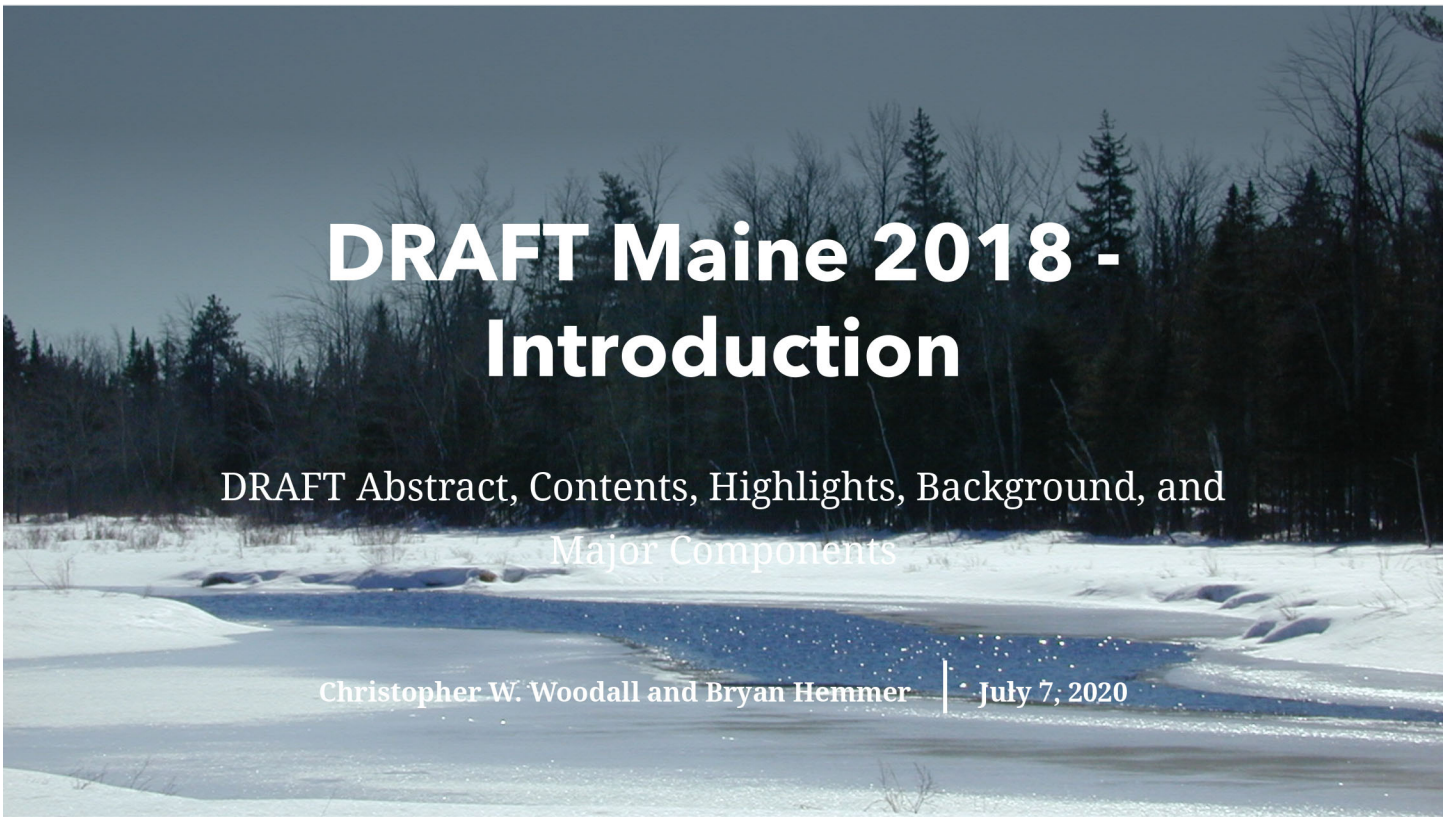

DRAFT Maine 2018 - Introduction

DRAFT Abstract, Contents, Highlights, Background, and Major Components

Christopher W. Woodall and Bryan Hemmer | July 7, 2020

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Abstract

Foreword

Contents

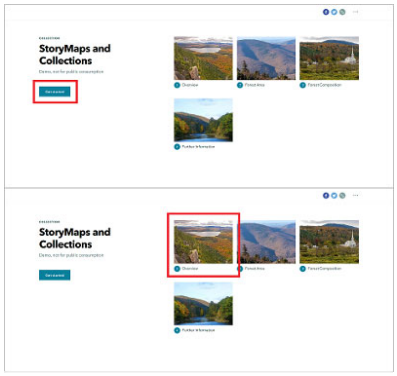
The report contains of the following sections:

- Forest Features
- Forest Resource Attributes
- Forest Health Indicators
- Forest Ecosystem Services

There are three ways to navigate through the report.

How to Navigate

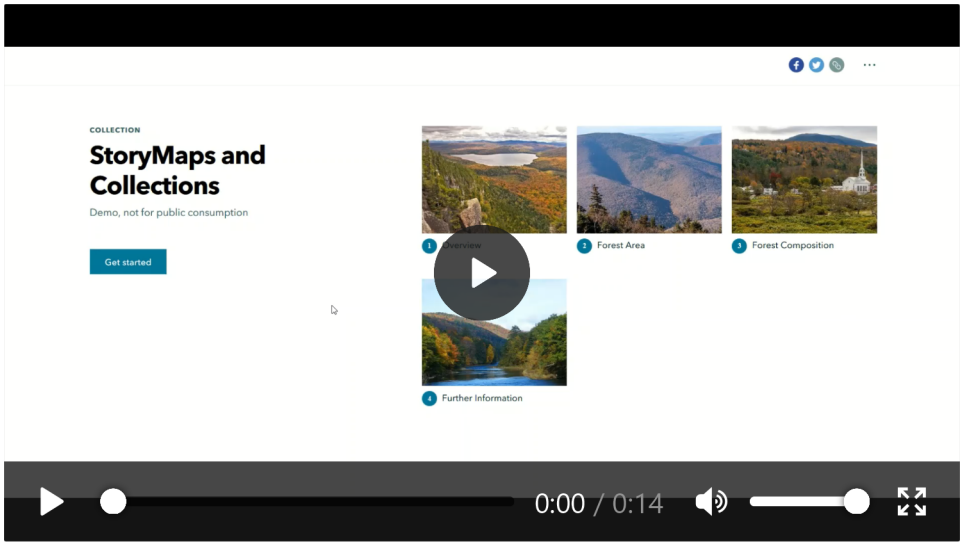
This report is composed of multiple, interconnected sections or “StoryMaps”. A StoryMap is a web-based application on the ArcGIS platform that enables the creation and sharing of maps in the context of narrative text and other multimedia content.



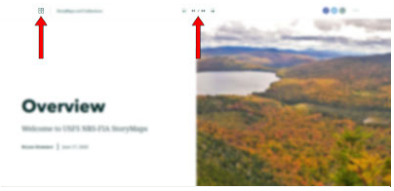
To begin exploring this report click **Get started** or click one of the StoryMap cards.

Opening StoryMaps

There are two methods for opening StoryMaps; click **Get started** to enter the main viewing experience, or, click the StoryMap card where you can view each section or StoryMap individually.



Video demonstrating the two methods for opening StoryMaps.

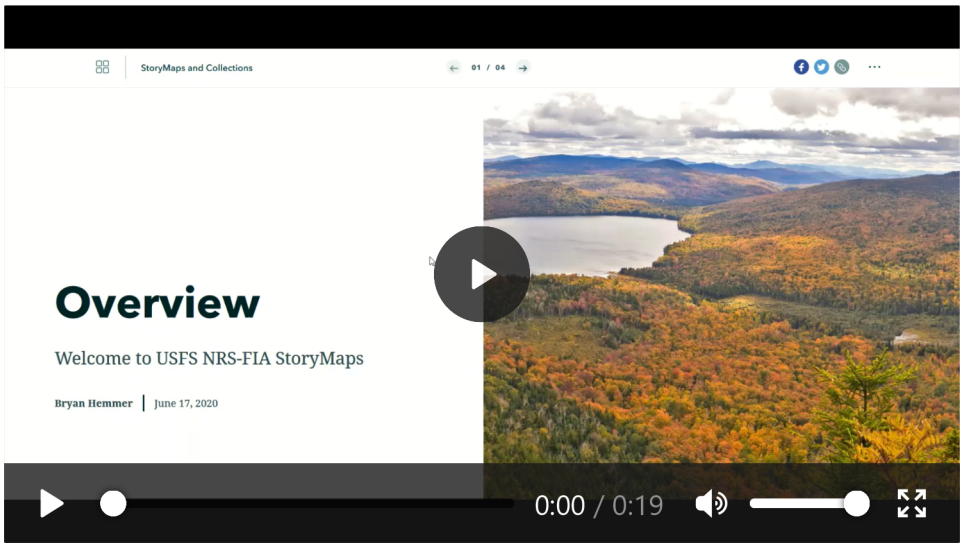


Navigate to other StoryMaps by either clicking the overview button or one of the navigation arrows in the sidebar.

Navigating within StoryMaps

Scroll or arrow down to view the content in each section. The interactive graphics can be explored within each section or by opening them in separate windows.

Use the arrows in the sidebar to step sequentially through other sections. If you want to view the report overview, click the button next to the collection title in the sidebar. From there you can click on any thumbnail to jump directly to that content.

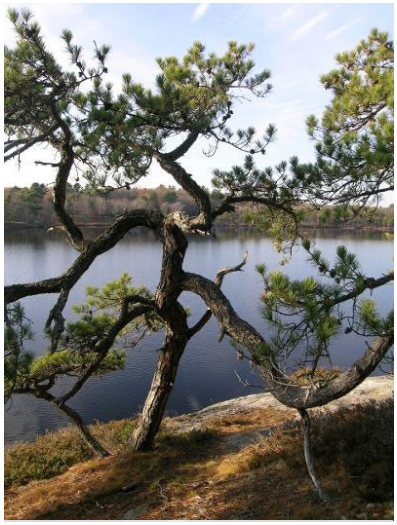


Video demonstrating the two methods for navigating to different StoryMaps.

Highlights

On the plus side

Issues to watch



Jack pine tree in Holt Research Forest, by Laura Kenefic USFS.

Background - An Overview of Forest Inventory

What is FIA?

The Forest Inventory and Analysis program (FIA) was established by the US Congress to “make and keep current a comprehensive inventory and analysis of the present and prospective conditions of and requirements of the forest and range lands of the United States” (Forest and Rangeland Renewable Resources Planning Act of 1974; 16 USC 1601 note). The program has collected forest information for over 80 years. A wide breadth of forest metrics is collected and analyzed for use by the general public, resource managers, policy makers, and researchers to better understand forest resources and the demands placed on them to make informed decisions on the fate of the forests of the US.

What is this report?

A Guide to Forest Inventory

What is a tree?

Trees are perennial woody plants with central stems and distinct crowns. The Forest Inventory and Analysis (FIA) program defines a tree as any perennial woody plant species that can attain a height of 15 feet at maturity. A complete list of the tree species measured in Maine during this inventory is included in the appendix. Throughout this report, the size of a tree is usually expressed as diameter at breast height (d.b.h.), in inches. This is the diameter, outside the bark, at a point 4.5 feet above ground.

What is a forest?

A forest is a collection of trees and most people would agree on what a forest is. But in order for statistics to be reliable and comparable, a definition must be created to avoid ambiguity. FIA defines forest land as land that has at least 10-percent canopy cover with trees of any size or formerly having had such tree cover and not currently developed for nonforest use. Generally, the minimum area for classification as a forest is at least 1 acre in size and 120 feet in width. There are more specific criteria for defining forest land near streams, rights-of-way, and shelterbelt strips (U.S. Forest Service 2016).

What is the difference between timberland, reserved forest land, and other forest land?

From an FIA perspective, there are three types of forest land: timberland, reserved forest land, and other forest land.

- Timberland is unreserved forest land that meets the minimum productivity requirement of 20 cubic feet per acre per year.

- Reserved forest land is land withdrawn from timber utilization through legislative regulation without regard to productive status, e.g., state parks, natural areas, national parks, and Federal wilderness areas. All reserved forest land is in public ownerships.

- Other forest land is commonly found on low-lying sites or high craggy areas with poor soils where the forest is incapable of producing 20 cubic feet per acre.

- In earlier inventories, FIA measured trees only on timberland plots and did not report volumes on all forest land. Since the implementation of the annual inventory, FIA has been reporting volume on all forest land.

- With the fourth remeasurement completed, comparison of four sets of growth, mortality, and removals data, as well as trends on forest land is now possible. However, because some of the older periodic inventories reported only on timberland, much of the trend reporting in this publication is still focused on timberland.

How do we estimate a tree's volume?

To estimate a live tree's volume, FIA uses volume equations developed for each tree species group found within the northeastern United States. Individual tree volumes are based on species, diameter, and height. FIA reports volume in cubic feet and board feet (International ¼-inch rule). Board-foot volume measurements are only applicable for sawtimber-size trees. Some wood products are often measured in cords (a stack of wood 8 feet long by 4 feet wide and 4 feet high). A cord of wood consists of about 79 to 85 cubic feet of solid wood and the remaining 43 to 49 cubic feet are bark and air.

How is forest biomass estimated?

Specific gravity values for each tree species or group of species were developed at the U.S. Forest Service Forest Products Laboratory (Miles and Smith 2009) and were applied to FIA tree volume estimates to determine merchantable tree biomass (weight of tree bole). Total aboveground live-tree biomass is calculated by adding the biomass for stumps, limbs, and tops (Woodall et al. 2011). Live biomass for foliage is currently not reported. FIA inventories report biomass weights as oven-dry short tons. Oven-dry weight of a tree is the green weight minus the moisture content. Generally, 1 ton of oven-dry biomass is equal to 1.9 tons of green biomass.

How do we compare data from different inventories?

To observe trends in the forest, current inventories are typically compared to past ones. This is possible for annual inventories, i.e., the 2003, 2008, 2013, and 2018 inventories. However, comparisons to periodic inventories (inventories conducted prior to 1998) are not desirable due to shifting definitions and assignment of stand characteristics such as forest type and stand size. While some estimates are less impacted (forest area, timber volume, tree biomass), others that directly involve forest type and size class are impacted such that direct comparisons are problematic.

Going from periodic to annual inventories, the plot design shifted from using variable-radius subplots to fixed-radius subplots. In addition, the 1990 inventory used modeled plots, based on measured plots in 1977, projected forward using the STEMS growth model (Belcher et al. 1982). However, the use of modeled plots appears to have resulted in the overestimate of live tree volume in the 1990 inventory on timberland by an estimated 6 percent.

A word of caution on suitability and availability

FIA does not attempt to identify which lands are suitable or available for timber harvesting, especially because suitability and availability are subject to changing laws and ownership objectives. Simply because land is classified as timberland does not mean it is suitable or available for timber production. Forest inventory data alone are inadequate for determining the area of forest land available for timber harvesting because laws and regulations, voluntary guidelines, physical constraints, economics, proximity to people, and ownership objectives may prevent timberland from being available for production.

Major Components of the FIA Program

Forest Inventory

National Woodland Ownership Survey

Information about family forest owners is collected annually through the US Forest Service's National Woodland Owner Survey (NWOS). The NWOS was designed to increase our understanding of owner demographics and motivation. Individuals and private groups identified as woodland owners by FIA are invited to participate in the NWOS. Each year, questionnaires are mailed to 20 percent of private owners, more detailed questionnaires are sent out in years 2 or 7 to coincide with national census, inventory, and assessment programs. Data presented here are based on survey responses from randomly selected families and individuals who own forest land in Maine. Please visit https://www.fia.fs.fed.us/nwos/ for more information.

Timber Products Output Survey

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