

## MARINE TRAFFIC OVERLAP WITH TAGGED RINGED SEALS, 2013-2022

**Research goals:** To understand changes in vessel traffic in the Pacific Arctic region, and specifically for ringed seals. We are relying on data of vessel locations (AIS data) and ringed seal locations (tagged by NSB and ADFG near Utqiagvik) to describe the monthly and annual trends in the number, types, and speeds of vessels occurring in areas used by tagged ringed seals during May-November, 2013-2022.

**Preliminary results:** 27 ringed seals were tagged during the period we have vessel data, during 2013-2022. Monthly areas for a total of 26 out of 27 tagged seals overlapped with vessel tracks (see maps on page 2). Of those 26 seals, the total number of vessels transiting through a seal's monthly area ranged from 14-161 vessels. Average vessel speed was ~6 mph, although maximum vessel speed was ~38 mph. Given that the same vessel may cross the area of several tagged seals, we also considered the number of unique vessel transits. There were a total of 873 unique monthly vessel transits, with the most occurring in the months of Sept. and Oct. (Fig. 1). Fifteen different types of vessels used seal areas (Fig. 2). The proportion of cruise ships, fishing vessels, and ro-ro cargo ships is generally greatest in July-Sep. Tanker vessels (i.e. chemical, crude oil, gas, and oil product tankers) only occur in Sep-Nov, with the exception of 2 gas tankers in July. The proportion of general cargo ships and bulk carriers increase during Sep-Nov.

**Next steps:** We would like your feedback and review. We intend to also consider changes in the number of vessels for winter months (Dec-Mar) before writing a research paper. There may be other ways to use these vessel tracking data to address your questions or concerns. **We want to equitably contribute to and support Indigenous-led research and management of vessels. Please reach out with your questions & feedback.**

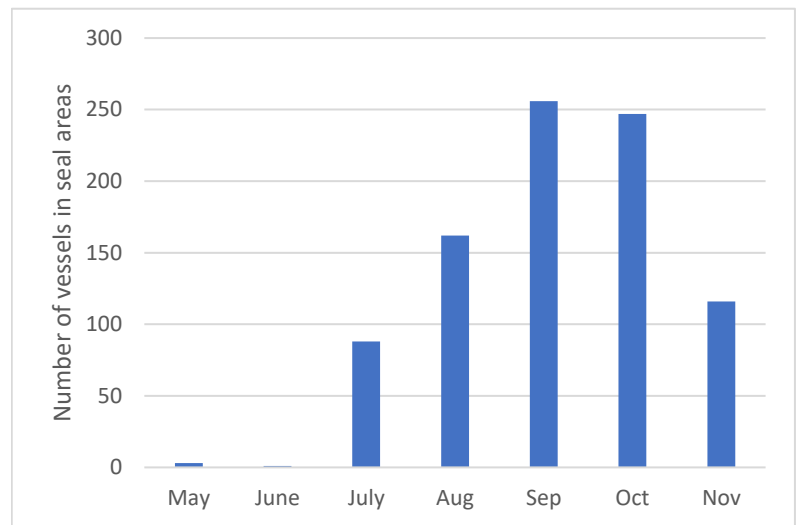


Fig 1. Total number of vessels in ringed seal areas during May-Nov across all years with seal tagging data, 2013-2022.

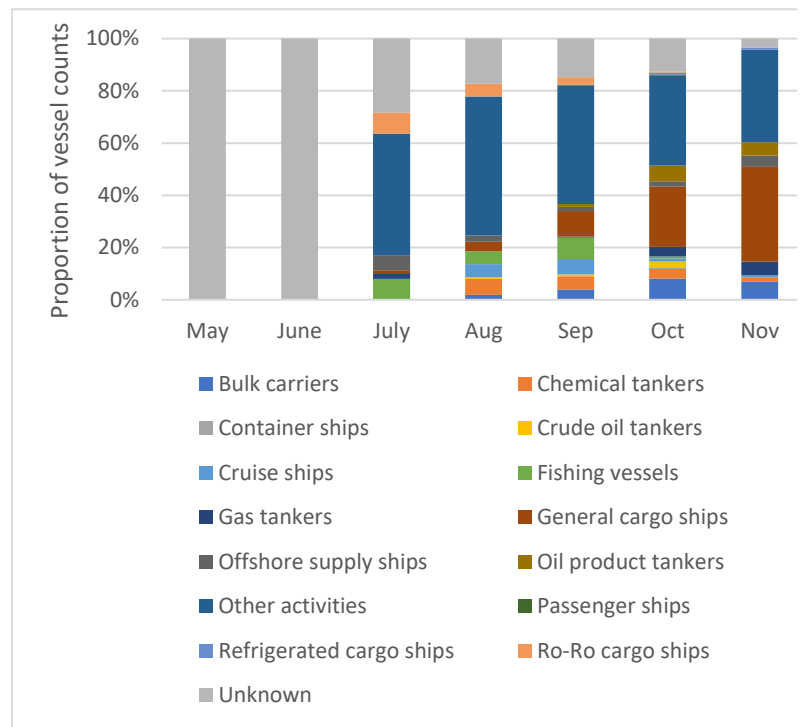
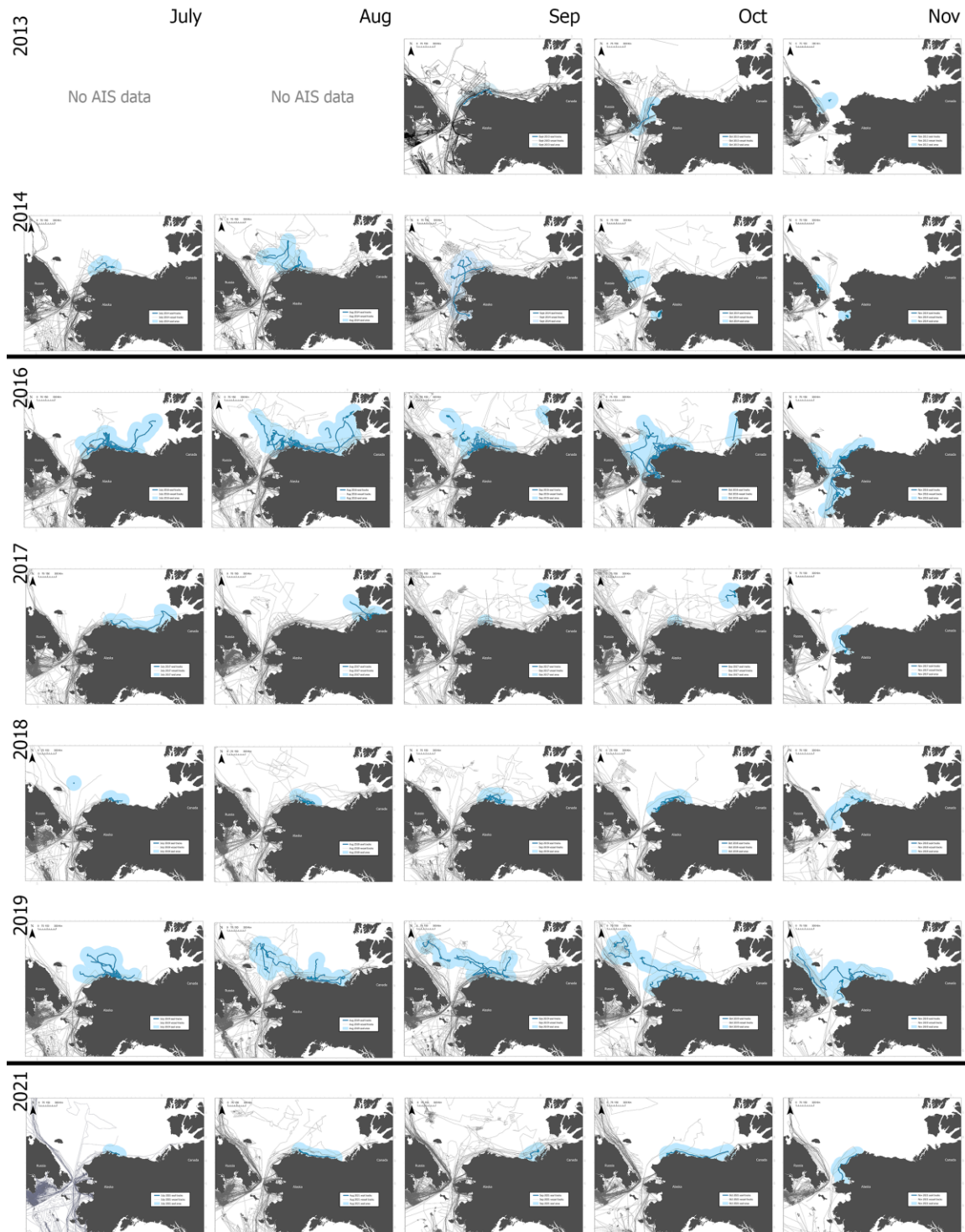


Fig 2. Proportion of different types of vessels in seal areas during May-Nov, across all years with seal data 2013-2022.



July-Nov. monthly maps of vessel tracks (black lines), tagged ringed seal tracks (blue lines), and areas used by seals (blue areas) to describe vessel interactions, 2013-2021. Vessels did not overlap with seals tagged in April during 2015, 2017, or 2020. Two vessels overlapped with a seal tagged in May 2015, and one vessel overlapped with a seal tagged in June 2019. No seal data was available in 2015 or 2020 (black bars).

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