

Field Work in Review

JBER Summer 2022

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Introduction

- We visited 70 of the 129 original field sites, plus 14 new ones, and took 383 data points
 - Field work began on June 6th and ended on September 13th
- There were sometimes challenges in making a call for wetland or upland based on soils and hydrology
 - Glacial landscape
 - Weather conditions
 - Seasonal frost layer
- Some Alaskan wetlands are difficult to delineate and require a specialized skillset
 - Some spruce forests presented unique challenges
 - Timing can have big effects

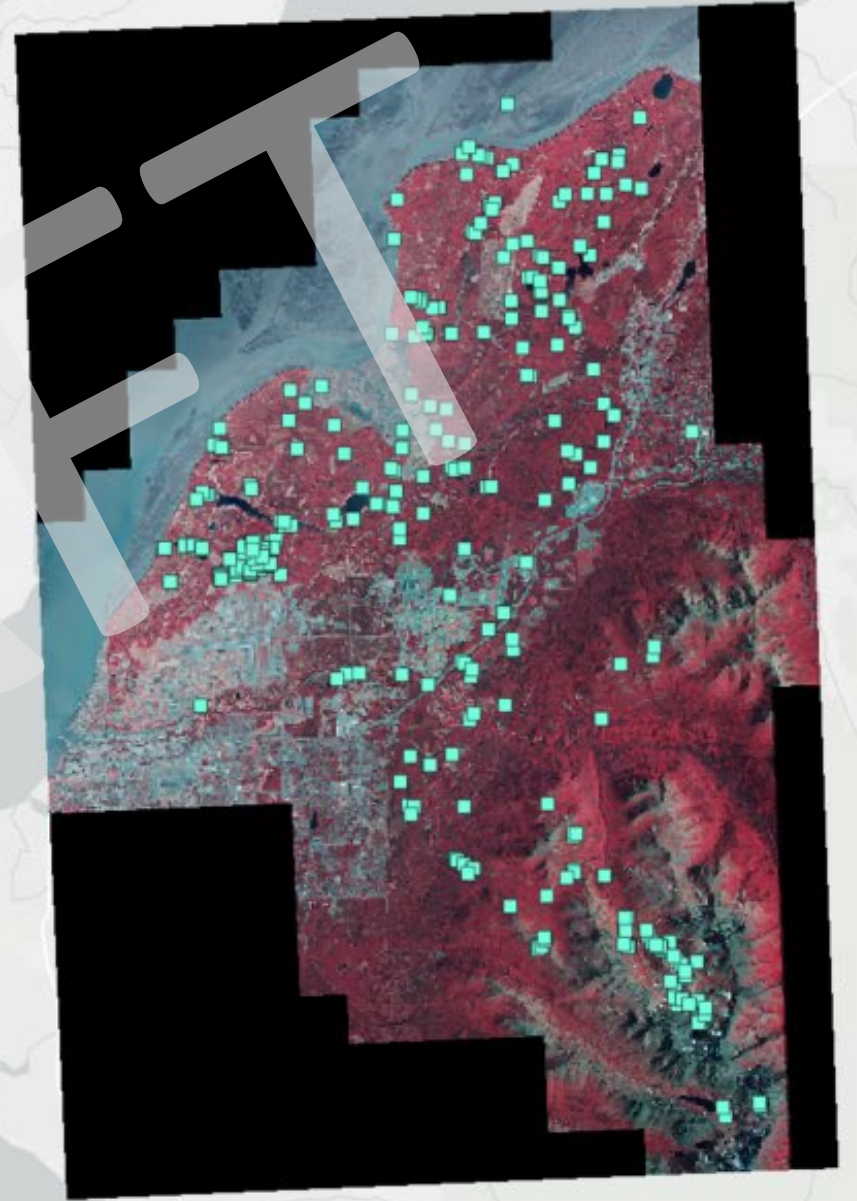
Today's topics

- Pre-field work
- Field procedure
- Field conditions
- Field data examples

Each slide has page numbers, so please note them if you have a question

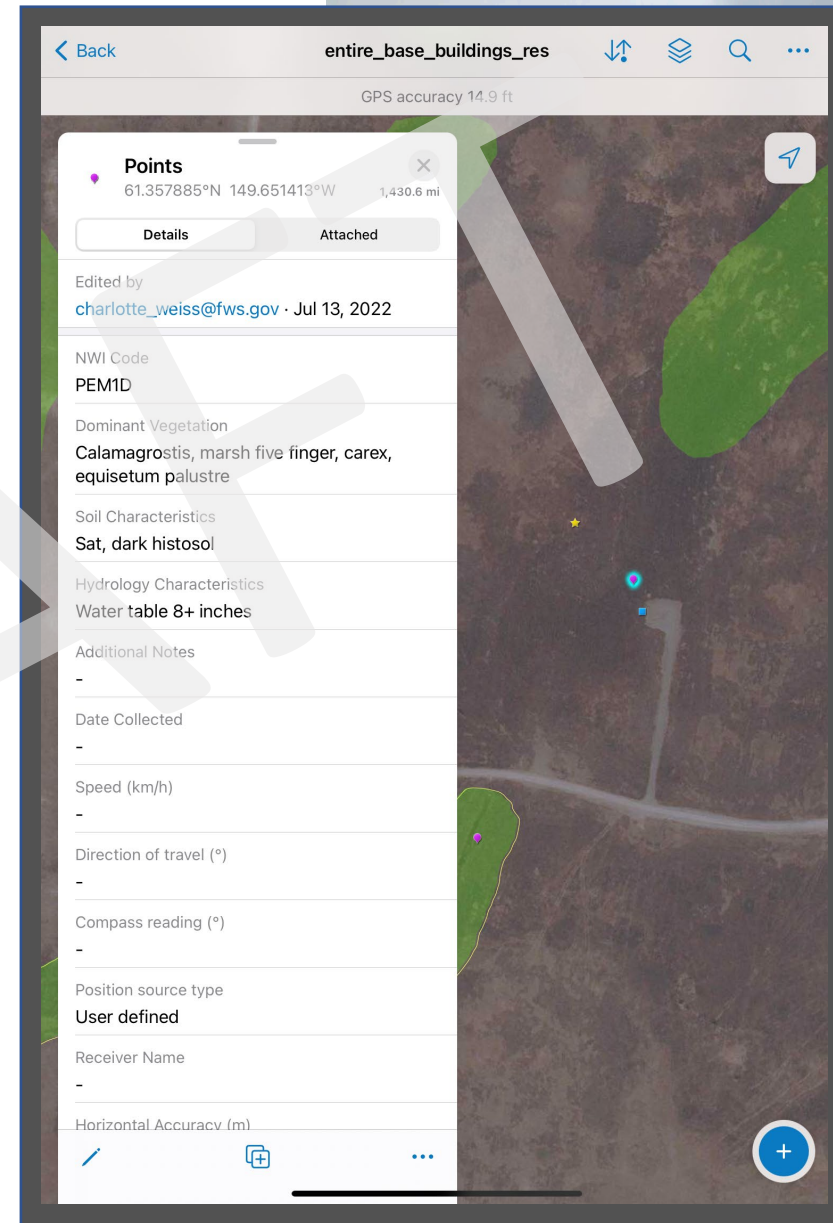
Pre-field work

- Digitized locations for all existing wetland data
 - 448 Points from 1995-2019
- Identified field sites
 - Complicated habitats
 - Unclear image signatures
 - Obvious wetlands and uplands
 - Redundancy
- Trainings
 - Bear safety
 - Range safety/unexploded devices
 - USACE wetland delineation training



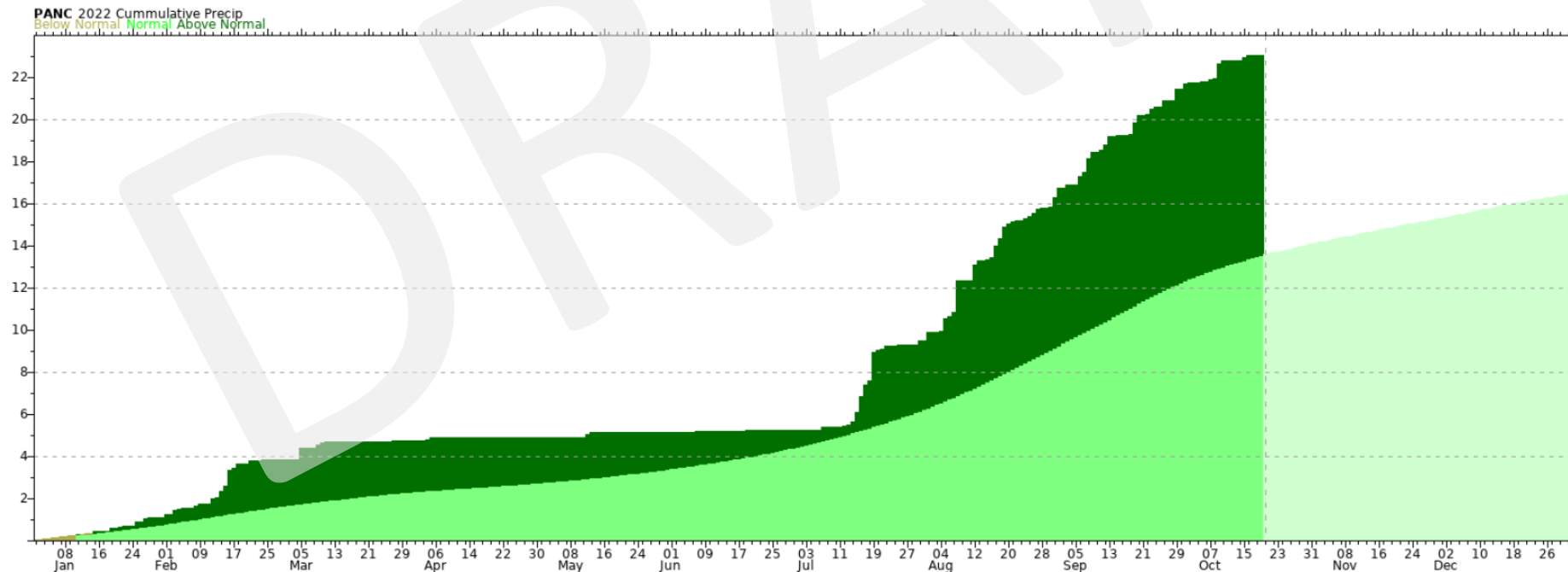
Field procedure

- Assess vegetation, soils, and hydrology
- Take photo points
- Collected GPS locations
- Extra discussion on strange conditions or relevant history (unusual precipitation, treefall, etc.)
- Make a call for wetland or upland (including Cowardin code)



Field Conditions

- First half of summer was very dry, and the second half very wet!
 - Made hydrology calls more difficult
- Some difficult terrain
 - Scrubby, hilly, painful plants
 - Could not access some places





Field Data Examples



Environments

- Bluejoint grass fields
- Spruce stands
- Mosaics
- Windthrow
- Alpine Swales
- Bogs/Fens
- Riverine
- Upland



Bluejoint Grass Fields

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Bluejoint Grass Fields

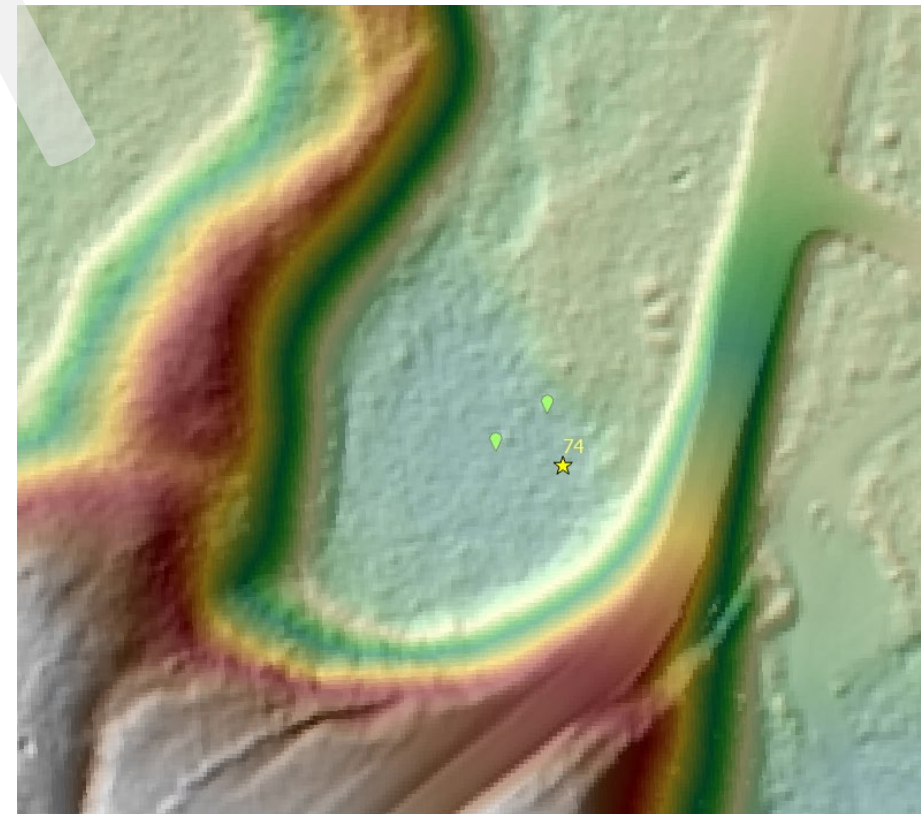
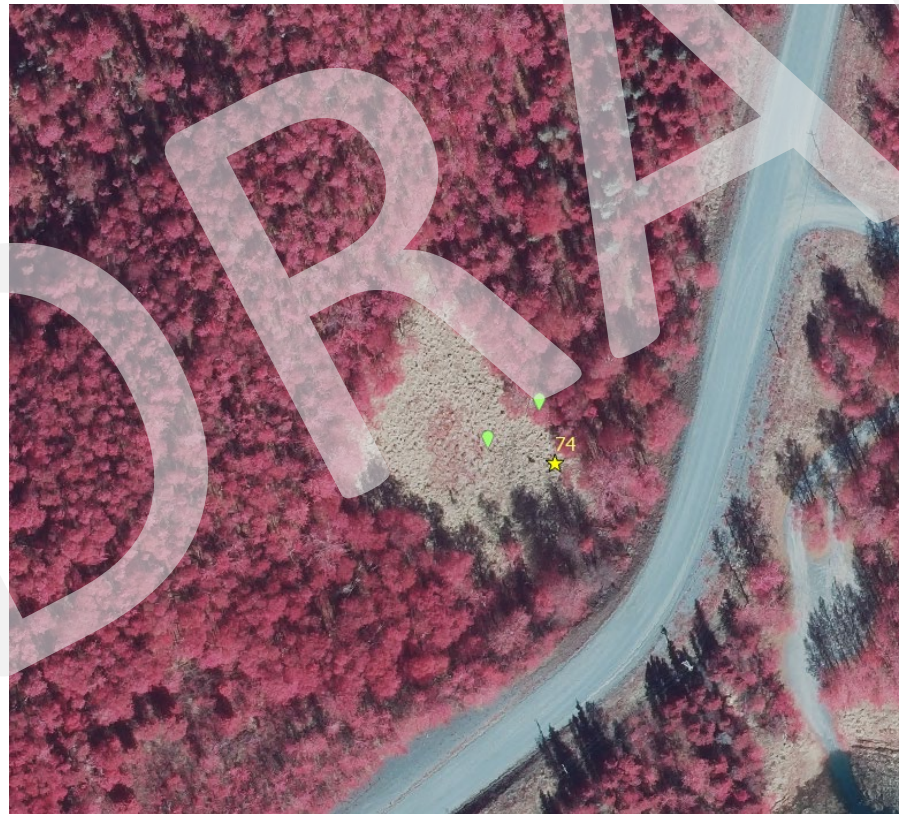
- Confirmed variation between different sites
- Will rely on landscape clues and association to determine wetland status, water regimes, and boundaries
 - Depressions
 - Mild slopes
 - Adjacent to obvious wetlands
 - Connectivity between highly saturated areas



Bluejoint Grass Fields - Depressions

- Representative example of isolated bluejoint grass wetlands– standing water, organic soils
- Overall depression, slight elevation change to northeast transitions to upland
- Photo captures border between grass wetland (standing water) and upland (healthy upland vegetation including birch trees and high bush cranberry)

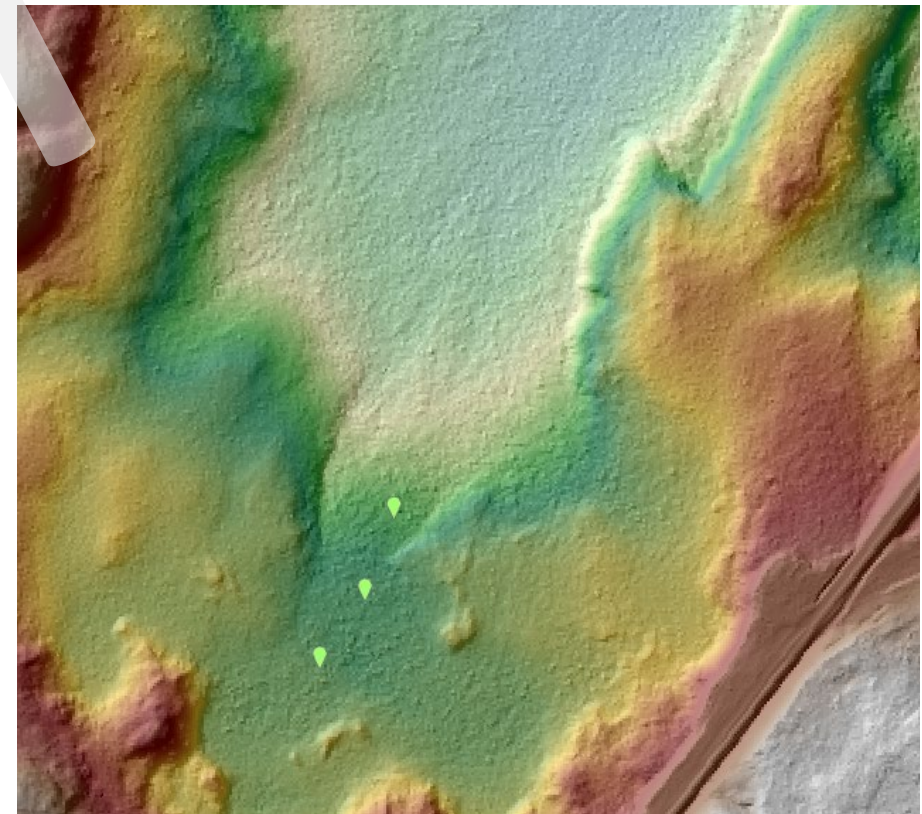
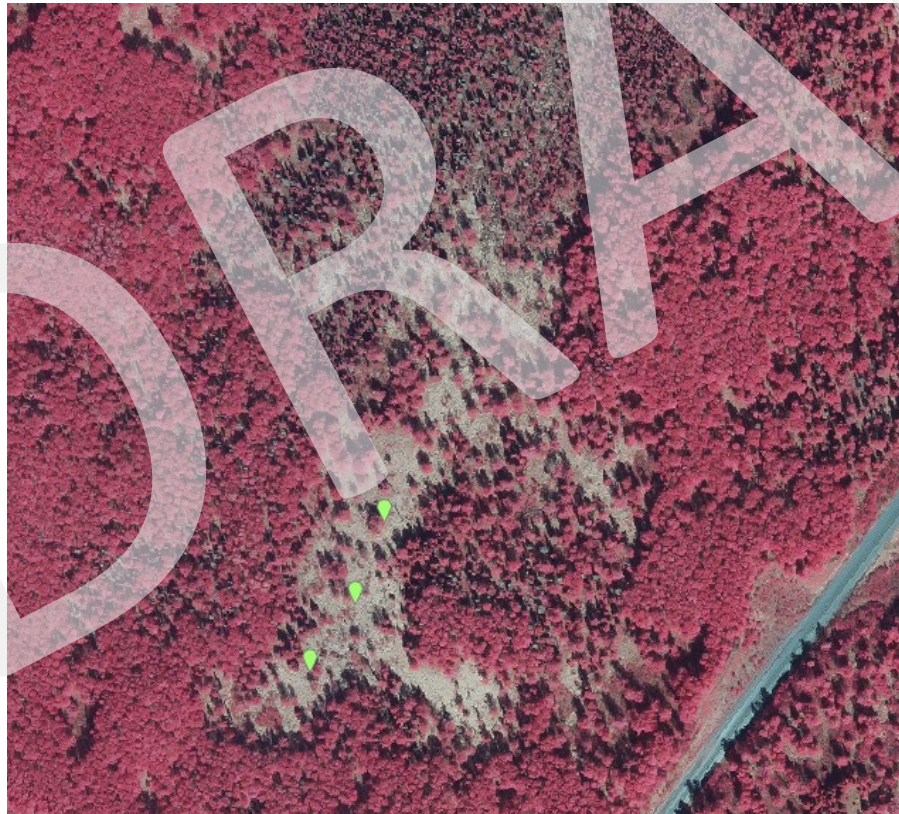
Example: Site 74 (149.6815264°W 61.2997101°N) visited 7/27/22



Bluejoint Grass Fields – Mild slopes

- Southwest to Northeast captures transition from upland to wetland
- Careful consideration required to map accurate boundary on mild slope– only just started to encounter consistent wetland hydrology at northernmost point
- Soil sample from northernmost point much less obviously hydric than depressional grass wetlands, but still organic and moist with some redoximorphic features on pore linings

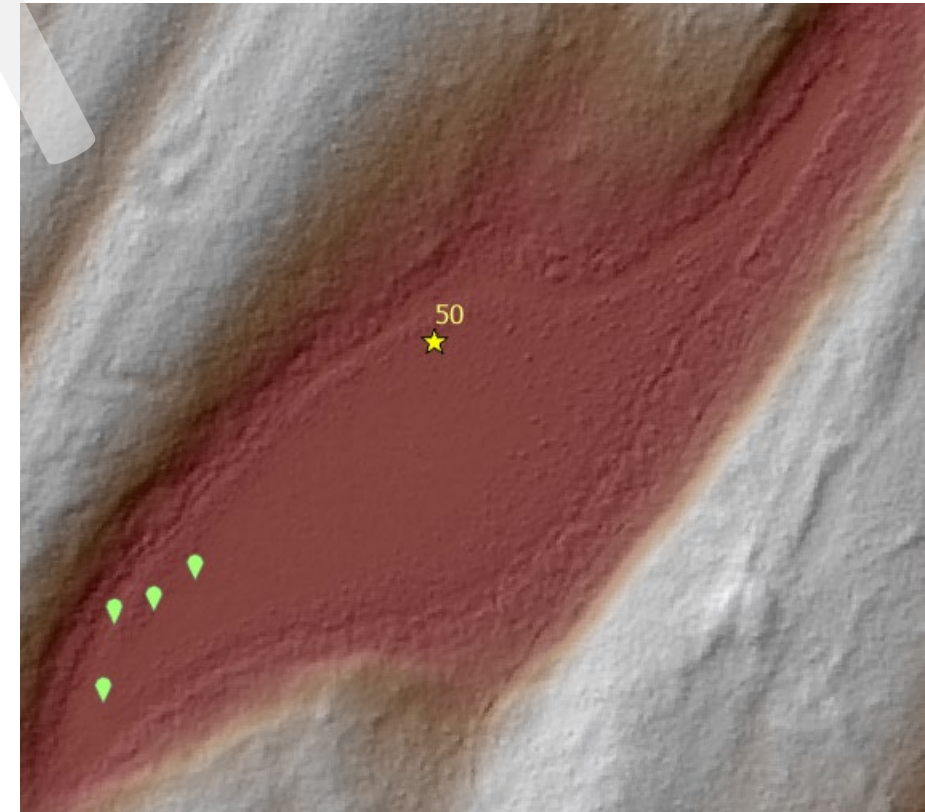
Example: Unnamed site (149.7548639°W 61.2760934°N) visited 6/15/22



Bluejoint Grass Fields – Adjacent Association

- Photo from southernmost field point captures standing water in grass field
- In depression and adjacent to obvious wetlands with inundation visible in imagery
- May have different water regimes based on hydrology– encountered conditions from saturated soils to standing water

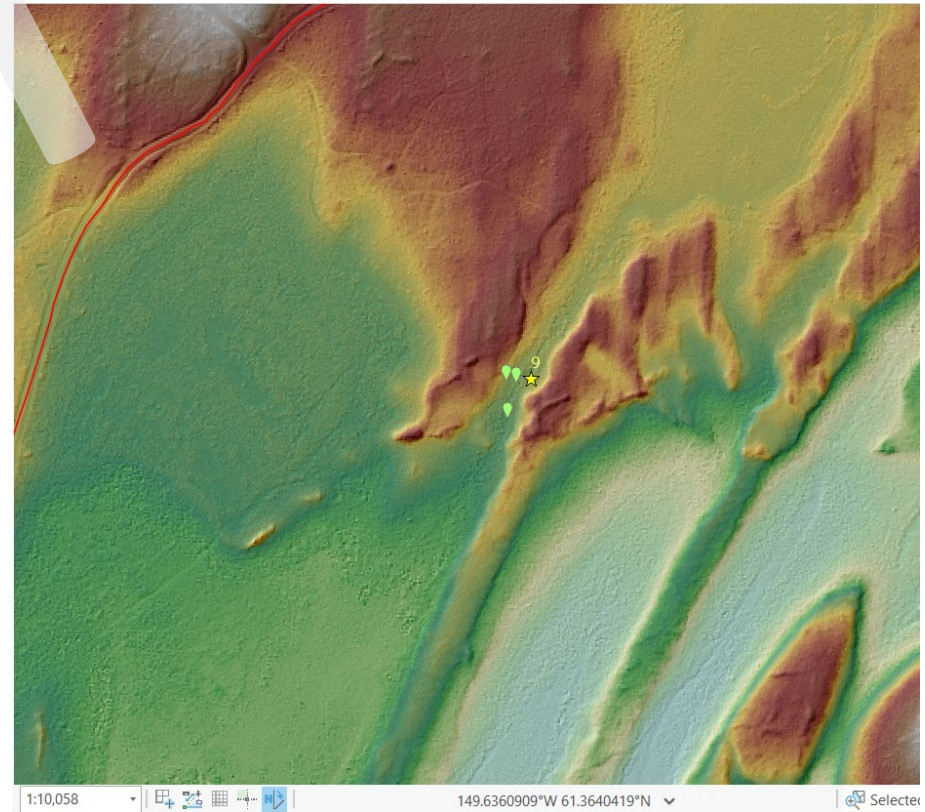
Example: Site 50 (149.6858189°W 61.3446902°N) visited 7/20/22



Bluejoint Grass Fields - Connectivity

- Grass bordered by upland plants like healthy birch (visible in imagery) and roses
- Channels with water-stained leaves support determination that connectivity exists between associated wetlands to the northeast and southwest
- Landform also supports determination that connectivity exists

Example: Site 9 (149.6260310°W 61.3609438°N) visited 7/21/22





Spruce Stands

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Spruce Stands

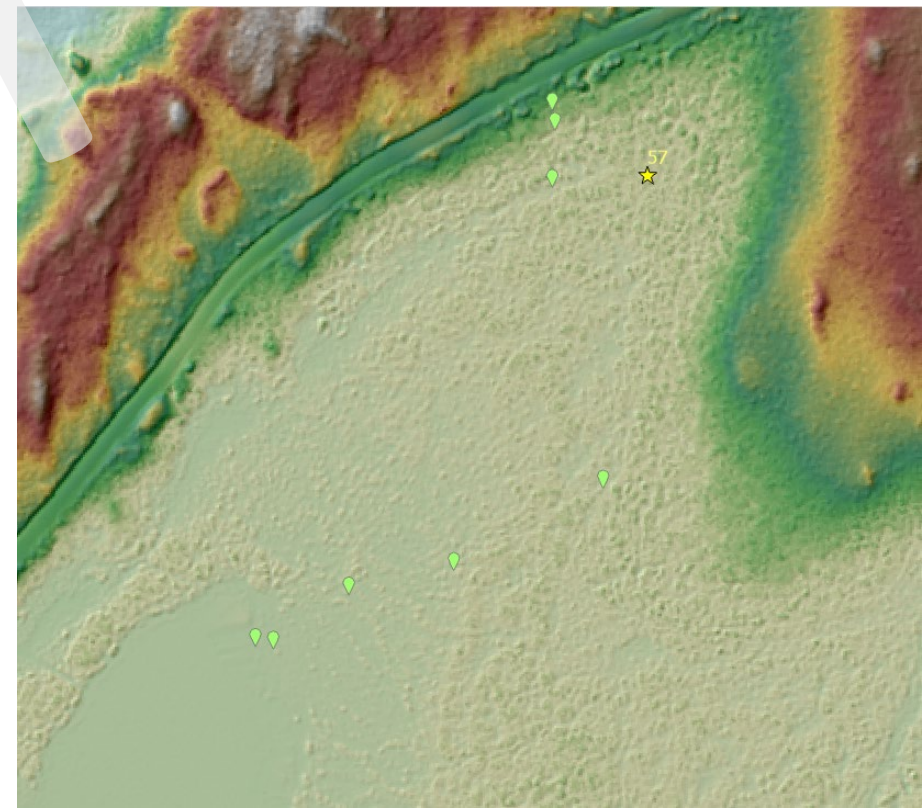
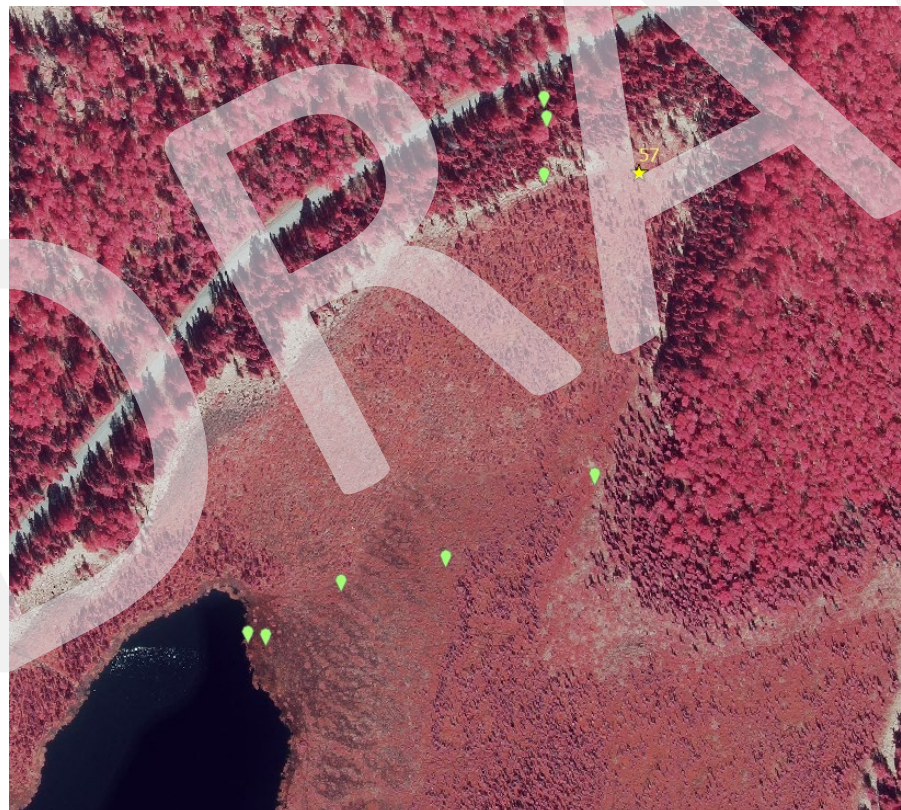
- Confirmed difficulty of classification in some areas
- Wetland
 - Stunted/scrubby black spruce adjacent to bogs/fens
 - Healthier black spruce trees
- Upland
 - Mixed stands of black and white spruce
 - White spruce stands killed by spruce beetles
 - Stands of spruce mixed with deciduous trees



Spruce – stunted/scrubby black spruce

- Stunted and scrubby within or bordering bog/fen conditions
- Saturated with wetland vegetation (Leatherleaf, Sweet Gale, sphagnum) understory

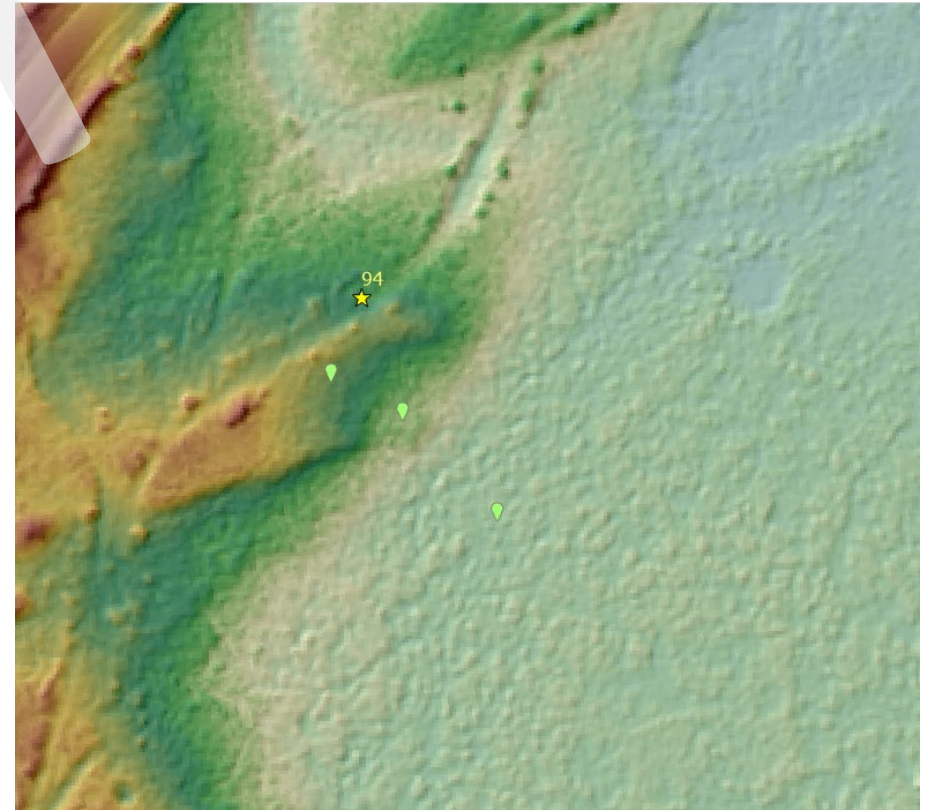
Example: Site 57 (149.6114086°W 61.3769882°N) visited 7/21/2022



Spruce – Healthier black spruce trees

- Photo (from midpoint) shows undulating terrain with tightly growing black spruce and FAC vegetation (low bush cranberry, Labrador tea). Sphagnum grows in microdepressions.
- This example shows transition from upland to wetland in a spruce forest on an elevation gradient. The westernmost point has upland indicators.
- Black spruce wetlands grow in close proximity to spruce uplands

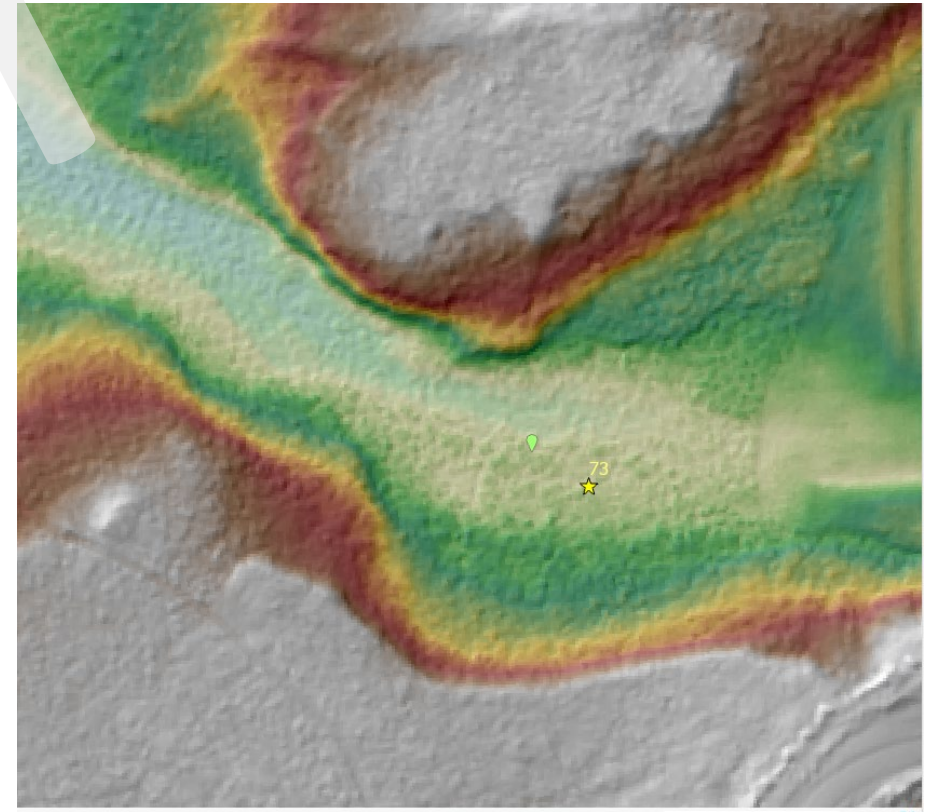
Example: Site 94 (149.6627757°W 61.3730331°N) visited 7/6/2022



Spruce – Mixed stands of black and white spruce

- Tall, happy spruce mix with upland understory (rose, birch tree saplings)
- Flatter microtopography, more open space
- Introduces questions compared to spruce forest wetlands

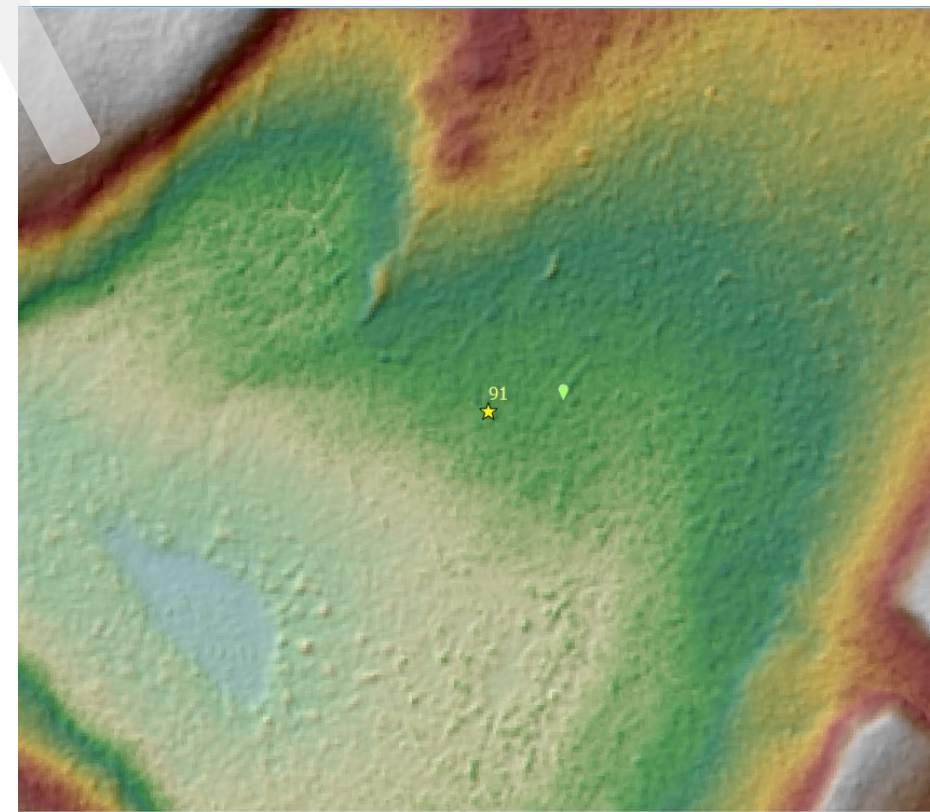
Example: Site 73 (149.6520256°W 61.3814799°N) visited 7/13/2022



Spruce – Beetle kill white spruce

- Also black and white spruce mix with upland understory, but this example has higher amount of beetle kill spruce
- Bark beetles primarily attack white spruce rather than black spruce
- Signature contains teal-ish dead trees
- Trees more spaced out, higher on elevation gradient

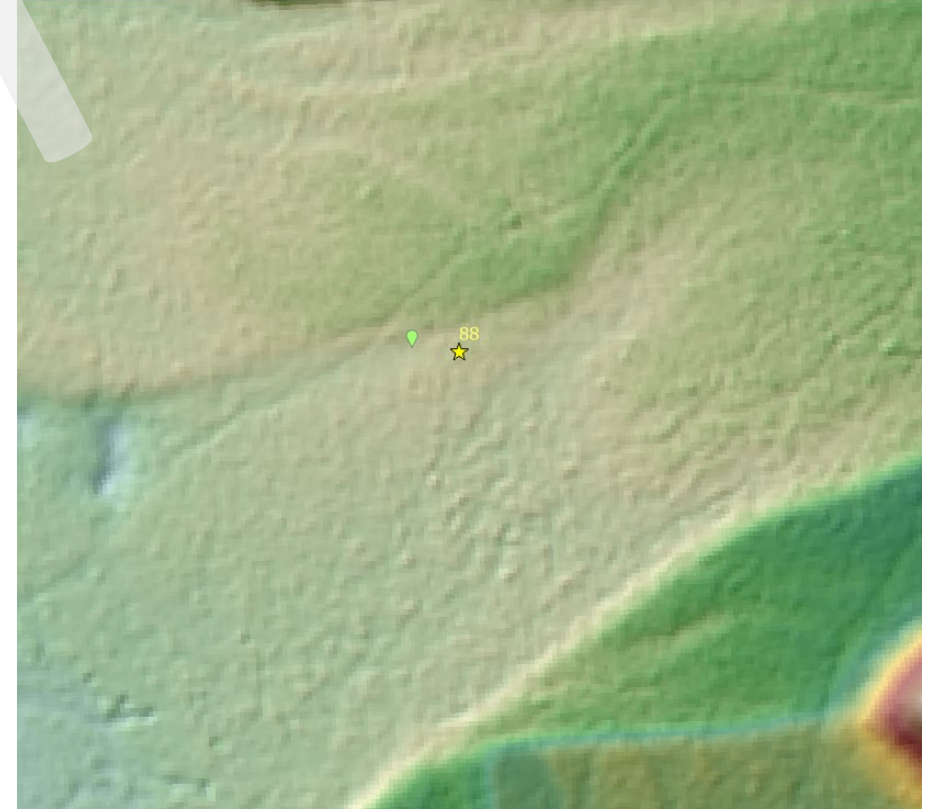
Example: Site 91 (149.7021607°W 61.3471570°N) visited 7/20/2022



Spruce – Spruce mixed with deciduous trees

- Trees spread out wider, upland vegetation in understory, dry soils
- Imagery shows variation of tree shapes and texture
- Example at Clunie Creek

Example: Site 88 (149.6955644°W 61.3208378°N) visited 7/20/2022



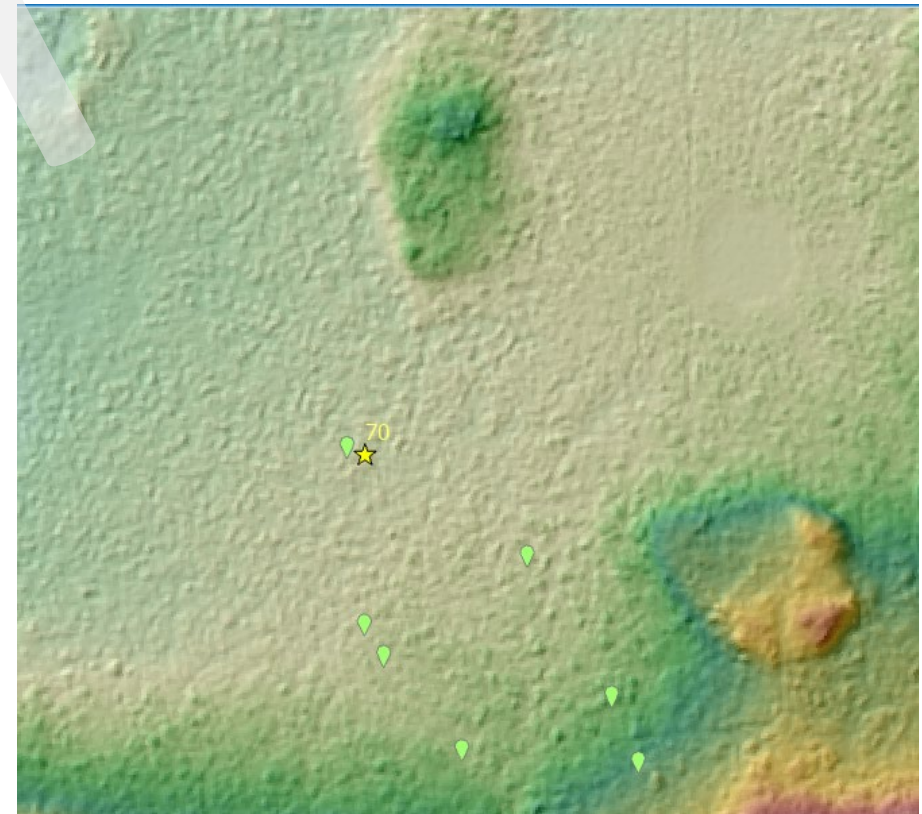
Mosaics

Many throughout JBER-- here are two types

Mosaics – Cross-hatched

- Areas cross-hatched with old logs over boot-topping saturation. Upland vegetation grows on stumps and rises.
- Occurred where there was treefall in landforms that encourage inundation (depressions, toe slopes)
- Photo shows old fallen log with wetland vegetation (*Equisetum palustre*) on either side in the valleys, but upland vegetation (roses and high bush cranberry) on the rises.

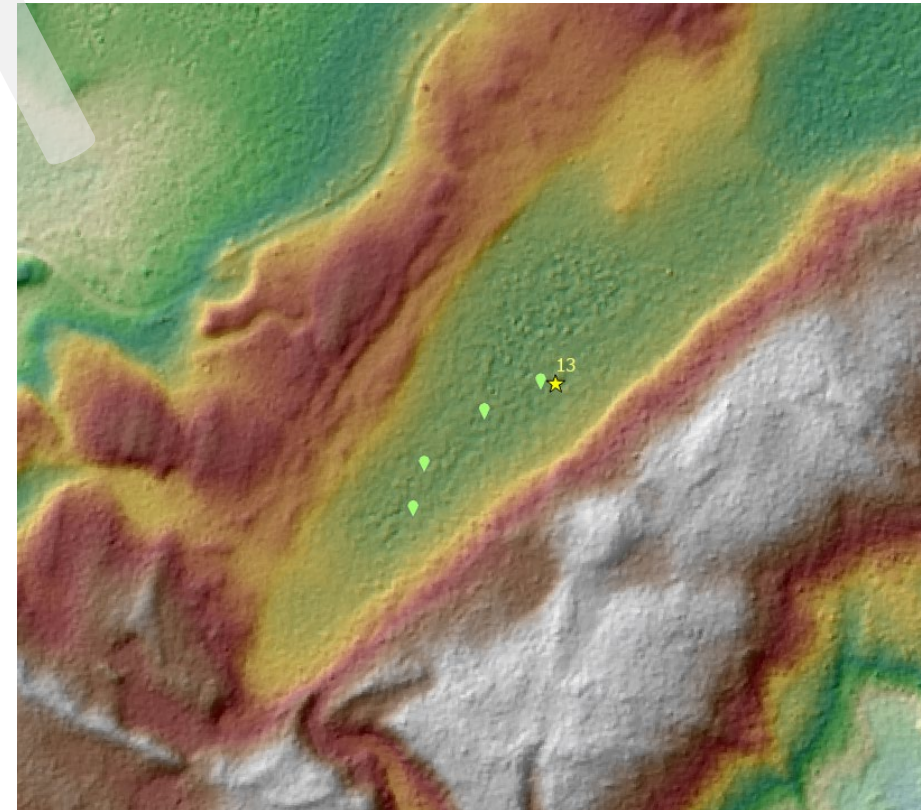
Example: Site 70 (149.8706310°W 61.2571859°N) visited 6/15/2022



Mosaics – Upland Forest

- Areas with healthy deciduous tree cover (largely birch trees) over minor pockets of saturation or water-stained leaves. Pockets are scattered throughout area but not dominant
- Photo shows close mix of FACU and FAC vegetation over water-stained leaves
- Area is in a minor depression, but dominated by healthy birch

Example: Site 13 (149.5785068°W 61.3714788°N) visited 7/14/2022





Windthrow

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Windthrow

- Creates open pockets in forest
- No discernible change from upland to wetland along walk west to east (note: very difficult walking!)
- 2009 (top right) shows change in last decade
- Signature to watch out for– red herring for bluejoint grass wetlands

Example: Site 12 (149.5724396°W 61.3700452°N) visited 7/14/2022





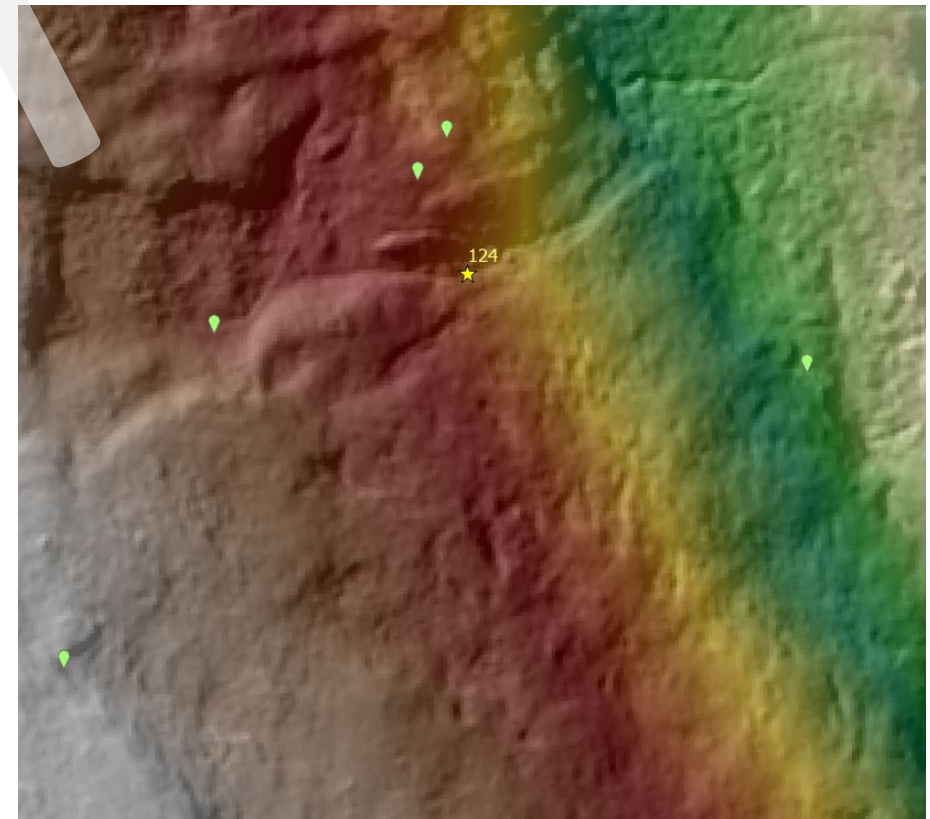
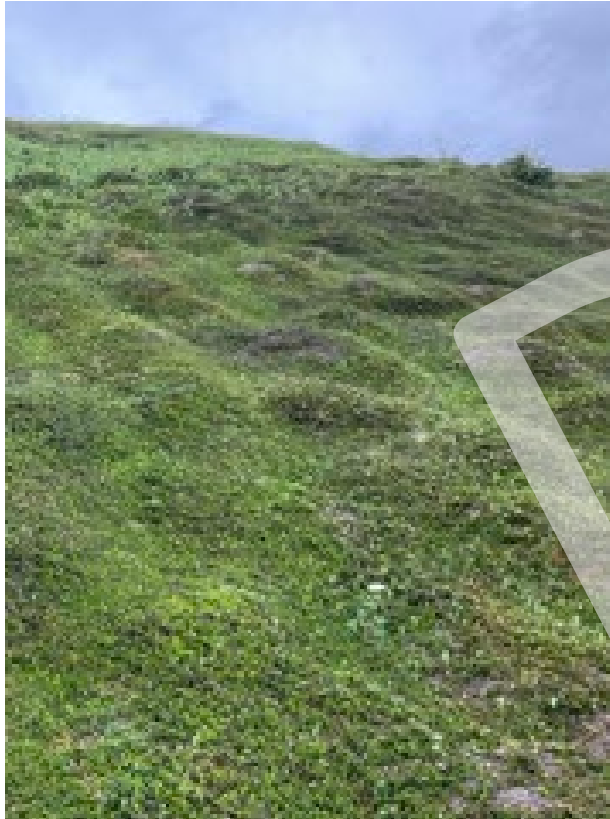
Alpine Swales

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Alpine Swales

- Unique wetland type
- Significant microtopography on slopes makes for complex hydrology

Example: Site 124 (149.6103569°W 61.1974506°N) visited 7/7/2022





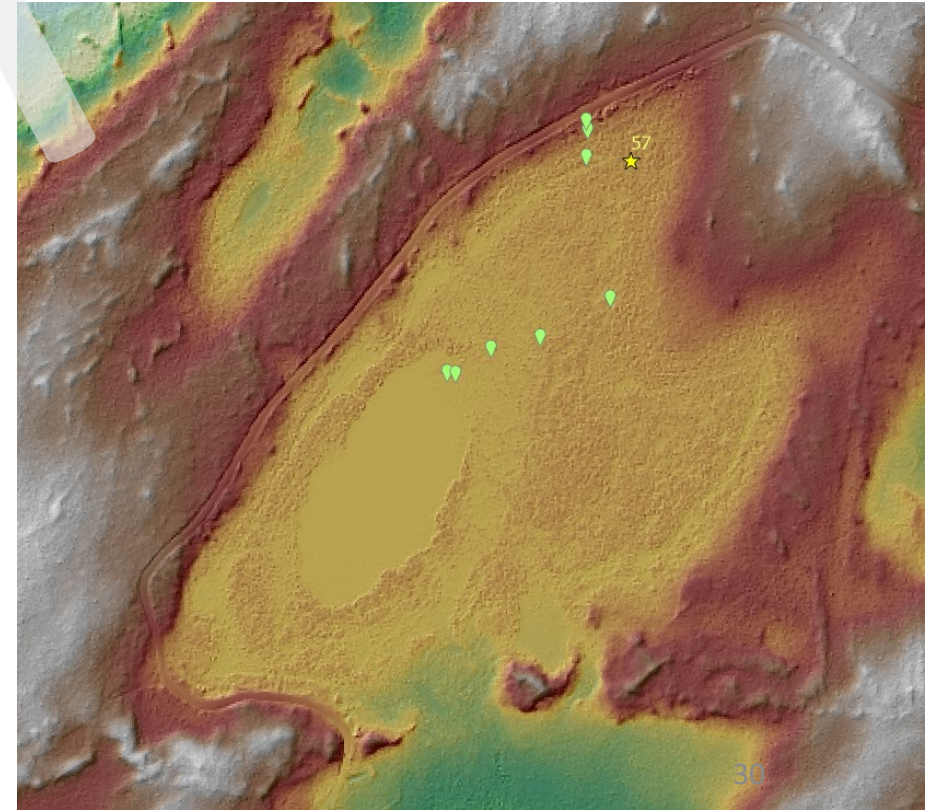
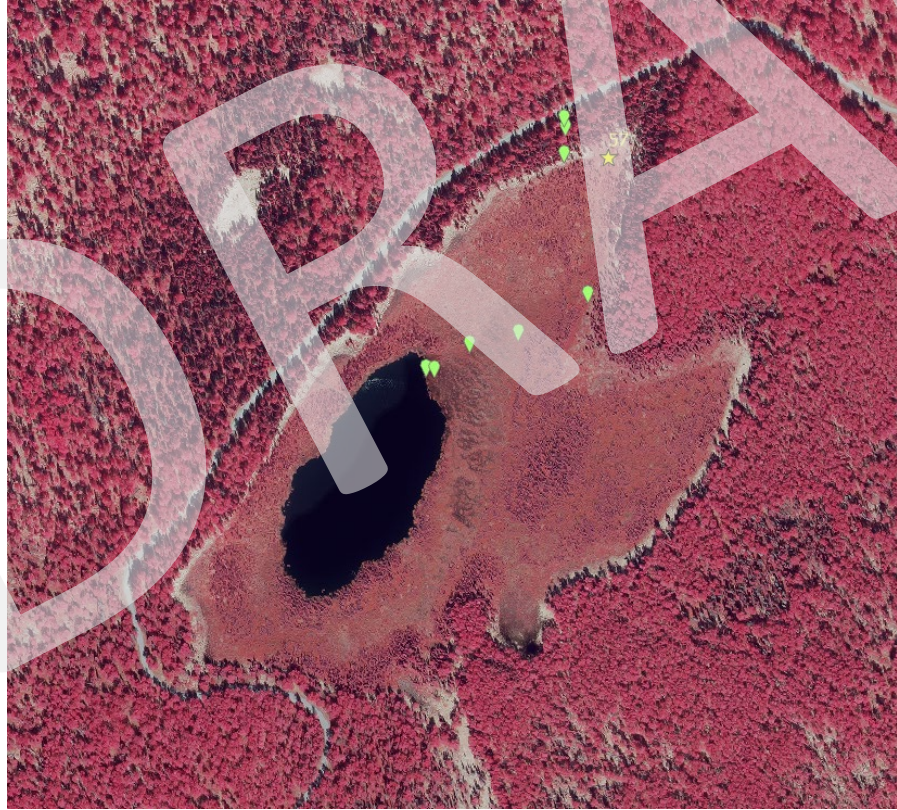
Bogs and Fens

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Bogs and Fens

- Occur in depressions and have nested types of wetlands
- Standing water in middle with obligate emergent veg (marsh five finger, carex), then saturated wetland shrubs (leatherleaf, bog rosemary, dwarf birch) with sphagnum understory, then bluejoint grass
- Sometimes bordered or scattered with scrubby black spruce. Sometimes has shallow permanently flooded water in the middle.

Example: Site 57 (149.6114086°W 61.3769882°N) visited 7/21/2022





Riverine

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Riverine

- Timing in season changed scheduled field days because of high water levels
- Captured conditions on borders.
- Many larger terraces were upland, scrubby vegetation.

Example: New site (149.7737292°W 61.2372472°N) visited 7/28/2022





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Uplands



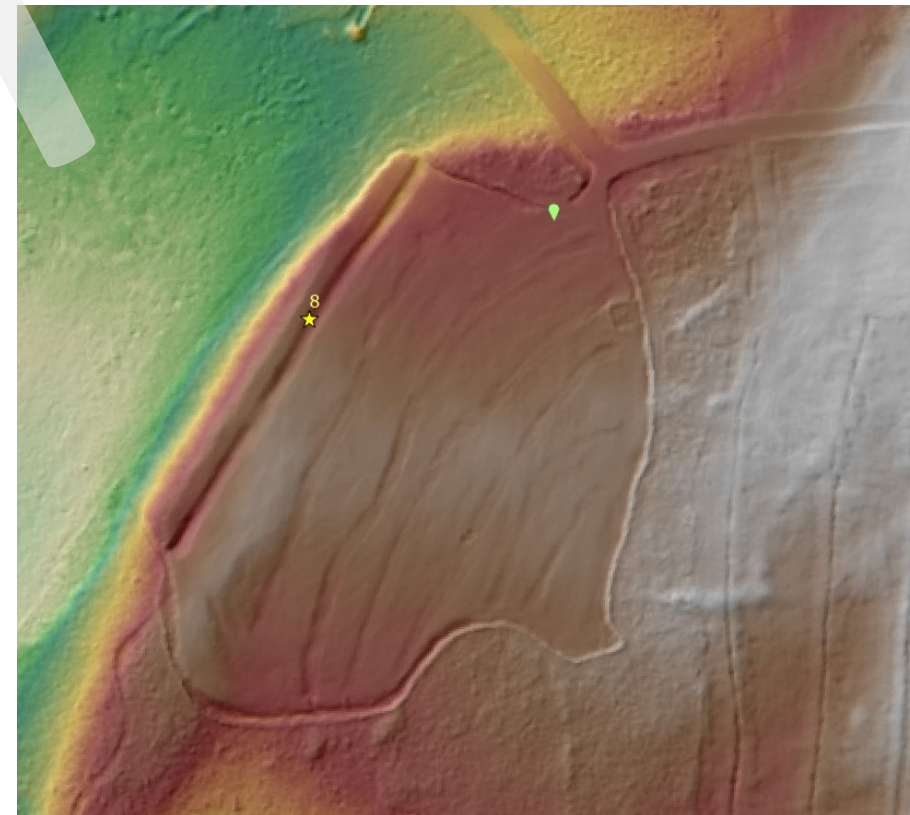
Uplands

- A few types of obvious uplands
 - Highly disturbed
 - Upland scrub/shrub
 - Upland deciduous forest
 - Steep slopes
 - Rocky alpine

Upland -- Highly disturbed areas

- Clearly manmade features

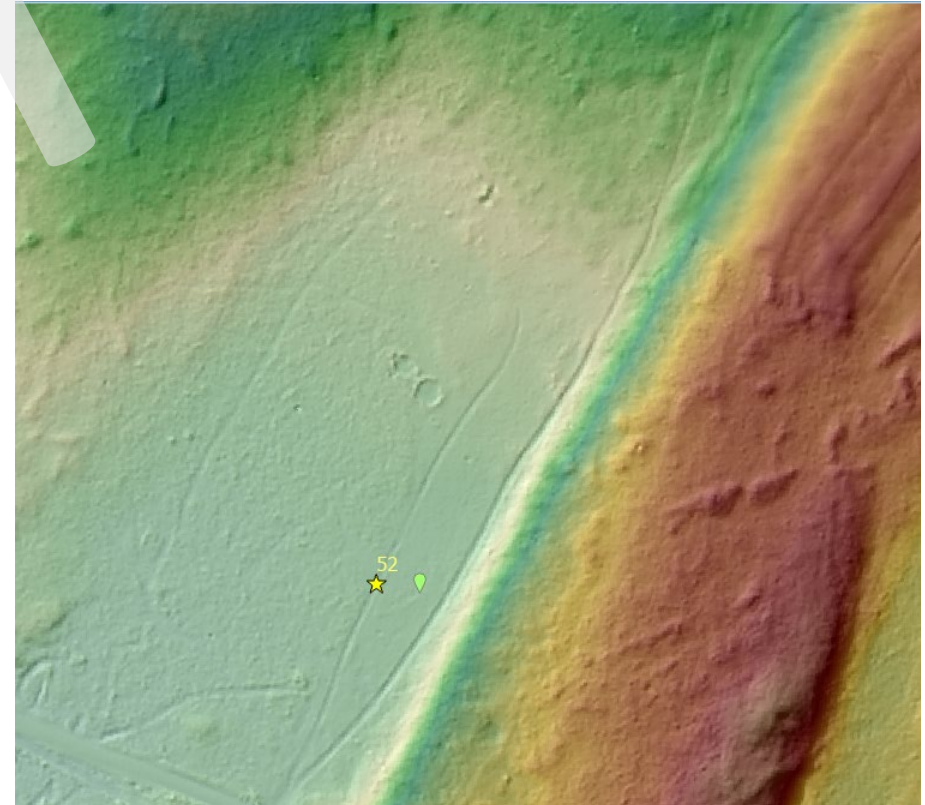
Example: Site 8 (149.6677471°W 61.3525483°N) visited 7/6/2022



Upland – Upland Scrub/Shrub

- Vegetation includes dwarf dogwood, FAC willows, roses, aspen and birch saplings, fireweed, etc.
- Sometimes created from human disturbance (military use, moose habitat)

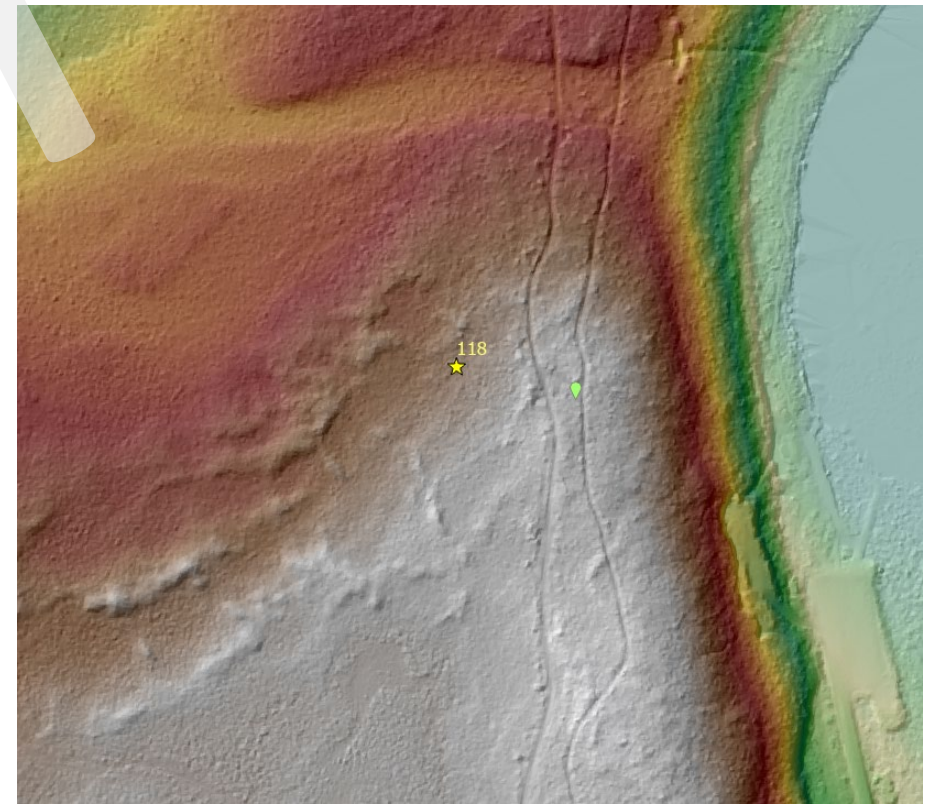
Example: Site 52 (149.6700581°W 61.3408482°N) visited 7/6/2022



Upland – Deciduous forest

- Dominated by aspens, cottonwood, and birch

Example: Site 118 (149.5699863°W 61.4025264°N) visited 7/13/2022





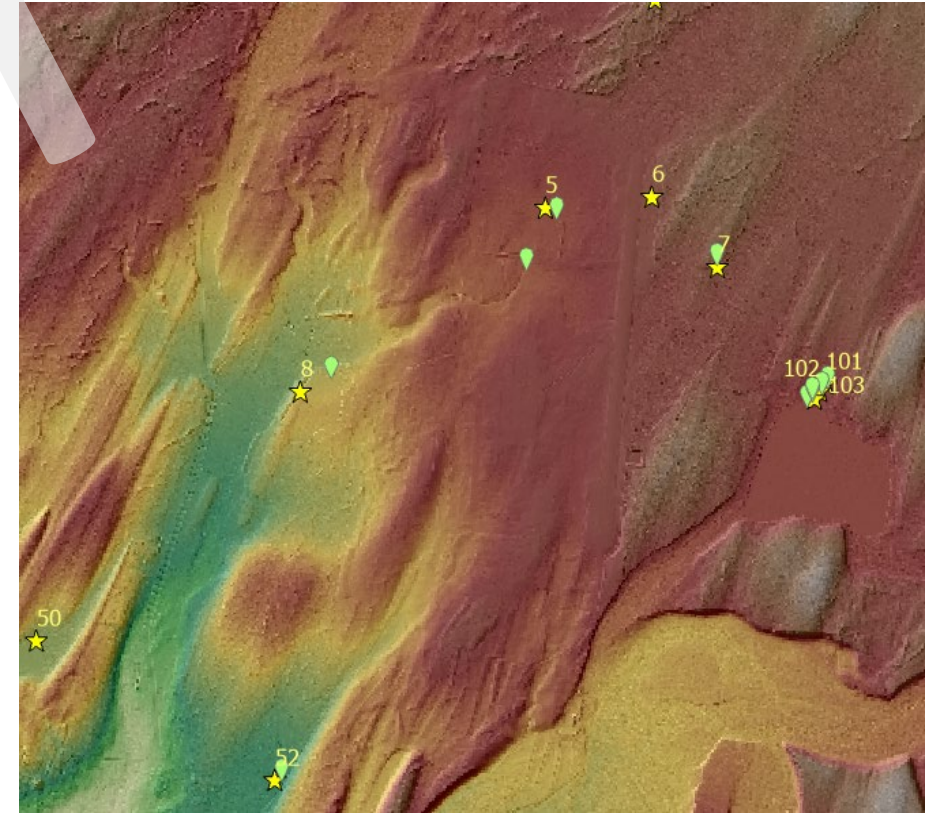
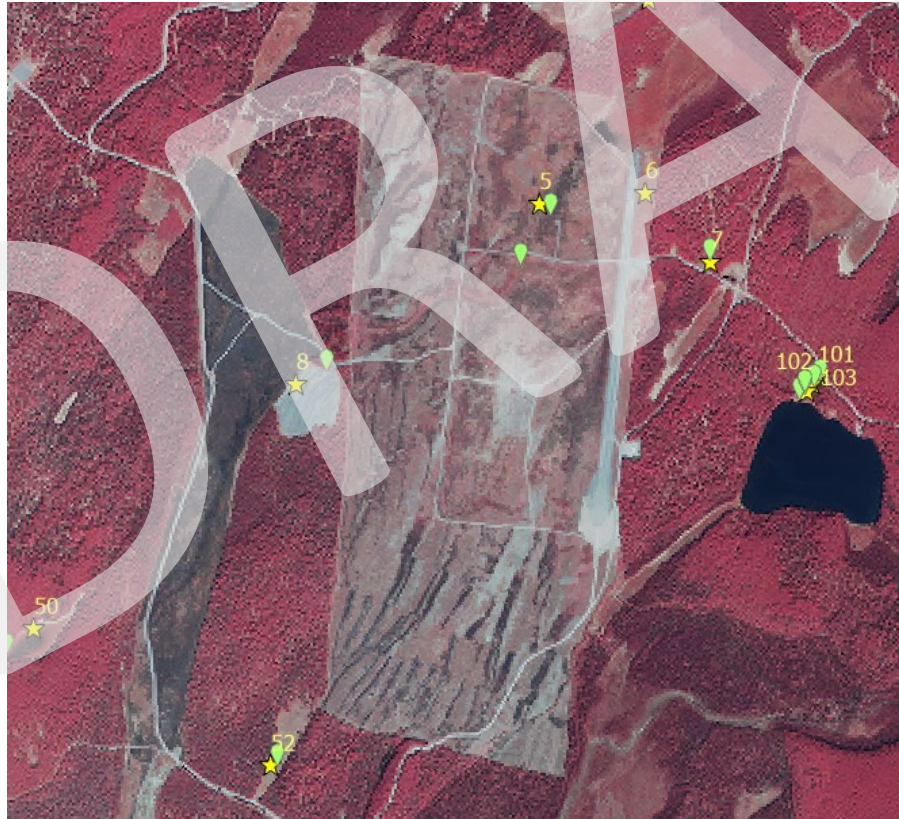
Other interesting areas

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Site 5 (drop zone)

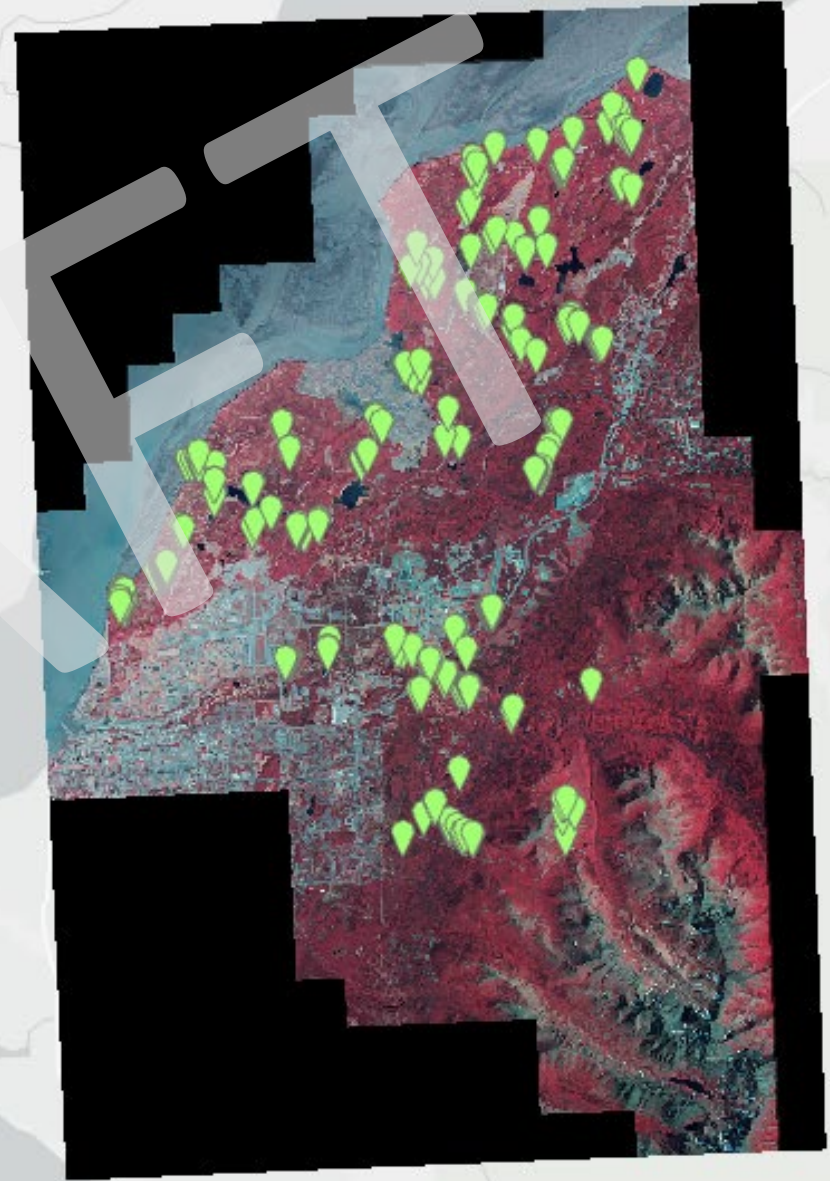
- Interesting imagery signatures and mottled landscape
- Currently mostly not mapped as wetlands, but field observations found some new areas that are clearly wetland

Example: Site 5 (149.6529108°W 61.3589459°N) visited 7/13/2022



Summary

- Visited alpine, disturbed cantonment areas, most of the training areas
 - Did not visit estuarine environments due to difficult access
- We have 383 field data points
- This field data is only one piece of the puzzle
 - Elevation
 - Imagery signatures
 - Prior field data



Thank you all for a very fulfilling field experience!
Our team worked hard and I am proud of our work





Let us discuss!
