

Putting an Ear to the Ground: Monitoring the Impacts of Climate Change on Working Forests



BACKGROUND

Managing forests in a dynamic climate presents some unique challenges. It is difficult to make adjustments with the large degree of uncertainty about how climate and forests will change in the near-term and on sub-regional spatial scales. To respond effectively, forest managers may want to (1) assess whether changes are happening as expected on their lands and (2) identify early warning signs of forest stress.

GOAL

With this in mind, Manomet is working to develop a **Resiliency Assessment Framework** that will provide a menu of simple, relevant, and cost-effective metrics for monitoring forest response to climate change, which managers can implement and use to inform their decision-making.

The final Framework will include a two-tiered approach, with locally relevant metrics (most likely an enhancement to existing inventory methods) and an assessment of the larger regional context (based on USFS Forest Inventory & Analysis data and/or remote sensing). This will allow for a comparative assessment of forest health and resilience on managed lands and the surrounding region.

CONTEXT

This project is an extension of Manomet's work with the Climate Smart Land Network (CSLN)—an alliance of forest landowners and managers, representing over 19 million acres throughout North America, who are responding to the opportunities and challenges posed by climate change.

More information at: www.ClimateSmartNetwork.org



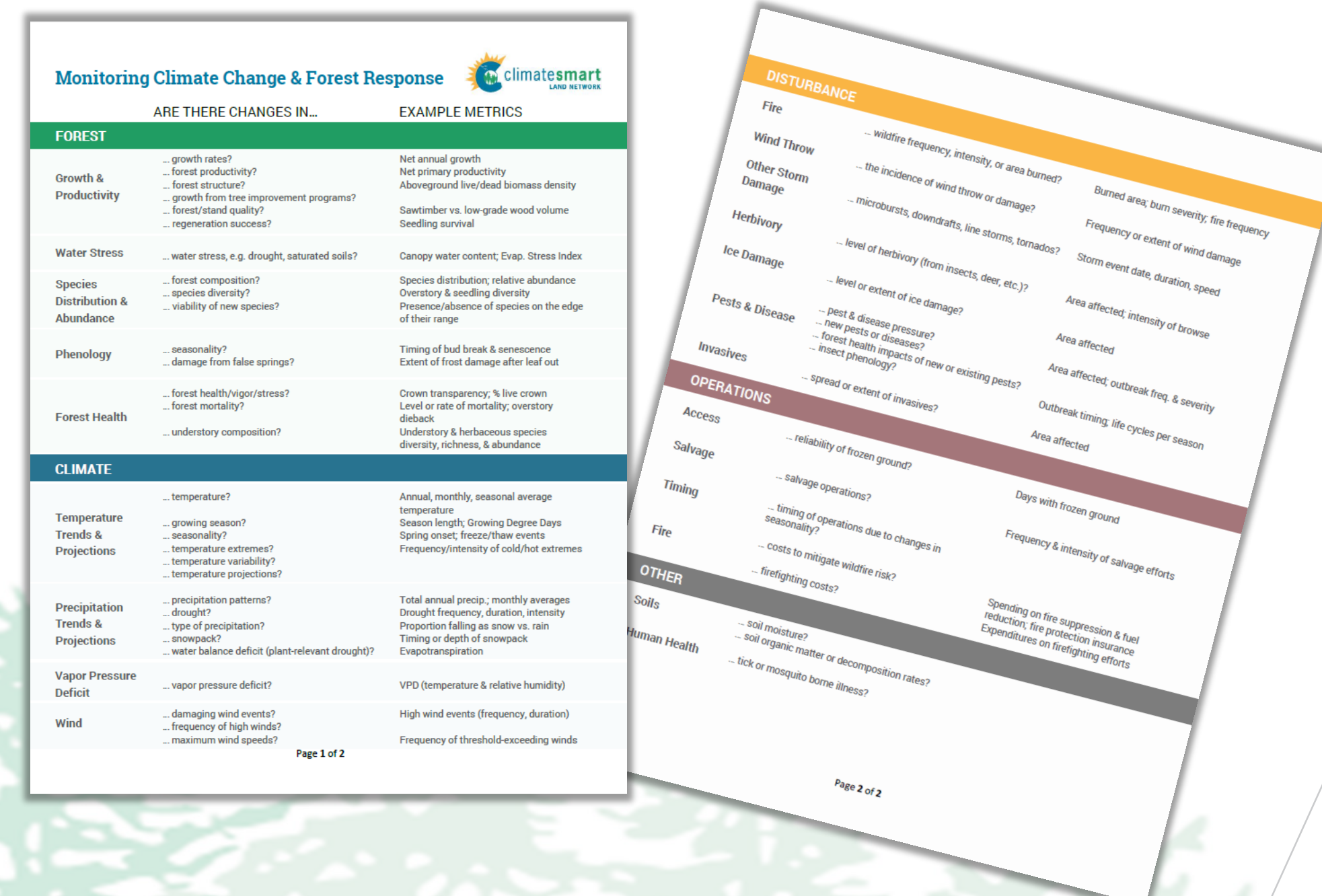
STUDY SITES

- Four companies participating as project partners (CSLN members; SFI-certified)
- Sites to develop, pilot, and evaluate the Framework
- Sites were selected to emphasize accessibility and representation of a diversity of forest types, geographies, and management structures



FRAMEWORK DEVELOPMENT

At the outset of the project, a comprehensive list of potential monitoring indicators and metrics was developed, based on anticipated climate change impacts, a review of many existing forest monitoring systems and protocols, and consideration of the relevant research questions that could be addressed. These were sorted into broad categories, including information related to climate, forests, disturbance, and management operations.



We are jointly refining this list, in collaboration with project partners, members of the research community, and others. Project partners are helping us catalogue the information that is already collected on each site and vet the metrics for their utility in informing operational decisions and management planning. The list will ultimately be narrowed to a handful of key metrics, based on a set of decision criteria:

1. Ranks high in importance for project partners
2. Cost effective to measure/monitor
3. Yields information that informs management
4. Scientifically robust
5. Clearly links to expected climate impacts

PRELIMINARY FINDINGS

Through initial site visits and follow-up conversations with project partners, we have developed a complete picture of the resources on each site, the general management activities, the existing monitoring efforts, and the site-specific challenges that are directly or indirectly related to climate (e.g. browse, invasives, etc.).

We now have a catalogue of the types of information forest management companies are already gathering, which highlights:

- (1) where we can achieve the greatest efficiencies by enhancing existing monitoring/inventory
- (2) where it is possible to build more formal data collection processes for information that is currently noted in a passing or anecdotal way

In particular, the first phase of the project has identified:

- * Commonalities across sites, e.g. all partners currently gather data on forest growth, productivity and species diversity
- * Topics captured through anecdotal or informal observation, e.g. instances of moderate decline, growing season length and phenology, reliability of frozen ground, prevalence of tick-borne illness
- * Information that is currently gathered from outside sources, e.g. pest and disease status from state or federal agencies
- * Potential data gaps, e.g. managers may want to begin explicitly monitoring changes in snowpack or temperature variability that affect operational conditions
- * Priorities of each partner organization



Project Timeline



YEAR 1 Site-specific Monitoring

- Identify study sites
- Collect information about current monitoring & inventory
- Develop and test local metrics
- Develop draft of mgmt. plan module

YEAR 2 Regional Context

- Assess forest health & productivity trends with USFS FIA (or other sources)
- Develop regional synoptic report
- Explore use of remotely-sensed information for trend detection

YEAR 3 Management Plan Module

- Integrate local metrics and regional trend assessments into forest management plan module

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Funding for an initial pilot effort was provided by Jane's Trust and the Maine Timberlands Charitable Trust. A generous grant from the Sustainable Forestry Initiative supports the three-year project described here.