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Carbon Accounting for Forest Land in the Michigan Upper Peninsula: Past, Present and Future

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Forest inventories have been important for strategic and tactical planning at many scales, from stand to landscape, for many years. Recently, concerns about sustainability that raised interest in forest inventory have expanded to include forest biomass and forest carbon. The link between carbon and climate change, international agreements that regulate atmospheric carbon emissions, interest in silvicultural manipulations that sequester carbon and the emergence of carbon trading systems have driven this change. Accordingly, forest inventory has also expanded in scope to include all carbon pools, such as carbon held in live tree boles, branches, stumps and coarse roots, dead trees, understory vegetation, forest floor and organic carbon stored in soil. Accounting for all carbon pools in forest inventory is complicated because traditional inventory designs focus on merchantable tree volume, restricting information largely to economically important components of live trees. Estimating carbon in these components is straightforward, and an emerging body of recent research has focused on estimating carbon in less commonly sampled pools. In this talk methods that may be used to estimate forest carbon inventory from various forms of inventory data will be explained, and illustrated with an example for the Michigan Upper Peninsula. Methods will include a survey of the most recently developed tools, such as the Carbon On Line Estimator (COLE) and comprehensive carbon inventories that build on Forest Inventory and Analysis (FIA) data.

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