

Ship strikes on large whales in the Salish Sea, Washington State: Insights from recent strandings and two well-documented fatal strikes by Washington ferries

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Why is this important?

➤ From 2015-2019 ship strikes were the second highest human related cause of large whale deaths as identified by strandings or carcass inspection but rarely witnessed.

➤ Ship strikes of large whales are under reported such that carcasses & strandings may be only a small fraction of true number. (Caretta, J. et al. 2021)

➤ Both humpback whale abundance & human populations have increased dramatically along US West Coast especially in the Salish Sea.

Period	Ship Strike	Entanglement
1971-80 (n=19)	5% (1)	0
1981-90 (n=68)	3% (2)	1% (1)
1991-2000 (n=89)	4.4% (4)	7% (6)
2001-2010 (n=76)	29% (22)	8% (6)
2011-2020 (n=129)	16% (20)	9% (12)

Above: From carcass/strandings reports. Total number in parentheses includes both definite and possible cause of death determinations.



Photo: Kiirsten Flynn, Strait of Juan de Fuca

Case 1: May 28, 2019

Vessel: Wenatchee
Length: 140m
Draft: 5.2m
Location: Heading into Seattle, WA. Coleman dock
Time of Day: 2015
Speed: ~16 kts



May 28, 2019

View from WA State Ferry Cam: Humpback surfacing in front of ferry right before collision. Photo: WSDOT

Case 2: July 6, 2020

Vessel: Tokitae
Length: 110m
Draft: 5.5m
Location: ¾ nm from Mukilteo, WA ferry dock
Time of Day: 1215
Speed: 12.9 kts



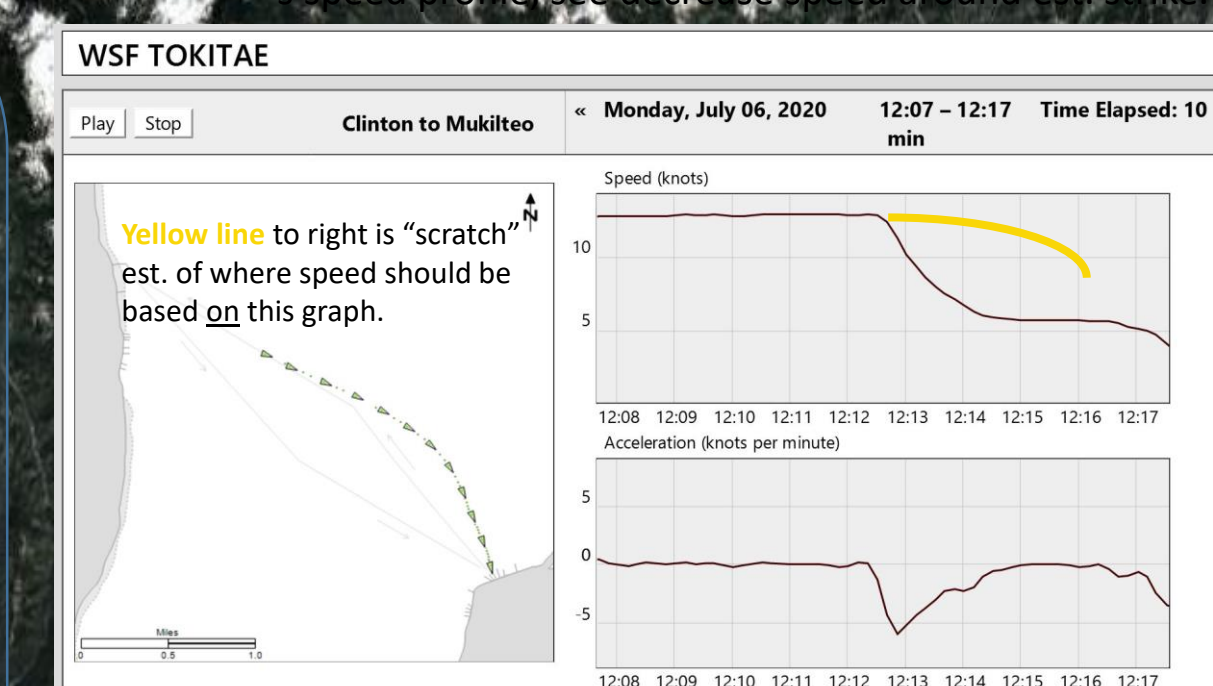
July 6, 2020

Apparent moment of impact. Part of whale & disturbance can be seen near bow of ferry. Photo: Bart Rulon

Whale surfacing directly in front of ferry traveling approx. 16kts which had no time to maneuver. Passengers on board saw the animal and blood after strike. Photo above: Matt McDonald. @do206.com After incident USCG helicopter surveyed area but could not relocate it.

Whale photo-id two days prior w/another larger whale also id'd. It had no injuries or abrasions present before ferry interaction. WSF acknowledged receiving notification that the pair pf whales were in the area.

Naturalists on WW boat saw one whale surface right in front of ferry as it was going full speed into dock. After incident extensive effort over two days to relocate, only found the larger animal.



Speed profile of typical ferry run into the dock.

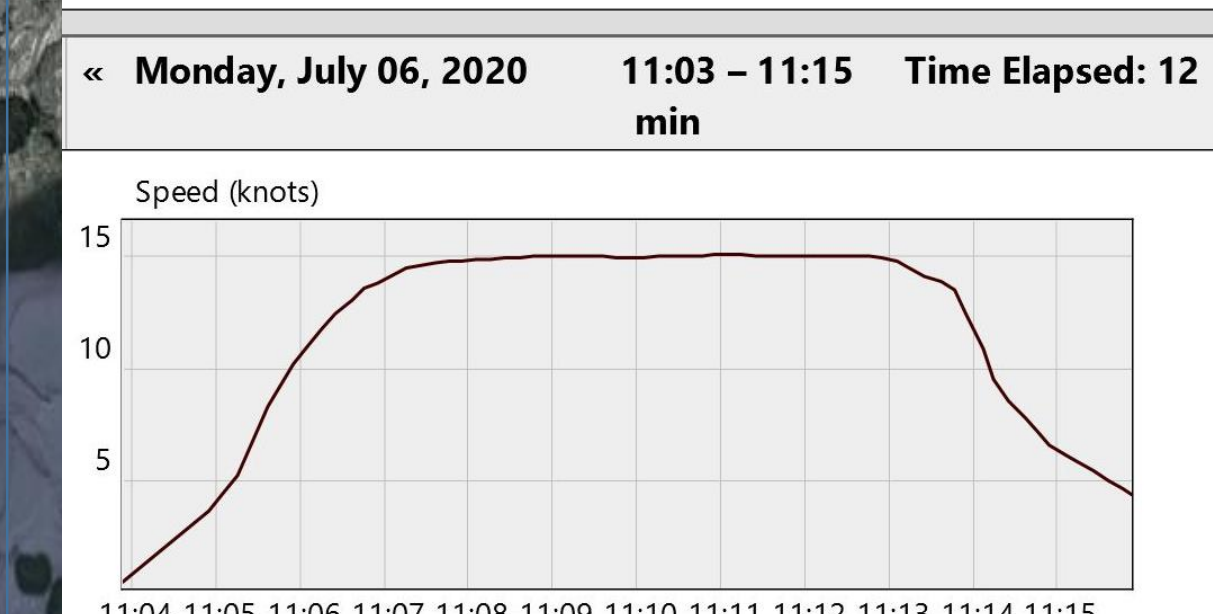


Photo: Bart Rulon/Puget Sound Express

Above: Visual injuries seen on both sides of whale, however life threatening injuries are most often internal.

On Left: Fluke of dead 30 ft yearling washed ashore on WA coast. 29 July 2020. COD ship strike, positively ID'd as NOT the struck whale above.

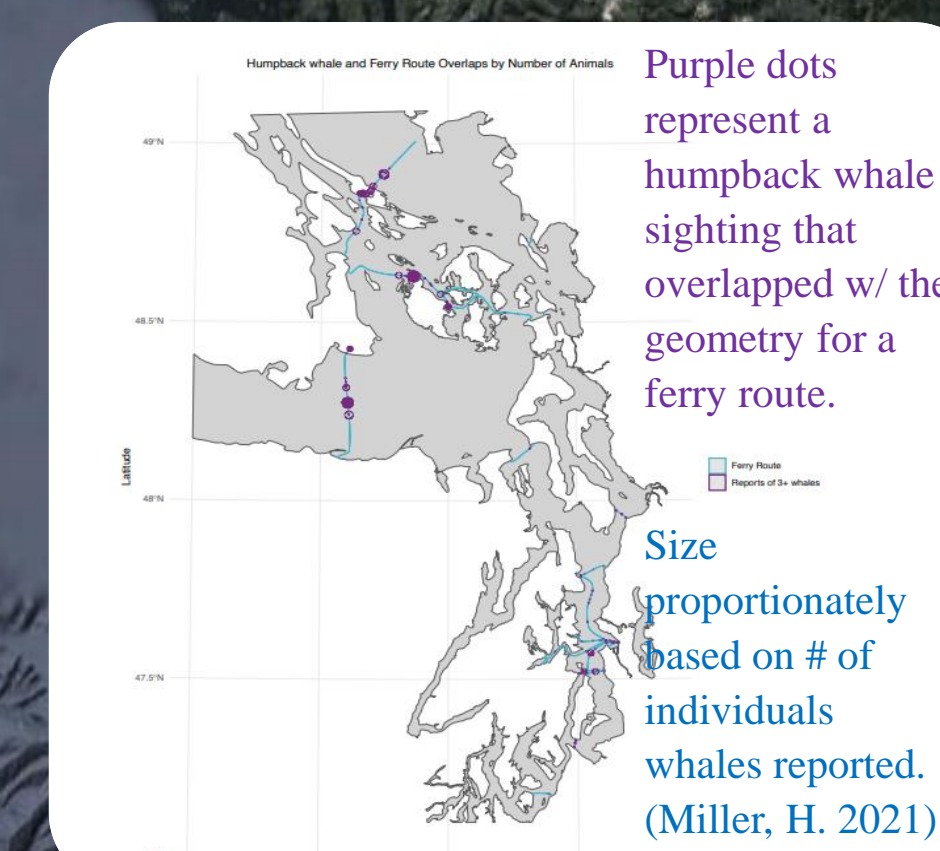
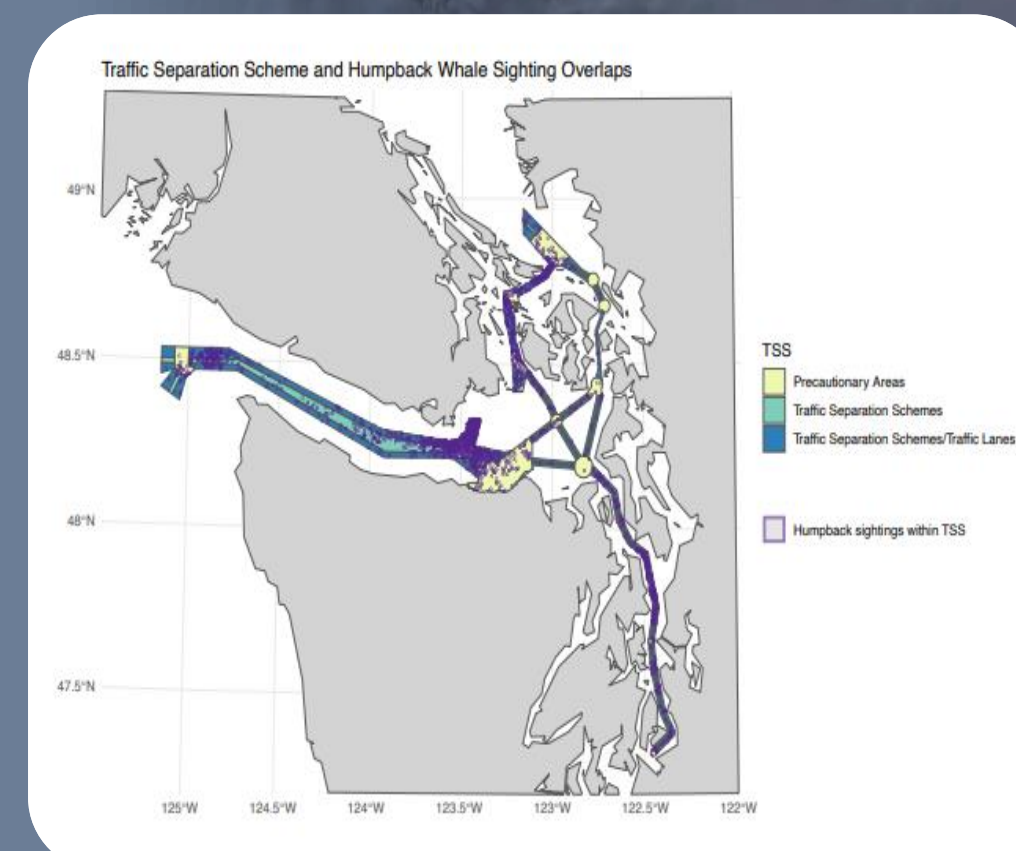
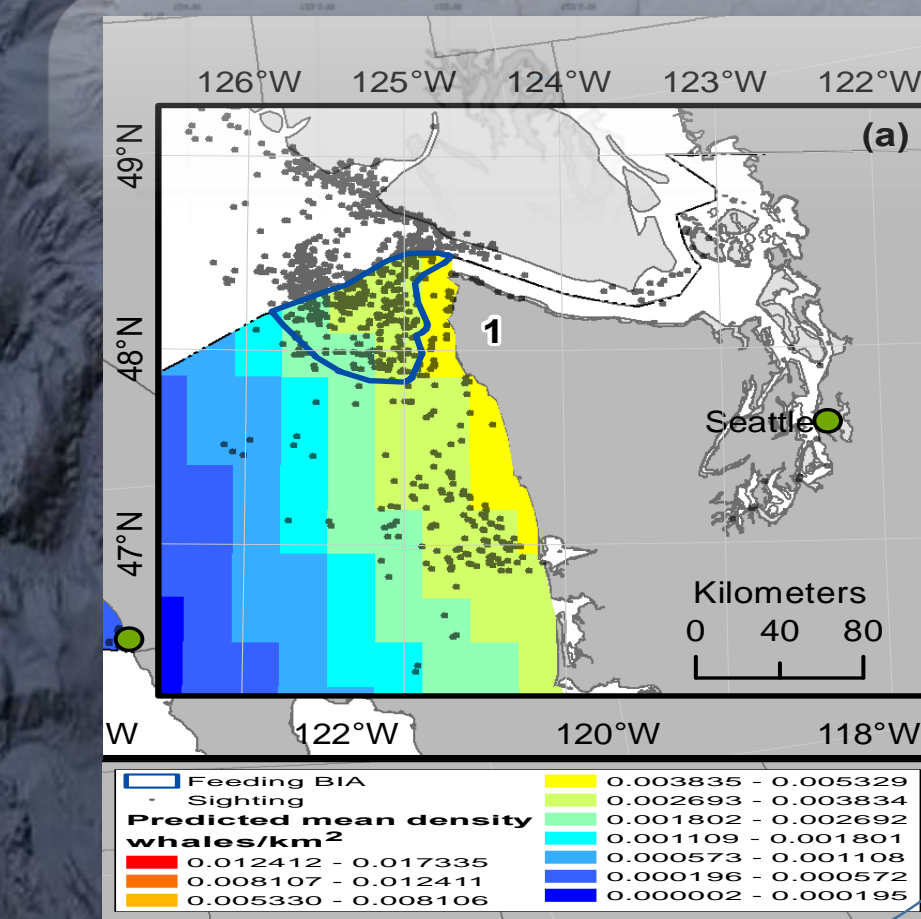


Figure Above: Traffic separation scheme (TSS) & humpback whale sightings within the Salish Sea. The purple dots are the locations of the humpback whale sighting reports. (Miller, H. 2021) **Right:** Humpback biologically important areas and predicted mean density of feeding areas.



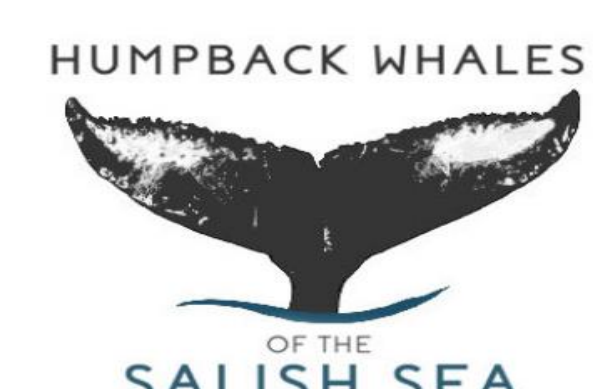
Conclusion

- For the last 40 years, all 7 known strandings of humpback whales in Washington inside waters occurred since 2015, with at least 3 of them the result of ship strike (**not** including the two described here since they were not associated with documented strandings).
- While both reports of vessel strikes presented here were concluded to be fatal, no carcasses were seen or recovered despite their having occurred in populated confined waters suggesting carcasses likely sank. The documentation in these incidences came from multiple sources including passengers and crew on board the boat, people on shore, and in one case a whale watch vessel tracking the whales.
- These documented strikes were despite ferries representing a small proportion of large vessel traffic in the area, and the location of these two incidences are not high use areas by humpback whales. Large cargo vessels representing the majority of large ship traffic often transit areas of much higher whale density but have not generated reports of ship strikes unless they physically dragged in the whale carcass on their bow.

Special thanks to the Washington State Department of Transportation: Ferry System for their support of this poster and their attention to this issue!



Photo Credit: KUOW: Casey Martin



References: Miller, H. 2020. Relating the Distribution of Humpback Whales to Environmental Variables and Risk Exposure. Thesis. Master of Marine Affairs. University of Washington.
Caretta, J.V., Justin Greenman, Kristin Wilkinson, James Freed, Lauren Saez, Dan Lawson, Justin Viezbicke, and Jason Jannot. 2021. Sources of Human-related Injury and Mortality for U.S. Pacific West Coast Marine Mammal Stock Assessments, 2015-2019. U.S. Department of