters, 1998-2000. JNCC Report No. 323 (2003).

¹⁵³ KJ Finley, GW Miller, RA Davis, and CR Greene, *Reactions of belugas, Delphinapterus leucas, and narwhals, Monodon monoceros, to ice-breaking ships in the Canadian High Arctic* (1990) p. 97-117 *In*: T.G. Smith et al (eds), "Advances in research on the beluga whale, *Delphinapterus leucas*." Can. Bull. Fish. Aquat. Sci. 224.

food concentrations and other visual cues, resulting in bird mortality due to impact with the structure, oiling and incineration by flares.¹⁵⁴ This is a phenomenon that needs to be further explored for the seabirds at risk occurring in the Gulf of St. Lawrence region.

2) At-risk species for which impacts of offshore oil exploration are unknown

There are many species at risk that occur in the Gulf of St Lawrence for which the potential impacts of offshore oil exploration and production, and seismic testing, are unstudied and unknown. Some examples are highlighted below.

The Porbeagle Shark (*Lamna nasus*) is considered Endangered by COSEWIC, but was declined for listing under SARA. Data from 2005 shows the Porbeagle population in Atlantic Canada had been depleted by 76-90% since 1961.¹⁵⁵ It is taxonomically unique in the region, being the only representative of its genus in the North Atlantic.¹⁵⁶ This species has inherent biological vulnerability resulting from its life-history characteristics, including slow population growth¹⁵⁷ and very low productivity¹⁵⁸, and is thus slow to recover from harm. COSEWIC does not list any threats to the Porbeagle Shark beyond direct harvest and bycatch.¹⁵⁹ Thus, even without any additional threats, such as those from offshore oil exploration and production, this species is already at imminent risk of extirpation. DFO models used to direct fishery limits that suggest that Porbeagle recovery

CASE STUDY: THE NORTH ATLANTIC RIGHT WHALE (*Eubalaena glacialis*)

Although the only designated critical habitat for the endangered North Atlantic Right Whale is outside the Gulf, migratory habitat, which likely includes the Gulf, is crucial to North Atlantic Right Whale survival, and the Gaspé area in the Gulf has been flagged as potential critical habitat.¹⁶⁰ Offshore oil and gas development poses risks to North Atlantic Right Whales, including from activities likely to destroy critical habitat, such as contamination from vessel discharges and oil and gas activities.^{161,162} The recovery strategy identifies reducing these impacts as explicit recovery objectives.¹⁶³ Further, within the high-use right whale habitat areas in Canada, sources of noise of concern have

¹⁵⁴ F. Wiese, W. Montevecchi, G. Davoren, F. Huettman, A. Diamond, J. Linke, "Seabirds at risk around oil platforms" (2001) *Mar. Pollut. Bull.* 42, pp. 1285–1290.

¹⁵⁵ AJF Gibson and SE Campana, *Status and recovery potential of porbeagle shark in the Northwest Atlantic*, DFO Canadian Science Advisory Secretariat Research Document 2005/053 (DFO, 2005), online:

<http://www.nmfs.noaa.gov/sfa/hms/sharks/Full_Porbeagle_Assessment.pdf>, p. 20.

¹⁵⁶ COSEWIC, *COSEWIC assessment and status report on the porbeagle shark *Lamna nasus* in Canada* (Ottawa: Committee on the Status of Endangered Wildlife in Canada, 2004). viii + 43 pp. Pg. iii.

¹⁵⁷ *Supra* note 155, p. 2.

¹⁵⁸ *Supra* note 156, p. 24.

¹⁵⁹ *Ibid.*

¹⁶⁰ North Atlantic Right Whale 2009 RS, *supra* note 132, p. 31.

¹⁶¹ Right Whale 2010 RPA, *supra* note 83.

¹⁶² North Atlantic Right Whale 2009 RS, p. 25, 32.

¹⁶³ *Ibid.*, p. 34-35.

included, among others: commercial transport, nearby or potential oil and gas exploration, and marine construction.¹⁶⁴ Seismic air guns used in petroleum exploration are also a source of loud noise that is a potential concern for right whale conservation, due to their potential to cause behavioural changes and damage to ear structures.¹⁶⁵

is possible using the key assumption of ecosystem constancy.¹⁶⁶ Clearly, if there is significant ecosystem alteration from offshore oil development, this assumption would be violated and would render current management insufficient to permit recovery of the Porbeagle.

The Winter Skate (*Leucoraja ocellata*) possesses life history characteristics that increase vulnerability to exploitation, reduce recovery rate, and increase the risk of extinction. The Southern Gulf of St. Lawrence population appears to have a restricted distribution, and the number of mature individuals is estimated to have declined by 98% since the early 1970s and is now at a historically low level.¹⁶⁷ However, potential anthropogenic impacts on habitat have not been evaluated.¹⁶⁸

Finally, poorly understood changes in the marine environment are thought to be the key threat to all populations of Atlantic salmon (*Salmo salar*), contributing to recent large scale declines in their survival.¹⁶⁹ While most Atlantic salmon seem to disperse far offshore almost immediately after leaving their natal watershed, some data suggest that Gulf of St. Lawrence Atlantic salmon may be an exception, with postsmolts found in the nearshore marine environment long after they should have left their natal watershed.¹⁷⁰ This points to the necessity to further study the potential impacts of offshore oil activities on Atlantic salmon.

3) Prioritizing marine conservation: marine protected areas must precede offshore development

¹⁶⁴ Ibid, p. 26.

¹⁶⁵ Ibid.

¹⁶⁶ Supra note 155, p. 20.

¹⁶⁷ COSEWIC, COSEWIC assessment and status report on the Winter Skate *Leucoraja ocellata* in Canada (Ottawa: Committee on the Status of Endangered Wildlife in Canada, 2005).

¹⁶⁸ Canadian Science Advisory Secretariat Research Document, Recovery potential assessment of 4T and 4VW winter skate (*Leucoraja ocellata*): biology, current status and threats (Ottawa: DFO, 2006).

¹⁶⁹ COSEWIC, COSEWIC assessment and status report on the Atlantic Salmon *Salmo salar* (Nunavik population, Labrador population, Northeast Newfoundland population, South Newfoundland population, Southwest Newfoundland population, Northwest Newfoundland population, Quebec Eastern North Shore population, Quebec Western North Shore population, Anticosti Island population, Inner St. Lawrence population, Lake Ontario population, Gaspé-Southern Gulf of St. Lawrence population, Eastern Cape Breton population, Nova Scotia Southern Upland population, Inner Bay of Fundy population, Outer Bay of Fundy population) in Canada (Ottawa: Committee on the Status of Endangered Wildlife in Canada, 2010). xvii + 136 pp, p. xiii.

¹⁷⁰ Ibid, p. 37.

Having assessed the impacts of offshore development in the SEA Study Area (and more broadly in the Gulf) on species at risk, we now turn to a related analysis of ecosystem conservation and protection. We respectfully submit that the identification and protection of important marine areas must be accomplished prior to any offshore development in both the SEA Study Area and the entire Gulf.

The status of marine protection in Canada's oceans, and of the Gulf of St. Lawrence in particular, leaves much to be desired with a mere 1% actually protected both in the Gulf and in Canada as a whole.¹⁷¹ This compares unfavorably with countries such as Australia¹⁷² and the United States¹⁷³, each of which has afforded varying degrees of protection (including "no-take" zones) on over 40% of its marine areas. Furthermore, it is particularly troubling given that Canada is signatory to the international *Convention on Biological Diversity* and has agreed to the goal of 10% marine protection in 2020 as recently adopted at Aichi.¹⁷⁴

Despite the fact that many marine sectors within the SEA Study Area are of sufficient interest on an ecological basis to warrant protection, there are no marine areas in the SEA Study Area that have been legally protected under Canadian law. The only thing that has been done is that DFO has designated ten Ecologically and Biologically Significant Areas (EBSAs) within the Gulf of St. Lawrence.¹⁷⁵ Indeed, it should be noted that one EBSA covers a large part of the SEA Update area and is crucial to the survival of cod and other groundfish species such as plaice and redfish. Whole populations can be found migrating and gathering in this EBSA which makes Western Newfoundland waters the main concentration area of cod, redfish and american plaice¹⁷⁶.

But the identification of EBSAs is not a general strategy for protecting all habitats and marine communities that have ecological significance. Rather, it is a tool for calling attention to areas that have particularly high ecological or biological significance, to facilitate provision of a greater-than-usual degree of risk aversion in the management of activities in such areas. The federal *Oceans Act* (1997) authorizes DFO to identify and recommend EBSAs and to provide enhanced protection to areas of the oceans and coasts that are ecologically or biologically significant¹⁷⁷. But concluding that an area is ecologically or biologically significant does not give it any special legal status or legal protection from activities such as offshore development.

¹⁷¹ CPAWS, *Is Canada on track to create 12 new marine protected areas by December 2012 ?* online: Canadian Parks and Wilderness Society,

<http://cpaws.org/uploads/OceanProgressReport_May142012_Final.pdf>, 21 p.

¹⁷² Mongabay.com, *Australia sets aside 40% of its waters for protection.* Online :

<<http://news.mongabay.com/2012/0614-hance-australia-mpas.html#>>

¹⁷³ NOAA, National Marine Protected Areas Center. Online :

<<http://www.mpa.gov/dataanalysis/analysisus/>>

¹⁷⁴ Convention on Biological Diversity, Strategic Plan for 2011-2020. Online :

<http://www.cbd.int/sp/targets/rationale/target-11/>

¹⁷⁵ DFO (Fisheries and Oceans Canada). 2007b. Ecologically and Biologically Significant Areas (EBSA) in the Estuary and Gulf of St. Lawrence: identification and characterization. DFO Canadian Science Advisory Secretariat Resource Document 2007/016.

¹⁷⁶ *Ibid.*

¹⁷⁷ *Oceans Act*, SC 1996, c 31 s 35(3).

One of the signatories to this submission (SNAP-Quebec, known as Canadian Parks and Wilderness Society outside of Quebec) has identified four special areas within the SEA Study Area. These special areas contain fragile or unique coastal ecosystems and warrant formal legal protection.¹⁷⁸

Once oil and gas exploration licences are issued over ecologically important areas, it becomes virtually impossible to obtain their protection at a later time. We believe, as a matter of basic marine spatial planning, that the decision-making order should be reversed: ecologically important areas should be identified and receive full legal protection prior to the issuance of any exploration licences.

Recommendation :

The Board should conclude that there are some portions of the SEA Study Area in which oil and gas development should not occur because of environmental sensitivity and ecological value. The Board should support a comprehensive process of marine spatial planning to identify and legally protect such areas. No new exploration licences should be issued by the Board in the Western Newfoundland offshore region until ecologically important marine areas have received full legal protection.

6. Gaps in Baseline Information on Environmental Conditions

As indicated in the Scoping Document, the C-NLOPB is required to identify knowledge gaps.¹⁷⁹ Obviously, there are many: insufficient information exists not only as regards the likely impacts of oil and gas development on the Gulf, but also as regards the existing state of Gulf biota and ecosystems. Our understanding of ecosystems, and how they are changing due to climate change and other pressures, is incomplete. Thus, in order to fulfill its objective of providing strategic guidance in light of offshore development opportunities, the SEA Update must be a platform not only for identifying what we don't know, but also for identifying what we need to know prior to making decisions to move forward in a precautionary manner with offshore activities.

The Quebec SEA2 process currently underway in the Quebec portion of the Gulf has identified numerous gaps in baseline information, including:

- movement of marine mammals between different habitats;
- currents and physically decisive phenomena for certain biological components;
- anthropogenic noise environment;
- use of the area by various species, including species at risk;
- location of breeding grounds of some fish species of commercial interest;
- data on aboriginal fishing activities.

¹⁷⁸ CPAWS (Canadian Parks and Wilderness Society). *Special marine areas in Newfoundland and Labrador: Areas of interest in Our Marine Backyards*. (2009), : CPAWS-NL <http://cpaws.org/uploads/pubs/report_nlmarineguide.pdf>.

¹⁷⁹ Scoping Document, *supra* note 3, pp. 4, 6, 7, 8, 11

Looking back at the 2005 and 2007 SEAs for the Western Newfoundland Gulf region, it is noteworthy that they failed to consider in any significant detail:

- worst case scenarios and blowout probabilities;
- spill trajectory modeling;
- the anticipated effectiveness of response measures;
- anticipated response gaps (ie. % of time response measures would be unavailable for deployment due to environmental/weather conditions);
- the use and toxicity implications of chemical dispersants;
- economic and social impacts of a large-scale spill.

In advance of the SEA Update report and with a view to identifying further information gaps, it is instructive to review the Old Harry EA report submitted by Corridor Resources in October 2011.¹⁸⁰ As discussed above, there are a number of deficiencies in this report. For example, the oil spill modeling is inadequate at best and it does not assess cumulative environmental impacts on the region. Moreover, it was sharply criticized by Environment Canada for its failure to confront the lack of information and properly assess the potential impact of the Old Harry proposal on wildlife. For instance, the effect of the project on Piping Plover could be difficult to determine, as “migration patterns, migration routes, migration height, and other aspects of migration are unknown” for Piping Plover.¹⁸¹ Similarly, the causes of the decline of Horned Grebe in Canada are little known.¹⁸² Finally, the EA report concludes that, based on 20 to 50 days of drilling, air emissions and impacts on the marine environment from development at the Old Harry prospect would be minimal with very little information to substantiate this claim.¹⁸³

We are concerned that there is no plan, or at least none that has been made public, to commission studies that would remedy the gaps in baseline information that exist in the area that could be affected by oil and gas development in the Western Newfoundland Offshore Area. While the SEA Scoping Document promises to identify information gaps related to VECs¹⁸⁴, it does not commit to addressing these gaps. This is a fundamental problem.

Recommendation: The SEA Update must address the information gaps persisting from the previous SEAs. Prior to issuing further exploration licenses or any authorizations to drill or conduct seismic programs, the Board should collaborate with federal departments, industry, academia and civil society to identify specific information gaps that require further study, and develop a plan to integrate such information in decision-making.

¹⁸⁰ Old Harry EA Report *supra* note 27.

¹⁸¹ Old Harry EA Comments, p. 79.

¹⁸² *Ibid* p. 80.

¹⁸³ Old Harry EA Report, *supra* note 27, at items 7.2.2.1, 7.2.2.5, 7.4.2.1, 7.4.4, 10.0.

¹⁸⁴ Scoping Document, *supra* note 3, p. 8.

7. Need for a Risk Management Framework in Identifying Mitigation and Monitoring Measures

Residents of the Gulf provinces have important social, economic, and cultural interests in the Gulf's health. As such, proposals to exploit hydrocarbons in the Gulf should proceed only if it can be demonstrated that the risks are acceptable and manageable.

Risk can be better understood when decision-making is science-based. The value of quantitative approaches to risk assessment can only be realized if all data, assumptions, and uncertainties are carefully documented, peer reviewed, and clear enough to enable public understanding of regulatory and licensing decisions. Opacity and obfuscation in this regard would be contrary to the SEA Scoping Document's commitment to identify mitigation and monitoring measures that need to be considered for offshore activities in general, and in specific or non-typical sites and areas.¹⁸⁵ Further, decisions about the risks from oil and gas development must allow for iterative and adaptive management.

Regulators, including but not limited to the Board, must take a leadership role in ensuring that any development that occurs in the Gulf is within socially acceptable limits for risk tolerance. With the stakes so high and with the entire industry's safety culture brought into question pursuant to the BP disaster, it is unreasonable to expect civil society to trust industry's assertions regarding cumulative impacts, emergency response capacity, safety plans and spill trajectory modeling.

Reaction to the Old Harry EA both demonstrates and justifies this mistrust. As noted above, the proponent's EA did not adequately consider the risk and effects of a worst-case scenario blowout. It also did not address spill response and contingency plans for such a spill or blowout, including the drilling of a relief well. There is no explanation of preferred mitigation strategies or description of other possible strategies, or why the ones adopted in the EA would be the most effective. The Board's efforts through this SEA Update process to set a high standard and lay a strong foundation for future project EAs can help correct the mitigation and monitoring proposals seen to date.

Beyond the specific commitments to examine mitigation measures in the Scoping Document, the Board's statutory obligations entail environmental protection responsibilities. The section of the *Canada-Newfoundland and Labrador Atlantic Accord Implementation Act* dealing with petroleum exploration and exploitation operations outlines an environmental mandate for the Board: section 135.1(a) and (b) speak to the Board's mandate to promote "safety, particularly by encouraging persons exploring for and exploiting petroleum to maintain a prudent regime for achieving safety" and "the protection of the environment."¹⁸⁶ We look to the Board to deliver on this mandate through its words and actions in the SEA Update context.

¹⁸⁵ Scoping Document, *supra* note 3, p. 6-7.

¹⁸⁶ *Canada-Newfoundland and Labrador Accord Implementation Act*, SC 1987, c 3, s 135.1(a) and (b).

1) An appropriate risk management framework should distinguish between acceptable, tolerable, and unacceptable risk

The SEA Scoping Document says the SEA will “generally describe typical offshore oil and gas production activities” and recommends “general mitigative measures,” but does not provide specifics on what risks and scenarios the SEA will seek to articulate and manage. The SEA should describe a risk framework guiding permitting decisions, and separating risks into “acceptable”, “tolerable”, and “unacceptable” categories.

We propose a simple framework, where: acceptable risks require no further mitigation measures; unacceptable risks are so serious that they cannot be allowed; and tolerable risks can be allowed but must be reduced to levels as low as reasonably practicable. This framework must encompass both the “ordinary” impacts of industrial activity, including in particularly sensitive areas, as well as the risks of very large oil spills, worst-case scenario blowouts and other low-likelihood accidents. The framework must acknowledge that some risks are unacceptable, and require continuous risk reduction for projects and activities that are deemed tolerable. The framework must be incorporated not only into back-end drilling authorizations and associated contingency plans, emergency plans, etc., but also into front-end environmental assessment approvals. Finally, the framework must be based upon the highest standards of transparent governance, so that all stakeholders might evaluate the information upon which the risks are to be evaluated.

Our preliminary thoughts on what risks are unacceptable and what risks are tolerable in Gulf offshore petroleum development are as follows. Please note that these examples are not intended to provide a comprehensive inventory of unacceptable activities, much less to draw hard lines between unacceptable and tolerable risks. They are provided simply in order to illustrate that a valid risk framework must define the boundaries of unacceptable risks and the scope of tolerable risks.

With respect to the risks of releasing oil into the environment, any project or activity that could result in a blowout, or risk the release of large volumes of oil in to the Gulf is unacceptable. Such an event would be catastrophic for the Gulf ecosystems, and for economic and cultural values of the people of Eastern Canada, as it would have devastating consequences for the fishery in the Gulf. Drilling should only ever be approved if it can be shown that the risk of such an occurrence is very small.

In addition to the risk of oil releases, we are concerned with the risks and other impacts of petroleum development and industrial activity on the economic, ecological and cultural values in the Gulf. Any project or activity that presents a risk to a crucial economic resource, a particularly sensitive area, or critical habitat for marine species should be deemed unacceptable.

2) Specific elements to incorporate into a risk assessment framework

Both for the SEA Update Area and elsewhere the Gulf, the Board must ensure that the risk management framework:

1. Encompasses and quantifies the risks associated with both high likelihood events (such as shipping noise, minor spills and leakage) and low-likelihood events (such as blowouts). It should describe the safety record and likely risks of different

- types of drilling equipment and techniques in the conditions they may encounter in the Gulf.
2. Applies whether the primary concern is to understand and manage the risks of particular activities, projects or policies, or to understand and manage the combined risks associated with multiple activities and projects to specific ecological endpoints in particular geographic areas.
 3. Allows for the possibility of unacceptable risk, such that a project or activity may be deemed too hazardous, or an area too sensitive to sustain any industrial activity.
 4. Provides for continual improvement, so that surpassing a certain threshold does not result in a disincentive to ongoing efforts to further reduce risk.
 5. Takes a precautionary approach to decision-making in the absence of adequate baseline information, and contains mechanisms to incorporate new research, monitoring, and observation into an iterative and adaptive management approach.

8. Emergency Response in the Risk Management Framework

The Board's SEA report, in laying out a risk management framework, should consider the special conditions in the Gulf that may affect emergency response capabilities, as well as the state of oil recovery technology and techniques, and the capacity of the surrounding communities to mobilize and emergency response. These factors should influence the Board's decisions on any projects that are considered after the SEA.

1) Risk management requires detailed contingency response plans

As part of the risk framework, the SEA must account for the conditions in the Gulf and the limitations on emergency response capacity that result from these conditions.

The Old Harry EA does not include detailed emergency response plans. This is a significant weakness, because it gives rise to a reasonable apprehension that Corridor is so unprepared for a spill that they will not even entertain the possibility that one may occur. The Board must require that proponents demonstrate their preparedness and appropriate risk management planning before any EA is approved, let alone any authorization to drill is granted.

An important component of this is the requirement for same-season relief wells. Recent information gathered for the National Energy Board's review of Arctic drilling supports the conclusion that a same-season relief well is a reasonable requirement: while SSRWs "take months to drill, but despite this they are an important insurance measure and "the only accepted, high-probability solution to a subsea blowout".¹⁸⁷

¹⁸⁷ National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, *Stopping The Spill: The Five-Month Effort to Kill the Macondo Well*. Staff Working Paper No. 6 (January 11, 2011), online: Oil Spill Commission <<http://www.oilspillcommission.gov/resources#staff-working-papers>>.

Recommendation: The Board should articulate its basic expectations as to the appropriate content and detail for contingency and response plans that industry proposes, and should frame these expectations within the following constraints:

- Develop extended oil spill trajectory models and parameters suitable for Gulf conditions (as discussed in Section 4) in collaboration with other offshore regulators. Work with scientific experts in the Canadian government, industry and the academic sector to apply the models to specific locations in the Gulf, including the SEA Study Area. These models, their input data and their outputs, should be made available to industry and the public.
- Require applicants to submit worst-case blowout scenarios, including trajectory modeling under a range of seasonal conditions, to establish the potential vertical and geographic spread of an oil spill in relation to ice and marine species.
- Require same-season relief wells (SSRWs).

2) Time pressures from changing ocean conditions and seasons

If a blowout occurs close to the end of the milder seasons, it may become very difficult to drill a relief well or otherwise stop the flow before conditions make it impossible to cap the well. This increases the level of risk and needs to drive permitting decisions in order to keep risks within acceptable limits, even if industry promises to drill only in ice-free seasons.

According to the CNLOPB, Corridor Resources' EA does adequately describe how a relief well could be drilled within the same season. The CNLOPB contends that the confined nature of the Gulf and the presence of pack ice should drive towards consideration of a better seasonal window¹⁸⁸. Ice conditions in the Gulf are variable with freeze-up usually starting in mid-December, and ice dislocation beginning in mid-March. Offshore ice remains until mid-April¹⁸⁹.

Under winter conditions, when the ocean is impassable with ice, it is a challenge to drill a same-season relief well. These wells can take up to 140 days to drill, so there is a risk of a multi-season blowout spilling oil directly into the ocean for months before it can be contained.

Recommendation: The SEA report should consider the weather and ocean conditions in the SEA Update Area and identify the risks this poses to emergency well-kill operations. Oil and gas exploration should only be approved if the proponent can clearly demonstrate that it has taken steps to reduce the risk of a multi-season blowout by scheduling drilling to allow ample time for the drilling of a same-season relief well.

3) Emergency response capabilities

Remoteness and logistical challenges can delay response to worst-case scenarios. The communities around the SEA area have a relatively small population. It is unlikely that

¹⁸⁸ Old Harry EA Comments, p. 2

¹⁸⁹ Québec, *Strategic environmental assessment* (2012), online: Gouvernement du Québec <<http://www.ees.gouv.qc.ca/english/index.asp>>.

local emergency response infrastructure would be able to respond adequately to an emergency such as a worst-case blowout. If a spill of the same proportions as Deepwater Horizon occurs, then a timely cleanup effort would be very difficult: in May 2010, the Macondo blowout required approximately 13,000 people, 1.5 million feet of boom, over 500 response vessels, 37 aircraft, 1000 local vessels, and more than 4000 additional volunteers.¹⁹⁰

Local resources may not meet this capacity requirement. The entire population of Newfoundland is approximately 512,700, down from 580,000 in 1992.¹⁹¹ The Old Harry EA proposes helicopter support for a response effort, but does not identify any local shore-based helicopter facilities.¹⁹² The SEA should consider the capacity of local communities to mobilize an adequate response, as the Newfoundland area is far from major population centres. Between limited local capacity and limited technology, it is unrealistic to think that a very large oil spill could be rapidly contained, even in ideal weather conditions.

Recommendation: Due to limited local response capacity, the SEA report should recommend that oil and gas exploration only be permitted where the proponent can demonstrate a world-class emergency response plan prior to approval, identifying the resources that would be required to respond to possible emergencies. The report should also insist that the proponent must commit to continually improving its response capacity and safety practices to reduce risk to the minimum practicable level. Proponents must be able to demonstrate that, in case of a worst-case scenario, they will be able to both (a) drill a same-season relief well and (b) apply state-of-the-art capping technology that is proven to perform better than a “crushed beer can”.¹⁹³

4) Response gaps

Many trials of response methods have been carried out in “laboratory” conditions, but it is often found that responses such as mechanical recovery of oil, dispersants, and *in situ* burning of oil perform poorly in real-world emergencies. Oil spill response gap is the percentage of time when specific oil spill countermeasures are not possible due to environmental operating limits. This is another substantial area of risk in the SEA Study Area. We are not aware of any attempt or study to quantify the percentage of time when no response would be possible to a spill in the western Gulf of St. Lawrence.

The SEA Study Area confronts operators with challenging weather, which can hamper the effectiveness of response efforts and render some techniques useless due to low visibility or turbulent water. In assessing the risks of oil and gas projects, the SEA must

¹⁹⁰ Standing Committee on Natural Resources, May 13, 2010, page 10, testimony of Mrs. Anne Drinkwater (President, BP Canada Inc.), quoted in Ecojustice and WWF, “Suggested Studies and Preliminary Response to CFI #1 and #2”

¹⁹¹ Newfoundland & Labrador Statistics Agency, “Annual Estimates of Population for Canada” (2012), online: <http://www.stats.gov.nl.ca/statistics/population/PDF/Annual_Pop_Prov.PDF>.

¹⁹² Old Harry EA Comments, p. 3.

¹⁹³ KUOW, “Sea Trial Leaves Shell’s Arctic Oil-Spill Gear ‘Crushed Like A Beer Can’” (30 November 2012), online: KUOW <<http://www.kuow.org/post/sea-trial-leaves-shells-arctic-oil-spill-gear-crushed-beer-can>>.

consider response gaps for mechanical recovery of oil, aerial application of dispersants, application of dispersants from a boat or air, and *in situ* burning.

Other response gap studies, notably in the Arctic context, have concluded that many responses do not perform well in the context of challenging weather. A study of response techniques as they might be applied to the conditions in Prince William Sound demonstrated that the three main response techniques would be unusable much of the year simply due to visibility, wind and waves, and temperature.¹⁹⁴ Further, the use of chemical dispersants is undesirable in colder climates, as the temperatures slow microbes' ability to degrade the oil and causes the oil to endure longer in the environment.

Recommendation: The Board must adequately address all response gaps prior to approving oil and gas development in the Gulf in order to ensure that mechanical recovery of oil would be possible in reality. For the purposes of the SEA, the Board must commission an independent study on response gaps and seek public input.

5) *Sea ice*

Sea ice can create a number of operational difficulties that reduce the ability to respond to disasters. While the Gulf of St. Lawrence is likely not as challenging an environment as found in the Arctic, such as the Beaufort Sea, the fact remains that sea ice and icebergs are a regular occurrence in the SEA Study Area. The CIS archive of iceberg reconnaissance shows that "icebergs have been spotted in the Strait of Belle Isle during every month of the year during the past 25 years."¹⁹⁵

Following a spill, sea ice can create difficulties tracking spilled oil, as oil can move independently from ice or be carried along with it depending on the type of ice and the amount of oil. Ice often sticks underneath the ice, thus slowing down its weathering. In addition, when oil is released by ice in spring it often happens at the most biologically productive time¹⁹⁶

As the climate changes, weather patterns and sea ice will change. Continued collection of data and incorporation of new information into plans is required.

Recommendation: Along with weather conditions, the Board should require that both emergency response plans and spill modeling take into account the impact of sea ice. The SEA should also assess the possible changes in quantity, distribution, and timing of ice in the context of climate change.

¹⁹⁴ Nuka Research and Planning Group, "Response Gap Estimates for Two Operating Areas in Prince William Sound" (February 28, 2007) online: Prince William Sound Regional Citizens' Advisory Council (PWSRCAC) <<http://www.pwsrcac.org/projects/OSPRops/gap.html>>.

¹⁹⁵ Old Harry EA Comments, p. 73.

¹⁹⁶ I Studenov et al. 2009. Russian – Norwegian Environmental Cooperation. Project HAV 13. Guidelines for post oil spill damage assessment. Akvaplan-Niva Report. <<http://www.klif.no/publikasjoner/2601/ta2601.pdf>>

9. Reforming Financial Responsibility and Spill Liability Rules: A Condition Precedent to Offshore Development in the SEA Study Area

Offshore development should only be allowed if Canadian laws are sufficiently robust to ensure that industry will bear full financial responsibility for the risks of a catastrophic spill. However, the patchwork structure of Canadian oil spill liability is in desperate need of reform prior to any drilling in the SEA Study Area of anywhere else in the Gulf of St. Lawrence. It is essential that Gulf residents be adequately protected against all damages, including natural resource damages, and losses resulting from offshore oil spills

In the SEA Study Area, the common law, which establishes basic tort remedies for victims of spill damage, is augmented by a statutory civil liability regime established pursuant to the *Canada-Newfoundland Atlantic Accord Implementation Act* (“*Accord Act*”) and complemented by specific regulations.¹⁹⁷

The current offshore liability regime imposes limited absolute liability (\$30 million) on operators and “channels” liability onto the operator, increasing access to justice by simplifying litigation and encouraging out-of-court settlements. However, implementation of the polluter-pays principle is not explicitly acknowledged as a primary objective of the regime. The regime’s other key weaknesses include:

- inappropriately low maximum absolute liability limits;
- uncertain availability of environmental damages, including the costs of assessing long-term ecological system damage;
- lack of a dedicated, industry-capitalized fund to ensure remediation and compensation even where the operator is unwilling or unable to finance these efforts;
- lack of clarity regarding the breadth of operator liability for spill response costs.

These weaknesses actually increase the risk of a worst case scenario oil pollution incident by failing to promote an appropriate industry safety culture, while exposing Canadian taxpayers and Gulf of St. Lawrence residents to potentially massive liabilities in the event of a serious spill.

The United States Department of Energy estimated that the costs of a deepwater blowout on the continental shelf of the United States to be at least \$16.3 billion USD.¹⁹⁸ As discussed above, the actual cost from the Macondo blowout will be even higher, with \$14 billion in response costs alone. The National Commission Report on the Macondo spill notes that total economic costs to the region will likely be in the tens of billions of

¹⁹⁷ *Canada-Newfoundland Oil and Gas Spills and Debris Liability Regulations*, SOR/88-262

¹⁹⁸ Bureau of Ocean Energy Management, Regulation and Enforcement, “Oil and Gas and Sulphur Operations in the Outer Continental Shelf - Increased Safety Measures for Energy Development on the Outer Continental Shelf: Final Rule” (October 14, 2010). 75 Federal Register 198 at 63345.

dollars,¹⁹⁹ and restoration of the Gulf of Mexico and the Mississippi Delta could require \$15 to \$20 billion.²⁰⁰ These total costs will likely not be known until the 2020s or 2030s.

Awards for damage to natural resources have become a possibility in Canada due to several court rulings. The Supreme Court has recognized the polluter pays principle²⁰¹ and has endorsed the concept of damages being awarded to the Crown for losses of “use value, passive use or existence value, and inherent value” related to natural resources.²⁰² However, the offshore liability regime applicable in the SEA Study Area does not adequately integrate natural resource damages, nor is it clear that the Board is in any way prepared to assess financial requirements (as part of an operator’s regulatory authorization process) on the basis of the potential costs to the environment.

The potential costs of such an incident in Canada should be well understood before any drilling is authorized, so that a plan for liability can be shaped. The SEA should indicate, to the extent possible, the basis upon which the Board will establish a series of baseline environmental conditions known to exist in the SEA Study Area, with a view to enabling future natural resource damage evaluations if and when a spill occurs. This latter point is particularly important given that the provisions in the *Canada-Newfoundland and Labrador Atlantic Accord Implementation Act*,²⁰³ and the spills and debris regulations²⁰⁴ do not provide any specificity on how the value of damaged natural resources is to be appropriately assessed and compensated.

Recommendation: The SEA report must acknowledge the importance of broader liability reform issues as a condition precedent to allowing offshore development activities in the SEA Study Area and the Gulf more broadly. The liability regime must be structured such that the operator pays the full costs of spill measures (including longterm ecological monitoring and evaluation), fully compensates 3rd parties and the Crown for all damages and losses including both economic and natural resource damages resulting from the spill. Both the liability regime and the financial requirements (assurances) imposed by the regulator must ensure that offshore operators internalize the risks of a costly and catastrophic blowout.

10. Conclusion

This is a crucial time for the Gulf. This vital water body is more fragile than ever. The SEA Study Area is a critical portion of the entire Gulf ecosystem.

The concerns discussed above reflect our hope that the Board deliver the most thorough SEA possible. Offshore oil and gas development in the Gulf is a huge issue for Atlantic Canadians – and indeed for all Canadians – and the risks and benefits of development must be weighed carefully and publicly.

¹⁹⁹ *Deepwater Horizon* National Commission Report, *supra* note 79, p. vi.

²⁰⁰ *Deepwater Horizon* National Commission Report, *supra* note 79, p. 239

²⁰¹ *Imperial Oil Ltd. v Quebec (Minister of the Environment)* [2003] 2 S.C.R.624.

²⁰² *British Columbia v Canadian Forest Products Ltd.*, 2004 SCC 38, [2004] 2 SCR 74 at par.138.

²⁰³ *Canada-Newfoundland Atlantic Accord Implementation Act*, SC 1987 c 3 s

²⁰⁴ *Supra* note 197; *Oil and Gas Spills and Debris Regulations* SOR/87-331

It is our position that no further licences, permits or authorizations for offshore development in the SEA Study Area be issued until a thorough, impartial and rigorous SEA is conducted, and the findings made available to the public. Offshore oil and gas development in the broader Gulf should only continue if the risks to the environment, people, and economy in the region are well understood and deemed by the public to be acceptable. Proceeding with development without methodically going through these steps could have disastrous consequences for the environment in the Gulf, and do serious harm to industry's social licence to develop offshore here and elsewhere in Canada.

Experts on Canadian SEA processes have noted that among the reasons for often disappointing performance of these processes are preferences for and incentives towards "narrow agendas and short-term perspectives and the general reticence of governments to subject their strategic efforts, or areas of strategic neglect, to greater public scrutiny and higher expectations."²⁰⁵ Conversely, a well run SEA can lead to benefits for government by increasing the profile and defensibility of projects, plans and policies that might follow a SEA, and benefits to the private sector by providing a more clear context for projects, and possibly simplifying and accelerating project-specific assessments.²⁰⁶ Run properly, this SEA could overcome the deficiencies that often plague Canadian SEAs, and provide real value to the Gulf region and its people.

The SEA provides an opportunity to do something unprecedented and essential: assess multi-jurisdictional, intergenerational and cumulative effects of oil and gas development in the SEA Study Area. If this SEA is not conducted to that full potential, we risk embarking on a development path with no sustained, comprehensive and data-driven cumulative effects analysis of its implications.

Respectfully submitted this 20th day of December, 2012.



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On behalf of Danielle Giroux (Attention Fragîles), Karel Mayrand (David Suzuki Foundation) and Patrick Nadeau (SNAP-Quebec/CPAWS)

²⁰⁵ *Supra* note 41, p. 182.

²⁰⁶ *Supra* note 41, p. 179.

Appendix 1: First Nations Formally Invited to SEA Consultations

(List Prepared by AMEC)

NEWFOUNDLAND

NunatuKavut Community Council
Innu Nation

QUEBEC

Montagnais de Pakua Shipi
Conseil des Montagnais de Unamen Shipu
Conseil des Montagnais de Natashquan
Bande des Innus de Ekuanitshit
Innu Takuaikan Uashat Mak Mani Utenam
La Nation Innu Matimekush-Lac John
Montagnais du Lac St.-Jean
Conseil des Innus de Pessamit
Conseil de la Première nation des Innus Essipit
La Nation Micmac de Gespeg
Gesgapegiac Micmac Band Council
Listuguj Mi'gmaq First Nation
Première Nation Malecite de Viger
Mi'gmawei Mawiomi Secretariat
Conseil Tribal Mamuitun
Regroupement Mamit Innuat Inc.

NOVA SCOTIA

Kwi'lmu'kw Maw-klusuaqn (Mi'kmaq Rights Initiative)
The Confederacy of Mainland Mi'kmaq
Native Council of Nova Scotia
Membertou First Nation
Eskasoni First Nation
Chapel Island First Nation
Wagmatcook First Nation
We'koqma'q First Nation
Paqtnkek Mi'kmaw Nation
Pictou Landing First Nation
Millbrook First Nation
Indian Brook (Shubenacadie) First Nation
Glooscap First Nation
Annapolis Valley First Nation
Bear River First Nation
Acadia First Nation
Union of Nova Scotia Indians

NEW BRUNSWICK

Union of New Brunswick Indians

Mawiw Tribal Council

North Shore Micmac District Council

New Brunswick Aboriginal Peoples Council

Assembly of First Nation's Chiefs in New Brunswick

Eel River Bar First Nation

Pabineau First Nation

Esgenoopetitj First Nation

Metepenagiag Mi'kmaq Nation

Eel Ground First Nation

Indian Island First Nation

Elsipogtog First Nation

Bouctouche First Nation

Fort Folly First Nation

Oromocto First Nation

St. Mary's First Nation

Kingsclear First Nation

Woodstock First Nation

Tobique First Nation

Madawaska Maliseet First Nation

PRINCE EDWARD ISLAND

Mi'kmaq Confederacy of Prince Edward Island

Native Council of PEI

Lennox Island First Nation

Abegweit First Nation

Appendix 2: Species at Risk in the Gulf of St. Lawrence

Species	Status			Critical habitat	RPA ²⁰⁷	Recovery strategy	Range in Gulf
	Schedule	SARA	COSEWIC				
Fishes							
Spiny Dogfish (<i>Squalus acanthias</i>)	No schedule	No status	Sp. concern	No		No	Gulf
American Eel (<i>Anguilla rostrata</i>)	No schedule	No status	Threatened	No		No	Gulf
Striped Bass, Southern Gulf of St. L. pop. (<i>Morone saxatilis</i>)	No schedule	No status	Threatened	No	Yes (2006)	No	South Gulf
Northern Wolffish (<i>Anarhichas denticulatus</i>)	Schedule 1	Threatened	Threatened	Recommended		Yes (2008)	Gulf
Atlantic Wolffish (<i>Anarhichas lupus</i>)	Schedule 1	Special concern	Sp. concern	No		Mgt. plan (2008)	Gulf
Spotted Wolffish (<i>Anarhichas minor</i>)	Schedule 1	Threatened	Threatened	Recommended		Yes (2008)	Gulf
Atlantic Cod, Laurentian North pop. (<i>Gadus morhua</i>)	No schedule	No status	Endangered	No	Yes (2011)	No	North Gulf
Atlantic Cod, Laurentian South pop. (<i>Gadus morhua</i>)	No schedule	No status	Endangered	No	Yes (2011)	No	South Gulf
Winter Skate, South. Gulf of St. L. pop. (<i>Leucoraja ocellata</i>)	No schedule	No status	Endangered	No	Yes (2005)	No	South Gulf
White Shark (<i>Carcharodon carcharias</i>)	Schedule 1	Endangered	Endangered	No	Yes (2006)	No	Gulf sporadic
Blue Shark (<i>Prionace glauca</i>)	No schedule	No status	Sp. concern	No		No	Gulf
Porbeagle (<i>Lamna nasus</i>)	No schedule	No status	Endangered	No		No	Gulf
Deepwater Redfish (<i>Sebastes mentella</i>)	No schedule	No status	Endangered	No	Yes (2011)	No	Gulf
American Plaice, Maritime pop. (<i>Hippoglossoides platessoides</i>)	No schedule	No status	Threatened	No	Yes (2011)	No	Gulf
Atlantic Salmon, various Gulf pop. (<i>Salmo salar</i>)	No schedule	No status	Sp. concern	No		No	Gulf
Atlantic Salmon, Anticosti Island pop. (<i>Salmo salar</i>)	No schedule	No status	Endangered	No		No	North Gulf
Atlantic Bluefin Tuna (<i>Thunnus thynnus</i>)	No schedule	No status	Endangered	No	Yes (2011)	No	South Gulf
Species							
Status							

²⁰⁷ Recovery Potential Assessment Reports (DFO)

	Schedule	SARA	COSEWIC	Critical habitat	RPA	Recovery strategy	Range
Marine mammals							
North Atlantic Right Whale (<i>Eubalaena glacialis</i>)	Schedule 1	Endangered	Endangered	Yes (2009)	Yes (2007)	Yes (2009)	Gulf (sporadic)
Blue Whale, Atlantic pop. (<i>Balaenoptera musculus</i>)	Schedule 1	Endangered	Endangered	Studies (2014)		Yes (2010)	Gulf
Fin Whale, Atlantic population (<i>Balaenoptera physalus</i>)	Schedule 1	Special concern	Sp. concern	No		No	Gulf
Beluga, St. Lawrence Estuary pop. (<i>Delphinapterus leucas</i>)	Schedule 1	Threatened	Threatened	Yes (2012)	Yes (2005)	Yes (2012)	Gulf (sporadic)
Killer Whale, Northwest Atlantic pop. (<i>Orcinus orca</i>)	No schedule	No status	Sp. concern	No		No	Gulf
Harbour Porpoise, Northwest Atlantic pop. (<i>Phocoena phocoena</i>)	Schedule 2	Threatened	Special concern	No		No	Gulf
Reptiles							
Leatherback Sea Turtle (<i>Dermochelys coriacea</i>)	Schedule 1	Endangered	Non-active	Studies ongoing		Yes (2006)	Gulf (sporadic)
Birds							
Red Knot <i>rufa</i> subsp. (<i>Calidris canutus rufa</i>)	Schedule 1	Endangered	Endangered	No		No	Migration
Eskimo Curlew (<i>Numenius borealis</i>)	Schedule 1	Endangered	Endangered	No		Yes (2007)	Migration
Piping plover <i>melodus</i> subsp. (<i>Charadrius melodus melodus</i>)	Schedule 1	Endangered	Endangered	Yes (2012)		Yes (2012)	Gulf
Yellow Rail (<i>Coturnicops noveboracensis</i>)	Schedule 1	Special concern	Sp. concern	No		Mgt. plan proposd	West Gulf
Horned grebe, Magdalen Islands pop. (<i>Podiceps auritus</i>)	Schedule 1	Endangered	Endangered	No		No	Magdalen Isl.
Roseate Tern (<i>Sterna dougallii</i>)	Schedule 1	Endangered	Endangered	Yes (2010)		Yes (2010)	Magdalen Isl.
Ivory Gull (<i>Pagophila eburnea</i>)	Schedule 1	Endangered	Endangered	No		No	Wint North Gulf
Harlequin Duck (<i>Histrionicus histrionicus</i>)	Schedule 1	Special concern	Special concern	No		Mgt. plan (2007)	Migration
Barrow's Goldeneye, eastern pop. (<i>Bucephala islandica</i>)	Schedule 1	Special concern	Special concern	No		Mgt. plan (2011)	Migration
Short-eared Owl (<i>Asio flammeus</i>)	Schedule 3	Special concern	Special concern	No		No	Gulf

Appendix 3: Summary of Threats to Species at Risk in the Gulf of St. Lawrence

Species	
Fishes	
Spiny Dogfish (<i>Squalus acanthias</i>)	Overfishing considered only approximate threat (SR 2010)
American Eel (<i>Anguilla rostrata</i>)	Habitat modif. dams; fisheries; parasites; chemical contamination, bioaccumulation (SR 2006)
Striped Bass, Southern Gulf of St. L. pop. (<i>Morone saxatilis</i>)	Fisheries climate change; habitat modification (spawning grounds) (SR 2004)
Northern Wolffish (<i>Anarhichas denticulatus</i>)	Fisheries (bycatch, bottom trawling); dredging; ocean dumping (SR 2001) / Oil and gas (seismic surveys; spills; drill cuttings; (RS 2008)
Atlantic Wolffish (<i>Anarhichas lupus</i>)	Fisheries (bycatch, bottom trawling); dredging (SR 2000) / Oil and gas (seismic surveys; spills; drill cuttings; (RS 2008)
Spotted Wolffish (<i>Anarhichas minor</i>)	Fisheries (bycatch, bottom trawling); dredging (SR 2000) / Oil and gas (seismic surveys; spills; drill cuttings; (RS 2008)
Atlantic Cod, Laurentian North pop. (<i>Gadus morhua</i>)	Overfishing; climate change? (SR 2010) / Physical disturbance or contamination of habitat by oil and gas dev. (RPA 2011)
Atlantic Cod, Laurentian South pop. (<i>Gadus morhua</i>)	Overfishing; climate change? (SR 2010) / Physical disturbance or contamination of habitat by oil and gas dev. (RPA 2011)
Winter Skate, South. Gulf of St. L. pop. (<i>Leucoraja ocellata</i>)	Overfishing; bycatch; bottom trawling? (SR 2005)
White Shark (<i>Carcharodon carcharias</i>)	Overfishing (SR 2006)
Blue Shark (<i>Prionace glauca</i>)	Fishing mortality (SR 2006)
Porbeagle (<i>Lamna nasus</i>)	Overfishing (SR 2004)
Deepwater Redfish (<i>Sebastes mentella</i>)	Overfishing; bycatch; seal predation; oil spill (SR 2010) / Seismic surveys (RPA 2011)
American Plaice, Maritime pop. (<i>Hippoglossoides platessoides</i>)	Overfishing; bycatch (SR 2009) / Oil rig discharges; oil spills (RPA 2011)
Atlantic Salmon, various Gulf pop. (<i>Salmo salar</i>)	Overfishing; hydro projects : reduced survival at sea; contaminants (SR 2011)
Atlantic Salmon, Anticosti Island pop. (<i>Salmo salar</i>)	Reduced survival at sea; contaminants (SR 2011)
Atlantic Bluefin Tuna (<i>Thunnus thynnus</i>)	Overfishing (SR 2011) / Seismic surveys; oil spills (RPA 2011)

Marine mammals	
North Atlantic Right Whale (<i>Eubalaena glacialis</i>)	Ship collisions; fishing gear entanglement; shipping and ambient noise (SR 2003) / Seismic surveys; oil rig noise (RS 2009) / Seismic surveys; oil and gas development (RPA 2007)
Blue Whale, Atlantic pop. (<i>Balaenoptera musculus</i>)	Collisions; fishing gear entanglement; whale watching; contaminants; climate change (SR 2002) / Seismic surveys; oil spills (RS 2009)
Fin Whale, Atlantic population (<i>Balaenoptera physalus</i>)	Reduced preys; contaminants; collisions; fishing gear entanglement; noise; seismic surveys (SR 2005)
Beluga, St. Lawrence Estuary pop. (<i>Delphinapterus leucas</i>)	Habitat loss; noise; contaminants; reduced preys (SR 2004) / Ship collisions ; seismic surveys; oil spills; oil rig pollution (RS 2012) / Seismic surveys; oil spills (RPA 2005)
Killer Whale, Northwest Atlantic pop. (<i>Orcinus orca</i>)	Reduced and contaminated preys; noise; ship collisions; seismic surveys; oil spills (SR 2008)
Harbour Porpoise, Northwest Atlantic pop. (<i>Phocoena phocoena</i>)	Fisheries bycatch ; acoustic harassment (aquaculture); seismic surveys; oil industry habitat loss (SR 2003)
Reptiles	
Leatherback Sea Turtle (<i>Dermochelys coriacea</i>)	Nesting beaches losses; fishing gear entanglement; marine pollution (plastic); contaminants (SR 2001)
Birds	
Red Knot <i>rufa</i> subsp. (<i>Calidris canutus rufa</i>)	Reduced food sources (spring migration) ; wetland losses; pollution; oil spills (SR 2007)
Eskimo Curlew (<i>Numenius borealis</i>)	Migration habitat losses; early overhunting (SR 2009)
Piping plover <i>melodus</i> subsp. (<i>Charadrius melodus melodus</i>)	Beach use; vehicles; coastal development; oil spills (RS 2012)
Yellow Rail (<i>Coturnicops noveboracensis</i>)	Habitat loss; wetland degradation and pollution (SR 2009)
Horned grebe, Magdalen Islands pop. (<i>Podiceps auritus</i>)	Habitat loss; contaminants; disturbance; fishing gear entanglement; oil spills (bird very often in water) ; (SR 2009)
Roseate Tern (<i>Sterna dougallii</i>)	Predation; human disturbance; oil-related industrial activities (pipelines, terminals); oil spills (SR 2009)
Ivory Gull (<i>Pagophila eburnea</i>)	Illegal shooting; predation; disturbance (nesting sites); contaminants; oil spills/oil pollution (extremely vulnerable to oiling) (SR 2006)
Harlequin Duck (<i>Histrionicus histrionicus</i>)	Hunting; habitat loss; oil spills, oiling in Atlantic (extremely vulnerable to oiling) (MP 2007)
Barrow's Goldeneye, eastern pop. (<i>Bucephala islandica</i>)	Contaminants; hunting; oil spills, oiling at sea (SR 2011)
Short-eared Owl (<i>Asio flammeus</i>)	Habitat loss (SR 2008)

Note: SR = Status Report; RS = Recovery Strategy; MP = Management Plan; RPA = Recovery Potential Assessment (DFO)