**COOPERATIVE FORESTRY RESEARCH UNIT**

**PRE-PROPOSAL**

**PROJECT TITLE:** Causal factors of thinning response in adaptive management regimes

**PRINCIPAL INVESTIGATOR:**

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**ABSTRACT:** Density management is common for commodity production but increasing focus on a tool for increasing resistance and resilience in unknown conditions.

Important to leverage work where we have it.

**PROJECT OBJECTIVES:**

**BACKGROUND:**

**APPROACH:**

**ANTICIPATED BENEFITS TO CFRU MEMBERS:**

The project will provide a unique, regional network of experimental plots that integrates traditional tree and plot measurements with remote sensing and micrometeorological variables. Findings from this work will be used to generate site-specific, predictive estimates of potential productivity of planted WS forests and natural regeneration that can be mapped with high resolution (e.g., 1/5 acre) across the region. These products can serve as decision support tools for multiple landowners seeking to strategically diversify their product portfolios (timber commodities, C, etc.) across their forestlands. These benefits directly support and align with the stated 5-year goals of the CFRU; Refining new tools for determining site productivity (Silviculture and Applied Research), and: Improving land base descriptions and modeling site productivity (Emerging Technologies and Modeling).

**APPROXIMATE LENGTH OF STUDY:**

Initial 3 years of study funded by CFRU, years 3-5 funded by Maine Agricultural and Forest Experiment Station, additional funding beyond year 5 will acquired where possible.

**ESTIMATED AMOUNT REQUESTED FROM CFRU:**

For full support of a M.S. student, field sampling, faculty summer salary - $160,000 ($53,333 per year)

**MATCHING FUNDS:**

Experimental sites, seedlings, planting, and treatment operations will be provided in-kind by JD Irving.Measurements and student support past year 3 of the project will be supported by funding provided by the Maine Agricultural and Forest Experiment Station.5 -year recurring measurements will be funded by availability.

**DELIVERABLES:**

Findings from this work will be disseminated to cooperators in the form of technical reports and raster geospatial tools. Site tours and technical transfer workshops will be used to demonstrate operational application and facilitate cooperator engagement with products. This project seeks to support a total of 2 M.S. students, each of which will generate original thesis works that can be submitted to peer-reviewed forestry journal articles. This project and associated products can be further used as a framework for additional investigation.

**References**

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[3] Nienstaedt, H., and J.C. Zasada. 1990. Picea glauca (Moench) Voss. In Silvics of North America, volume 1. Conifers. Edited by R.M. Burns and B.H. Honkala. USDA Agricul- ture Handbook 654. pp. 133–147.

[4] Pawson, S.M.; Brin, A.; Brockerhoff, E.G.; Lamb, D.; Payn, T.W.; Paquette, A.; Parrotta, J.A. 2013. Plantation forests, climate change and biodiversity. *Biodiversity and Conservation* 22 (5):1203-1227.

[6] Rauscher, H.M. 1984. Growth and yield of white spruce plantations in the Lake States (a literature review). Research Paper NC-253. St. Paul, MN: U.S. Dept. of Agriculture, Forest Service, North Central Forest Experiment Station