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02 July 2014

Dear Ms. Bonnell-Eisnor,

Re: WWF-Canada's Comments on the CNSOPB call for bids NS 14-1 parcels

Thank you for the opportunity to provide comments on the NS14-1 parcels call for bids. WWF-Canada[1] has serious concerns over this call for bids given the proximity of these parcels (especially parcels 1, 2 and 3) to the Gully Marine Protected Area (Gully MPA), and its overlap with the Shortland and Haldimand Canyons, and sensitive benthic areas. Under the *Species at Risk Act (SARA),* these three canyons (Gully, Shortland and Haldimand) have been identified as critical habitats for northern bottlenose whales, which are listed as endangered species and are threatened by fishing impacts and human-related noise.

Species Considerations

The current size of the northern bottlenose whale Scotian Shelf sub-population is only 163 individuals. Northern bottlenose whales are one of the most extreme deep diving cetaceans, regularly diving to depths greater than 1000m and staying at depth for over 30-45 minutes. This sub-population is resident in the Sable Gully, Shortland and Haldimand canyons. They occupy these habitats year-round. There is very little mixing or genetic exchange between individuals in this sub-population and other sub-populations, such as off Labrador and Iceland. Their peak mating period appears to be time in July and August in the Gully.[2]

[1] WWF-Canada (World Wildlife Fund Canada) is a member of WWF, one of the world's largest independent conservation organizations, active in more than 100 countries. WWF is creating solutions to the most serious conservation challenges facing our planet, helping people and nature to thrive. WWF-Canada opened its first office in the Atlantic region in Halifax in 2001. Our conservation work in this region includes securing protection for unique habitats, such as The Gully and mitigating threats to endangered species.

[2] Whitehead, H., A. Faucher, S. Gowans, and S. McCarrey. 1997a. Status of the northern bottlenose whale, *Hyperoodon ampullatus*, in the Gully, Nova Scotia. *Canadian Field-Naturalist* 111: 287-292.

There are many other species found in these canyons that could be impacted by oil and gas activities including several other species listed under *SARA*. Whitehead (2013[3]) concluded that a recent 21% increase per year in Sowerby's beaked whale, listed as special concern under *SARA*, is likely due to the lack of anthropogenic disturbance related to noise, particularly seismic exploration, over the last decade. Increasing seismic activities on the Scotian Shelf will pose a significant threat to these and other species of cetaceans.

Other listed species such as blue whales (Endangered), fin whales (Special Concern), leatherback sea turtles (Endangered), as well as many other marine mammals, sea turtles and deep water corals are found within or regularly use the area throughout the year. Baseline scientific data regarding the population size and distribution of many of these species is lacking.

Furthermore, the overlap and proximity of parcel 3 to the *Lophelia* Coral Conservation area and the Stone Fence and Laurentian Environs is also of particular concern given the known impacts of oil and gas activities and potential oil spills on deep-water corals. The Deepwater Horizon case provides an example of significant impacts on deep water corals resulting from the oil spill in the Gulf of Mexico. Spatial activities' restrictions should be applied to these sensitive benthic areas (also known as vulnerable marine ecosystems) and buffer zones should be identified as part of the required mitigation measures. This is consistent with Canada's commitment under the CBD Aichi Target 10, which states that "by 2015, the multiple anthropogenic pressures on coral reefs, impacted and other vulnerable ecosystems by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning." It is well established that cold water corals, shellfish, certain fish larvae (such as Atlantic cod larvae), coccolithophores, among others, are under threat from ocean acidification. Several scientific reports have indicated the need to reduce anthropogenic pressures on vulnerable ecosystems to improve their resilience to a more acidic ocean.[4]

WWF-Canada is deeply concerned that in the absence of a completed marine spatial planning process, including a MPA network plan, for the Scotian Shelf bioregion, conflict of use will increase, and areas of high conservation value (e.g. MPAs, critical habitats, ecologically or biologically significant areas, sensitive benthic areas, etc) could be negatively impacted by oil and gas activities in the longer term. To ensure our oceans are ecologically healthy and productive, these issues must be addressed. However, we would like to focus this submission on a more immediate concern – impacts from seismic activities on marine mammals.

Immediate Issue: Sound Impacts

Our most **immediate concern** about this call for bids relates to the **seismic impacts on cetaceans**. Even though, some mitigation measures have been put in place in other parcels, such as ramping up seismic sounds, the use of passive acoustic monitoring and observers, we would like to stress that these measures are not sufficient when considering the location of these critical habitats, the migratory corridors between the critical habitats and listed species.

The lethal impacts on beaked whales from noise from naval sonars are well documented. The lethal impacts from seismic are less understood and should trigger the application of the precautionary

[3] Whitehead, H. 2013. Trends in cetacean abundance in the Gully submarine canyon, 1988–2011, highlight a 21% per year increase in Sowerby's beaked whales (*Mesoplodon bidens*). *Canadian Journal of Zoology* 91: 141-148.

[4] IGBP, IOC, SCOR (2013). *Ocean Acidification Summary for Policymakers – Third Symposium on the Ocean in a High-CO2 World.* International Geosphere-Biosphere Programme, Stockholm, Sweden.

principle through the avoidance of impacts on sensitive areas inhabited by listed species and the use of enhanced mitigation measures based on scientific advice and therefore beyond what is required to date. There are other sub-lethal impacts which also warrant the application of the precautionary principle including sound masking effects, hearing shifts, and displacement. Using the mitigation measure of ramping up seismic in the effort to scare animals out of an area is not considered to be an adequate mitigation measure in this area and for these species. Scotian Shelf northern bottlenose whales live in the canyons on the eastern Scotian Shelf year-round and, due to their limited movements, they do not have alternative silent places to use as a refuge. Due to their extreme deep diving abilities, in terms of both depth and duration, northern bottlenose whales are thought to be one of the species most impacted by underwater noise[5]. As such, impact from sound from seismic surveys was one of the considerations leading to the listing of this species as Endangered under *SARA*.

Gully MPA, Critical Habitats and other relevant considerations

The Gully MPA Regulations (SOR/2004-112), under the *Oceans Act,* prohibits any activity in the Gully Marine Protected Area or in the vicinity of that Area that is likely to result in the disturbance, damage, destruction or removal of living marine organisms and their habitats.

It is important to note that one of the main reasons for the establishment of the Gully was to protect endangered Northern bottlenose whales, not to mention cold water corals and many different species of fish. The attempt to protect Northern bottlenose whales from collision with ships and noise impacts in the Gully area dates back to 1994, when a Whale Sanctuary was created in that same area. Besides the northern bottlenose whales, many other species of marine mammals are found in the Gully MPA, including sperm whales, blue whales, long-finned pilot whales, striped dolphins, common dolphins, and Atlantic white-sided dolphins.

The 2008 Gully MPA Management Plan refers to the regulation prohibition (above mentioned) and underscores that impacts resulting from the transmission of acoustic noise are of particular concern.

Zone 1 of the Gully MPA, as well as the Shortland and the Haldimand Canyons have been designated as critical habitat for Northern bottlenose whale under SARA. As highlighted in the Gully Management plan, these three canyons are the only areas on the Scotian Shelf and Slope that the whales are known to use regularly.

Section 32 (1) of *SARA* states that no person shall kill, harm, harass, capture or take an individual of a wildlife species that is listed as an endangered or threatened species. With respect to the obligations to protect such species' critical habitat, Section 58 (1) states that no person shall destroy any part of the critical habitat of any listed endangered species or of any listed threatened species.

The Northern Bottlenose whale critical habitat protection statement lists acoustic disturbance from seismic as an activity that will likely result in the destruction of critical habitat. As noted by the Gully Management Plan:

> "Many whale species use sound to navigate and locate prey, since sight is of little use in the dark depths beyond the euphotic zone. Human generated sounds may impact whales directly by causing hearing loss or other physiological effects, or indirectly by creating background noise that prevents them from finding prey, disturbs mating behaviour, causes them to avoid the area, or harms or displaces their prey.
>
> Sound can travel vast distances in the ocean and is refracted by the ocean bottom. Complex topographical features, such as submarine canyons, may make it difficult to predict levels of noise and impacts. The

[5]Houser, D., R. Howard and S. Ridgway. 2001. Can diving-induced tissue nitrogen supersaturation increase the chance of acoustically driven bubble growth in marine mammals? *Journal of Theoretical Biology*. 213(2): 183-195.

impacts of sound on whales are related to the intensity of the sound, its frequency, and its duration. Different species of whales have different hearing abilities and create sounds at different intensities and frequencies. Although the different species of toothed whales have similarities in how they use and hear sound, there are differences among species and many species have been studied very little. As well, cumulative impacts are not known." (Gully MPA Management Plan (2008), page 24).

In terms of cumulative impacts, it is also important to note the potential risks associated with synergistic effects of ocean noise and ocean acidification, as acidification changes the transmission of sound, particularly lower frequency sound. Changes in ocean chemistry caused by lower pH levels can make sound travel further distances. This issue should be further investigated and respective impacts properly analyzed prior to the authorization of seismic activities near MPAs and critical habitats for endangered marine mammal species.

This is of particular concern in the northern reaches of the North Atlantic and Arctic, as these regions have been identified as some of the areas where ocean acidification has been more intense in accordance with the latest draft of the Intergovernmental Panel on Climate Change (IPCC) report (AR5).

The 2007 the Statement of Canadian Practice for Seismic (SOCP) establishes minimum standards for seismic activities. To further reduce the potential impacts of a seismic survey, there is a requirement to design programs which avoid areas where it is known that there are aggregations of marine mammals and marine fish at critical times in their life cycle and during critical biological functions such as spawning, breeding, feeding, nursing and migration times. In addition, all seismic surveys must be planned to avoid:

> i) a significant adverse effect for an individual marine mammal or sea turtle of a species listed as endangered or threatened on Schedule 1 of the *Species at Risk Act*; and
>
> ii) a significant adverse population-level effect for any other marine species.

Each seismic survey must be planned to avoid, *inter alia*:

> i) displacing an individual marine mammal or sea turtle of a species listed as endangered or threatened on Schedule 1 of the *Species at Risk Act* from breeding, feeding or nursing;
>
> ii) diverting an individual migrating marine mammal or sea turtle of a species listed as endangered or threatened on Schedule 1 of the *Species at Risk Act* from a known migration route or corridor;
>
> iii) displacing a group of breeding, feeding or nursing marine mammals, if it is known there are no alternate areas available to those marine mammals for those activities, or that if by using those alternate areas, those marine mammals would incur significant adverse effects; and
>
> iv) diverting aggregations of fish or groups of marine mammals from known migration routes or corridors if it is known there are no alternate migration routes or corridors, or that if by using those alternate migration routes or corridors, the group of marine mammals or aggregations of fish would incur significant adverse effects.

The Statement of Practice for Seismic also indicates that each seismic survey must also establish a safety zone with a radius of at least 500m. The rationale for this minimum distance is not provided in the SOCP, and given the lack of scientific information on the received sound levels and how they affect animals this distance may not be adequate to protect marine mammals from lethal or sub-lethal impacts.

Recent research[6] has shown that a related species, the Cuvier's beaked whale, elicits strong behavioural responses to mid-frequency sonar (which is slightly different from seismic) at low received levels (89-127 dB). This is much lower than the standard usually given as the threshold for seismic.

Because of their restricted home range, limited movements, small population size and sensitivity to noise pollution, it is crucial that the evaluation of impacts on this isolated, endangered population be from the consideration of disturbance, harassment or causing harm, not solely the potential for causing injury or death. Results from DeRuiter *et al.*'s recent research suggests these responses could occur at much lower received levels and hence, further distances, that those currently addressed in the Statement of Practice.

It is our understanding that, out of concern for the call for bids in proximity to species at risk and their critical habitat, the minimum standards identified in the SOP were examined at a recent CSAS meeting, which took into consideration the most recent scientific findings regarding sound propagation models, at risk species distributions and the impacts from human-created sounds. However, specific sound exposure thresholds for meeting SARA's requirements for preventing mortality, harm and harassment of individuals and destruction of critical habitat could not be determined at the time due to scientific uncertainties. These uncertainties trigger the application of the precautionary principle (Rio Declaration, Principle 15; *Oceans Act*). Despite these uncertainties, the CSAS meeting concluded that, *inter alia*, "planning seismic surveys to avoid spatial and temporal overlap is the only measure within the Statement of Practice that addresses preventing the potential destruction of critical habitat, as required by SARA."[7]

The CSAS meeting also recommended that monitoring programs (with respect to safety zones, seismic surveys activities and cetacean detection methods) should be designed to achieve a target probability of detection consistent with SARA requirements. Several monitoring measures were discussed, *inter alia*: enhanced real-time monitoring, extended observation periods, conducting seismic only during good visibility conditions, and having an adequate number of marine mammal observers with passive acoustic monitoring efforts. It was also highlighted that to evaluate the effectiveness of mitigation and monitoring measures and to detect potential adverse effects on these species at risk, it is necessary to design effective monitoring programs at distances where harm, harassment or destruction of critical habitat may occur – not just injury or death -, including beyond a defined safety zone.

It is noteworthy that to date, sound propagation in the vicinity of deep-sea canyons is not sufficiently understood, both up- and down-slope. Therefore, 500m distance for safety zones around these areas might not be enough to avoid harm to these species and their habitats. As well, again, the use of current measures such as ramping up should not be considered as appropriate mitigation to reduce impacts on this species in, near or between these canyons. These canyons are core habitats for this species and their range does not extend far beyond them so scaring them out of such areas should be considered as being highly likely to cause potential population-wide and significant impacts.

Given the small population size of endangered northern bottlenose whales in this area and the significant harm and other risks associated with seismic activities in these critical habitats as well as in their vicinity, WWF-Canada calls on CNSOPB to comply with SARA, and to apply the precautionary approach and best international practices, **by not allowing seismic activities (and further oil and gas activities) to take place in the Gully MPA, in the Shortland and the Haldimand Canyons as well as the migration corridors in between the MPA and the canyons**. In addition, until effective measures to prevent any disturbance to marine mammals and their habitats are

[6] DeRuiter *et al.* 2013. First direct measurements of behavioural responses by Cuvier's beaked whales to mid-frequency active sonar. Biol. Lett. 2013 9, 20130223

[7] Review of Mitigation and Monitoring Measures for Seismic Survey Activities in and near the Habitat of Cetacean Species at Risk Meeting Held March 2014. CSAS Science Advisory Report, In Prep.

developed, scientifically tested, and implemented, in combination with an **effective monitoring program** (prior, during and after seismic activities take place), WWF-Canada also calls on CNSOPB to **not allow seismic activities (and further oil and gas activities) to take place** in parcels 1, 2. We also call for the **incorporation of science-based safety zone distances around the Gully MPA, the critical habitats and the migratory pathways in-between these areas, and sensitive benthic areas into CNSOPB's regulations and policies to avoid opening areas like these for bids in the future, as well as into license conditions,** as this situation generates legal uncertainties for business and avoidable conservation concerns.

To address the conservation concerns for endangered northern bottlenose whales and other species, we also recommend that the Statement of Canadian Practice be updated to strengthen the current standards on allowable frequencies and sound levels, as well as on the appropriate safety zone distances and the incorporation of no-go areas such as in MPAs, critical habitats, migratory corridors, sensitive benthic habitats, in accordance with best available science.

International Courts have made clear that there is a trend towards making the precautionary approach part of customary international law and therefore legally binding. It is also important to note that the *Oceans Act* has also endorsed the wide application of the precautionary approach to conservation, management and exploitation of marine resources in order to protect these resources and preserve the marine environment.

Canada's international legal obligations also require comprehensive marine mammal regulation. The United Nations Convention on the Law of the Sea (UNCLOS) requires States to specifically conserve marine mammals (Art. 65) and the habitats of "depleted, threatened or endangered species and other forms of marine life" (Art. 194 (5)), and also requires states to take a number of steps to protect the marine environment in general (Art. 192) and prevent pollution (Art. 194 (1) (including noise pollution).[8]

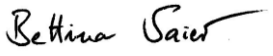
The UN Convention on Biological Diversity's (CBD) provision on *in situ* conservation requires: the establishment of networks of protected areas; regulation or management of biological resources important for the conservation of biological diversity whether within or outside protected areas, with a view to ensuring their conservation and sustainable use; protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings; environmentally sound and sustainable development in areas adjacent to protected areas with a view to furthering protection of these areas; rehabilitation and restoration of degraded ecosystems and promote the recovery of threatened species, *inter alia*, through the development and implementation of plans or other management strategies; development or maintenance of necessary legislation and/or other regulatory provisions for the protection of threatened species and populations.

In conclusion, we urge the CNSOPB to apply the precautionary principle by not allowing seismic activities (and further oil and gas activities) to take place in parcels 1, 2 and no further oil and gas exploration and exploitation in parcel 3 until proper baseline scientific research, conservation measures and respective monitoring programs are in place. We also call for the incorporation of the CSAS meeting recommendations, as well as science-based and precautionary safety zones distances around these habitats into CNSOPB's regulations and policies and license conditions.

8 As pollution is defined as "the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities," and as sound is a form of energy UNCLOS requires regulation of noise pollution.

Thank you for your consideration, and do not hesitate to contact us if you wish to further discuss any aspects of this submission.

Sincerely,



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