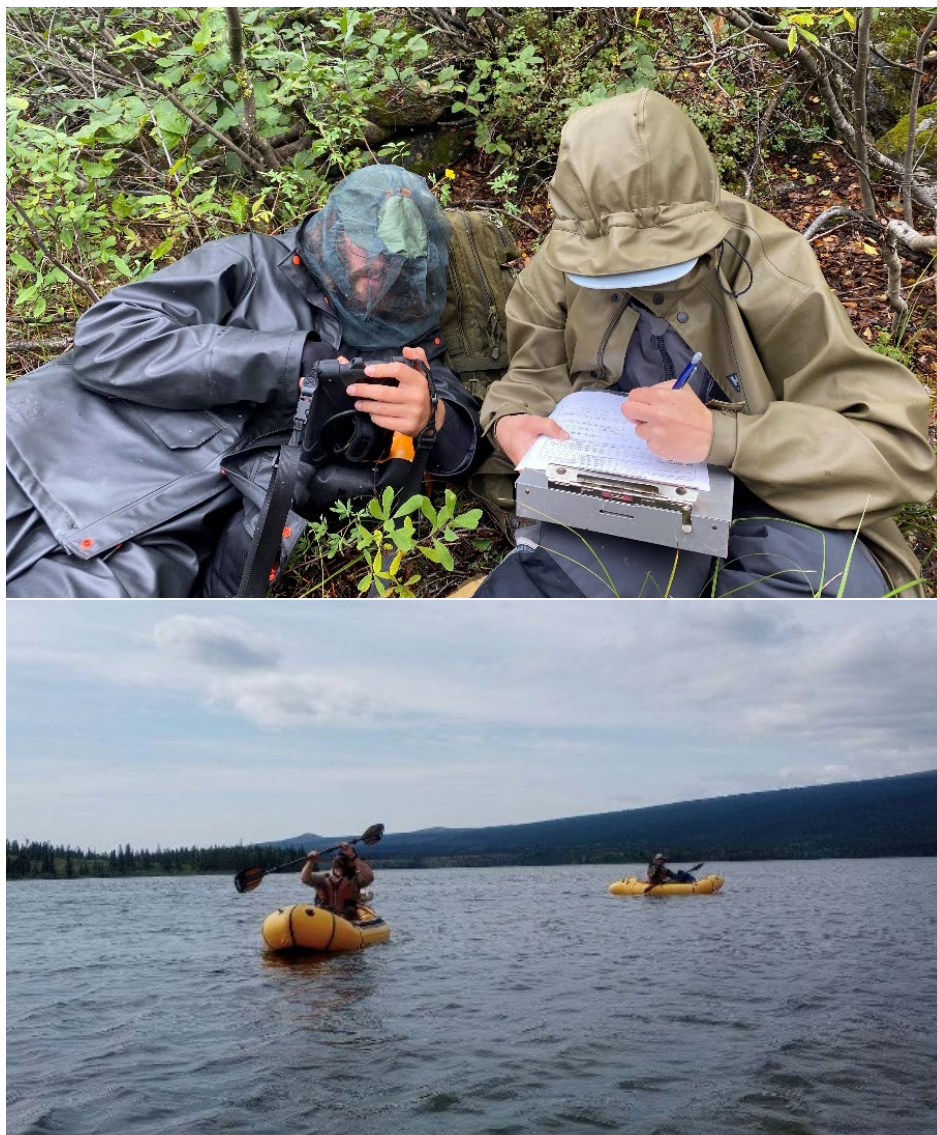




Invasive Plant Management in Gates of the Arctic National Park & Preserve

2024 Summary Report





ON THE COVER

From left to right, IPMT Crew lead Dusty Reed and SCA intern Sam Vrablic collecting botanical specimen vouchers of native plants at Walker Lake.

Photography by NPS/Toby Fried

ON THIS PAGE

Top: From left to right, SCA interns Josh Ward and Zoe Fornander inputting seed collection data on tablet and paper forms at Walker Lake. Bottom: From left to right, SCA interns Liam Irvin and Sam Schroeter surveying for Elodea at Lake Selby.

Photography by NPS/ Yoselyn Ayala and Benjamin Wright

Invasive Plant Management in Gates of the Arctic National Park & Preserve

2024 Summary Report

Yoselyn Ayala, Dusty Reed, and Benjamin Wright

National Park Service
Gates Of the Arctic National Park & Preserve
101 Dunkel Street
Fairbanks, AK 99701

January 2025

U.S. Department of the Interior
National Park Service
Alaska Regional Office
Anchorage, Alaska 99501

The National Park Service publishes a range of reports that address natural resource topics. These reports are of interest and applicability to a broad audience in the National Park Service and others in natural resource management, including scientists, conservation and environmental constituencies, and the public.

These reports are used to disseminate comprehensive information and analysis about natural resources and related topics concerning lands managed by the National Park Service. They support the advancement of science, informed decision-making, and the achievement of the National Park Service mission.

All manuscripts in the series receive the appropriate level of peer review to ensure that the information is scientifically credible, technically accurate, appropriately written for the intended audience, and designed and published in a professional manner.

All reports must have a peer review statement that has been approved by the Peer Review Manager of the report. You can choose or combine parts from the four listed statements below, or create your own.

This report received informal peer review by subject-matter experts who were not directly involved in the collection, analysis, or reporting of the data. Data in this report were collected and analyzed using methods based on established, peer-reviewed protocols and were analyzed and interpreted within the guidelines of the protocols.

Views, statements, findings, conclusions, recommendations, and data in this report do not necessarily reflect views and policies of the National Park Service, U.S. Department of the Interior. Mention of trade names or commercial products does not constitute endorsement or recommendation for use by the U.S. Government. This report is available in digital format from the NPS Datastore.

Please cite this publication as:

Yoselyn Ayala, Yoselyn, Dusty Reed, and Benjamin Wright. 2025. Invasive Plant Management in Gates of the Arctic National Park & Preserve: 2024 Summary Report. National Park Service, Anchorage, AK

Contents

	Page
Abstract	iv
Acknowledgements.....	v
List of Terms.....	v
Introduction	1
Methods	3
Seeds of Success	4
Elodea Surveys	6
Results.....	8
Discussion	12
Literature Cited	13

Figures

	Page
Figure 1. Gates of the Arctic National Park & Preserve Boundary from the Park Brochure.....	2
Figure 2. Seeds of Success work done at Walker Lake 2024	9
Figure 3. Elodea Survey done at Walker Lake 2024.....	10
Figure 4. Elodea Survey done at Lake Selby 2024.....	11

Tables

	Page
Table 1: Native Plant seeds scouted and collected for Seeds of Success at Walker Lake 2024.	8

Abstract

This report describes the work performed by the Invasive Plant Management Team (IPMT) at Gates of the Arctic National Park & Preserve (GAAR) in July and August of 2024. The IPMT crews involved on these work trips were three NPS crew leads and six Student Conservation Association (SCA) interns. The two objectives for this field season were to collect native plant seeds as part of the Seeds of Success (SOS) protocol and survey for the invasive aquatic plant *Elodea*. For SOS, only three different plant species were collected in the Walker Lake area due to inclement weather and plants being past maturity. *Elodea* surveys were conducted at Walker Lake and Lake Selby, and none was found at either lake.

Acknowledgements

The Invasive Plant Management Team would like to thank Ellen Lyons for being our point of contact and approving our work in GAAR. We would also like to thank Amy Larsen for suggesting which lakes should be surveyed for Elodea and Jeff Rasic for coordinating with us to collect seeds in the park. We would also like to thank Krista Bartz for setting up the crews with dragonfly collection equipment. A big thank you to Paul Anderson for coordinating our flights to and from GAAR and for serving as the main pilot for all crews and pilot Jonathon Hinson for flying the weeds crew to Bettles. We would also like to thank NPS pilot Brian Manning and USFWS pilot Bret Nigus for picking up the weeds crew after being delayed at Walker Lake due to poor aviation conditions.

List of Terms

BLM	Bureau of Land Management
USFWS	U.S. Fish & Wildlife Service
GAAR	Gates of the Arctic National Park & Preserve
GIS	Global Information System
GNSS	Global Navigation Satellite System
IPMT	Invasive Plant Management Team
NPS	National Park Service
PFD	Personal Flotation Device
SCA	Student Conservation Association
SOS	Seeds of Success
SWAN	Southwest Alaska Network
UAA	University of Alaska Anchorage
USGS	United States Geological Survey
YUGA	Yukon-Charley Rivers Preserve and Gates of the Arctic National Park and Preserve

Introduction

The Alaska Regional Invasive Plant Management (IPMT) is one of 17 established IPMT in the country. Each IPMT serves multiple parks within a specific broad geographic region. They work to identify, develop, conduct, and evaluate invasive species removal projects and undertake appropriate native species restoration efforts. Due to the remote nature of many of the Alaska park units and the associated high cost of travel, the Alaska IPMT does not always have the funding to have a centralized crew that travels to each park in its region like a lot of the lower 48 crews. Historically the teams have worked cooperatively with partner parks to train existing park staff, partially fund seasonal employees, and support in park internship positions.

IPMT Liaison Anna O'Brien received Bipartisan Infrastructure Law (BIL) and Inflation Reduction Act (IRA) project funding that allowed the IPMT to hire three term positions beginning in spring 2024. These new hires served as IPMT Crew Leads who managed three separate IPMT field crews for the 2024 field season. These three crews were the Early Detection and Rabid Response for Terrestrial Invasive Plants (Weeds) Crew, the Aquatic Invasive Plants (*Elodea*) Crew and the Seeds of Success (Seeds) Crew. Each Crew consisted of one crew lead and two Student Conservation Association (SCA) interns. These crews work collaboratively with the 16 National Park units in Alaska. The needs of each park determine the work schedule for the Alaska IPMT crews. While each of these crews have a specialty, they are all cross trained in the other crews' specialties and other niche needs to better serve the parks.

Gates of the Arctic National Park & Preserve (GAAR) lies north of the arctic circle (Figure 1) and is composed of 8,472,505 acres of which 7,523,897 acres are designated wilderness. It is considered the least visited National Park in the country with 11,045 recreational visitors in 2023. GAAR does not contain any roads or trails and is accessed by foot, via small aircraft, and small watercraft. Visitors can choose to do day trips with local air taxis or overnight trips. Visitors who decide to do overnight trips will need to plan to be self-reliant since there are no amenities anywhere inside of the park. There are limitless recreational opportunities in the park: fishing in alpine lakes, floating down one of the numerous rivers, wildlife viewing, hiking, and camping.

In 2023, Jeff Rasic, who was the park's resource manager at the time, reached out about wanting to start collecting seeds for the Ambler Road Project. The Ambler Road Project proposes the construction of a 211-mile road that would extend from Mile 161 of the Dalton Highway west towards the Ambler Mining District. This road would cross through the National Park less than five miles south of Walker Lake, making Walker Lake a good location for native seed collection. The goal was for the IPMT crew to collect seeds from Walker Lake starting in 2023 but due to some flight complications the crew drove up the Dalton highway and collected seeds from the Prospect Creek Area (Ambler Road Intersection on BLM Land) instead. The goal for 2024 was to collect seeds at Walker Lake. The seeds crew was tasked with scouting for native plant seeds population and the weeds crew would return a month later to make seeds collections.

Another goal for the 2024 season was to survey for the invasive aquatic weed *Elodea*. The two species of elodea that are being surveyed for are *Elodea canadensis* and *Elodea nuttallii*. Justin Fulkerson from the University of Alaska Anchorage (UAA) surveyed for *Elodea* in 2019 at Walker Lake and none was detected. When the IPMT reached out to GAAR the park listed Walker Lake and Lake Selby as top priorities for *Elodea* surveys. The elodea crew was tasked with prioritizing the southern half of Walker Lake starting from the public use cabin, and the south side of Lake Selby around the outflow area. The elodea crew also collected dragonfly larva at the request from the Inventory and Monitoring Network (I&M). Dragonfly collections are identified to species and are also used to test the amount of mercury found in the waterways.

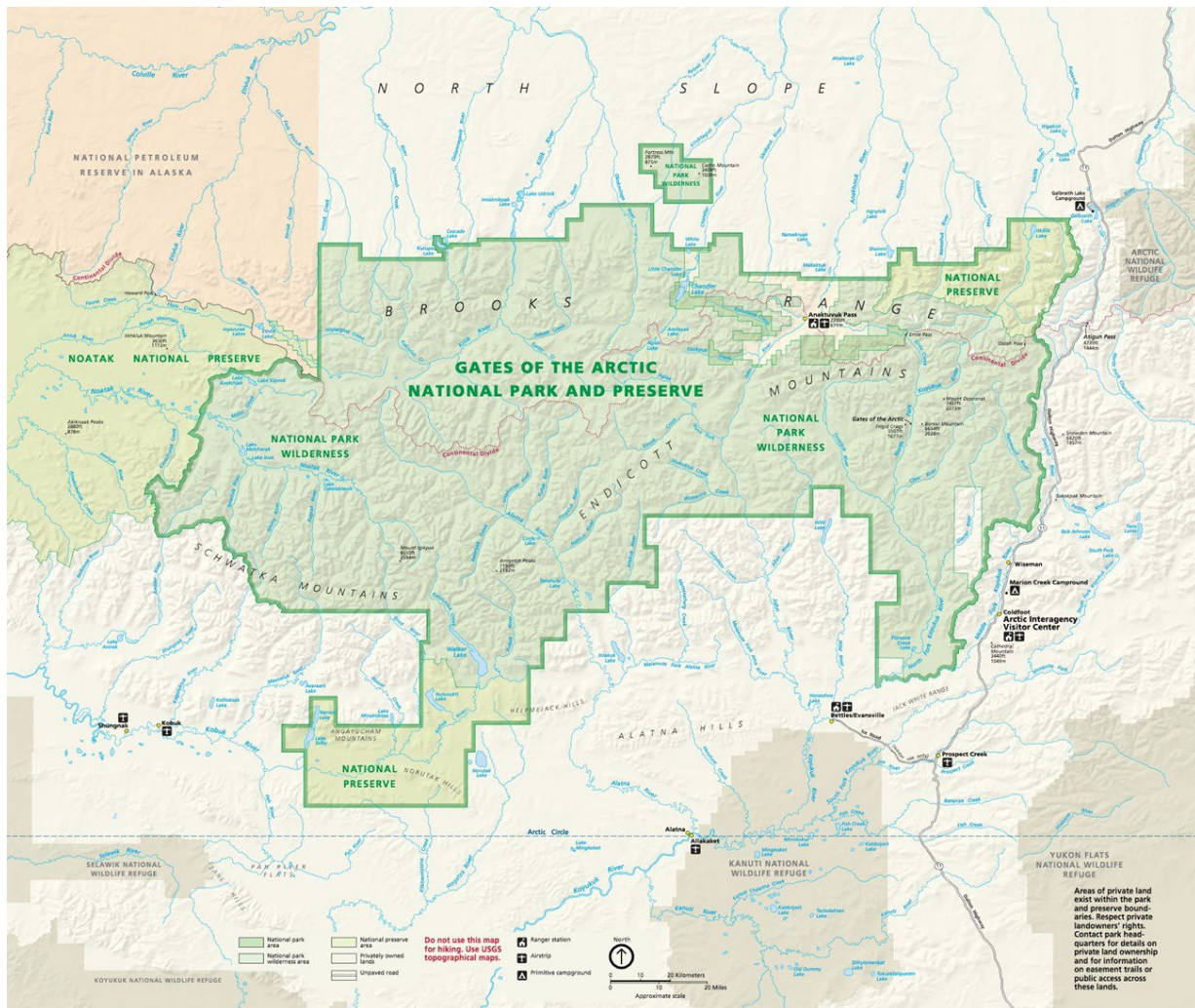


Figure 1. Gates of the Arctic National Park & Preserve Boundary from the Park Brochure

Methods

The 2024 IPMT field work that occurred in Gates of the Arctic National Park and Preserve was conducted during two work trips that took place on July 15th – July 22nd and August 12th – August 21st. Fieldwork consisted of two primary components: Seeds of Success and Elodea Surveys. Locations were assigned by IPMT Liaison Anna O’Brien after coordination with the GAAR staff.

Methods for Seeds of Success data collection and processing followed the Bureau of Land Management’s (BLM) Technical Protocol for The Collection, Study, And Conservation of Seeds from Native Plant Species for Seeds of Success (BLM 2024). This protocol outlines methods for data collection in the field and processing data. Data was collected using Samsung Galaxy Tab Active 3 paired with a Leica GNSS Receiver. Spatial data and attribute data was collected using Esri’s ArcGIS Survey 123.

Methods for Elodea Survey data collection and processing followed the Standard Operating Procedure for Elodea Detection in Alaska Lakes (Fulkerson 2023). This protocol outlines methods for data collecting in the field and processing data. Handheld Garmin units, GPSmap76CS x, were used to navigate to pre-generated sampling stations on the lakes. Data was collected using Samsung Galaxy Tab Active 3. Spatial data and attribute data was collected using Esri’s ArcGIS Field Maps.



SCA intern Toby Fried collecting an herbarium voucher specimen

Seeds of Success

The first seeds trip to GAAR was conducted by the seeds crew, which consisted of crew lead Dusty Reed and SCA interns Toby Fried and Sam Vrablic. They were tasked with scouting for potential seed collection populations and to collect any seed if possible. No seed scouting or collections had occurred at Walker Lake prior to 2024 so the crew focused primarily on scouting populations of native plants that would then be collected by the weeds crew later in the summer. However, when viable seed was found during the trip, the opportunity to collect was taken. The seed crew was able to survey for three and a half days; the final survey day was cut short because the crew had to fly to Bettles earlier than expected.



Crew Lead Yoselyn Ayala counting fruits on monkshood for scouting form

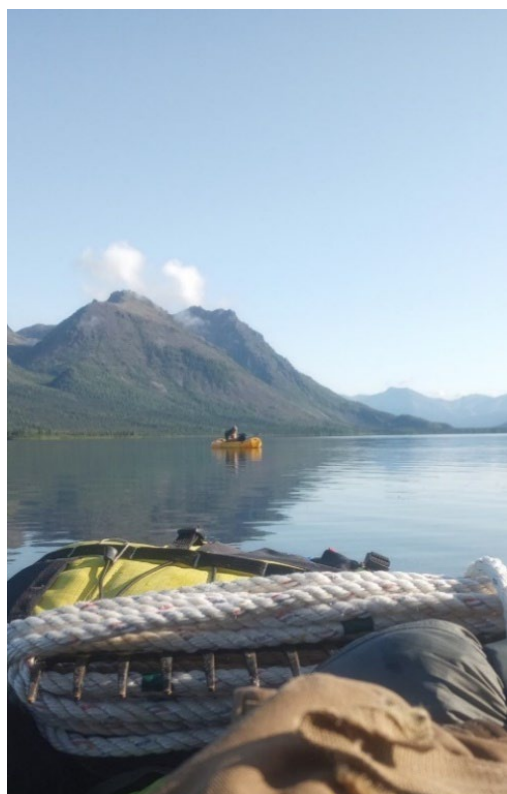
Much of the land in the survey area consisted of either shrubby alder thickets or rocky lichen fields. Due to the landscape around Walker Lake and the limited information about potential seed populations the crew's objective was to cover as much ground as possible. On the first day the crew hiked north up the flanks of the 3,651-foot peak immediately north to tree line, east to the Kobuk River, and then back to the cabin along the north edge of the small pond between the Kobuk and Walker Lake. The second day the crew hiked along rolling ridges south and eventually reached the shore of Walker Lake, approximately two miles south along the shore from the cabin, then returned along the edge of the wetlands between Walker Lake and the Kobuk River. On the third day the crew

paddled the canoe, stashed at the cabin at Walker Lake, south along the shoreline to the outlet stream, and then continued west to the south westernmost point of the lake.

The second trip taken in August was made by the weeds crew which consisted of crew lead Yoselyn Ayala and SCA interns Joshua Ward and Zoe Fornander. The objective of this trip was to re-scout the populations mapped by the previous crew and make collections of any native plants that had viable seeds. The crew stayed in the public use cabin and hiked to several of the scouting points. Since there are no established trails in GAAR, hiking around Walker Lake took additional navigation efforts to try to avoid any of the thick alder brush and marshy wetlands in the area. Dusty Reed also shared a map with the crew with routes his crew took to help the weeds crew navigate the area. Many scouting points were not reached by the weeds crew because some scouting points were easily accessible using a canoe but due to inclement weather the weeds crew was unable to use it to reach those specific points and they could not be accessed overland within an appropriate time limit. The scouting points that were reached were re-scouted to update population data and if seeds were mature, the crew collected seeds and filled out appropriate forms.

Elodea Surveys

The elodea crew consisted of crew lead Benjamin Wright and SCA interns Liam Irvin and Sam Schroeter. The two lakes that were surveyed for *Elodea* were Walker Lake and Lake Selby, during the first trip to GAAR. *Elodea* sampling was conducted relying on four pieces of equipment: a handheld Garmin unit (GPSMAP 76CSx), a GPS-capable tablet with the Field Maps app, an aquatic vegetation sampler, and a watercraft. The aquatic vegetation sampler is made up of two garden rake heads welded together with a rope attached to the base so it can be retrieved. The type of watercraft used in elodea surveys depends on the park and the body of water, pack rafts were used at Lake Selby and a canoe staged near the cabin was used at Walker Lake.



SCA intern Sam Schroeter navigating to elodea survey point on Lake Selby.

Typically, sampling was conducted by two individuals while a third recorded the results. Most sampling at Walker Lake and Lake Selby was done using visual surveys due to clear water conditions, however rake tosses were used if visibility was limited. The first day, after the entire crew was flown to Walker Lake, was spent testing and verifying the canoe's condition. The second day had ideal weather conditions, so *Elodea* surveys were done the entire workday. On the third day at Walker Lake the crew scouted for Seeds of Success and collected dragonfly samples instead of elodea due to strong winds and waves. Dragonfly sampling followed the Dragonfly Mercury Project Sampling Guide for the Collection of Dragonfly Larvae Samples from National Parks for Mercury Analysis (Nelson and Eagle-Smith 2024).

At Lake Selby, the first day involved dragonfly larvae sampling in the morning (Figure 5) and *Elodea* sampling in the afternoon. The second day was spent surveying for *Elodea* and the crew was able to survey the target area due to good weather. However, the crew was then flown back to Bettles in the evening due to weather considerations.



SCA interns Sam Schroeter and Liam Irvin collecting dragonflies for mercury project at Walker Lake.

Results

During the 2024 field season, SOS collections and *Elodea* surveys were conducted in Gates of the Arctic National Park & Preserve. Many of the plants re-scouted during the second trip had already dropped their seeds which led to many of the plant populations not having enough viable seeds to make a complete collection. The landscape around Walker Lake proved laborious to navigate and a lot of areas did not have numerous populations of grasses and forbs to collect from. Adequate populations of forbs and grasses were found at tree line on the mountain and significant populations of sedges were found along the shoreline and in some wetland areas south of the cabin. Along the lakeshore the aster *Eurybia sibirica* was the only forb found in large enough populations to collect. Overall, nine different native plant species were scouted, and three species were collected (Table 1). The sedges proved to be difficult to collect due to an increase of rainfall during the second work trip. The sedges that were located near the lake had gotten inundated due to the increased water level of the lake and the sedges found further from the lake had flooded making it extremely difficult to walk in the vicinity without getting stuck and sinking into the soil. The populations that were reached via canoe by the first crew were not re-scouted due to inclement weather, so those populations were not collected. There was also one scouting point that had the incorrect location information. This error was missed during post processing and was caught when making the map for this report, the scouting point is outlined by a red square on the map below (Figure 2). To fix this error additional steps will need to be taken with the help of Kristy Snyder, the BLM GIS Analyst.

Table 1: Native Plant seeds scouted and collected for Seeds of Success at Walker Lake 2024.

Species			SOS Survey Location
Latin name	Common Name	USDA Plant Code	Walker Lake
<i>Aconitum delphiniifolium</i>	larkspurleaf monkshood	ACDE2	S
<i>Artemisia arctica</i>	boreal sagebrush	ARAR9	S
<i>Carex aquatilis</i>	water sedge	CAAQ	X
<i>Carex limosa</i>	mud sedge	CALI7	X
<i>Carex rotundata</i>	round sedge	CARO7	S
<i>Carex saxatilis</i>	rock sedge	CASA10	S
<i>Chamerion angustifolium</i>	fireweed	CHAN9	S
<i>Eurybia sibirica</i>	arctic aster	EUSI13	S
<i>Festuca altaica</i>	Altai fescue	FEAL	X

Key: S= Scouted only, X= Scouted and Collected

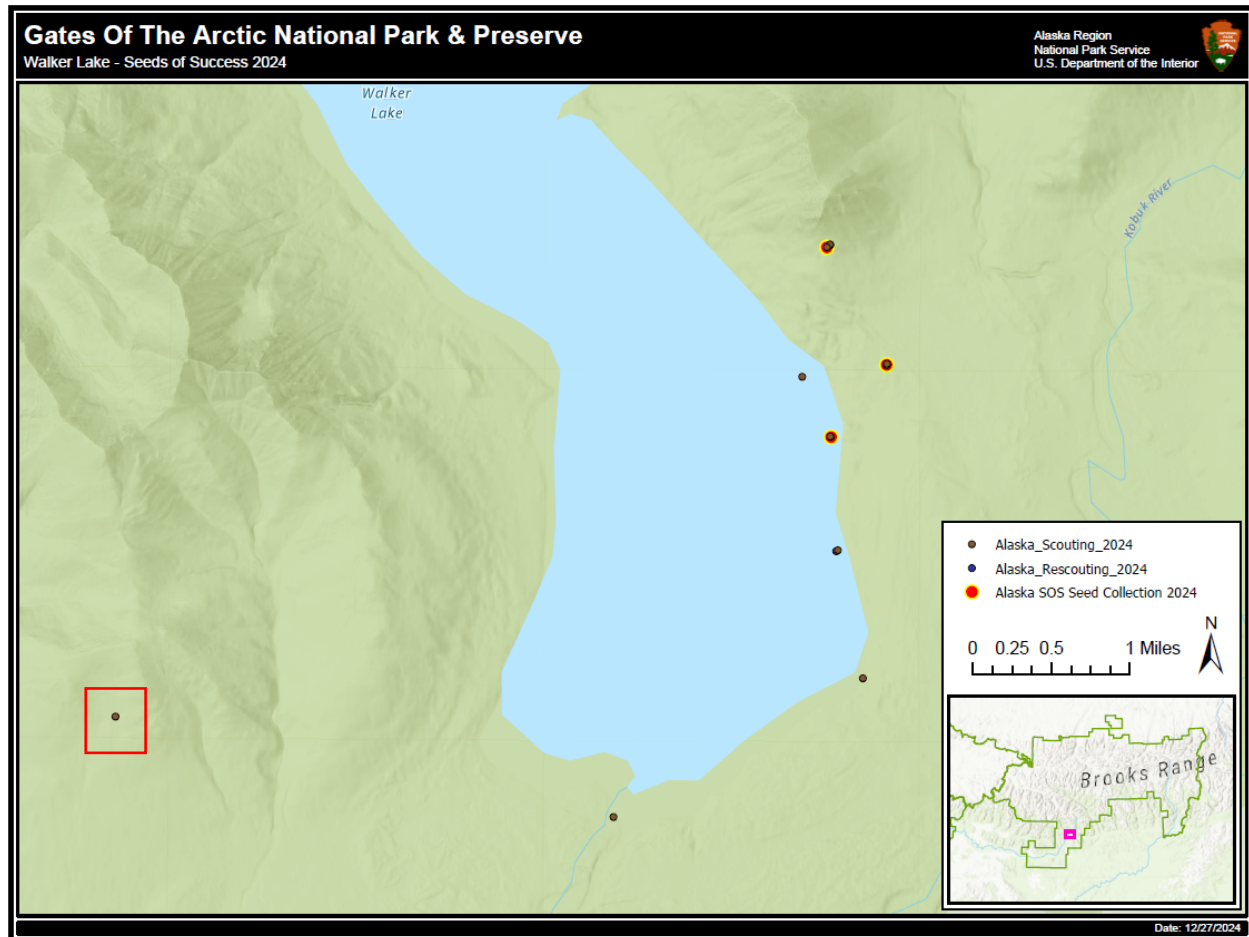


Figure 2. Seeds of Success work done at Walker Lake 2024

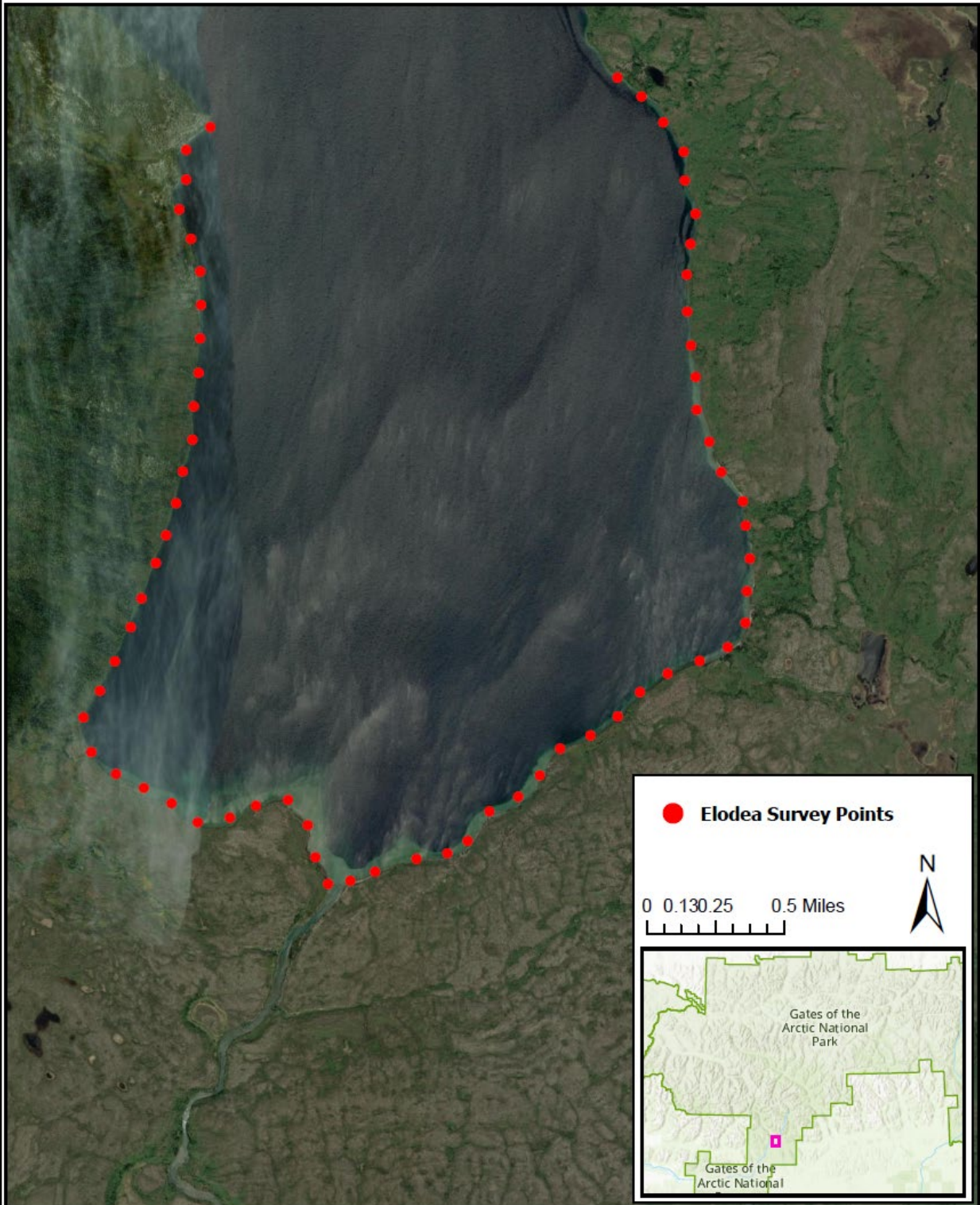
Both Walker Lake and Lake Selby were surveyed for elodea and no elodea was found. However, these lakes should continue to be surveyed. There were some areas with inaccessible survey points, these were usually at the lake outflow or nesting waterfowl areas. We also realized during post processing that some of the survey points at Lake Selby had been lost due to either human error or equipment malfunction. The map shown in Figure 8 outlines the area with missing data with a red rectangle.

The elodea crew also sampled for dragonflies at both lakes and made collections at both lakes. At Walker Lake 15 dragonflies were collected for individual sampling. At Lake Selby a total of 70 dragonflies, 20 to be used for individual sampling and 50 to be used in group sampling were collected. These dragonflies were then delivered to Krista Bartz, the Aquatic Ecologist with the Southwest Alaska Network (SWAN).

Gates Of The Arctic National Park & Preserve

Walker Lake - Elodea Survey 2024

Alaska Region
National Park Service
U.S. Department of the Interior



Date: 12/30/2024

Figure 3. Elodea Survey done at Walker Lake 2024.

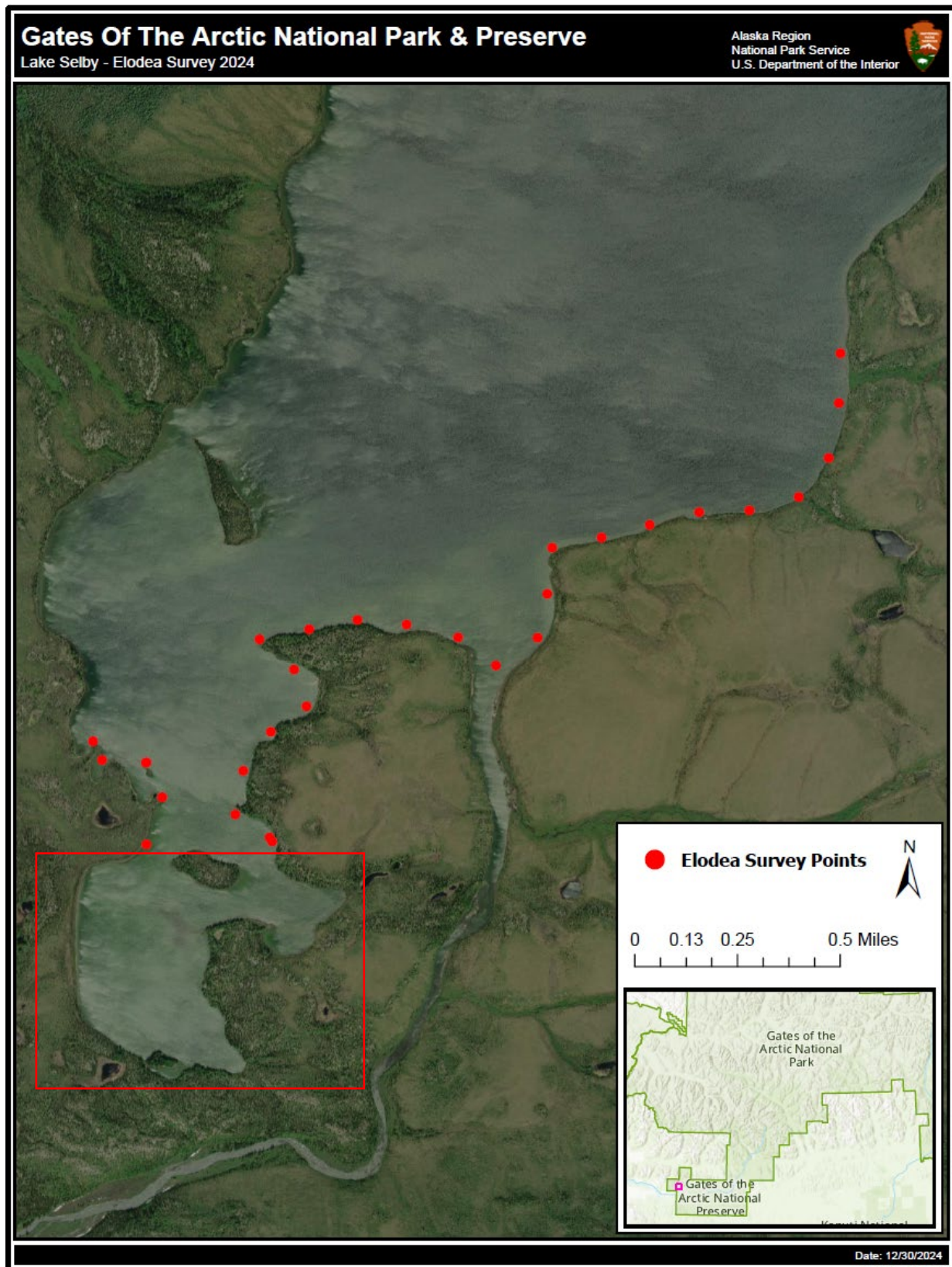


Figure 4. Elodea Survey done at Lake Selby 2024. The red rectangle encompasses where surveys were done for Elodea, but the data were lost.

Discussion

Elodea surveys were successful with none found. While this is good news, both Walker Lake and Lake Selby should continue to be monitored due to the high use of those lakes. After conversations with Amy Larsen, the YUGA Aquatic Ecologist, she recommended that the IPMT should return and survey the entirety of the Walker Lake perimeter and around Swan Lake located within Walker Lake. It would be ideal to have a crew survey the lakes yearly.

The canoe at Walker Lake is a great resource however crews should not assume it will be in useable condition or that weather will cooperate. During the first trip the weather was favorable and traveling in canoe was a very convenient way to scout for native plants. On the second trip to Walker Lake the weather had shifted to rainy, foggy, and windy conditions making it unsafe to travel by canoe and making it difficult to reach some of the scouted locations on the water's edge. It's always advisable to carry repair materials for any watercraft that may end up being used whether that is a pack raft, or a boat stored at a survey location. There is also an aluminum rowboat at Walker Lake although the state of its seaworthiness and condition of the oars is unknown. For future crews working in GAAR, it would be wise to bring their own field-tested watercraft and PFDs.

Similarly, the Seeds of Success scouting was successful with several native plant populations scouted. Unfortunately, by the time a crew returned to collect seeds most populations had already dropped their seeds and there weren't enough viable seeds to make a collection. Due to this, limited collections were made in 2024. Justin Fulkerson, the lead botanist for UAA, also collects native plant seeds using the SOS protocol. Anna O'Brien spoke with him after the field season, and he also had issues collecting seed at a similar latitude to Walker Lake (on the Dalton Highway) due to the early seed set in the region. For the future, in addition to scouting more locations, collections could be done earlier in the year to increase the likelihood of there being collectable seed, however this runs the risk of arriving before many seeds are ready to collect.

The Weeds Crew work trip was scheduled to take place August 12th – August 19th with a planned pickup at Walker Lake on August 18th. Due to inclement weather the crew was picked up two days later than anticipated on August 20th. The Weeds crew had packed as lightly as possible due to flight weight limitations and had planned to eat dinner in Fairbanks on the 18th. Ultimately these decisions led to the crew having limited food while they waited to be picked up. The three crew members managed to combine enough food for an additional two breakfasts, two dinners, and one lunch, although they ended up in a calorie deficit. The public use cabin they were staying in had a container of emergency food that was all expired however if needed the dried pasta and rice would have been consumed. For future trips to GAAR it would be beneficial for crews to take additional food in case of another pickup delay due to weather, and it would be beneficial to have GAAR staff or future IPMT crews leave some emergency food in the cabin if possible. Bringing fishing gear could also be a viable option since Walker Lake has lots of tasty fish to eat.

Literature Cited

Alaska Department of Natural Resources (n.d.). Ambler Road Project. Retrieved January 3,2025 from [Ambler Road Project – Division of Mining, Land, and Water](#)

Fulkerson, J.R. 2023. Standard Operating Procedure for *Elodea* Detection in Alaska Lakes. Alaska Center for Conservation Science, University of Alaska Anchorage. 28 pages.

National Park Service (n.d.). Stats Report Viewer. Retrieved December 26,2024, from [Stats Report Viewer](#)

Nelson, Sarah J., and Eagles-Smith, Collin. 2024. Dragonfly Mercury Project Sampling Guide for the Collection of Dragonfly Larvae Samples from National Parks for Mercury Analysis. U.S. Geological Survey et al. 18 pages.

US Bureau of Land Management. 2024. Seeds of Success Technical Protocol for the Collection, Study, and Conservation of Seeds from Native Plant Species. Bureau of Land Management. 56 pages.