

EVALUATING NEW APPROACHES TO MONITOR SPOTTED SEAL HAUL OUT BEHAVIOR

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Funding Status and Timeline: This ongoing project is funded by the Alaska Sea Grant from 2024 – 2026. The first field season took place in Utqiagvik, AK from July – September 2024. Time-lapse camera monitoring components were previously collected and reported to the ISC. The project also relies on substantial funding and support from: AAOKH, the International Arctic Research Center at UAF, and the Ice Seal Research Program at the NSB-DWM.

Summary: The goal of this project is to improve our understanding of spotted seal ecology during the summer-fall open water period by employing two non-invasive technologies; time-lapse cameras (commonly known as ‘game cameras’) and small quad-copter style Uncrewed Aircraft Systems (sUAS, or commonly known as ‘drones’). Specifically, we will (1) quantify the effects of environmental conditions on spotted seal summer-fall haul out behavior; (2) quantify disturbance effects of drones on hauled out seals; (3) determine feasibility of using drones to monitor spotted seals; (4) improve and broaden understanding of spotted seal haul out behavior by weaving results with local environmental observations from Indigenous Knowledge holders and; (5) conduct outreach activities, including consultation with the ISC, participation in the Utqiagvik BARC science fair, and AAOKH newsletters and online reports.

Project Updates:

1. Spotted Seal Terrestrial Haul Out Behavior: Timelapse Cameras & AAOKH Observations



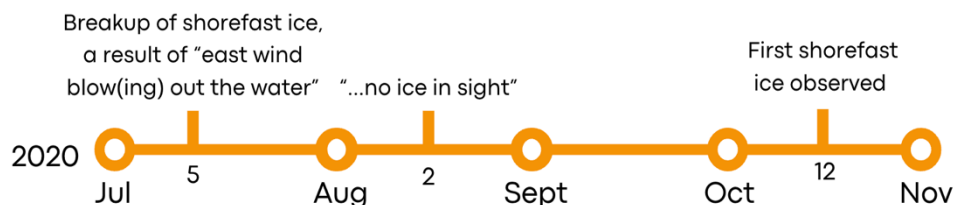
Preliminary results suggest that seals are more likely to haul out and in greater numbers in relatively **lower temperatures** (30-40 degrees Fahrenheit), when winds are coming from the **north to northeast** direction at **moderate speeds** (0-15 knots), and towards the end of the open-water season, with counts peaking in **late August/early September**.

Camera trap photo from August 27, 2020, showing ~25 seals hauled out on Oarlock Island, Dease Inlet. Photo credit: Andy Von Duyke & Donna Hauser.

Weaving Results with Utqiagvik AAOKH Observations by Billy Adams and Joe Leavitt: Examples

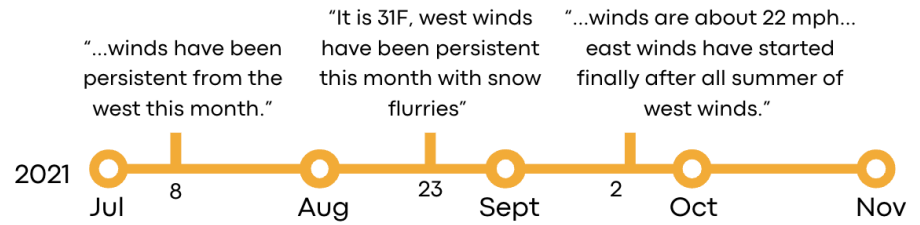
Sea Ice Observations by Joe Leavitt

Given that spotted seals can access haul outs once shorefast ice has dissipated, seals may have arrived at Oarlock as early as August 2nd and stayed until shorefast ice began forming in early October, as observed by Joe Leavitt. This is not captured by the camera traps, which were deployed from Aug 20th – Sept 5th, 2020.



Wind Observations by Billy Adams

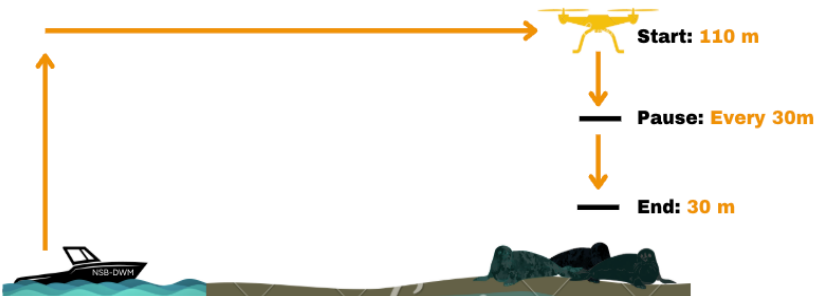
Despite being known haul out sites, no seals were detected on Oarlock Island during the 2021 season. Billy Adams' observations describe persistent west winds. West winds drive offshore transport in Dease Inlet, submerging the Oarlock Island haul out, helping to explain why no seals were detected throughout the 2021 season.



2. Spotted Seal Behavioral Response to Small Drones

During July-September of 2024, we surveyed haul out sites using a small drone deployed from an NSB-DWM research vessel. We conducted a total of **45 flights** over spotted seal haul outs in Dease Inlet, with counts ranging from **1 – 103 seals**.

Right: map of spotted seal haul outs/drone flight locations in Dease Inlet, Alaska. Below: drone flight pattern



Preliminary results suggest that drones can be flown over hauled out spotted seals as low as **31 meters** without causing a disturbance, suggesting potential future opportunities to non-invasively collect data on body condition, relative abundance, age distribution, and behavior



Scan to view
 drone footage
 from 2024



Right: Drone imagery of spotted seal haul out (82 seals) near the entrance to Pittalukruak Lake, Dease Inlet on August 20, 2024. Drone reached an altitude of 30.7 m before a disturbance occurred.

Next Steps:

- Finalize data analyses and publish findings for: 1. Terrestrial haul out behavior, and 2. Seal behavioral response to drones
- Plan 2025 field season in Utqiagvik, which will focus on community outreach & conducting drone flights to collect imagery for spotted seal body condition analysis

Requests of Ice Seal Committee: Please share any comments, questions, or suggestions. Thank you!