LANDFIRE BpS Review

What is it? How does it work? Why does it matter?

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The Nature Conservancy LANDFIRE Team

Presented to
Southwest Fire Science Consortium
January 20, 2016

LANDFIRE's mission is to provide agency leaders and managers with a common "all-lands" data set of vegetation and wildland fire/fuels information for strategic fire and resource management planning and analysis.
Today’s Agenda

• The what and how about LANDFIRE BpS models
• A bit about BpS review: why it’s necessary, and how it will work
• How you can be involved
• Where to go for more information and help

BpS = Biophysical Settings
Introduction to LANDFIRE

**LANDFIRE**

*Land*scape *Fire* and Resource Management Planning Tools Project

An innovative program designed to **create** and periodically **update** comprehensive vegetation, fire and fuel characteristics **data** using a **consistent process** for the entire United States.

**KEYWORDS:** nationwide, consistent, ecological models, GIS data, tools, fire/non-fire, spatial data
**Spatial Datasets**

**LANDFIRE**
- Uses peer-reviewed, consistent, repeatable scientific methods
- Delivers an “all-lands” spatial dataset of vegetation

**LANDFIRE Products**
- Vegetation-not just fire
- Fire Regimes
- References and Baselines
- Fuels (Models and Measurements)
- Disturbance Characteristics
- Topographic and GIS Spatial Analysis
Spatial Datasets

LANDFIRE Existing Vegetation Type
LANDFIRE Existing Vegetation Cover
LANDFIRE Historic Fire Regime Groups
The link...

• The Biophysical Settings Model and Description bundles are linked to many spatial data sets.
• Spatial datasets are not perfect—we are always working to improve.
• Some areas for improvement are linked to the BpS descriptions.
Vegetation Model & Description Bundle

- **WHAT**: describe how ecosystems (Biophysical Settings) looked and functioned prior to major European Settlement

- **WHY**: to use as a reference to compare current conditions to (READ-not a prescription)

- **HOW**: worked with hundreds of experts to describe and model, followed by expert review, incorporation of feedback then QA/QC

- **WHEN**: ~ 2,000 models and descriptions completed in 2008. TNC’s LANDFIRE team submitted 200-400 pages of documentation and associated models every two weeks.
WHAT

Two-part bundle

Textual description informed by ecological model

State-and-transition ecological model
### Description: the Basics

<table>
<thead>
<tr>
<th>General</th>
<th>Classes</th>
<th>Height/Cover Summary</th>
<th>Disturbances</th>
<th>Relevant Literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biophysical Setting ID</td>
<td>5013110</td>
<td>North-Central Interior Dry Oak Forest and Woodland</td>
<td>Forsted</td>
<td>Relevant literature</td>
</tr>
<tr>
<td>Geographic Range</td>
<td>Province 222: For Michigan 222J. For Wisconsin 222K, L and R.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disturbance Description</td>
<td>The North-Central Interior Dry Oak Forest and Woodland is predominantly Fire Regime I, characterized by low-to-moderate severity surface fires. Historically, indigenous fires accounted for over 95% of the ignitions over these landscapes. Vegetation types varied</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetation Description</td>
<td>Oaks dominated the presettlement vegetation, especially white oak (Quercus alba), black oak (Quercus velutina), northern pin oak (Quercus ellipsoidalis), and bur oak (Quercus macrocarpa). This system is distinguished from North-Central Interior</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjacency/Identification Concerns</td>
<td>This type intergrades and can be easily confused with North-Central Interior Dry-Wet Oak Forest and Woodland (1310). Fire suppression within the last century has allowed this system to be converted to that system on the northern knolls within the historic range</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uncharacteristic Native Conditions</td>
<td>Though present historically, red maple has been typified as the “native invasive” in oak forests. Its abundance in these systems measured in both stem density and basal area has grown considerably due to fire suppression and the marked increase in fire return</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

#### Model Dominant Species
- **QUAL**: Quercus alba
- **QUVE**: Quercus velutina
- **QUEL**: Quercus ellipsoidalis
- **QUCO2**: Quercus coccinea
- **CAGL8**: Carya glabra
- **PRSE2**: Prunus serotina
- **SAAL5**: Sassafras albidum
- **QUMA2**: Quercus macrocarpa

<table>
<thead>
<tr>
<th>Model Zone</th>
<th>Mapzones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alaska</td>
<td>1st MZ</td>
</tr>
<tr>
<td>California</td>
<td>2nd MZ</td>
</tr>
<tr>
<td>Great Basin</td>
<td>3rd MZ</td>
</tr>
<tr>
<td>Great Lakes</td>
<td>4th MZ</td>
</tr>
<tr>
<td>Northeast</td>
<td>5th MZ</td>
</tr>
<tr>
<td>Northern Plains</td>
<td>6th MZ</td>
</tr>
<tr>
<td>Northern Rockies</td>
<td>7th MZ</td>
</tr>
</tbody>
</table>

Originally captured in the “Model Tracker Database”
### Description: Succession Classes

#### Class A

<table>
<thead>
<tr>
<th>Landscape %</th>
<th>Class Indicator Species</th>
<th>Indicator Spp. Canopy Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>ANGE Andropogon gerardii</td>
<td>Upper</td>
</tr>
<tr>
<td></td>
<td>SCHIZ4 Schizachyrium</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SONU2 Sorghastrum nutans</td>
<td></td>
</tr>
</tbody>
</table>

**Cover Type**: Early Development 1  
**Struct. Stage**: All Structures

**Description**: PRAIRE. This class ranges from 0-4 years and succeeds to class B. Class A is grassland prairie maintained by frequently recurring fire. Replacement fire was modeled with the probability of occurring every 10 years. Native Americans used these lands for hunting, and agriculture/native plant gathering. If fire is absent for a few years, tree seedlings and sprouts would recruit into trees and form savannas. Heavy grazing, though unlikely to have large-scale impact, would have kept certain patches from progressing to a woody shrub vegetation stage and would have maintained Class A. Native grazing was modeled with the probability of occurring every 100 years.

**Structural Data (for upper layer lifeform)**:
- **Min Canopy Closure**: 0 %
- **Max Canopy Closure**: 100 %
- **Min Height**: Herb 0m
- **Max Height**: Herb > 1.1m
- **Max tree size class**: None

- **Upper Layer Lifeform is not Dominant**

If checked, please specify the dominant lifeform, and its minimum and maximum canopy cover and height:

#### Class B

<table>
<thead>
<tr>
<th>Landscape %</th>
<th>Class Indicator Species</th>
<th>Indicator Spp. Canopy Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>QUAL Quercus alba</td>
<td>Upper</td>
</tr>
<tr>
<td></td>
<td>QUVE Quercus velutina</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SCHIZ4 Schizachyrium</td>
<td></td>
</tr>
</tbody>
</table>

**Cover Type**: Mid Development 1  
**Struct. Stage**: OPEN

**Description**: SAVAINA. This class ranges from 5-14 years and succeeds to class C. Savannas conditions occurred where fire was fairly frequent allowing some trees to develop (5-15 yrs). Any area that does not burn frequently would convert to woodland conditions (class C). Replacement fire, modeled at the probability of occurring every 40 years, would send class B to class A. Surface fire, modeled at the probability of occurring every 33 years, would maintain the system in this class. Native grazing, modeled at the probability of occurring every 100 years, would also maintain the system in this class.

**Structural Data (for upper layer lifeform)**:
- **Min Canopy Closure**: 11 %
- **Max Canopy Closure**: 20 %
- **Min Height**: Tree 0m
- **Max Height**: Tree 25m
- **Max tree size class**: Large 21-33” DBH

- **Upper Layer Lifeform is not Dominant**

If checked, please specify the dominant lifeform, and its minimum and maximum canopy cover and height:
Boxes = Succession classes.   Lines = disturbances or succession
Inputs for VDDT modeling included:

- basic parameters for each Succession Class (structure, start and end age)
- types and annual probability of disturbances
- what happens when there is not a disturbance

Models were run:

- 10 times for 1,000 cells, 1,000 years
“High-touch” hands-on process

1. Experts reviewed models and descriptions
2. Reviews were incorporated into the descriptions & models
3. Automated and manual quality assurance and quality control.

*Not perfect!*
Delivered

- Description and Model bundles delivered every two weeks
- First cog in the machine of BpS, S-Class, Vegetation Departure and other mapping processes
Uses

- Research
- Conservation planning
- Input for other models
- Fire management planning
- Ecological assessment
Why Review?

• “Blunders” e.g. typos, inconsistencies, and so on
• New science
• Missed opportunities
• Potential for upgraded delivery system
• Updated modeling software
Our Philosophy

BpS Review + Users = Better Products
BpS Review Process

• We are currently “cleaning” the BpS list, removing duplicates and near duplicates.
• We will post those documents, ~1200 of them, to a dedicated BpS Review website.
• We will then invite review. Contributors will have option to review only a Word document, or can do the document and the model.
• Most review will be conducted in contributors’ locations, e.g. office desk, laptop, etc., though the LANDFIRE team will hold WebEx sessions and be available to help.
• Review will be incorporated and delivered via a Web Site (TBD).
Online Connections

LANDFIRE Program Home: http://www.landfire.gov

Conservation Gateway: http://nature.ly.landfire

Twitter: @nature_LANDFIRE

YouTube: LANDFIREvideo

Bulletins/Post cards via e-mail
  - Opt in: http://eepurl.com/baJ_BH

Email: LANDFIRE@tnc.org