



LANDFIRE in the Field

Using Data Products for Ecological and Forest Management Inventory and Monitoring

Joel Carlson is the Principal Consultant and Owner of the Massachusetts-based [Northeast Forest and Fire Management, LLC](#) (NE-FFM) which he founded in 2006. For more than 25-years, he has worked in habitat



management, forestry, and fire management in positions as Chief of Forest Fire Control/Deputy Bureau Chief of Forestry with the Massachusetts Department of Conservation's Bureau of Forest Fire Control & Forestry; Fire Manager with The Massachusetts Chapter of The Nature Conservancy; and Woodlands & Natural Areas Manager for the University of New Hampshire's Woodlands and Natural Areas Program. An instructor at the National Advanced Fire and Resource Institute (NAFRI) in Tucson since 2004, Joel has participated in the Advanced Fire Effects (RX510) training where he presents on "Implementing Fire Regimes in Wildland Remnants Systems." He currently is a Community Representative on the [North Atlantic Fire Science Exchange](#).

An early adopter of LANDFIRE tools and data, Joel says they support his work to address conservation, natural resource, and fire management goals in both planning and implementation.

When and why did you start using LANDFIRE?

I worked for The Nature Conservancy's Massachusetts chapter and participated in several LANDFIRE regional workshops when the program first got started. Even at that time, it was clear that the various data products would have great utility when looking at broad scale questions.

I began using LANDFIRE data shortly after founding NE-FFM, when I was contracted by the US Fish and Wildlife Service to conduct a fuel and wildfire hazard assessment for the newly created Mashpee National Wildlife Refuge on Cape Cod. The assessment used field data that we collected for surface fuel models and crown fuels. Those data were combined with LANDFIRE data and then used to run FlamMap to generate spatial fire behavior outputs. Treatment prescriptions were then designed and tested using FMAPlus, NEXUS, BehavePlus, FlamMap, and GIS analysis on the project area.



Prescriptions that met set objectives related to the manipulation of existing conditions were then assigned spatially to the refuge using GIS, enabling managers to have spatially explicit treatment prescriptions for the entire refuge. It was decided not to use LANDFIRE products in this part of the project because the 30-m resolution of LANDFIRE's surface and crown data products wasn't appropriate for application at the refuge's scale of several thousand acres (and the heterogeneous landscape of Wildland Urban Interface). The topographic data products were used due to the relatively homogenous nature of these variables in the project area. While the collection of higher resolution field data was imperative for the project, a post-project analysis of the FlamMap outputs found that the field data set and LANDFIRE fuels data set produced similar results for fire behavior.

Tell us about your work in Cape Cod and elsewhere – how does LANDFIRE fit into it?

NE-FFM develops management plans and studies including forest management plans, wildfire hazard assessments, community wildfire protection plans, fire management plans, prescribed burn plans, and monitoring protocols. We undertake ecological and forest management inventory and monitoring to evaluate fire and forest management objectives. Services also include the coordination and instruction of fire management trainings and workshops. Additionally, the company plans, implements, and conducts the application of vegetation management, logging operations, and prescribed fire for a wide range of resource management goals including ecological management, forest management, fuel hazard reduction, and view shed protection.



Mashpee Pine Barrens - Carlson

Beyond using LANDFIRE data products for the desk reconnaissance of sites and for presentations, the data have been used for multiple projects, and have proven imperative for plans we developed for the Massachusetts Department of Conservation and Recreation at four of their properties, Manuel F. Correllus State Forest, Myles Standish State Forest, Blue Hills Reservation, and Boston Harbor Islands, in addition to the Massachusetts Division of Fisheries and Wildlife's [Montague Plains Wildlife Management Area](#). We produced Community Wildfire Protection Plans (CWPP) that use LANDFIRE data products for the [Wildland Fuel Hazard Assessment Mashpee National Wildlife Refuge](#), [Barnstable County Wildfire Preparedness Plan](#), [Cuttyhunk Island Community Wildfire Protection Plan](#), and [Prudence Island Community Wildfire Protection Plan](#), among others.

What LANDFIRE product is your "go-to" most often, and why?

The Fire Regime data products are a great tool for giving people an idea of what role fire plays at a state and regional scale. I use the Fire Regime Groups and Mean Fire Return Interval data products frequently for this purpose. An example is included my article for the Ecological Landscape Alliance, "[A Synopsis of Prescribed Fire in New England](#)."

Members of the NE-FFM's team use LANDFIRE heavily for planning projects when we do fire management Plans, CWPPs, and planning mechanical or prescribed fire treatments in extreme fire behavior areas near sensitive resources. One thing that has changed our work flow especially for larger projects or projects in new areas is the online Interagency Fuel Treatment Decision Support System (IFTDSS) which uses LANDFIRE data products. On new projects, we use Google Earth for the initial look at an area before we go into the field, then we insert IFTDSS and the associated LANDFIRE data products before heading out.

What opportunities do you see for LANDFIRE to improve its usefulness?

LANDFIRE is a valuable resource and to this day I cannot comprehend how a project as ambitious as this could do what it has done for the entire country -- no small task.

That said, nothing is perfect, and managers should always strive to improve past work using the adaptive management processes. I hope LANDFIRE improves data accuracy for northeastern fuels and vegetation along with the data sets derived from these products. Additionally, northeastern fire managers have been skeptical of LANDFIRE's value and accuracy. I think that northeastern managers can provide better feedback on what they observe in their management areas so as to improve LANDFIRE products. At the same time, LANDFIRE needs to work with the diverse array of government and non-government northeastern land managers, find out their needs, and show them how LANDFIRE can support their work.

I cannot imagine working without LANDFIRE data and products, and I am positive that the program will continue to support conservation and land management practices.

More from Joel:

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[Spring 2014 Prescribed Burn in Masticated Fuels for New England Cottontail Habitat on Mashpee Wampanoag Tribe Lands, Mashpee National Wildlife Refuge](#). 41-second video of Mashpee Prescribed Burn in Masticated Fuels

