

NEW HAMPSHIRE VIEW 2019 - 2020 ACTIVITIES

Our High Impact Activity for this year was the evaluation of very high spatial resolution imagery to assess the impact of forest edges. As our landscapes become more fragmented because of increased development, more and more edges are created. Edges (boundaries between forest and other land covers) allow more light and wind as well as increased temperatures changing the ecosystem and altering the flora and fauna in these locations (Figure 1). As edges increase, the core areas necessary for many plants and animals decreases (Figure 2). Transects are typically collected on the ground to measure the edge influence (Figure 2). In this study, very high spatial resolution imagery was evaluated as a substitute for the ground transects (Figure 3). Measurements made in the Depth of Edge Influence (DEI) and the Canopy Openness (CO). Transects were measured first on the ground to determine the DEI and CO and then these results were compared to the same measurements made on the very high spatial resolution imagery.



Figure 3. Very high spatial resolution image showing transect locations.



Figure 1. Example of impacts from creating forest edges.

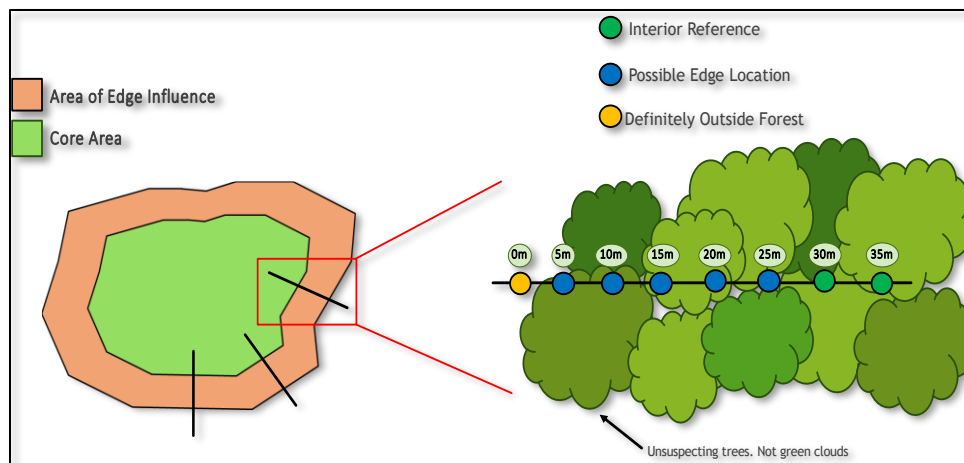


Figure 2. Example showing forest polygon core and edge with transect sampling.

Results of this research have shown:

- Many more transects can be obtained from very high spatial resolution imagery than can be collected from the ground for the same amount of effort.
- Imagery-based measurements tended to overestimate CO.
- There are issues, as reported in previous studies, with the imagery detecting the forest understory because of the canopy density.
- Age of edge is an important factor in determining success.

BENEFITS TO NHVIEW

- Our work evaluating the use of very high resolution imagery for forest edge detection shows promise to be able to more effectively and efficiently monitor changes in the forest landscape caused by landscape fragmentation that directly impact the ecology of the area. Our information will provide the means for natural resource managers, wildlife biologists, conservation planners, and others to make better decisions about their land.
- This year NHView assumed the lead role in the University GeoSpatial Support Center (GSC) after the departure of the GeoScience librarian. This facility provides consulting and workshops on remote sensing and geospatial analysis to students, staff, and faculty. NHView, the GSC, and others teamed up for GIS Day to showcase remote sensing and geospatial analysis campus wide.
- NHView funded two undergraduate interns to work in the Basic and Applied Spatial Analysis lab to help with research resulting in two posters on this work presented at the Undergraduate Research Conference.



Undergraduate collecting forest canopy data.



Very high spatial resolution image of the College Woods Natural Area used by many classes and students adjacent to the University of New Hampshire campus.

NHVIEW CONSORTIUM MEMBERSHIP

- **Department of Natural Resources & the Environment, UNH**
The Basic and Applied Spatial Analysis Lab (BASAL) conducts basic research on spatial data uncertainty/map accuracy and applied research applying the tools of remote sensing, GIS, and spatial data analysis to solve natural resource problems.
- **NH GLOBE Partnership, UNH**
Carries out GLOBE teacher training in atmosphere, land cover, hydrology, soil and earth system science with a focus on land cover mapping and geospatial technologies.
- **EOS-EarthData, UNH**
A digital library of Earth science data that serves scientists, educators and the public.
- **NH GRANIT GIS Repository, UNH**
A cooperative project to create, maintain, and make available a statewide geographic data base serving the information needs of state, regional, and local decision-makers.
- **Diamond Library, UNH**
The library maintains an extensive map and aerial photo collection for NH and houses the GeoSpatial Support Center.
- **Forest Watch, UNH**
A New England environmental education activity using field, lab, and satellite data analysis methods for assessing the state-of-health of local forest stands.
- **Cooperative Extension, UNH**
Offers short courses in geospatial technologies including GIS, GPS, and field mapping.
- **Dartmouth College**
- **NH Planning Commissions**

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