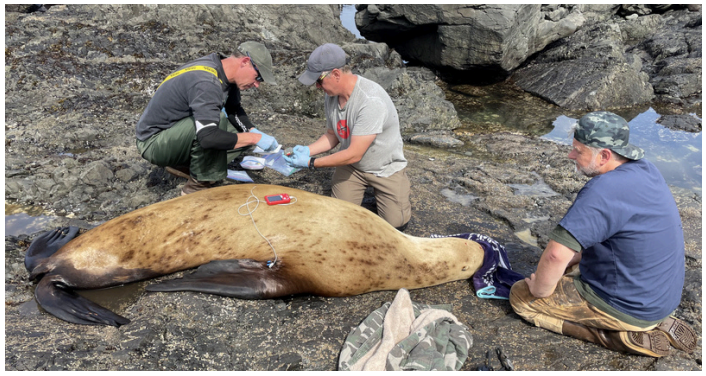
Convergent tracks: a tagging study to quantify sockeye salmon predation by sea lions

Conservation and Stewardship

BC Coast

Enumeration

Habitat Monitoring



Researchers sampling and tagging a Steller sea lion.

One hypothesis on high salmon mortality rate is that large aggregations of Steller sea lions intercept Fraser River sockeye salmon (10 of 24 CUs threatened or endangered north of Vancouver Island) during return migrations. Little is known about sea lion foraging behaviour and diet in these remote transitions zones between offshore and coastal areas and even less is known about salmon mortality rates.

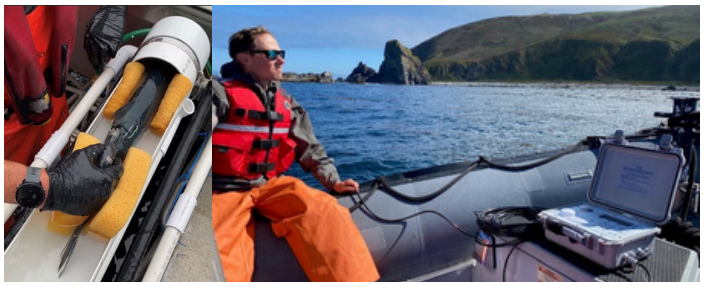
This project estimates sea lion predation on adult sockeye salmon as they migrate past Triangle Island, off the northern tip of Vancouver Island. This region is the site of the largest Steller sea lion rookery in the world and is hypothesized to be a survival bottleneck that disproportionately impacts Fraser River sockeye salmon productivity.
Salmon-related work would quantify predation impacts via multiple complementary tagging technologies.

This project captures sockeye salmon via purse seine near Haida Gwaii, then uses satellite tags to quantify guild-specific predation rates (e.g. cetacean, pinniped, shark) based on depth and temperature sensors, to generate high resolution estimates of salmon habitat use, and to estimate diversion rates that may moderate predation impacts (i.e. migrations through Juan de Fuca rather than Johnstone Strait).

Take-aways

- Steller sea lions are hypothesized to feed on large numbers of adult Fraser River sockeye salmon when the salmon migrate past Triangle Island, near northern Vancouver Island.
- This project tags sockeye salmon and Steller sea lions, and also analyzes sea lion diets, to determine if the area is a survival bottleneck.

Researchers leverage existing acoustic telemetry infrastructure in the northern Strait of Georgia, to increase the precision of mortality rate estimates at relatively low cost. Pinniped-related work will include complementary methods (fatty acids, stable isotopes and scats) to estimate diets at multiple temporal scales along migration pathways on either side of Vancouver Island. Pinniped diet analyses will be complemented by satellite tagging to understand movements, distribution and foraging behaviour in relation to salmon mortality locations.



Researchers tagging sockeye salmon and collecting field data.

Timeline

- ✓ June-Aug 2024: first field season
- ↻ Aug 2024-March 2026: data analysis
- ↻ June-Aug 2025: second field season

DFO Science Division

Ecosystem Sciences

DFO Science Section

Marine Mammals and Regional Ecosystems Effects on Fish and Fisheries

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Collaborations

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Locations

Triangle Island
Haida Gwaii

Species

Sockeye

Project ID

2409

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