



Peer Review Plan

(Reference [Information Quality Act](#))

FS-1400-0003 (V.1.1) 3/12

☒ Influential Scientific Information

☐ Highly Influential Scientific Assessment

Agency

USDA Forest Service, Northern Research Station

Principle Investigator

Leslie Brandt

Title of Study

Central Hardwoods Ecosystem Vulnerability Assessment and Synthesis

Field of Study

forest ecology, climate change

Type of Review

☐ Panel Review

☐ Alternative Process (Briefly Explain):

☒ Individual Review

Estimate Date for Completion

05/23/2013

Number of Reviewers

☒ 3 or fewer

☐ 4 to 10

☐ More than 10

Primary Discipline/Types of Expertise needed for Review

Forest ecology of central hardwoods region, landscape ecology, forest management, global change

Reviewer Names and Affiliations

Dr. Stephen Shifley, US Forest Service, Northern Research Station, Columbia, MO

Dr. Michael Jenkins, Department of Natural Resources, Purdue University

Dr. David Diamond, Department of Forestry, University of Missouri

Expected Publication Outlet (Science or similar Peer Reviewed Journal)

NRS General Technical Report.

Reviewers Selected by: ☒ Agency

☐ Designated Outside Organization

Organization's Name: _____

Opportunities for Public Comment? ☐ Yes ☒ No

If yes, briefly state how and when these opportunities will be provided:

How: _____

When: _____

Peer Reviewers Provided with Public Comments ☐ Yes☒ NoPublic Nominations Requested for Review Panel ☐ Yes☒ No**Other Comments****Abstract:**

The forests in the Central Hardwoods region will experience direct and indirect impacts from a changing climate over the next 100 years. This assessment evaluates the vulnerability of terrestrial ecosystems in the Central Hardwoods region of Illinois, Indiana, and Missouri to a range of future climates. We synthesized and summarized information on the contemporary landscape, provided information on past climate trends, and illustrated a range of projected future climates. This information was used to parameterize and contextualize multiple vegetation impact models, which provided a range of potential vegetative responses to climate. Finally, we brought these results before a multi-disciplinary panel of scientists and land managers to assess ecosystems through a formal consensus-based expert elicitation process. We describe the cThe summary of the contemporary landscape of the region, identifies major stressors currently threatening forests and other terrestrial ecosystems in the region. Major current threats to forests in the area include invasive species, habitat fragmentation, oak decline, and an increase in mesophytic species compared to historical levels. OWe examined observed trends in climate over the historical record, which indicate reveal that precipitation increased in the area, is receiving more precipitation and that daily maximum temperatures are decreasing decreased while minimum temperatures are increasingincreased. We examined potential future Projected climate trends for the next 100 years for this region using downscaled global climate model data, which indicate a potential increase in mean annual temperature of 2 to 7 °F for this region over the next 100 years. Projections for precipitation suggest show an increase in winter and spring precipitation, and summer and fall precipitation projections vary by model. We identified potential impacts on forests by incorporating these future climate projections into three forest impact models (Tree Atlas, LINKAGES, and LANDIS PRO). Model projections suggest that northern mesic species such as sugar maple, American beech, and white ash may fare worse under future compared to current climate conditions, but other species such as post oak and shortleaf and loblolly pine may benefit from projected changes in climate. Changes in northern red, scarlet, and black oak will depend on how precipitation changes later in the late growing season. We assessed ecosystem vulnerability for nine natural community types in the region using Tthese model results along with projected changes in other factors such as wildfire, invasive species, and diseases, are incorporated into an overall assessment of ecosystem vulnerability for nine natural community types in the region. The basic assessment was conducted through a formal elicitation process of 20 science and management experts from across the region, who Vulnerability was determined by examining considered vulnerability in terms of a system's potential impacts and adaptive capacity through a formal elicitation process of 20 science and management experts from across the region. Mesic upland forests were determined to be the most vulnerable, while many systems adapted to fire and drought, such as open woodlands, savannas, and glades, were perceived as less vulnerable to projected changes in climate. These projected changes in climate and their associated impacts and vulnerabilities will have important implications for economically-important timber species, forest-dependent wildlife and plants, recreation, and long-range planning.