



BRITISH COLUMBIA
CONSERVATION FOUNDATION

June 11, 2024

NEW REPORT HIGHLIGHTS DEVASTATING IMPACT OF LOG BOOM OPERATIONS IN COWICHAN ESTUARY

Cowichan Tribes, BC Conservation Foundation, and Pacific Salmon Foundation year six study results demonstrate need for more to be done to save salmon populations.

DUNCAN, BC - Today, Cowichan Tribes, in collaboration with the BC Conservation Foundation (BCCF) and the Pacific Salmon Foundation (PSF), released a Year Six Report, outlining the detrimental impacts of log boom storage on wild Pacific salmon populations in the Cowichan-Koksilah Estuary. The report, part of a joint eight-year study, emphasizes the need for best practices to be implemented to support the survival and recovery of Chinook salmon and estuary ecosystems.

More than 100 years of log boom handling operations in the Cowichan-Koksilah Estuary have littered the sea bed with anoxic zones of cut logs, bark, and sticks, causing widespread damage to salmon dependant eelgrass beds and forage fish populations. This multi-year study clearly indicates that the booms' current positioning in crucial salmon migration corridors facilitates seal predation, which is one of the key factors in the correlation between declining Pacific salmon populations and burgeoning harbour seal density.

"Ststeelhtun (salmon) are an integral part of our spiritual and cultural identity and they have been hit hard by the loss of marsh habitat, climate change, logging, and log boom operations in our territory," said Cowichan Tribes Chief Cindy Daniels (Sulsulxumaat). "I commend our Luxumexun (Lands and Self Governance) department, BC Conservation Foundation and Pacific Salmon Foundation for their long-term commitment to this study which has delivered concrete data demonstrating the level of crisis our relatives, the salmon, are experiencing. With these results, we look forward to working with government, industry, and partners to take actions to reverse these impacts before it is too late," added Daniels.

Results from the study indicate that the presence of log booms has a statistically significant negative impact on adult Chinook terminal survival. The mechanism is altering predator-prey dynamics between harbour seals and salmon by enhancing predation efficiency. Further, this impact is exacerbated by low flows, preventing adult Chinook from migrating into the river and away from predation pressures in the lower river and estuary. As climate impacts become more severe, the negative impacts of log booms in key migration corridors and low river flows will increase.

Based on the study results, BCCF has developed a series of best management practices specific to the Cowichan-Koksilah Estuary designed to limit, restrict, and offset damage to fish and fish habitat. Such listed strategies include: situating the booms in deeper water where ocean-going ships already anchor and onshore log limbing and cleaning practices.

“Indigenous knowledge and Western science both indicate that the current log booming operations in the Cowichan-Koksilah Estuary are degrading the estuarine environment physically, chemically, biologically, and ecologically,” said Jamieson Atkinson, Program Manager, Aquatic Research and Restoration Centre, BC Conservation Foundation. “With climate forecasts calling for increasing drought periods, this study’s findings highlight the urgent need for effective management strategies to ensure the survival and recovery of wild Pacific salmon stocks.”

“Pacific salmon need us to take actions within our control to support their recovery. This study, led by Cowichan Tribes and BC Conservation Foundation, presents us with a clear path forward to collaborate with industry and crown government to update log boom storage practices. The recommendations set out in this report will have immediate and long-term benefits for recovery and resilience of Pacific salmon who depend on healthy estuaries during their migration,” says Michael Meneer, President and CEO, Pacific Salmon Foundation.

-30

Additional Information:

- [Year 6 Report: Understanding the impact of Anthropogenic and Environmental Conditions on Adult Chinook Salmon](#)
- Technical Backgrounder (Attached)

Media Contacts:

Tara Zwaan, Communications Manager
Cowichan Tribes
(250) 732-7502 | Public.Relations@cowichantribes.com

Jamieson Atkinson, R.P. Bio, Program Manager, ARRC
BC Conservation Foundation
(250) 390-2525, ext. 103 | jatkinson@bccf.com

Oscar Beardmore-Gray, Communications Coordinator
Pacific Salmon Foundation
(778) 522-4413 | obeardmore-gray@psf.ca



BRITISH COLUMBIA
CONSERVATION FOUNDATION

Technical Analysis of Year Six Report Findings - Log Boom Operations in the Cowichan Estuary

Date: June 11, 2024

This project, led by Cowichan Tribes together with the BC Conservation Foundation (BCCF), the University of Victoria (UVic), and the Pacific Salmon Foundation (PSF), involves assessing how industrial and environmental factors affect the survival of adult Chinook salmon in Cowichan Bay, its estuary, and the lower river.

At its peak, log boom operations in the Cowichan Estuary occupied 49% of the area. While the current License of Occupation for Cowichan Bay covers just 5.9% of the estuary, the Year Six Report highlights the need for changes in industrial practices and legislation to restore a healthy ecosystem and mitigate the effects of more than a century of log booming operations.

Methodology

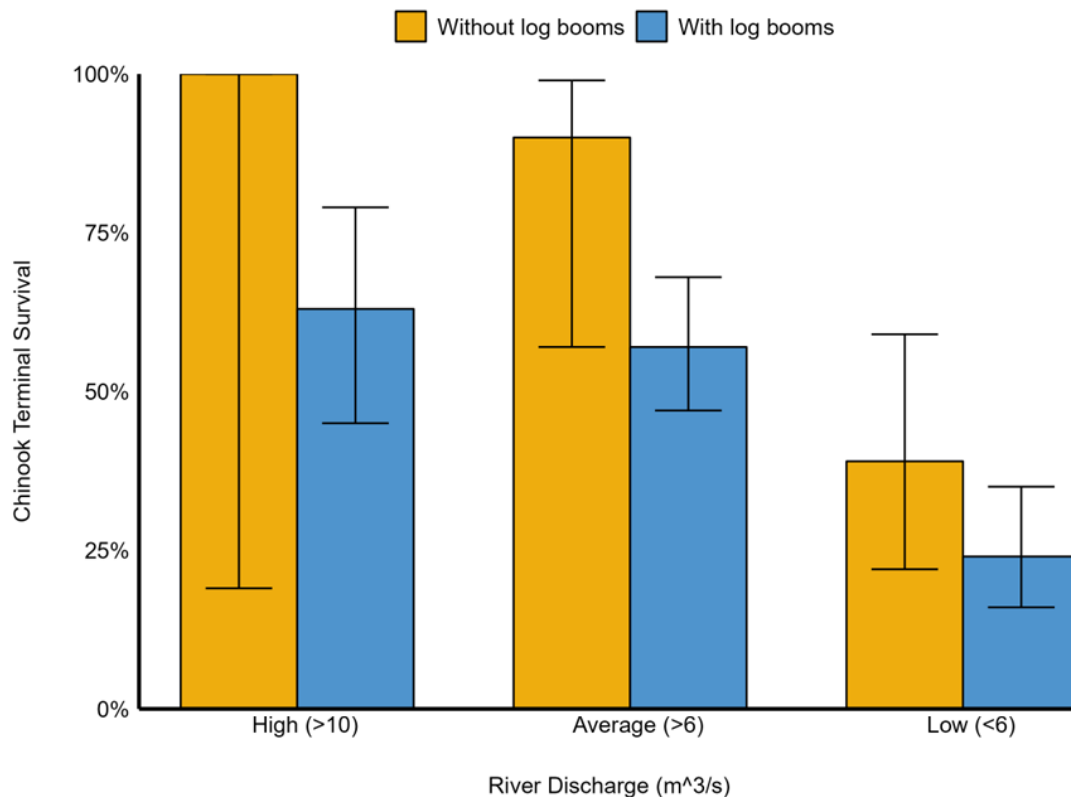
Since 2017, researchers from Cowichan Tribes, BCCF, and UVic have been tagging adult Chinook salmon in Cowichan Bay with Passive Integrated Transponders (PIT) to monitor survival to return rates. Adult Chinook are deemed a 'survivor' if detected on the mainstem PIT array at river kilometre 7. In 2019, 2020, and 2022, a subset of Chinook was also tagged with acoustic devices to track their location, depth, and acceleration. PIT antennas and acoustic listening receivers were installed extensively throughout the Cowichan River, the estuary, and Cowichan Bay. Using PIT and acoustic tags informs the research team about Chinook behaviours in the bay and lower river environments in relation to human-caused disturbances such as log booms and underwater boat noise – including daytime and nighttime behaviours, staging depths, and potential predation events.

Findings

In short, log booms in the Cowichan Bay reduce Cowichan Chinook survival (see graph below). Log booms were present for five of the six study years (log booms were absent in 2019). Survival was highly variable between study years, ranging from 24% in 2023 to 65% in 2021. Results from the study indicate that log booms have a statistically significant negative impact on adult Chinook terminal survival. The mechanism (i.e. log booms) alters the predator-prey dynamics between harbour seals and salmon by enhancing predation efficiency through log booms. Prolonged staging time in estuaries makes salmon more vulnerable to predation from seals, who rest on booms and prey on the salmon that have to migrate past or underneath them to enter the river.

Further, this impact is exacerbated by low flows, preventing adult Chinook from migrating into the river and away from predation pressures in the lower river and estuary. The study results suggest that climate change will likely exacerbate poor survival rates. Low flows in the Cowichan River result in longer staging in the lower river and estuary, as Chinook wait for the opportune time to journey upstream to spawn.

As the frequency of summer drought periods increases, the terminal survival of Chinook will likely decrease. Removing barriers to survival, such as log booms, will help facilitate safer migration corridors for salmonids. With the increasing frequency of summer droughts, it is likely that the survival rate of Chinook salmon will decline. By eliminating obstacles to survival, such as log booms, we can help create safer migration pathways for salmon species.



This bar graph represents Chinook terminal survival in high, average, and low river discharge levels. It depicts survival when log booms are present in blue and are absent in gold. The black lines represent the 95% confidence interval bars. They cover a range of values that we are 95% certain contain the true mean of the population.

Next Steps

Cowichan Tribes is working with BCCF to propose alternative log boom operations in the Cowichan Bay region based on current estuarine literature and study data.

Suggestions include:

- Using dryland sorting facilities.
- Moving existing log booms to deeper waters.
- Expanding log boom operations to other locations with less critical habitat for salmon.