Understanding Factors that Motivate Participation of Container Ships in the Quiet Sound Voluntary Commercial Vessel Slowdown

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Executive Summary

Marine mammals use sound as their primary means of communication, foraging, socialization, and navigation (*GloNoise Partnership*, n.d.). Commercial shipping is the largest contributor to anthropogenic underwater noise (Hildebrand, 2009). Container ships account for most underwater noise generated by shipping (Jalkanen et al., 2022). The Southern Resident killer whales (SRKWs), listed as endangered in 2005, are a unique ecotype of killer whale found only in the area from central California to southeast Alaska that feed primarily on protected Chinook salmon. The SRKWs have immeasurable cultural and spiritual importance to Indigenous communities throughout the Salish Sea. Underwater noise is identified as one of the three major threats facing the endangered SRKWs, among prey availability and contaminants in their food and water. Low frequency sound generated by vessels overlaps with frequency ranges used by SRKWs, resulting in temporary or permanent hearing loss, increased stress response and disruption to foraging and breeding (NOAA Fisheries, 2025a).

Small reductions in vessel speed produce significant reductions in underwater noise (Findlay et al., 2023). Quiet Sound, a program of the nonprofit Washington Maritime Blue, administers a voluntary slowdown in Admiralty Inlet and north Puget Sound to reduce acoustic and physical impacts from large commercial vessels during months when SRKW are most commonly present. In the 2023-24 slowdown, 71% of vessel transits reduced their speed and 59% of vessel transits fully met the suggested speed targets, which resulted in a 50% reduction in median broadband sound levels (Quiet Sound, 2024). Container ships represented nearly half of the vessel transits (405 of the 843) through the slowdown zone from October 12, 2023 to January 12, 2024. Of those 405 transits, 272 container ship transits fully reached target speeds, a 67% participation rate (Quiet Sound, 2024). According to Quiet Sound's acoustic analyses, container

ships were the third largest contributor to vessel-generated underwater noise in Puget Sound during the 2023-24 baseline period.

This thesis seeks to understand the factors that motivate container ship participation in the Quiet Sound voluntary vessel slowdown, given that container ships account for the majority of vessel transits and are the largest contributor of anthropogenic underwater noise among participating vessel types. The goal of this research is to inform and improve program design and engagement with the shipping industry to increase impact of the voluntary slowdown. This qualitative case study developed an analytical framework to understand the impact of various factors on motivation to participate, including: Program characteristics, information sharing and exchange, operational factors, external influences, and intrinsic values. Sustainability reports and websites of 18 shipping lines calling Puget Sound ports, 6 vessel agents, the Ports of Seattle and Tacoma and the Northwest Seaport Alliance were analyzed. Key informant interviews were conducted with 8 representatives from: shipping lines, a shipping association, pilotage authority, the ECHO program, the Ports of Seattle and Tacoma, and the Northwest Seaport Alliance.

While 12 out of the 18 shipping lines reported participating in voluntary speed reduction programs, only 2 mentioned the Quiet Sound program specifically in their annual reporting. Companies positioned their slowdown participation under efforts to protect biodiversity, typically in alignment with Sustainable Development Goal #14 Life Below Water. According to sustainability reports and company websites, 4 shipping lines have undertaken more extensive biodiversity assessments, but just 2 lines were Green Marine certified. Interview respondents viewed participation in the slowdown as a way to demonstrate action to protect biodiversity. Respondents expressed less interest in financial incentives and awards and more interest in public recognition. Respondents also expressed an intrinsic desire to reduce their impacts on

whales and a curiosity to understand more about how participation in the slowdown advances recovery efforts.

Operationally, 11 out of 18 shipping lines name slow-steaming as a strategy for fuel conservation and emissions reduction, specifically to meet Carbon Intensity Indicator (CII) requirements. Interview respondents noted that understanding the emissions reduction and fuel savings would be one more tool in their toolbox of reducing environmental impact. According to document analysis, route optimization allows shipping lines to avoid bad weather, minimize idling time outside ports and therefore save fuel, and meet berthing times all while participating in voluntary speed reduction measures. This was validated by interview respondents who noted scheduling delays as the primary reason for not participating in the slowdown, but typically there was enough buffer in the schedule to accommodate participation when planned ahead of time.

Recommendations for the Quiet Sound program, which may be relevant to other voluntary vessel speed reduction programs, include:

- Communicate how reducing speeds benefits whales throughout the slowdown, especially when the SRKW are confirmed to be in the slowdown zone.
- Quantify the emission reduction and fuel savings co-benefits of the slowdown.
- Establish multiple points of contact within shipping lines, including building relationships with Operations Managers and Sustainability Leads.
- Celebrate shipping line participation publicly in places where stakeholders, shareholders, and competitors can see.
- Point companies to underwater noise reduction frameworks like Green Marine as a way to not only receive further acknowledge participation in voluntary speed reduction programs but also to guide future underwater noise mitigation efforts.