**Rapid Assessment Reference Condition Model**

The Rapid Assessment is a component of the LANDFIRE project. Reference condition models for the Rapid Assessment were created through a series of expert workshops and a peer-review process in 2004-2005. For more information, please visit www.landfire.gov. Please direct questions to helpdesk@landfire.gov.

**Potential Natural Vegetation Group (PNVG):**

**R4OKHK**  
Oak Woodland

### General Information

**Contributors** (additional contributors may be listed under “Model Evolution and Comments”)

**Modelers**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
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</table>

**Reviewers**

<p>| | |</p>
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<thead>
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<tbody>
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</tr>
</tbody>
</table>

**Vegetation Type**  
Woodland

**Dominant Species**

- QUAL  
- TIAM  
- QURU  
- CAOV  
- QUMA  
- OSVI  
- ACSA  
- QUMU

**General Model Sources**

- Literature
- Local Data
- Expert Estimate

**Rapid Assessment Model Zones**

- California  
- Pacific Northwest  
- Great Basin  
- Great Lakes  
- South Central  
- Northeast  
- S. Appalachians  
- Northern Plains  
- Southwest  
- N-Cent.Rockies

**Geographic Range**

Occurring primarily in Iowa, northern Missouri, eastern Nebraska.

**Biophysical Site Description**

Found in wooded valleys extending into the extensive landscape of tallgrass prairie on the uplands. Topographically, distributed on dry and dry-mesic slopes between flat uplands and bottomlands; also on dry sites on flat uplands adjacent to edges of valleys. Generally, from east to west, the distribution becomes more and more limited in extent and more dependent on favorable habitat conditions. Open conditions describe a single canopy structure with no developed midstory. Closed conditions are multiple canopy usually late-seral forests.

**Vegetation Description**

White oak, red oak, bur oak, basswood, sugar maple (east), and black maple (west) are the main tree species; bur oak, hickory, white ash, and American and red elms are frequent associates. Ironwood and roughleaf dogwood are important under and mid story components. Toward the western edge of the type, the following tree species drop out of the model due to geographic range: sugar maple, black maple, white, oak, red oak. At the far western edge, only bur oak and basswood remain as major canopy trees.

**Disturbance Description**

Fire Regime Group I. Frequent surface fires (5-yr fire return interval) in the understory under woodland density of canopy trees. Interruptions to frequent fire are necessary to allow tree regeneration to replace aging canopy trees. A 15-yr pause in burning is modeled as opportunity for regenerating trees to grow into fire-resistant size class before surface fire resumes.

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*Dominant and Indicator Species are from the NRCS PLANTS database. To check a species code, please visit http://plants.usda.gov.*
Adjacency or Identification Concerns
Adjoins oak savanna (R4OASA) toward prairie side of woodland. Adjoins maple-basswood forest communities on rarely burned mesic sites. Model focuses on portion of landscape that could support oak woodland.

Scale Description
This PNVG was found in fairly protected areas with minimum patch sizes 100-1000 and maximum 10,000 acres.

Issues/Problems
Class A (open regenerating state) modeled out to be 16% of outcome, but presettlement condition was likely much less (1%).

Model Evolution and Comments
Ortmann suggested that grazing/browsing could have been an important influence in establishment of canopy trees in gaps and in recruitment/establishment of understory species.

Succession Classes
Succession classes are the equivalent of "Vegetation Fuel Classes" as defined in the Interagency FRCC Guidebook (www.frcc.gov).

<table>
<thead>
<tr>
<th>Class</th>
<th>%</th>
<th>Description</th>
<th>Indicator Species* and Canopy Position</th>
<th>Structure Data (for upper layer lifeform)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class A</strong> 16%</td>
<td></td>
<td>Early1 All Structures 0-15 years. Sprouts, seedlings, saplings of major overstory species in gaps and openings created by wind, insect/disease and fire. Shrubs abundant as well. Both fire-tolerant and intolerant species present. Trees grow into fire-resistant sizes by end of this class.</td>
<td>QUAL Upper, QURU Upper, TIAM Upper, ACA SA Upper</td>
<td><strong>Cover</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Min</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Height</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Herb Short &lt;0.5m</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Tree Size Class</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sapling &gt;4.5ft; &lt;5”DBH</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Upper Layer Lifeform</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Herbaceous</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Shrub</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓ Tree</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Fuel Model</strong></td>
</tr>
</tbody>
</table>

| **Class B** 67% |     | Late1 Open 16-400 years. Single canopy structure without woody understory. Herbaceous layer dense. White oak and red oak are dominant species due to fire exclusion of maple and basswood. After 150 years, red oak dies of old age, leaving white oak as main dominant. | QUAL Upper, QURU Upper | **Cover** | **Max** |
|                  |      |                                                                            |                                        | Min                                      | 25 % | 60 % |
|                  |      |                                                                            |                                        | **Height**                              |     |       |
|                  |      |                                                                            |                                        | Tree Short 5-9m | Tree Medium 10-24m |
|                  |      |                                                                            |                                        | **Tree Size Class**                      |     |       |
|                  |      |                                                                            |                                        | Large 21-33”DBH                          |
|                  |      |                                                                            |                                        | **Upper Layer Lifeform**                 |     |       |
|                  |      |                                                                            |                                        | - Herbaceous                           |     |       |
|                  |      |                                                                            |                                        | - Shrub                               |     |       |
|                  |      |                                                                            |                                        | ✓ Tree                                 |     |       |
|                  |      |                                                                            |                                        | **Fuel Model**                          |     |       |

*Dominant and Indicator Species are from the NRCS PLANTS database. To check a species code, please visit http://plants.usda.gov.
Insects/Disease
Wind/Weather/Stress
Competition
Other:

<table>
<thead>
<tr>
<th>Class C</th>
<th>17%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Late1 Closed</td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>16-400 years. Mature canopy. White oak is dominant overstory species variable due to death of red oak and fire exclusion of maple and basswood.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indicator Species* and Canopy Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACSA Upper</td>
</tr>
<tr>
<td>TIAM Upper</td>
</tr>
<tr>
<td>QURU Upper</td>
</tr>
<tr>
<td>QUAL Upper</td>
</tr>
</tbody>
</table>

**Upper Layer Lifeform**
- [ ] Herbaceous
- [ ] Shrub
- [x] Tree

**Fuel Model** no data

**Structure Data (for upper layer lifeform)**

<table>
<thead>
<tr>
<th>Cover</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>60%</td>
<td></td>
<td>100%</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Height</th>
<th>Tree Size Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tree Short 5-9m</td>
<td>Tree Medium 10-24m</td>
</tr>
<tr>
<td>Large 21-33&quot;DBH</td>
<td></td>
</tr>
</tbody>
</table>

**Non-Fire Disturbances Modeled**
- [x] Insects/Disease
- [x] Wind/Weather/Stress
- [ ] Native Grazing
- [ ] Competition
- [x] Other:

**Disturbances**

<table>
<thead>
<tr>
<th>Fire Regime Group:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>I: 0-35 year frequency, low and mixed severity</td>
</tr>
<tr>
<td>II: 0-35 year frequency, replacement severity</td>
</tr>
<tr>
<td>III: 35-200 year frequency, low and mixed severity</td>
</tr>
<tr>
<td>IV: 35-200 year frequency, replacement severity</td>
</tr>
<tr>
<td>V: 200+ year frequency, replacement severity</td>
</tr>
</tbody>
</table>

*Dominant and Indicator Species are from the NRCS PLANTS database. To check a species code, please visit http://plants.usda.gov.*
**References**

Anderson, Pail F. 1996. GIS research to digitize maps of Iowa 1832-1859 vegetation from General Land Office township plat maps. Iowa Department of Natural Resources, Des Moines, Iowa. See also: http://www.public.iastate.edu/~fridolph/dnrglo.html


