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Underwater Noise Pollution and Implications for WCPFC Fisheries

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Underwater Noise Pollution and Implications for WCPFC Fisheries

Sound is essential to the functioning of marine ecosystems. Fish and many other species rely on acoustic cues to communicate, detect predators and prey, coordinate schooling behaviour, and undertake migrations. Human activities have significantly increased underwater noise across the ocean, with fishing vessels, commercial shipping, and acoustic technologies contributing to both chronic and acute sound exposure. This increase in underwater noise is increasingly recognised in international frameworks as a form of marine pollution, with potential implications for ecosystem health and fisheries productivity within the Western and Central Pacific Ocean (WCPO).

Scientific evidence shows that elevated noise can interfere with communication, foraging efficiency, and predator detection in many fish species, including those of commercial importance. Laboratory and field studies indicate that vessel noise can reduce schooling cohesion in tunas and may disrupt migration patterns. High-intensity sources have been associated with physiological stress, sensory damage, and behavioural displacement, while sessile species such as oysters and scallops—unable to relocate—experience reduced recruitment and increased mortality following noise exposure. For highly migratory species, such as cetaceans and tuna, noise can disrupt feeding, breeding, and migration routes, potentially altering distribution patterns that underpin regional fisheries. Changes in species behaviour or distribution may also influence catchability, with implications for stock assessment and management.

Noise pollution is considered within existing legal obligations and emerging international practice. UNCLOS defines marine pollution to include the introduction of energy into the marine environment,¹ and the WCPFC Convention requires the Commission to apply the precautionary approach (Art. 5(c)), minimise pollution from fishing vessels (Art. 5(e)), and protect marine biodiversity (Art. 5(f)). Other global and regional organisations, including the EU,² IMO,³ CMS,⁴ OSPAR,⁵ and the GFCM,⁶ have recognised underwater noise as a

¹ *United Nations Convention on the Law of the Sea* (adopted 10 December 1982, entered into force 16 November 1994) 1833 UNTS 3, Art. 1(4).

² Mathias Andersson et al, *Setting EU Threshold Values for Continuous Underwater Sound Technical Group on Underwater Noise (TG NOISE) MSFD Common Implementation Strategy* (2023); Mathias Andersson et al, *Setting EU Threshold Values for Impulsive Underwater Sound Technical Group on Underwater Noise (TG NOISE) MSFD Common Implementation Strategy* (2023).

³ *Revised Guidelines for the Reduction of Underwater Radiated Noise from Shipping to Address Impacts on Marine Life*, MEPC.1/Circ.906, International Maritime Organisation, (22 August 2023).

⁴ *Resolution 12.14 Adverse Impacts of Anthropogenic Noise on Cetaceans and Other Migratory Species*, UNEP/CMS/Resolution 12.14, October 2017.

⁵ 'OSPAR Regional Action Plan for Underwater Noise (RAP Noise), *OSPAR Agreement 2025-15*, OSPAR MM 2025/04/07'.

⁶ FAO, *GFCM 2030 Strategy for Sustainable Fisheries and Aquaculture in the Mediterranean and the Black Sea*. (2021).

pollutant and developed guidance or mitigation measures. Incorporating underwater noise within WCPFC's marine pollution work would therefore be consistent with international trends and existing Convention obligations.

Several low-cost mitigation options exist for the fishing sector, in line with the 2023 IMO *Revised Guidelines for the Reduction of Underwater Radiated Noise from Shipping to Address Adverse Impacts on Marine Life* (MEPC.1/Circ.906). Enhancing propeller design, maintaining hulls and engines to reduce cavitation, and isolating mechanical equipment can significantly reduce noise emissions. Operational practices, such as lowering vessel speed, adjusting routes, and limiting unnecessary use of sonar and acoustic equipment, offer additional ways to reduce noise with minimal operational burden. Many of these measures generate co-benefits, including lower fuel consumption and reduced emissions.

Enhanced collaboration with other RFMOs, the IMO, and scientific institutions would help develop a shared knowledge base and harmonised approaches. Data-sharing on vessel characteristics, acoustic outputs, and mitigation performance could further support regional assessment.

The WCPFC can integrate underwater noise considerations into its existing marine pollution framework, as indicated through the updated review on marine pollution submitted by Canada (WCPFC22-2025-15). Responses could include: updating definitions and scope to explicitly recognise underwater noise; encouraging the adoption of operational and technical mitigation measures; promoting awareness and training for vessel operators; and supporting targeted research. Such actions would align with the WCPFC's mandate to protect ecosystem biodiversity, while also contributing to emerging global best practice.

Underwater noise pollution is an emerging issue directly relevant to fisheries sustainability and operations. Although uncertainties remain, existing evidence indicates that noise can affect fish behaviour, distribution, and productivity, with potential consequences for fisheries. With cost-effective mitigation options available and increasing attention across international fora, the WCPFC is well positioned to take early and pragmatic steps to address underwater noise as part of its broader commitment to ensure long-term conservation of highly migratory fish stocks in the WCPO.