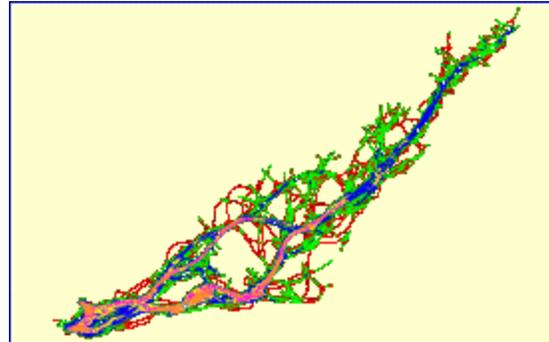


Mapping Site Disturbance

Issue: Characterizing site disturbance from forest harvesting activities requires a means of describing the level of impact from a given machine, and the area in which it occurred. Numbers of passes has often been used in the past to describe the level of machine impacts: it is quantitative, and, at least in some cases, correlated with changes in soil physical properties. Knowledge of how many passes a given point received, however, has not been easy to measure in unconstrained conditions until recently. Global Positioning Systems (GPS) provide an accurate and flexible means of tracking the movements of harvesting machines across a site and for extended periods. The GPS is capable of providing the machine's location at fixed intervals, but converting these vector positions into numbers of passes requires some additional processing. The objective of this project was to develop systems for evaluating numbers of machine passes from GPS data and to determine the accuracy of the generated maps.



Study Description: GPS receivers were mounted on harvesting equipment (1 feller-buncher, 2 skidders) and positional data recorded for each machine during the harvest of 2 40-acre tracts. Software was developed to calculate 2-dimensional coverage of the machines based on sampled positions and linear motion between points. Simulation studies were used to define confidence intervals on the number of passes at a specific location.

Status: The study is complete and 5 presentations have been made based on the results.

Benefits:

- *Spatial measure of site impacts to assist in planning site preparation, or for historical documentation.*
- *Research tool for studying the relationship between traffic density and soil impacts.*

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