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RE: Submission on the Government of Canada's draft Ocean Noise Strategy

I. INTRODUCTION

West Coast Environmental Law Association (WCELA) is dedicated to safeguarding the environment through law. Since 1974, our staff lawyers have successfully worked to develop proactive legal solutions to protect and sustain the environment. Our marine program seeks to strengthen Canada's legal framework for ocean conservation.

We are grateful to be able to contribute to the development of Canada's Ocean Noise Strategy. Ocean noise is an urgent and life-threatening issue for marine life: there is overwhelming evidence that underwater noise can cause harm and even death in at least 150 marine species.^{1,2} The release of the draft Strategy is an important step in advancing the protection of marine life from ocean noise pollution, and signals that the government is serious about addressing this issue.

However, several key elements are currently missing from the draft Strategy. Without these elements, it is not clear how and when the Strategy will result in meaningful reductions in ocean noise. To create a real difference in ocean noise pollution, the draft Strategy must include the following elements:

1. A precautionary approach to move forward on addressing ocean noise in cases of scientific uncertainty;
2. Actionable, legally-binding measures related to noise thresholds and limits;
3. Protection for sensitive areas, like MPAs and species at risk critical habitat;
4. Measures to reduce the most significant sources of ocean noise pollution;
5. Meaningful legal measures to ensure the success of the Strategy; and
6. Mechanisms for accountability, including timelines and reporting.

¹ Chou, E. et al. (2021) International policy, recommendations, actions and mitigation efforts of anthropogenic underwater noise, *Ocean & Coastal Management*, 202(105427), <https://doi.org/10.1016/j.ocecoaman.2020.105427>.

² Weilgart L. (2023). Best Available Technology (BAT) and Best Environmental Practice (BEP) for Mitigating Three Noise Sources: Shipping, Seismic Airgun Surveys, and Pile Driving. 53 Pages. CMS Technical Series, No. 46.

These elements must be realized through meaningful changes to policy and law, to reflect the urgency of the problem and to provide measures that will meaningfully reduce the impacts of ocean noise on marine life.

Our submission outlines these six elements in greater detail below, including overarching recommendations for strengthening the draft Strategy. We then provide feedback on how to incorporate these elements into Objectives 1 and 2 of the draft Strategy, including feedback on specific recommendations within each objective.

II. OVERARCHING RECOMMENDATIONS

Table 1. Summary of missing areas or topics and proposed actions to strengthen Canada’s Ocean Noise Strategy

Missing Area or Topic	Proposed Actions
Precautionary measures to address ocean noise in cases of scientific uncertainty	<ul style="list-style-type: none"> • Reduce the risk of potential environmental damage by adopting a precautionary approach when and where data is limited. • Act on the knowledge we already have and do not delay the implementation of management measures due to scientific uncertainties, especially when the potential risks of inaction are high. • Prioritize noise reduction measures targeting the major sources of anthropogenic ocean noise.
Actionable measures related to noise thresholds and limits	<ul style="list-style-type: none"> • Set underwater radiated noise reduction targets in places known to be excessively loud (e.g., the Salish Sea, the Gulf of St. Lawrence, and the Bay of Fundy), as well as data-rich areas where noise pollution sources and impacts are well understood. • Set noise limits in quiet areas that are rapidly changing, including the Arctic. • Establish noise limits for human activities, especially shipping, seismic surveys, and pile driving, that are the greatest contributors to ocean noise and are known to cause harm to marine life, based on biological thresholds (noise different species can withstand without adverse impacts) and scientific, local, and Indigenous knowledge.
Protection for sensitive areas and habitat	<ul style="list-style-type: none"> • Create quieter refuges for marine life to thrive through the introduction of noise reduction targets and limits in marine protected areas and key habitats for at-risk species.
Measures to address major sources of ocean noise pollution	<ul style="list-style-type: none"> • Prioritize the application of quieting technologies that reduce sound at source (likely the most effective way to reduce the environmental

	<p>impacts of underwater noise),³ and quieting methods that offer other benefits, such as reducing greenhouse gas emissions and operational costs.</p> <ul style="list-style-type: none"> • Promote innovation of quieter technologies by enshrining noise reduction measures in law. For example, noise threshold requirements set by the German government illustrate how mandating noise reduction measures can spark innovation and investments in quieter technologies.
Meaningful legal measures	<ul style="list-style-type: none"> • Utilize Canada’s existing legal tools to develop legally binding thresholds and requirements for ocean noise, to reduce harm to species at risk, and to create “quiet sanctuaries” for marine life.
Mechanisms for accountability	<ul style="list-style-type: none"> • Identify timelines within the Ocean Noise Strategy for the implementation of each recommendation. • Identify mechanisms for Canada to measure and report on reductions in ocean noise pollution.

1. Precautionary Approach

We were encouraged to see that one of the principles of the draft Strategy is to “employ a precautionary approach to the development and implementation of recommendations using best-available knowledge”. However, in our view the recommendations as currently drafted do not adopt a precautionary approach. The Strategy focuses heavily on knowledge gaps, data collection, monitoring, and assessment, rather than on legal, management and technical solutions. While continued knowledge and data development are critical, focusing on these efforts alone risks postponing action to reduce ocean noise based on the significant scientific understanding we already possess.

In particular, the draft’s recommendations lack clarity on how and when Canada will determine, implement and enforce critical measures known to reduce noise impacts (such as noise thresholds and limits, area-based measures, and quieter technologies), as well as laws to ensure the maximum impact of such measures.

There is widespread consensus that a precautionary approach to management should be taken in addressing noise pollution.⁴ In order to reflect the seriousness and the urgency of the problem, a strong Ocean Noise Strategy must provide actionable measures that will meaningfully reduce ocean noise in the short and long term, must identify timelines for when these measures will be taken, and must include law as part of the solution.

³ Weilgart L. (2023). Best Available Technology (BAT) and Best Environmental Practice (BEP) for Mitigating Three Noise Sources: Shipping, Seismic Airgun Surveys, and Pile Driving. 53 Pages. CMS Technical Series, No. 46.

⁴ Chou, E. et al. (2021) International policy, recommendations, actions and mitigation efforts of anthropogenic underwater noise, *Ocean & Coastal Management*, 202(105427), <https://doi.org/10.1016/j.ocecoaman.2020.105427>.

2. Noise Thresholds and Limits

Establishing noise budgets, thresholds and limits is a critical aspect of addressing and reducing ocean noise pollution. Recommendation 10 of the draft Strategy discusses the development of acoustic thresholds to assess the impacts of ocean noise on marine life. However, it must go further by identifying practical means of implementing and enforcing these thresholds, including through regional noise budgets and mandatory thresholds for noise emissions from specific human activities.

Regional noise budgets for Canada's ocean, established as legally binding targets under the marine environmental quality provision of the *Oceans Act*, S.C. 1996, c. 31, will catalyze government efforts to work together to reduce ocean noise caused by individual activities as well as on a cumulative basis. These should include noise reduction targets in places known to be excessively loud (e.g., the Salish Sea, the Gulf of St. Lawrence, and the Bay of Fundy), as well as data-rich areas where noise pollution sources and impacts are well understood. Noise limits are also needed to protect natural soundscapes in quiet regions that are rapidly changing, such as the Arctic, which is a unique underwater soundscape.⁵

The draft Strategy should also establish noise limits for specific human activities, especially those known to be the most significant sources of underwater noise, namely shipping, seismic surveys and pile driving. Noise limits for specific activities should be mandated through project approvals and conditions of license. Mandatory noise limits have the dual benefit of protecting marine life and incentivizing the development of quieter technology. This was the case in Germany, where major progress was made in quieting technology for pile driving after the German government set a mandatory threshold for noise production from the construction of offshore wind farms.⁶

Additionally, introducing mandatory noise thresholds will align Canadian law and policy with other jurisdictions, including the European Union (EU), for example, where mandatory noise threshold limits have recently been set to ensure species and habitats are protected from human-generated noise. The EU's Marine Strategy Framework Directive aims to cap the total allowable average ambient sound level in the region through suggested indicators for ambient sound, including that the annual average ambient noise level ("noise within 1/3 octave bands 63 and 125 Hz (centre frequency)") should not exceed 100dB.⁷ EU Member States are to include these thresholds in their marine strategies and take action to ensure noise in their waters does not exceed these limits. Canada should establish similar ambient noise thresholds for each of its ocean basins on a precautionary basis, and these can be adapted and updated as knowledge progresses.

3. Area-Based Protections

Although the draft Strategy identifies a few current initiatives to address ocean noise in sensitive ecosystems, including marine protected areas (MPAs) and species-at-risk critical habitat, this is not a focus of the recommendations in the document.

⁵ Halliday, W.D., Pine, M.K., Insley, S.J., 2020. Underwater noise and arctic marine mammals: Review and policy recommendations. *Environ. Rev.* 28, 438–448. <https://doi.org/10.1139/er-2019-0033>.

⁶ Weilgart L. (2023). Best Available Technology (BAT) and Best Environmental Practice (BEP) for Mitigating Three Noise Sources: Shipping, Seismic Airgun Surveys, and Pile Driving. 53 Pages. CMS Technical Series No. 46 at p 25.

⁷ Tasker, M.L., Amundin, M., Andre, M., Hawkins, A., Lang, W., Merck, T., 2010. Marine Strategy Framework Directive: Task Group 11 Report and other forms of energy Underwater noise. <https://doi.org/10.2788/87079>.

To date, ocean noise is not explicitly incorporated into any federal MPA laws and is addressed in less than half of MPA management plans. Thus, marine species meant to be protected in MPAs can still be harmed by the effects of noise pollution. Canada's approach is inconsistent with other jurisdictions, where underwater noise management is a priority within MPAs. For example, the United States National Oceanic and Atmospheric Administration *Ocean Noise Strategy Roadmap* recommends using "National Marine Sanctuaries to develop increased capacity for preserving, restoring, and maintaining natural acoustic habitats, as well as the protected species associated with them, through new management measures, regulations, dedicated scientific research, and outreach programs."⁸

Canada's Ocean Noise Strategy should similarly commit to regulating and managing ocean noise within existing MPAs, including by establishing noise limits for MPAs, introducing ocean noise reduction measures into MPA management plans, and establishing buffer zones around MPAs. Canada should also identify and designate "quiet MPAs" where noise-generating activities are restricted and natural soundscapes are maintained for species to thrive.

The Strategy should also strengthen protections from noise pollution for species at risk. Protections for at-risk species and their habitat under the *Species at Risk Act*, S.C. 2002, c. 29 fail to set minimum noise thresholds needed to protect marine species and acoustic habitats. To ensure the protection and recovery of Canada's most vulnerable species, the federal government should mandate noise limits for the marine habitats of all listed species at risk, based on biological limits. In cases of uncertainty, the government must take a precautionary approach to reduce the risk of irreversible loss of biodiversity.

4. Measures to Address Major Sources of Ocean Noise Pollution

Ocean noise pollution comes from three significant sources: shipping, seismic airgun surveys, and pile driving.⁹ However, the draft Strategy does not specifically address any recommendations for mitigating noise from these sources. The Strategy should identify specific measures to reduce noise from these sources, including noise thresholds for activities requiring project approvals, mandatory noise mitigation measures, and operational methods to reduce noise, such as speed restrictions and no-go zones for shipping.

See *Appendix A* for a summary of measures to reduce noise pollution from these major sources of ocean noise recommended in the CMS Technical Report, which can and should be included in Canada's Ocean Noise Strategy.

5. Legal Recommendations

Law is an essential element in ensuring meaningful reductions in ocean noise. Legal requirements create mandates and prioritizes issues, enabling effective intergovernmental collaboration and participation from other governments and stakeholders. Legal tools, particularly noise thresholds, would also level the playing field for all noise-producing stakeholders and incentivize the use and development of quieter technology. Finally, legal tools are powerful because they are enforceable.

⁸ NOAA. 2016. Ocean Noise Strategy Roadmap. <https://cetsound.noaa.gov/road-map>.

⁹ Weilgart L. (2023). Best Available Technology (BAT) and Best Environmental Practice (BEP) for Mitigating Three Noise Sources: Shipping, Seismic Airgun Surveys, and Pile Driving. 53 Pages. CMS Technical Series No. 46.

Recommendation 15 of the draft Strategy identifies the importance of promoting compliance with voluntary and mandatory ocean noise measures. It must be strengthened to emphasize the importance of establishing noise measures in law, and for developing new measures to comprehensively address ocean noise impacts.

Canada has the legal framework and tools it needs to immediately improve the management of ocean noise. WCELA, WWF-Canada and East Coast Environmental Law published a 2024 report titled *Canada's Ocean Noise Strategy: Legislation and Policy Analysis*, which identifies existing legal tools to quiet Canada's ocean, and recommendations for any areas where new laws are required.¹⁰ Canada should use the tools identified in this report in its Strategy, in order to develop legally binding thresholds and requirements for ocean noise, to reduce harm to species at risk, and to protect "quiet" areas of the ocean for marine life to thrive.

6. Mechanisms for Accountability

Although the draft Strategy identifies important actions to improve understanding and management of ocean noise, it does not identify how and when these actions will result in meaningful reductions in ocean noise for marine life. Given the severity of the impacts of ocean noise pollution on marine life and forecasts for ocean noise to continue to increase, it is essential that Canada's Ocean Noise Strategy be strengthened to include meaningful timelines for the completion of actions and recommendations in the Strategy, as well as measures to assess the successfulness of the recommendations, and whether they have resulted in reduced impacts from ocean noise.

III. OBJECTIVE-SPECIFIC FEEDBACK

Objective 1 – Gather and integrate evidence to address knowledge gaps and develop innovative methods, tools, and technologies

Objective 1 focuses on knowledge gaps, data collection, and data analysis as a foundation for addressing ocean noise. While ongoing study of the noise problem is important to developing solutions, the recommendations under Objective 1 do not reflect the significant scientific understanding we already possess. As a result, the majority of the recommendations focus on the first half of Objective 1, addressing knowledge gaps, rather than the second half, developing innovative methods, tools, and technologies. This approach does not align with the precautionary principle.

Canada must use the significant knowledge it already possesses to implement actionable measures for species and regions that are well-researched, for example southern resident killer whales in the Salish Sea. In cases where data is more limited, Canada should adopt precautionary measures to prevent the potential of irreversible harm to marine species and ecosystems. Precautionary measures should also be taken alongside the practice of adaptive management, which focuses on implementing management measures while learning about which actions are most effective at achieving specified objectives. The recommendations under Objective 1 should be strengthened to reflect these principles.

¹⁰ Kofahl, M., Hewson, S., Watson, M. (2024). *Canada's Ocean Noise Strategy: Legislation and Policy Analysis*. 119 Pages. WWF-Canada, West Coast Environmental Law & East Coast Environmental Law.

The Government of Canada should continue to support research and innovation for developing new methods, tools, and technologies to achieve substantive reductions of negative impacts from noise on marine life. But its priority must lie in establishing meaningful management measures now, using the best available science and knowledge, to significantly reduce noise levels in ocean soundscapes.

Table 2. Feedback on recommendations that support achieving Strategy Objective 1 (gather and integrate evidence to address knowledge gaps and develop innovative methods, tools, and technologies)

Key Recommendations	Feedback and proposed action(s)
<p>Recommendation 2: Improve understanding of ocean noise in dynamic and rapidly changing marine ecosystems.</p>	<p>While more research is required to understand how ocean noise is transferred in different marine environments, the fundamental principles of underwater noise propagation are well known. Canada should use simplified calculations and forecasts to inform noise limits and noise mitigation measures for the loudest activities, including shipping, seismic air guns, and pile driving, while more complex noise models are developed. Actions to manage human-generated noise in a changing world should not be delayed due to the absence of scientific certainty.</p>
<p>Recommendation 3: Conduct further research to address knowledge gaps on individual- and population-level impacts of ocean noise.</p>	<p>Addressing knowledge gaps about the impacts of underwater noise on marine species and populations is valuable, but it should not postpone immediate action to reduce ocean noise levels. Current knowledge of highly-studied species or populations, particularly threatened or endangered ones, can be used to inform noise regulations and management measures in the short term. The Strategy should recommend the development of protective measures for highly-studied species and regions, prioritizing those that are threatened or endangered, and treating these species as “indicator species” for other marine animals that are understudied. For example, Germany has adopted a Sound Protection Concept that focuses on harbor porpoises to assess the impacts of underwater noise from wind farm construction projects. This species is highly studied in relation to noise impacts and is thus treated as an “indicator species” for other marine animals that are understudied.¹¹</p>
<p>Recommendation 6: Support technologies that directly reduce ocean noise at its source.</p>	<p>Canada should adopt legal limits for noise-producing activities in order to incentivize the development and use of quieter technologies. This was the case in Germany, where major progress was made in quieting technology for pile driving after the German government set a mandatory threshold for noise production from the construction of</p>

¹¹ Germany, Bundesministerium fuer Umwelt, Naturschutz und Reaktorsicherheit. (2014). Concept for the Protection of Harbour Porpoises from Sound Exposures during the Construction of Offshore Wind Farms in the German North Sea (Sound Protection Concept). 37 Pages. ASCOBANS Advisory Committee Meeting, AC1/Inf.3.2.2.a (P).

	<p>offshore wind farms.¹²</p> <p>Canada should support the development and adoption of quieter technologies, while immediately implementing operational measures that reduce noise from major sources, such as ship slowdowns across protected and conserved ocean areas.</p>
<p>Recommendation 10: Promote the development of evidence-based tools and guidance to better assess impacts of ocean noise on marine life.</p>	<p>This recommendation should be strengthened to specify the development of noise thresholds and targets, including legally binding targets. These should include regional noise budgets, area-based targets for MPAs and species at risk critical habitat, and noise thresholds for human activities that are based on biological limits. These measures can and should be developed on an interim basis and can be adapted as further research is conducted.</p>

Objective 2 – Enhance collaboration and application of evidence-based tools and technologies to develop and implement clear guidance and management actions

Although Objective 2 of the draft Strategy highlights the importance of enhanced collaboration and application of evidence-based tools and technologies to inform management actions, it is completely missing concrete, actionable measures that are needed to protect marine life from underwater noise now and into the future.

Evidence-based tools and technologies to develop and implement viable and effective management actions already exist for major sources of noise pollution. For instance, the Convention on the Conservation of Migratory Species of Wild Animals (CMS) published a Technical Paper in 2023 that provides practical guidance on the Best Available Technology (BAT) and the Best Environmental Practice (BEP) to reduce noise from three major sources of noise pollution: shipping, seismic airgun surveys, and pile driving.¹³ A number of important decisions and resolutions passed by countries under international treaties – such as CMS and the Convention on Biological Diversity (CBD) – call for and encourage the use of BAT and BEP in this report. See *Appendix A* for a summary of measures to reduce noise pollution from these major sources of ocean noise.

¹² Weilgart L. (2023). Best Available Technology (BAT) and Best Environmental Practice (BEP) for Mitigating Three Noise Sources: Shipping, Seismic Airgun Surveys, and Pile Driving. 53 Pages. CMS Technical Series No. 46.

¹³ Weilgart L. (2023). Best Available Technology (BAT) and Best Environmental Practice (BEP) for Mitigating Three Noise Sources: Shipping, Seismic Airgun Surveys, and Pile Driving. 53 Pages. CMS Technical Series No. 46.

Table 3. Feedback on recommendations that support achieving Strategy Objective 2 (enhance collaboration and application of evidence-based tools and technologies to develop and implement clear guidance and management actions)

Key Recommendations	Feedback and proposed action(s)
<p>Recommendation 11: Establish a clear and transparent Government of Canada framework for ocean noise management with defined roles and responsibilities.</p>	<p>WCELA, WWF-Canada and East Coast Environmental Law’s 2024 report, <i>Canada’s Ocean Noise Strategy: Legislation and Policy Analysis</i>, provides many pathways for Fisheries and Oceans Canada, Transport Canada, Environment and Climate Change Canada, Parks Canada, and regulators of coastal offshore industries to work collaboratively in utilizing the legal tools Canada already has to address issues related to noise pollution.¹⁴ Recommendation 11 should be updated to include mandates for the collaborative development of measures to reduce ocean noise, including legally binding measures.</p>
<p>Recommendation 13: Develop appropriate management objectives supported by the implementation of specific and timely measures to help minimize impacts of ocean noise on marine species.</p>	<p>This recommendation should be strengthened to commit to regulating and managing ocean noise within existing MPAs, including by establishing noise limits for MPAs, introducing ocean noise reduction measures into MPA management plans, and establishing buffer zones around MPAs. Canada should also identify and designate “quiet MPAs” where noise-generating activities are restricted and natural soundscapes are maintained for species to thrive.</p> <p>The Strategy should strengthen protection from noise pollution for species at risk by setting minimum noise thresholds needed to protect marine species and acoustic habitats.</p>
<p>Recommendation 14: Support the active leadership of Indigenous communities in initiatives to understand and manage ocean noise.</p>	<p>Indigenous nations are at the forefront of ocean noise management in many areas of Canada’s coast, identified needs and solutions, and are requesting Crown government support. Canada’s Ocean Noise Strategy should commit to implementing solutions identified by Indigenous nations and to funding Indigenous-led initiatives.</p>
<p>Recommendation 15: Promote participation in voluntary ocean noise measures and enhance compliance with mandatory ocean noise measures.</p>	<p>Participation in and compliance with existing ocean noise measures are essential for ensuring that these measures are meaningful. However, the strategy should also recommend the development of new ocean noise measures in order to continue to reduce ocean noise, starting with the most sensitive species/ecosystems. These should include noise targets and thresholds, area-based protections, and measures to reduce the most significant sources of ocean noise, and must include law as part of the solution.</p>

¹⁴ Kofahl, M., Hewson, S., Watson, M. (2024). *Canada’s Ocean Noise Strategy: Legislation and Policy Analysis*. 119 Pages. WWF-Canada, West Coast Environmental Law & East Coast Environmental Law.

<p>Recommendation 16: Develop and employ standardized methods and indicators to measure the effectiveness of ocean noise management measures.</p>	<p>Strengthen to specifically refer to metrics for determining whether the Ocean Noise Strategy has been successful in reducing ocean noise pollution and its impacts, and to include timelines for the implementation of action items in the Strategy.</p>
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IV. CONCLUSION

Canada’s draft Ocean Noise Strategy provides needed objectives and recommendations to begin addressing the impacts of ocean noise. However, the draft recommendations must be strengthened to provide clear direction on how Canada will implement and enforce critical elements for noise management, including noise thresholds and limits, area-based protections, timelines for when these measures will be in place, and direction on how Canada will monitor their success.

We thank you again for the opportunity to contribute to the discussion on the Ocean Noise Strategy and look forward to engaging with the next steps and actions to address underwater noise impacts on marine ecosystems.

V. APPENDIX

Appendix A. A selection of the recommendations in the CMS Technical Series Report that provides guidance on the Best Available Technology (BAT) and the Best Environmental Practice (BEP) to reduce noise from three major sources of noise pollution: shipping, seismic airgun surveys, and pile driving.

Noise source	Recommendations
Shipping	<ul style="list-style-type: none"> ● Reduce noise emission from ships through cavitation optimization, using various techniques such as better maintenance and improvements in propeller and hull design ● Focus quieting on the 10-15% of the noisiest container and cargo ships of the global fleet ● Adopt measures for slow steaming (the deliberate reduction of the speed of cargo ships to cut down fuel consumption), which is the most effective operational measure that could be imposed immediately to reduce noise emissions, while also providing other environmental and economic benefits (10% speed reductions cross global fleet could cut shipping noise by 40%, and reduce CO₂ emissions by around 13%)
Seismic Airgun Surveys <i>(used in oil and gas exploration)</i>	<ul style="list-style-type: none"> ● Quieting technologies, such as Marine Vibroseis, that could replace airguns are most promising, because much of the energy emitted by airguns is wasted and unused ● Marine Vibroseis that is a controlled sound source and can be tailor-made to the specific environment conditions and without the damaging sharp rise time of airguns is likely to be less damaging towards marine species
Pile Driving <i>(used for offshore wind farms and other marine infrastructure)</i>	<ul style="list-style-type: none"> ● Many new quieting technologies can be applied, such as alternative low-noise concepts ● Significant advancements of quieting technologies have been stimulated by mandatory measures set by governments, such as Germany, imposing noise thresholds and therefore setting an action-forcing standard for innovation and investments

Source: Weilgart L. (2023). Best Available Technology (BAT) and Best Environmental Practice (BEP) for Mitigating Three Noise Sources: Shipping, Seismic Airgun Surveys, and Pile Driving. 53 Pages. CMS Technical Series No. 46