

MARINE MAMMALS

Study geographic boundaries: Kitimat terminal PDA and CCAA.

Study time boundaries: Construction, operations and decommissioning phases.

Project works and activities considered in the study*:

In-water infrastructure site preparation and construction, construction support vessels, in-water infrastructure operations, moored tankers, tanker and tug traffic.

Study methods: Northern resident (NR) killer whales, Canadian north Pacific (CNP) humpback whales and, Steller sea lions were selected as key indicators to assess project effects on marine mammals.

They represent species of the three major groups of marine mammals likely to be seen in the CCAA: toothed whales, baleen whales and pinnipeds (animals with flippers). The viability of killer whales can be considered as a measure of ecosystem health. Humpback whales are by far the most abundant baleen whale found in the CCAA. The existence of numerous long-term studies of the foraging and habitat needs of stellar sea lions makes it a good representative pinniped for the CCAA.

Several field studies, including both aerial and vessel-based surveys, were conducted throughout 2005/06 to determine the seasonal presence and abundance of marine mammals in the CCAA. Additional surveys are being conducted in 2009.

VEC	Key Issues	KIR	Baseline Results	Measurable Parameter	Potential Project Effects**	Proposed Mitigation	Residual Effects	Cumulative Effects
Marine Mammals	<p>Killer whales are listed as threatened on both BC's <i>Blue List</i> and on <i>Schedule 1</i> of the <i>Species at Risk Act</i> (SARA).</p> <p>Humpback whales are listed as special concern on the BC's <i>Blue List</i> and are designated as threatened on <i>Schedule 1</i> of the SARA.</p> <p>Steller sea lions occur year-round in the CCAA, are listed as a species of special concern on <i>Schedule 1</i> of the SARA, and are on BC's <i>Blue List</i>.</p>	<p>Northern resident (NR) killer whales</p> <p>Canadian north Pacific (CNP) humpback whales</p> <p>Steller sea lions</p>	<p>In general, marine mammals require a clean environment, healthy prey populations, and a physical and acoustic environment that is large and quiet enough for them to communicate effectively, locate and capture prey, detect predators and maintain other vital life functions.</p> <p>Marine mammals are found throughout the CCAA year round, from Hecate Strait up to the mouth of the Kitimat River. Seasonal changes in marine mammal abundance are generally related to distributions of prey. During field surveys, humpback whales were the most commonly sighted cetacean within the CCAA. Other marine mammal species observed during surveys include killer whales, Steller sea lions, harbour seals, Dall's porpoise, harbour porpoise and Pacific white-sided dolphins.</p> <p>As top predators, killer whales rely on all lower creatures in its food chain and can therefore be viewed as a measure of ecosystem health. Killer whales are well studied and are known to frequent the CCAA. Killer whales are most frequently observed during June and July in pursuit of pre-spawning Chinook salmon, but remain in the area to prey on the large runs of chum salmon that arrive in September and October.</p> <p>Humpback whales are commonly observed and are by far the most abundant baleen whale found in the CCAA. Researchers observing humpback whales in Douglas Channel suggest presence in this region extends from June to November. While humpbacks are seen in BC primarily between May and October, some animals are present year round; therefore, it is possible for humpback whales to occur within the CCAA year-round.</p> <p>Steller sea lions occur year-round in the CCAA, and there are numerous long-term studies on this species' foraging and habitat needs. They are widespread throughout the coastal waters of BC.</p>	Habitat alteration due to acoustic emissions.	Vessel movement in the CCAA and activities associated with marine terminal construction, such as dredging and pile drilling, will generate underwater sound that may result in sensory disturbances to marine mammals. Sound levels produced during construction, operations, and decommissioning or during vessel transit of the CCAA are not expected to cause temporary or permanent hearing damage to marine mammals. The most likely environmental effect is behavioural disturbance and some animals may temporarily move away. Also, underwater acoustic emissions may mask faint calls or biological noises.	Currently being assessed.	Currently being assessed.	Currently being assessed.
				Physical injury due to underwater blasting.	Terminal construction activities will likely include both on-shore and underwater blasting. As shock waves produced by blasting are relatively short, severe injuries are expected to occur only if the animal is extremely close to the explosion source.	Currently being assessed.	Currently being assessed.	Currently being assessed.
				Physical injury due to vessel strikes.	Project vessels transiting the CCAA throughout the life of the project have the potential to collide with marine mammals, leading to injury or direct mortality. The physical presence and movements of the vessels may also frighten or deter marine mammals along the shipping route, thereby resulting in energetic stress. Baleen whales are more prone to vessel strikes than toothed whales, and strikes with pinnipeds are infrequent.	Currently being assessed.	Currently being assessed.	Currently being assessed.

*Refer to Figure 3.3 in section 3, *Project description*, for the full list of physical works and activities. **The effects of spills and malfunctions will be included in the update for the supplemental filing.