

# MCC GIS Internship Successes and Further Possibilities

By Bryon Carroll



## Introduction

For the summer of 2022 thanks to funding from the START program plus the collaboration between Monroe Community College and UMaine this internship was made possible. Casmir and I were given the amazing opportunity to spend 8 weeks working, learning, and experiencing the best of what Maine has to offer. We were able to work with a number of different teams and experience many different types of work and many different methods of collecting data.

## Questions and Goals

The larger goal of this experience was to, through the experiences we had and work that we did, determine the viability of this internship experience and report back on it.

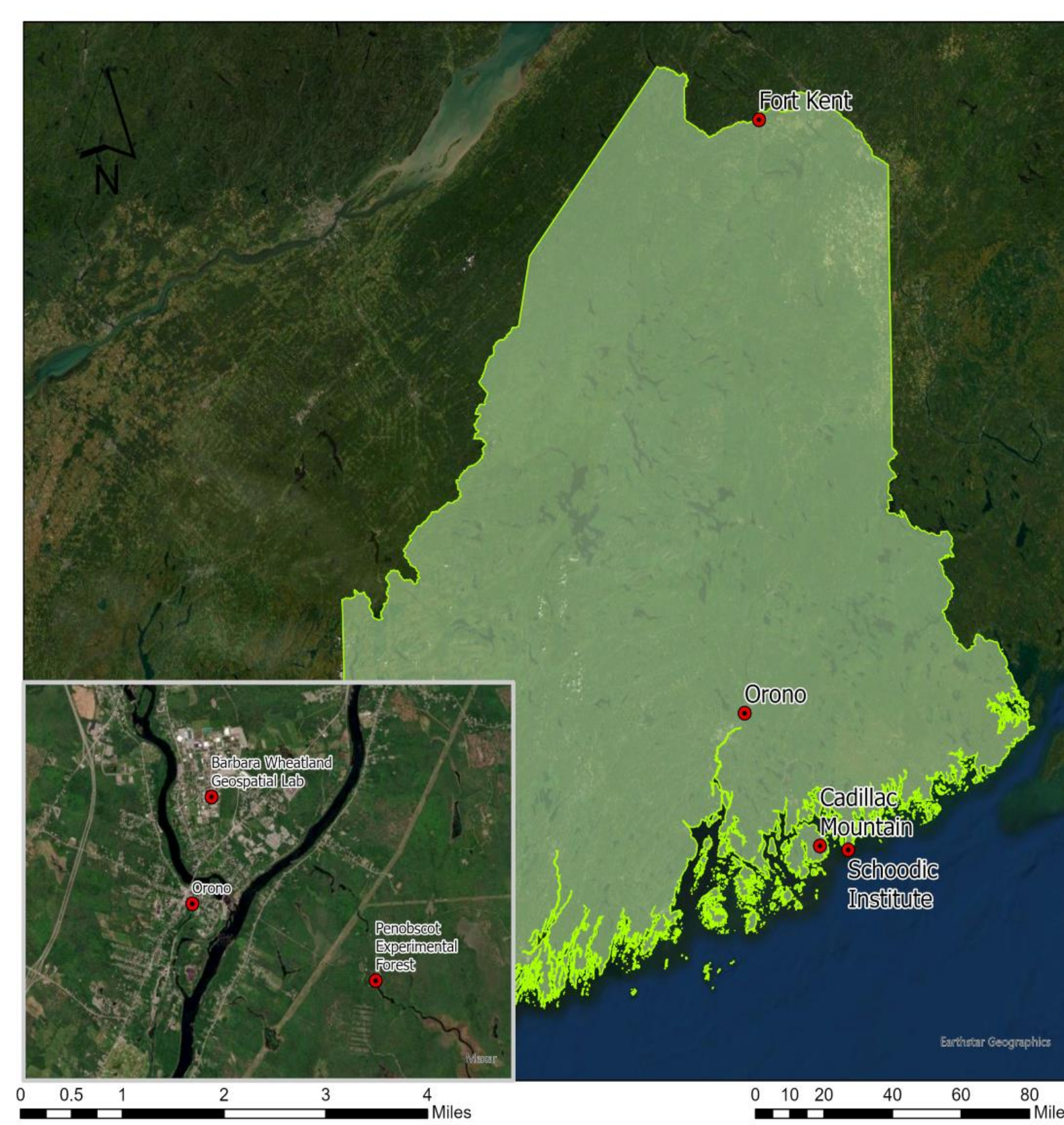
Questions to be answered:

1. Is this internship worth repeating?
2. How could it be made better?

## Methodology

Due to the fact that this internship was the first of its kind between MCC and UMaine it was our job to experience everything we could so that we could narrow things down to the point where we could pick out things that could be made into independent projects for future interns. Through this methodology we worked with numerous teams with each team working on something completely different from the others

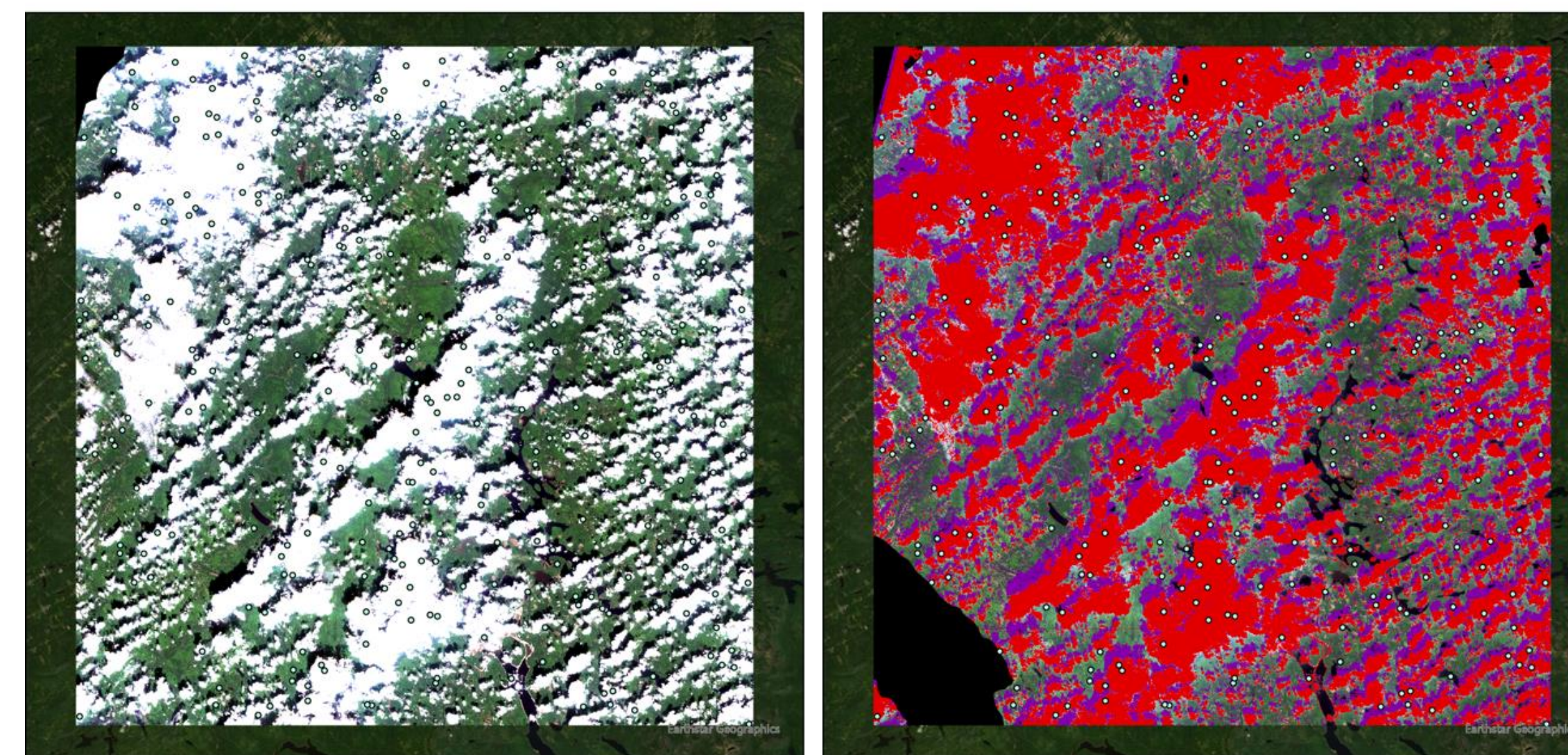
## Locations Visited Within Maine



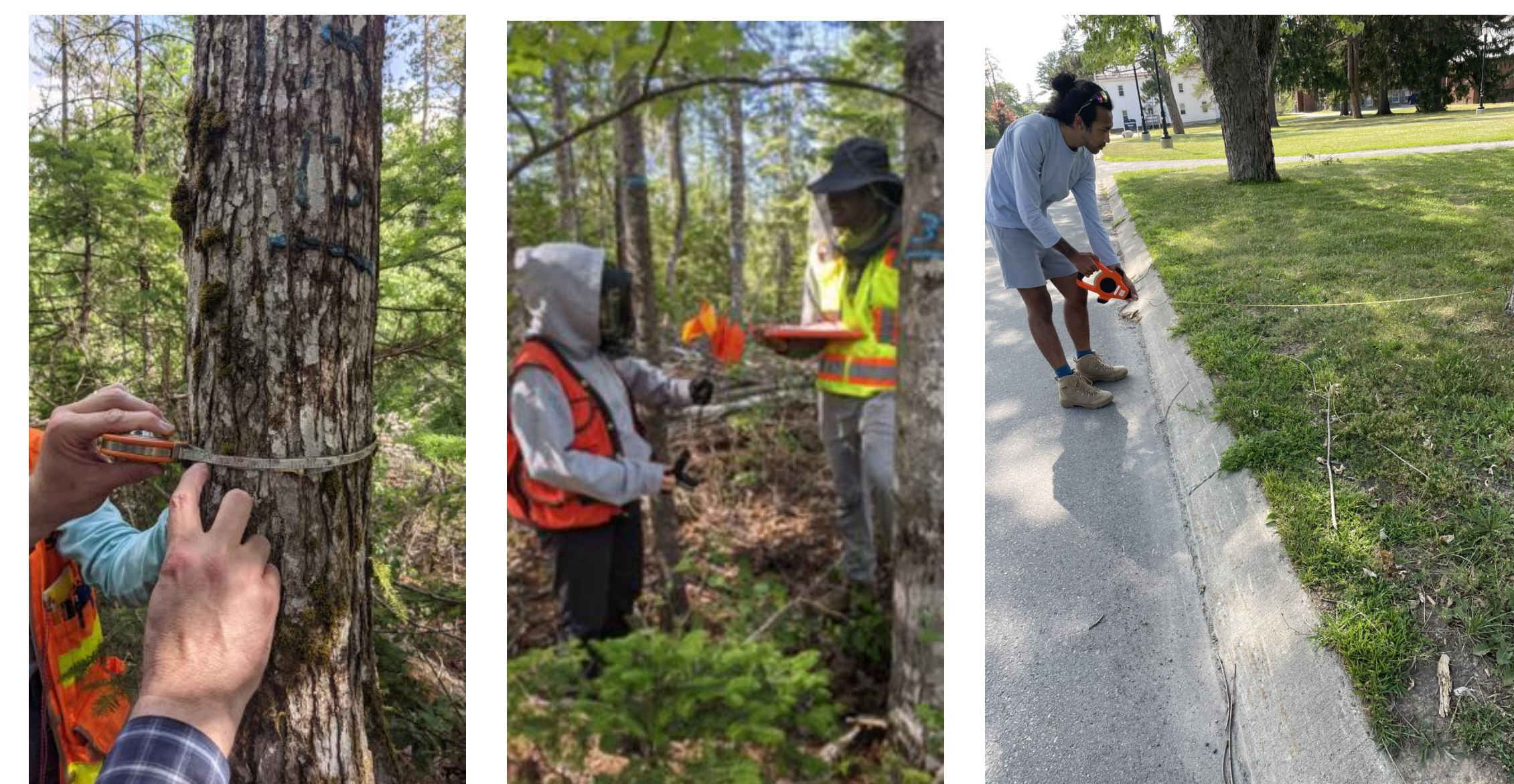
Map of locations visited within Maine. Town of Orono and surrounding region is shown with inset.  
Map Projection: NAD 1983 (2011) StatePlane Maine East FIPS 1801  
Source: Maine Geolibrary

## Results

Below are the possible continuations that can come from this internship  
Round 1 Training Points      Round 1 ML Cloud Mask Results



WGL and Kasey – LiDAR mapping and Cloud masking



PEF and town of Orono tree inventory – Keeping track of what we have to see how the forest changes over time.



Pari's Group – Finding a way to identify a problem before it's too late.



UMFK – Ned's project

## Discussion

The Wheatland Geospatial Lab was who we had the most contact with during the summer whether it was us helping them test some things or them helping us out and seeing how we're doing. We learned about LiDAR and drone imaging initially from them and they even gave us a demonstration of how it worked. We also worked directly with Kasey Legaard and his project which was Cloud Masking. Kasey is trying to come up with a better way to identify clouds in satellite images which we helped with while we were at UMaine. Casmir took a liking to this project and continuing this process with Kasey has been discussed as a potential capstone project.

We were given the opportunity to do some field work with a few of the students that are also working with WGL. We worked with Stephanie and Rissa the first time. We were continuing work that has been done for the past 40 years and that is doing forest inventory. This is done to see how the forest changes over time and determine the rate at which the forest grows. We also worked with another student, Dave Ludwig, on his project which also involved tree inventory but this time it was for the town of Orono. Both of these were interesting projects to be a part of and especially with the CFI (Continuous Forest Inventory) plots is something that could easily be made into its own internship for those that are interested in Forestry.

We spent some time with the team run by Dr. Pari Rahimzadeh which consists of Tawanda Gara and Rajeev Bhattarai. Due to the fact that this project has not been published yet there is not a lot that can be talked about regarding it. However, what can be said is that the team is collecting data that will be used for forest health evaluations by using changes in the pigments in the leaves as indicators of changes with the trees.

Up in Fort Kent we assisted Dr. Kennedy "Ned" Rubert-Nason Ph.D. in the project that he was working on. Ned is using a simplified model to get data on tree health using hyperspectral data which can then be used to expand the reach of the study beyond the initial species chosen. Currently Ned is using Balsam Poplar to represent broadleaf deciduous trees and Red and White Spruce to represent the evergreens. Balsam Poplar is a tree that is commonly used in studies for this purpose and is a tree that Ned is very familiar with. The two types of spruces are of high commercial interest in the northern region of Maine. Both trees are also relatively common meaning that finding specimens for the study will not be a problem

## Conclusion

There are a tremendous amount of opportunities in Maine for those that are interested in the environmental side of education. Not only do I believe that this grant and internship was a huge success, but I believe that it is something that should not only be continued but also expanded. There is a place here for students from a wider variety of course study than just GIS. GIS is something that has become part of most careers that exist now but students today fail to realize that while they are in school. I believe that there is a great opportunity for students from multiple major tracks to gain experience that will catapult them forward in their pursuit if a career. Computer technology and GIS students can learn about real world applications of the skills they learn from MCC. Perspective students of Forestry, Forest management, Natural Sciences, and Environmental Science could be given that chance to gain real world experience in their respective fields while also being taught the importance of remote sensing and geospatial technology within the things that they would be doing.

This would not only be a fantastic experience for students, but it would also be an experience that would let them better understand the importance of what they are doing. In today's world where our environment is under constant threat from all sides we need people who are the very best at what they do. Being that the forest resources in Maine are many times greater than those of New York, I believe that an internship experience like this could be the first step in empowering students to become the great professionals that we would like to see take control of our future and help make our world better.

## Acknowledgements

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