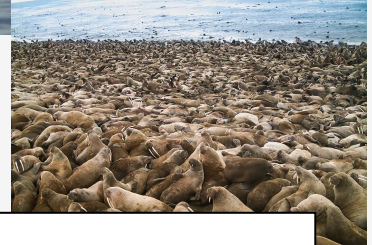
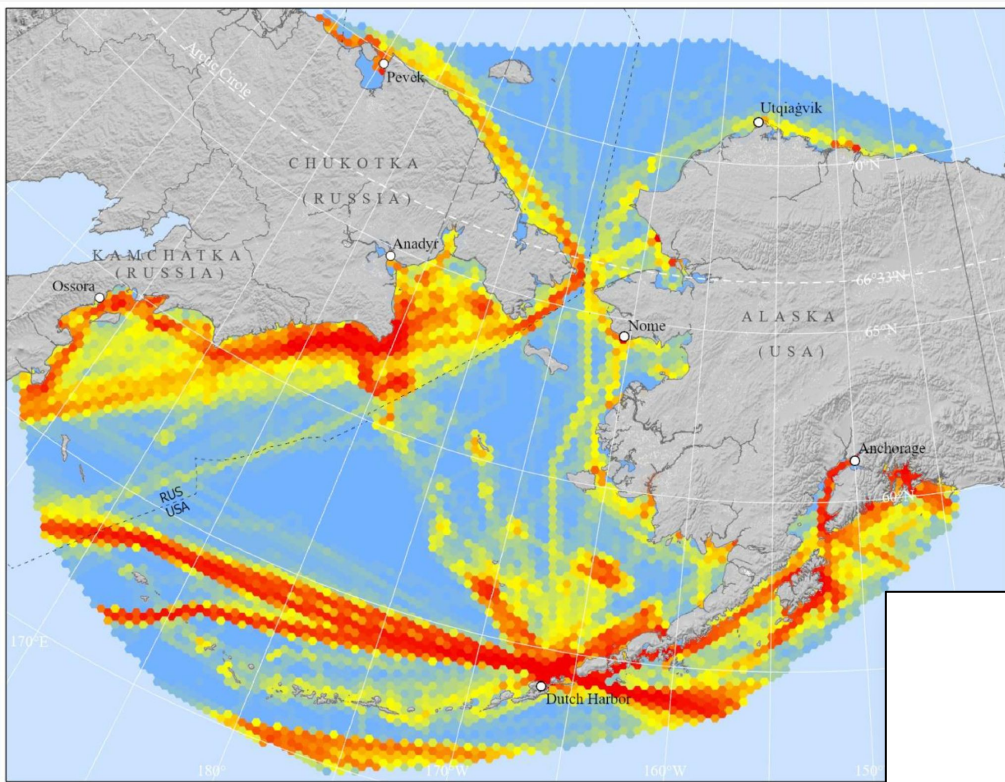




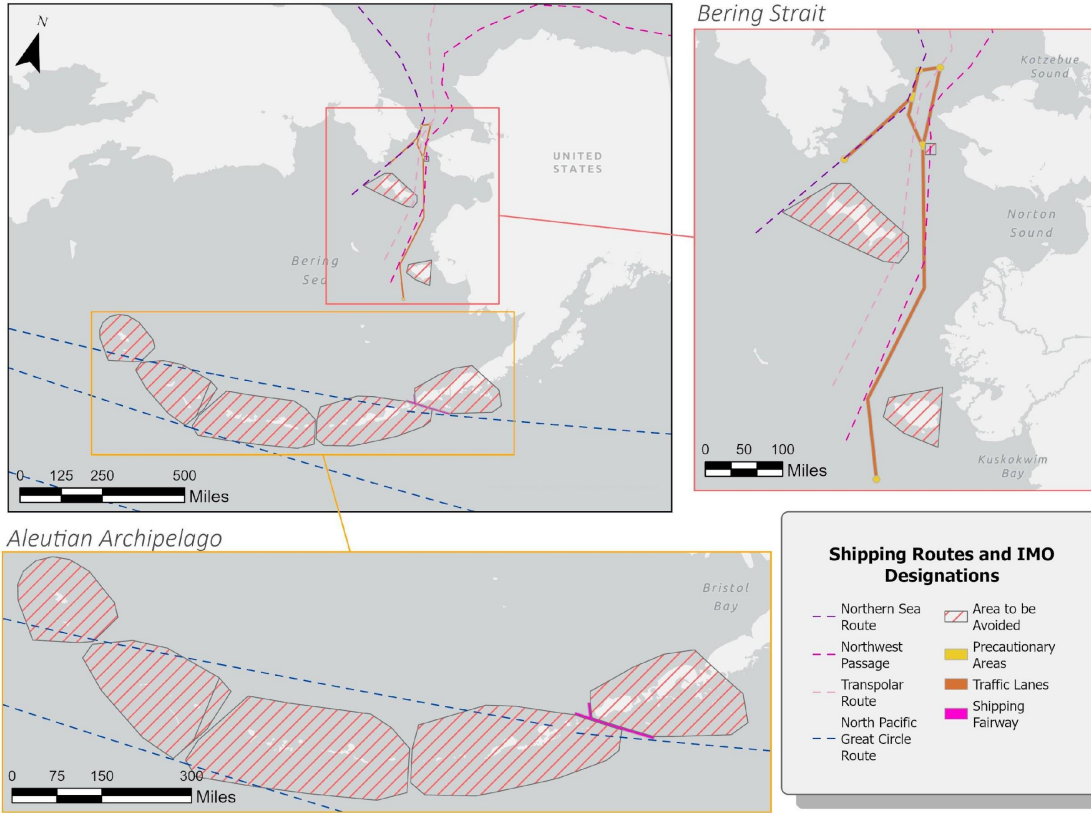
Managing Increasing Rates of Vessel Traffic in the Bering Strait

Bella Block, University of Alaska Anchorage:
Institute of Social and Economic Research



Importance

International Maritime Organization (IMO) Shipping Designations



Study Region

General:

- **Exclusive Economic Zones (EEZ)**
- Areas to be Avoided (ATBAs)

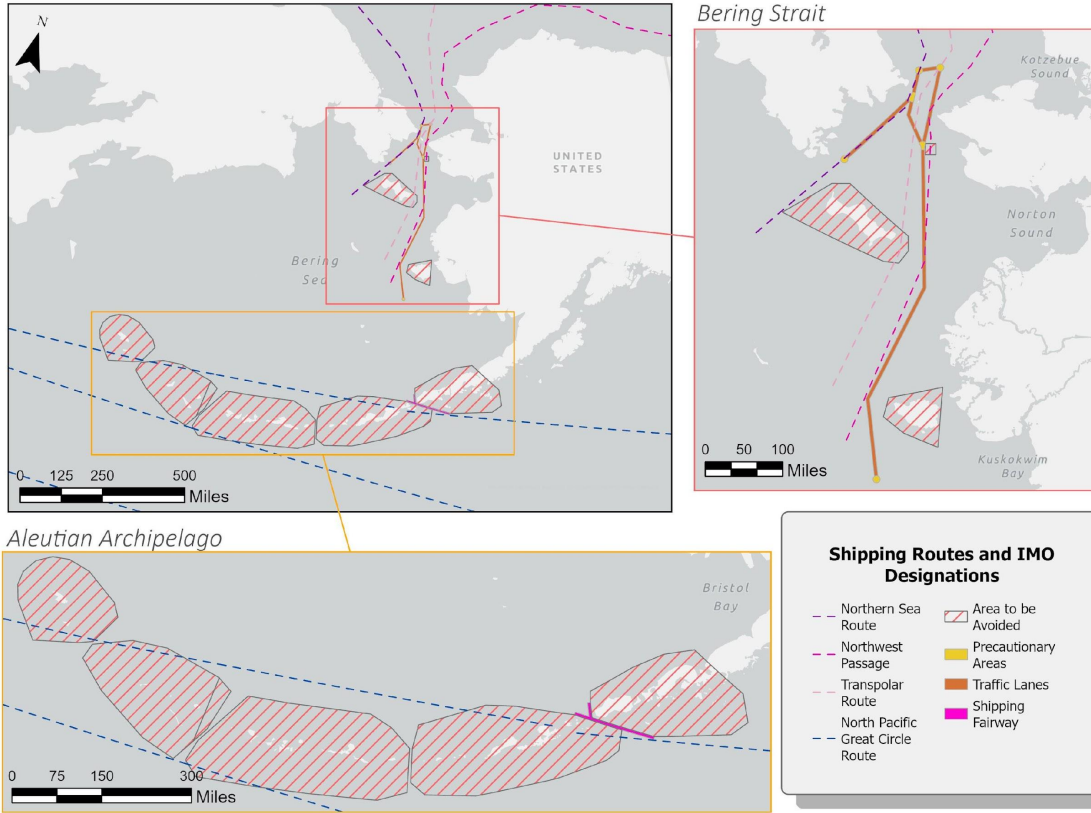
Aleutian Chain:

- North Pacific Great Circle Route
- ATBAs established in 2016
- US Coast Guard Alternate Planning Criteria (APC) Framework

Bering Strait:

- Bottleneck separating the Arctic from the Bering Sea
- ATBAs established in 2018
- Ecologically and culturally significant
- Increases in vessel traffic

International Maritime Organization (IMO) Shipping Designations



Study Region

General:

- Exclusive Economic Zones (EEZ)
- **Areas to be Avoided (ATBAs)**

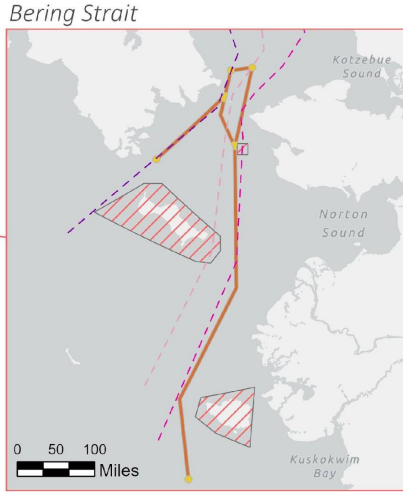
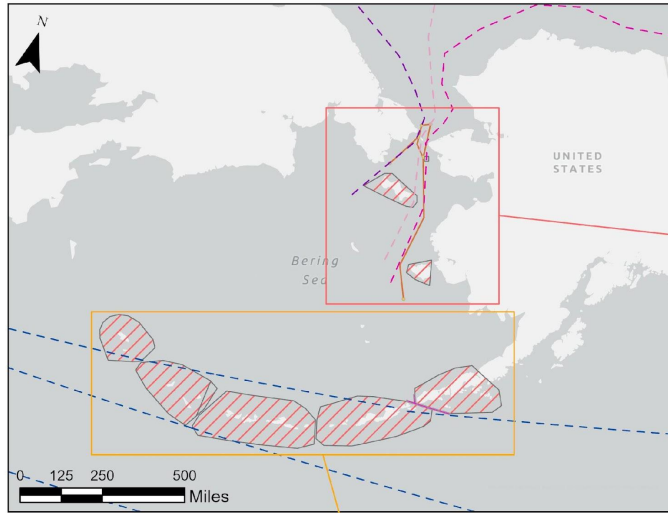
Aleutian Chain:

- North Pacific Great Circle Route
- ATBAs established in 2016
- US Coast Guard Alternate Planning Criteria (APC)
- Framework

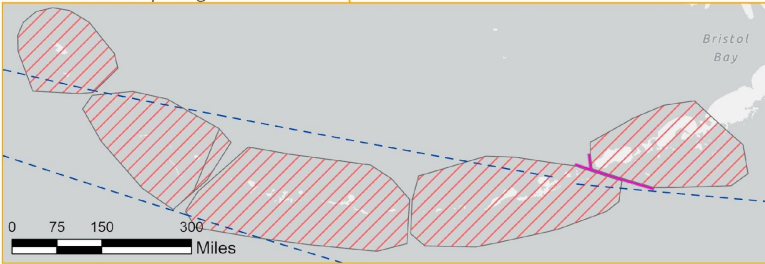
Bering Strait:

- Bottleneck separating the Arctic from the Bering Sea
- ATBAs established in 2018
- Ecologically and culturally significant
- Increases in vessel traffic

International Maritime Organization (IMO) Shipping Designations



Aleutian Archipelago



Shipping Routes and IMO Designations

- - Northern Sea Route
- - Northwest Passage
- - Transpolar Route
- - North Pacific Great Circle Route
- ▨ Area to be Avoided
- Precautionary Areas
- Traffic Lanes
- Shipping Fairway

Study Region

General:

- Exclusive Economic Zones (EEZ)
- Areas to be Avoided (ATBAs)

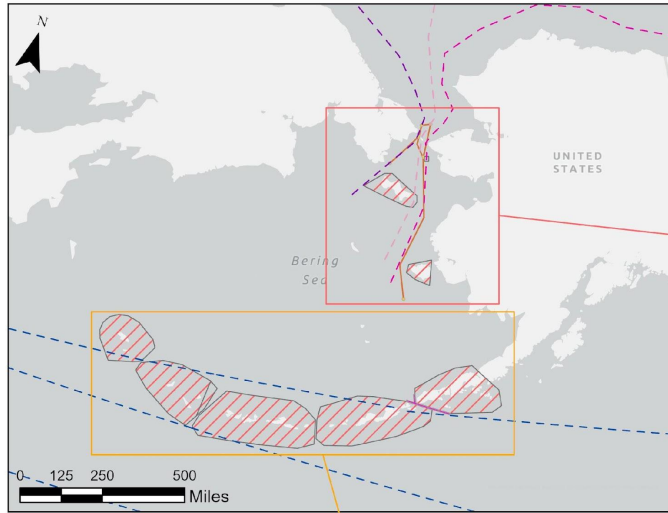
Aleutian Chain:

- *North Pacific Great Circle Route*
- *ATBAs established in 2016*
- *US Coast Guard Alternate Planning Criteria (APC) Framework*

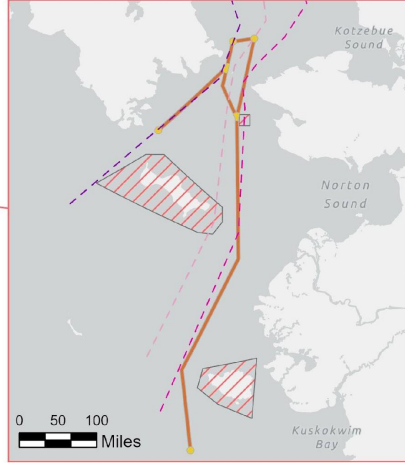
Bering Strait:

- Bottleneck separating the Arctic from the Bering Sea
- ATBAs established in 2018
- Ecologically and culturally significant
- Increases in vessel traffic

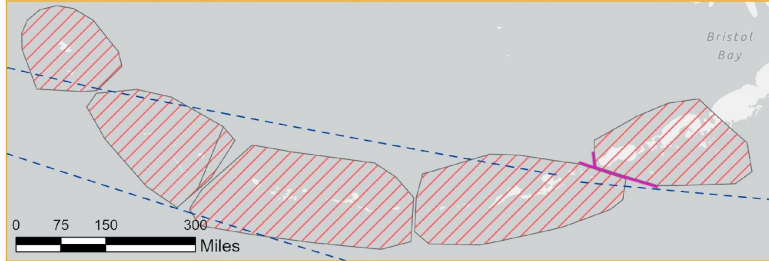
International Maritime Organization (IMO) Shipping Designations



Bering Strait



Aleutian Archipelago



Shipping Routes and IMO Designations

- Northern Sea Route
- Northwest Passage
- Transpolar Route
- North Pacific Great Circle Route
- Great Circle Route
- Area to be Avoided
- Precautionary Areas
- Traffic Lanes
- Shipping Fairway

Study Region

General:

- Exclusive Economic Zones (EEZ)
- Areas to be Avoided (ATBAs)

Aleutian Chain:

- North Pacific Great Circle Route
- ATBAs established in 2016
- US Coast Guard Alternate Planning Criteria (APC)
- Framework

Bering Strait:

- **Bottleneck separating the Arctic from the Bering Sea**
- **ATBAs established in 2018**
- **Ecologically and culturally significant**
- **Increases in vessel traffic**



Study Objectives



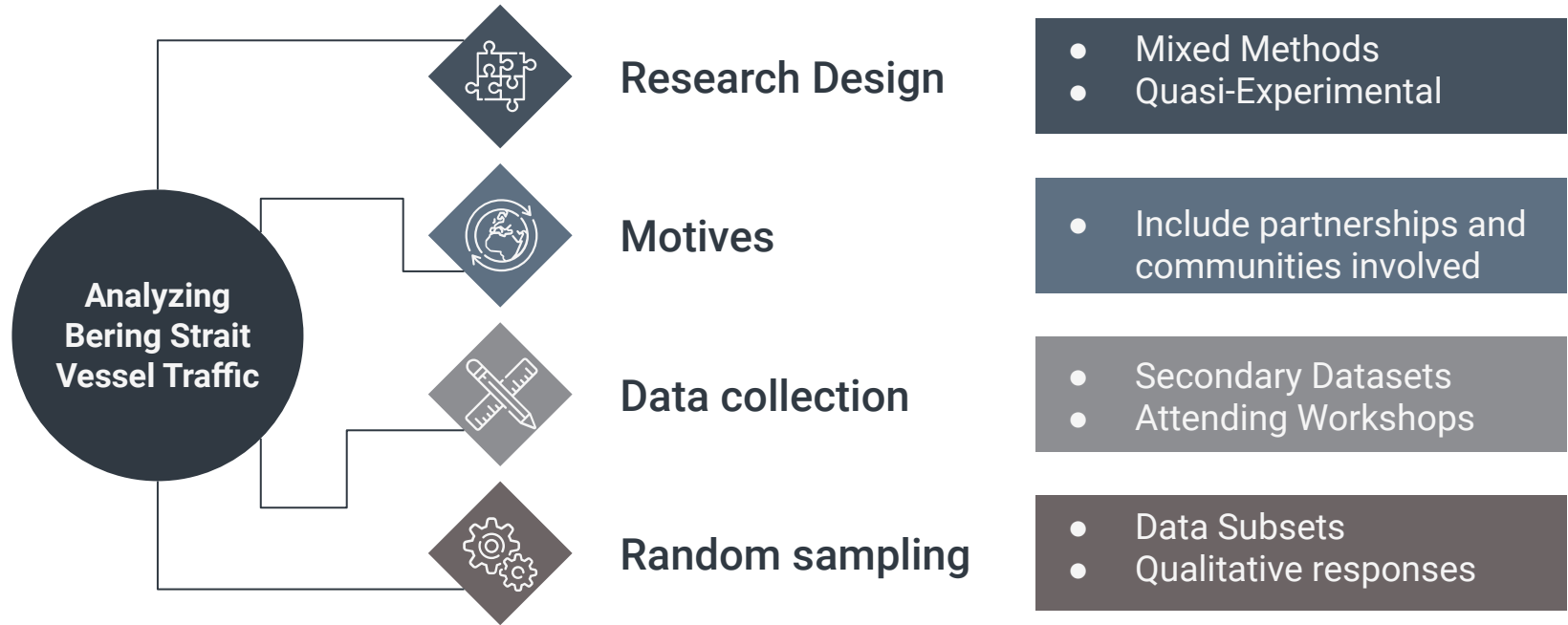
Determine whether vessel traffic impacts can be mitigated through different policies.



Interact with stakeholders to propose adaptive solutions to protect culture and the environment.



Methodology



Analysis Methods



Aleutian Chain

Cargo and Tanker Traffic

- Qualitative
 - Email communication from MXAK
- Quantitative
 - Hotspot Analysis
 - Participation Analysis (MXAK)



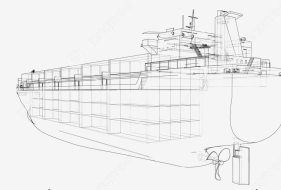
Bering Strait/Western Alaska

All vessel traffic types

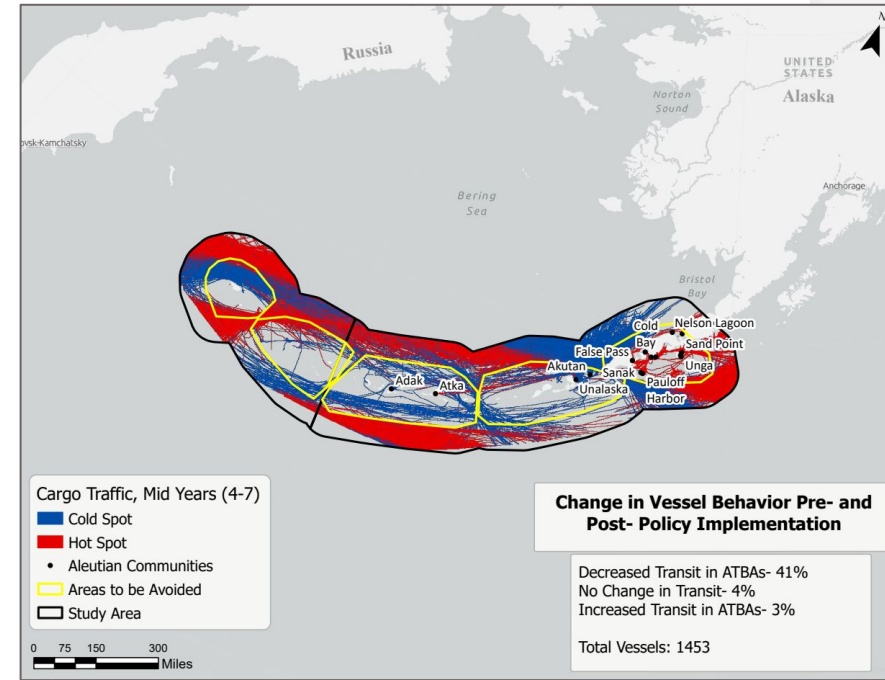
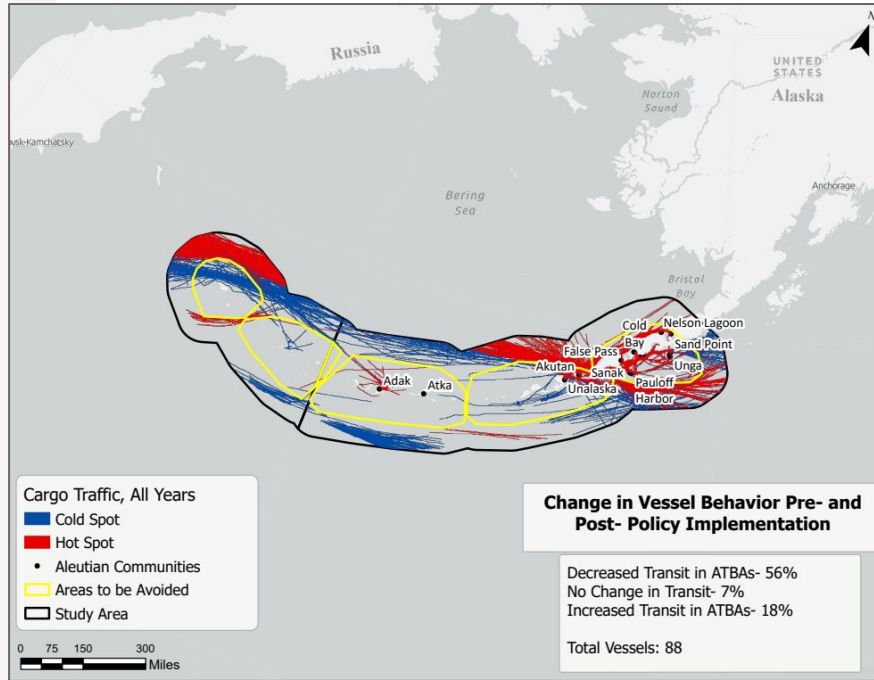
- Qualitative
 - Community input
- Quantitative
 - Hotspot Analysis
 - Community Summaries



Study Findings: Aleutian Chain

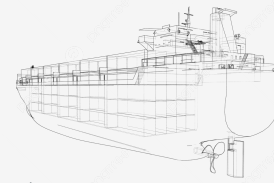


Cargo: Traffic *decreases* within ATBAs Post-Policy Implementation (2016-2022)

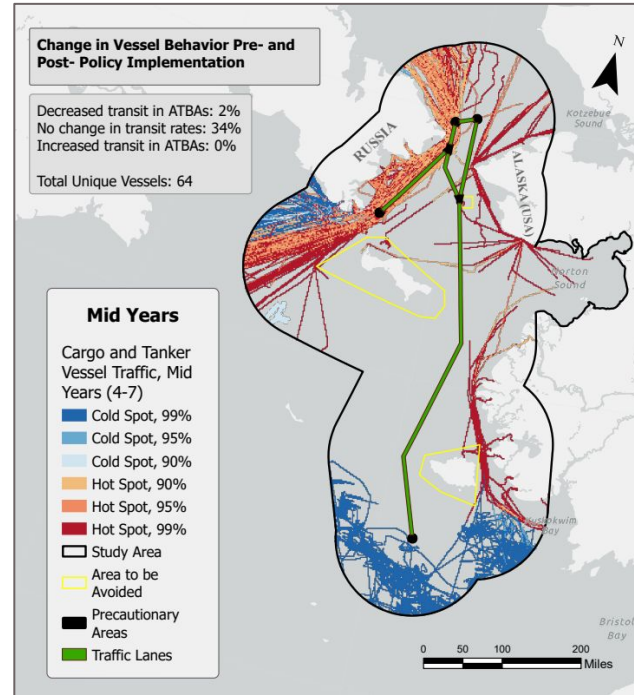
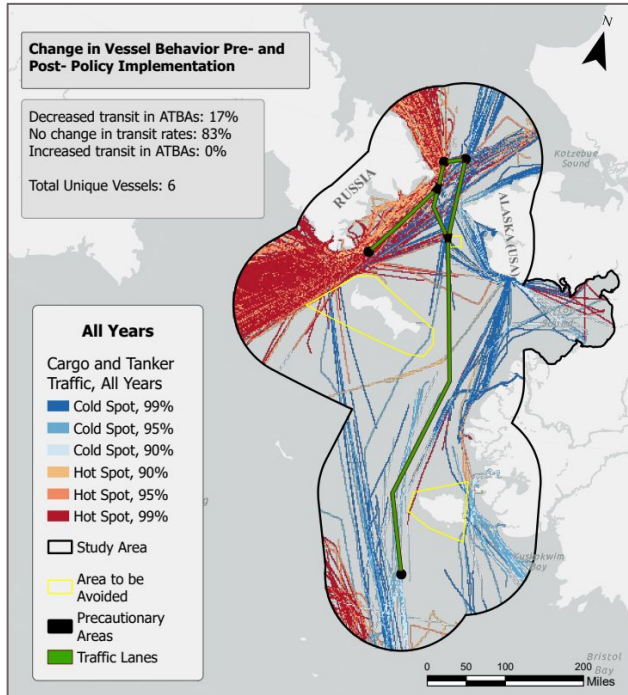


* Maps created by Bella Block, ArcGIS Pro

Study Findings: Bering Strait

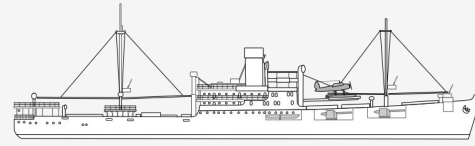


Cargo and Tanker: Vessel traffic occurs mainly on Russian side (Northern Sea Route)

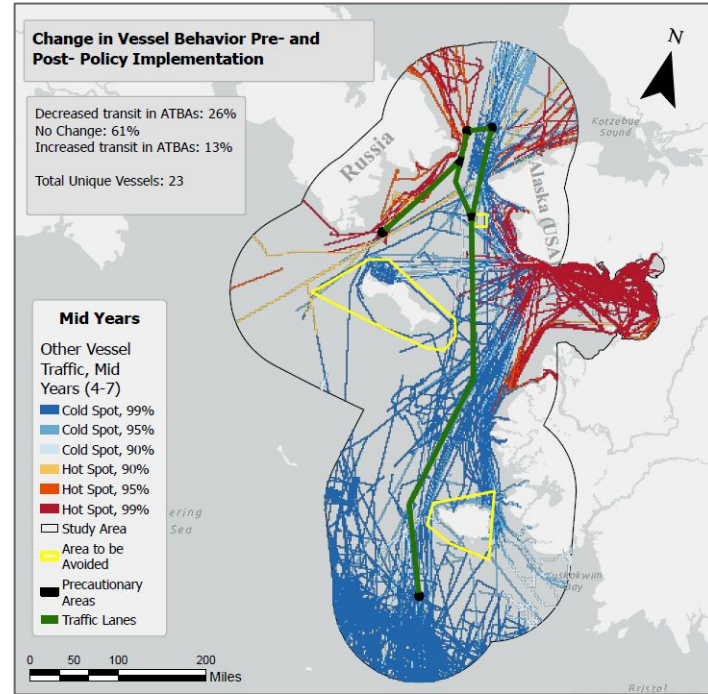
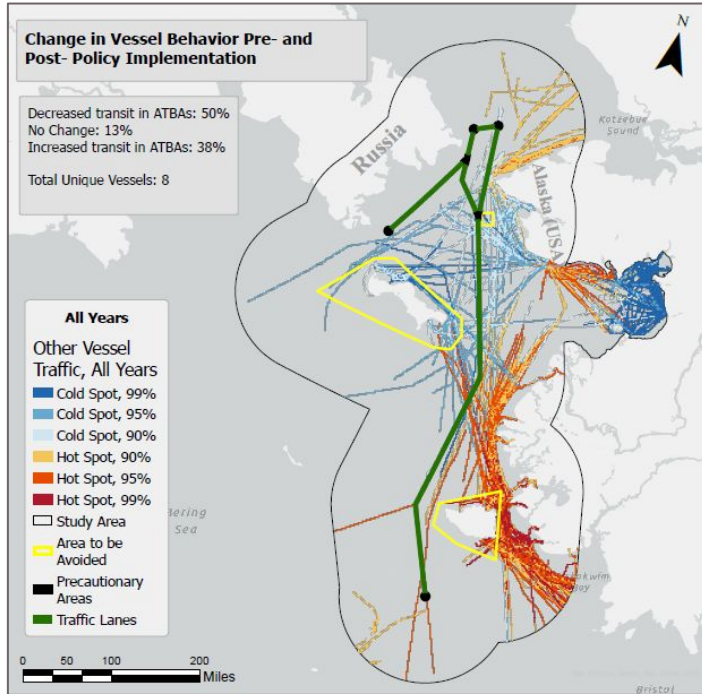


* Maps created by Bella Block, ArcGIS Pro

Study Findings: Bering Strait



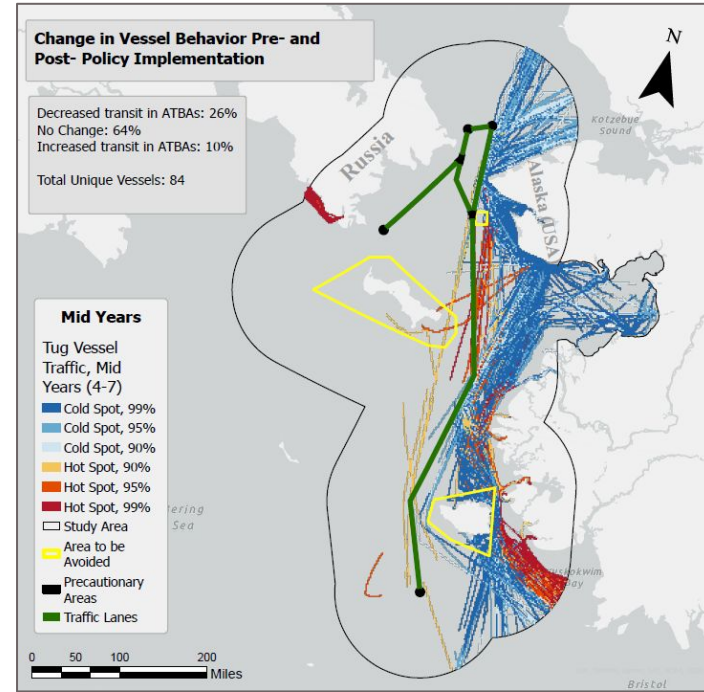
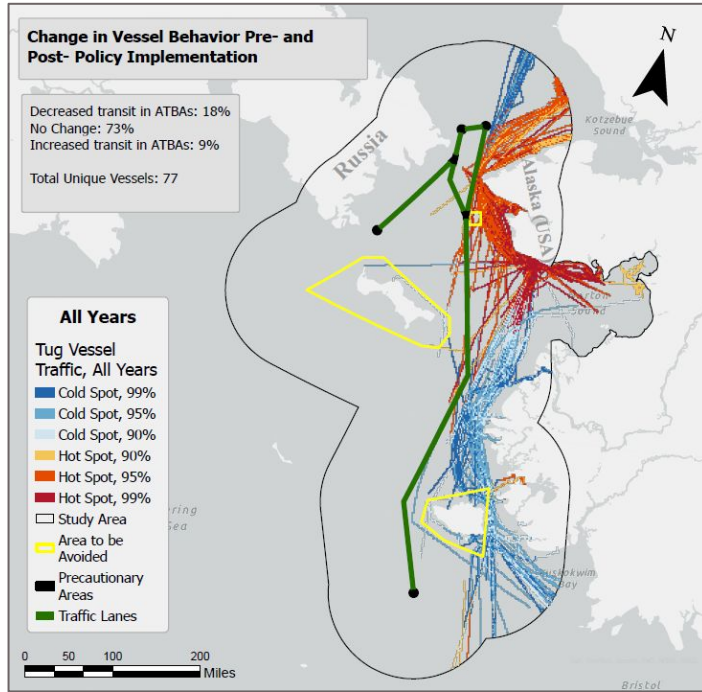
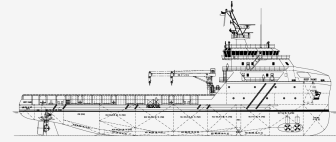
Other: Vessel traffic depends on transit intensity



* Maps created by Bella Block, ArcGIS Pro

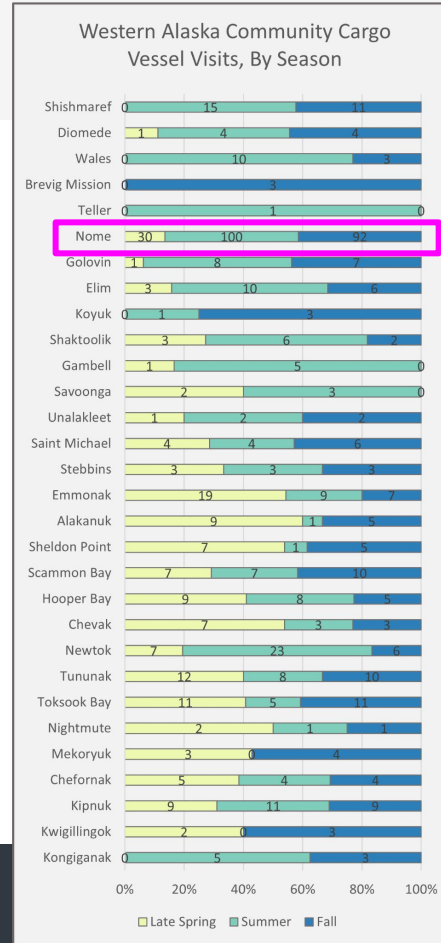
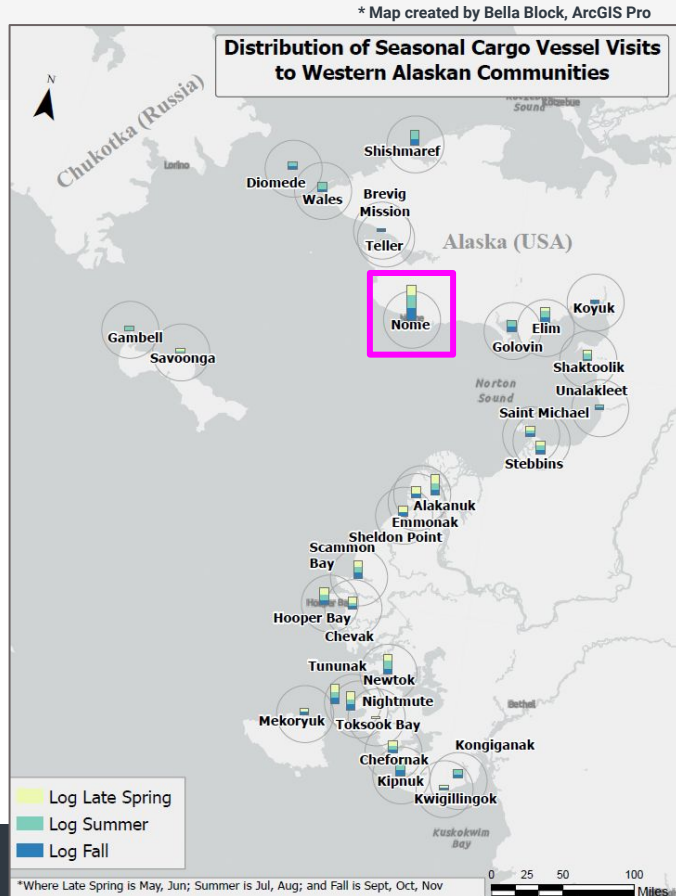
Study Findings: Bering Strait

Tug: Experiences large behavior changes from policy implementation



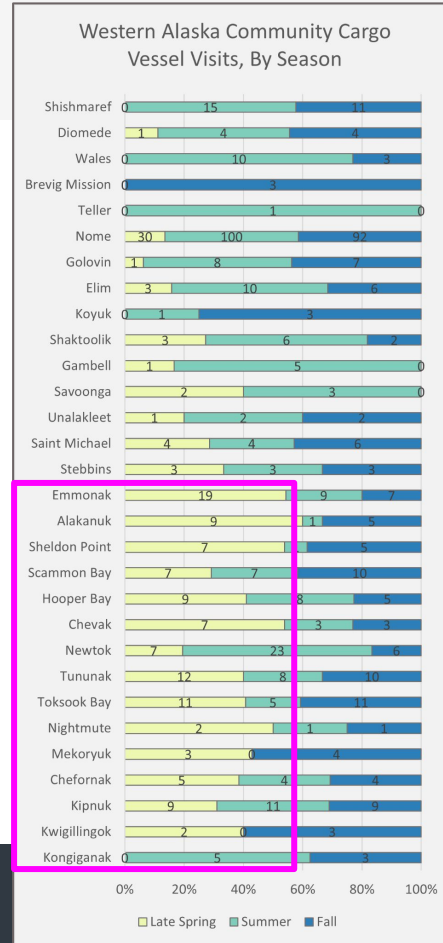
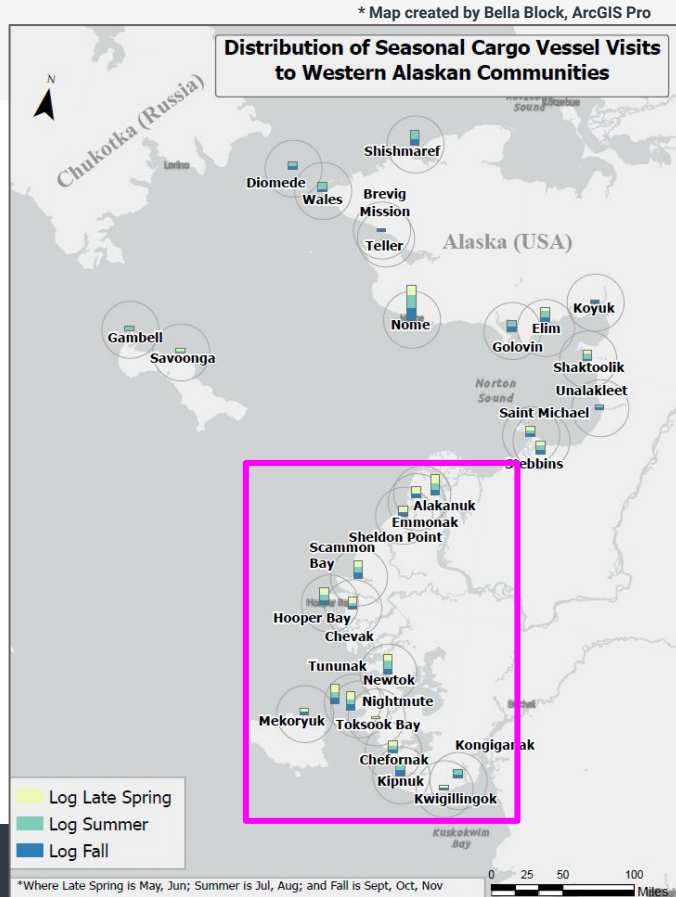
* Maps created by Bella Block, ArcGIS Pro

Study Findings: Western Alaska Community visits



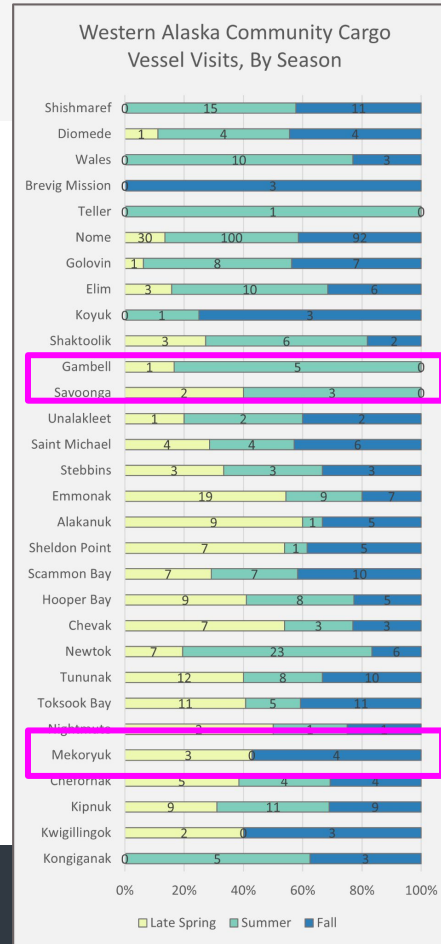
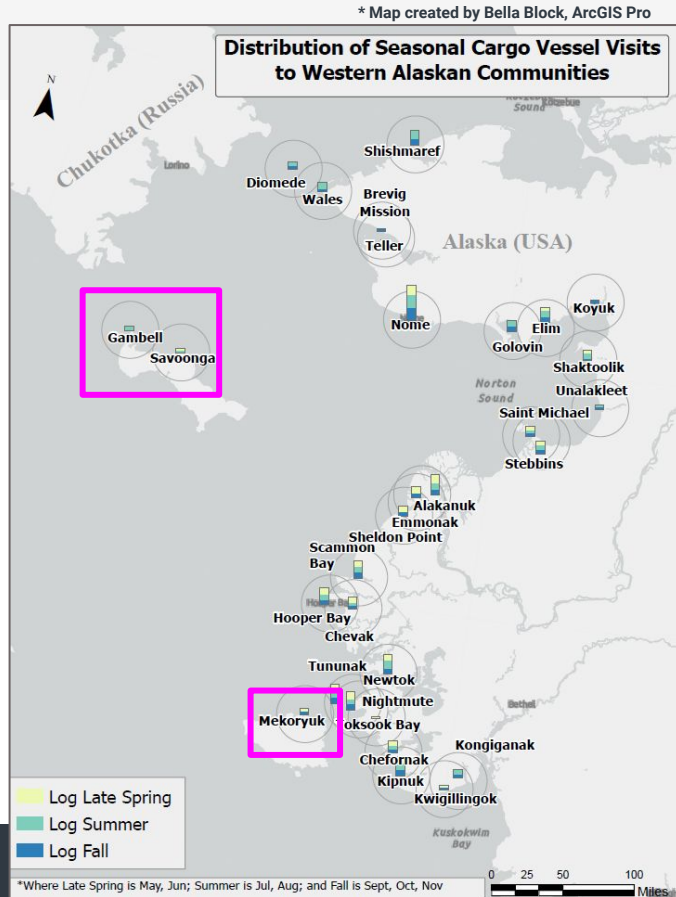
- Nome experiences the **most** cargo vessel traffic in the region

Study Findings: Western Alaska Community visits



- Nome experiences the **most** cargo vessel traffic in the region
- More Southern communities see **larger** rates of 'Late Spring' cargo vessel visits

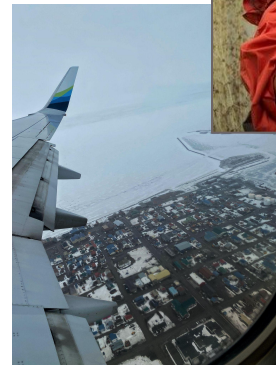
Study Findings: Western Alaska Community visits



- Nome experiences the **most** cargo vessel traffic in the region
- More Southern communities see **larger** rates of 'Late Spring' cargo vessel visits
- Smaller communities within ATBAs are likely serviced by **tug vessels** rather than cargo vessels

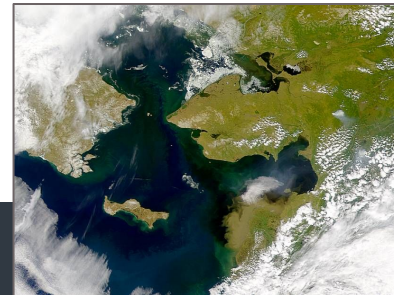
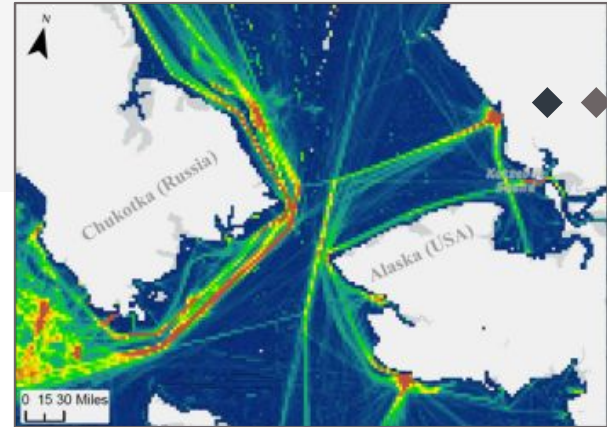
Community Outlooks

- Subsistence
 - ↓ numbers of harvestable animals
 - Changes to access
- Environment
 - ↑ Harmful Algal Blooms (HABs)
 - Changes in migration patterns
 - Climate Change
- Development
 - Port of Nome expansion
 - Graphite One mine
 - Gold Dredging
 - Tourism
- Monitoring
 - Lack of oversight



Key Findings

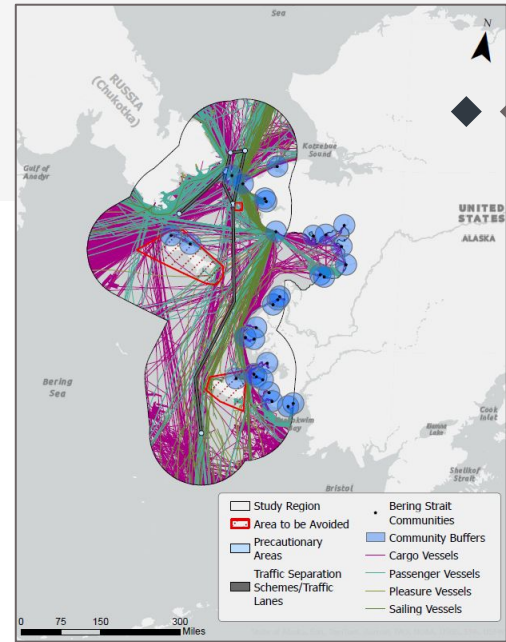
- Locations of major traffic, community traffic
- Transit Intensity affects adherence to ATBAs
- ATBAs changed vessel behavior
- Local Voices on Shipping, Subsistence, etc.



Vessel Types	Transit Intensity	
	All Years (8/8)	Mid Years(4-7/8)
Cargo+Tanker	17%↓ 0%↑ (n=6)	2%↓ 0%↑ (n=64)
Other	50%↓ 38%↑ (n=8)	26%↓ 13%↑ (n=23)
Tug	18%↓ 9%↑ (n=77)	27%↓ 10%↑ (n=84)

Next Steps:

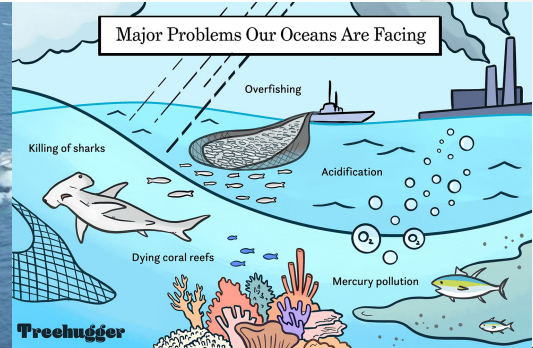
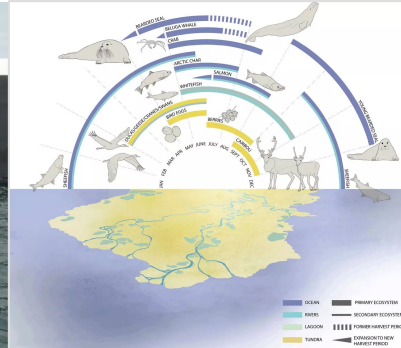
- Complete analysis on MXAK intervention within the Aleutian Chain
- Repeat the community summary process for tug vessels
- Provide research to the region in a user-friendly format



Policy Implications



- Showing effectiveness in changing vessel traffic patterns can lead to:
 - **Vessel and Operator Safety**
 - **Increased Subsistence Access**
 - **Environmental Protections**



TAKK!

Do you have any questions?

irblock@alaska.edu
+1 907 707 6472
ArcticTelecoupling.org

NSF Project # 2032786 Arctic Telecoupling Project
Alaska NSF EPSCoR travel award #OIA-1757348
UArctic Travel Grant: Arctic Congress Bodø 2024

