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## Forest Resiliency Indicator Checklist for Collaborative Groups: A Process to Develop a Shared Vision

Collaborative groups often struggle when trying to agree upon and articulate a common vision for forest restoration. The differing perspectives and varying backgrounds and experiences with regard to forest ecology that collaborative members bring are assets in terms of increasing understanding and more fully representing the many objectives that are important in a project. Those differences often cause discord within the group, and can make the attempt to find agreement on restoration actions seem overwhelming. In these documents, the National Forest Foundation offers a potential process for collaborative groups to use in identifying key areas of agreement and disagreement regarding the ecological health of a project area. Through use of this process, we hope groups will be able to take proactive steps to gather information and increase understanding around the issues that spur the most conflict, ultimately leading toward agreement on a shared vision for a resilient forest. The process is outlined below and then covered step-by-step in Appendices I and II.

The National Forest Foundation views this document is a work in progress. We would greatly appreciate any feedback your collaborative group has based on your experience in working with the tool and/or in other approaches your group has taken to identify a shared vision for restoration.

**OVERALL QUESTION:** How can our collaborative stewardship group support actions/activities that trend the forest in a more resilient direction?

### Process:

- Review common indicators of forest health/resiliency in the document below (Appendix I).
- As a group, go out and look at the project area and/or review maps, specialists' reports and data layers for the forest area if appropriate.
- As individuals, ask each member of the collaborative group to fill out the forest assessment form (Appendix II) *according to their perspective*.
- Have your coordinator, facilitator or a balanced subset of your collaborative collect all of the forms and tabulate results.
- Discuss the results as a group. Identify areas where there is broad agreement; make sure everyone sees and fully understands these areas of agreement as a way to further build consensus of the group.
- For areas of disagreement, make a plan for how to get more information or further explore the issue, with the intent of eventually finding agreement so the group can move forward with projects that lead towards this shared vision.
- Finally, outline the final agreed-upon components in a comprehensive document to be shared with all members of the collaborative in order to ensure common understanding amongst all members.

## **Appendix I: Assessing Ecological Forest Landscape Resilience: A Starting Point**

This document is intended to assist collaborative stewardship groups in identifying key questions to ask and answer when developing a shared vision of forest resiliency for the group and determining priorities for restoration planning and on-the-ground projects. These questions do not address social or economic needs, but are focused on ecological conditions of forest ecosystems. They can be used to help gather appropriate information to support development of both short and long term objectives for investment in the resiliency of the project area/forest. As stated in the title, this process is a starting point to help launch discussion, and may lead the group to consider more questions relevant to your area or that respond to specific concerns of the participants.

The following outlines indicators that are commonly evaluated in determining forest resiliency.

### **1) Plant and Soil Relationship (how plants support soil development and how soil supports plant growth)**

- a) Soil compaction is often an indicator of compromised plant-soil relationships. Some signs of soil compaction can include:
  - Weeds like dandelions, knotweed, clover
  - Mineral Soil
  - Widespread roads and motorized or horse trails (look for linear vectors of vegetation)
  - Large areas of tread marks from vehicles or other obvious signs of heavy equipment (puddling, displacement, rutting)
  - Degraded litter and duff (duff is partially and fully decomposed organic matter on forest floor, and litter is pieces of vegetation that have fallen onto the forest floor)
  - Widespread presence of domestic livestock
  - Dispersed camping impacts
  - Extensive human foot traffic
  - Heavy use by wild ungulates
  
- b) Woody debris on the forest floor is commonly recognized as important to the natural process of vegetation being incorporated into the soil. Coarse woody debris provides diverse habitat for vertebrates and invertebrates, and slowly releases nutrients. Finer organic debris (small twigs, leaves, dead bugs) decay into organic matter that retains water within the soil for nutrient uptake, helps prevent catastrophic run-off events, and is the energy source for microbes that in turn make nutrients available to plants and other organisms. Herbaceous species help control erosion, serve as food sources for animals, and contribute to the productivity and diversity of the forest. In reviewing this component consider:
  - Presence of woody debris across the forest/project area
  - Diversity in structure of woody debris present – e.g. large logs, smaller branches and twigs
  - Character of litter and duff
  - Soil Wood

## 2) Diversity

Diversity in a variety of forms is important for the ecological integrity of the forest and is an indicator of resilience. An even-aged stand of one tree species, for example, is more susceptible to disease and infestation because of the insects' ability to grow their population rapidly, versus a forest with diverse species and ages. A mosaic of plant species and age and size structures can slow the spread of disturbance like insects or fire, and can also support a greater variety of habitats and wildlife. In addition, if one were to view the forest as a puzzle with pieces representing patches of different plant communities and age and size structures, then if one piece that is important to certain wildlife or plant communities is injured or damaged, they can move to another piece offering those same characteristics. Diversity should be reviewed in a variety of ways:

- a) Diversity across the landscape, or "patchiness"
  - Do you observe a mix of vegetative communities, soil and forest floor characteristics, and habitat?
- b) Diversity in structure, meaning different ages and sizes of vegetation
  - Are all of the trees about the same age?
  - Do you observe a variety of canopy heights?
  - Do you observe a mix of under and mid-story plants?
- c) Vegetative species diversity
  - Does one species dominate at the expense of others? Think about both canopy and forest floor species, recognizing that sometimes single species domination is the natural condition.
  - Are species of concern missing or failing to thrive?
  - Is there a high presence of non-native invasive species that are pushing out or inhibiting the growth of native plants?
- d) Wildlife diversity (you will likely need to gather information using reports for this one)
  - Does one species dominate at the expense of others?
  - Are species of concern missing or failing to thrive?
  - Is there a mix of different types of species (birds, small and large mammals, insects, etc.)?

## 3) Disturbance

Both the history of disturbance and the response of the area to disturbance are important in gauging whether a system has the ability to recover through natural cycles.

- a) In many areas, fire disturbance is a representative component of a healthy, functioning forest ecosystem. Fire regimes are a measure of how frequently wildfire naturally passes through a forest system. You can learn a lot by looking at the projected fire regime for an area and comparing it with the actual history of fire in an area.
  - Are there areas of the forest that are susceptible to uncharacteristic wildfire given a past history of fire suppression?
  - Is there a need/opportunity to address areas that have not been subject to a natural fire regime through stewardship/restoration work?

- b) Insects (bark beetles, for example) are a natural part of the ecosystem, but their populations can grow very large when forest conditions support their population growth and trees are in a distressed state due to other factors.
- To what extent are bark beetles or other insects that affect trees present?
- c) Invasive plants can prevent native plants from thriving and change other forest conditions such as susceptibility and response to fire, habitat quality, and diversity, among others.
- To what extent do you observe invasive species?
- d) Add to this list as appropriate for your area.
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Resources:

- Ecosystem Services Scorecard (ESS): User's Guide, Madson et al, National Commission on Science for Sustainable Forestry, 2006.
- [Managing Organic Debris for Forest Health](#), Schnepf et al, Pacific Northwest Extension Service, 2009.
- Decaying Organic Materials and Soil Quality in the Inland Northwest: A Management Opportunity, Harvey et al, USDA Intermountain Research Station, 1987.
- Check to see if your National Forest has a "Down Woody Material Guide".

## Appendix II

### Project Area Assessment Tool

Instructions: Based on your knowledge and observations, answer the following questions about the project area.

NAME:

DATE OF ASSESSMENT:

SITE:

Indicator: Plant and Soil Relationships	Through-out the project area	In some places	Not present	NA	Don't Know	Comments/Notes
<b>Soil compaction</b>						
• Are weeds such as dandelions, knotweed, or clover present?						
• Is there an overabundance of roads and motorized trails or horse trails?						
• Do you observe an excess of tread marks from vehicles or other obvious signs of heavy equipment?						
• Do you observe significant impacts from domestic livestock?						

• Do you observe negative soil impacts from dispersed camping or human foot traffic?						
• Additional considerations						
Other informational needs:						

<b>Woody debris on the forest floor</b>						
• Do you observe coarse woody debris (>3 inches)?						
• Do you observe small twigs, leaves, etc. (fine woody debris, <3 inches)?						
• Are herbs and understory plants present?						
• Additional considerations						
Other informational needs:						

<b>Indicator: Diversity</b>	Through- out the project area	In some places	Not present	NA	Don't Know	Comments/Notes
<b>Diversity across the landscape</b>						
<ul style="list-style-type: none"> <li>Do you observe a mix of vegetative communities, soil characteristics, and habitat?</li> </ul>						
<ul style="list-style-type: none"> <li>Additional considerations</li> </ul>						
Other informational needs:						

<b>Diversity in vegetative structure</b>						
<ul style="list-style-type: none"> <li>Are all of the trees and other vegetation about the same age?</li> </ul>						
<ul style="list-style-type: none"> <li>Do you observe a variety of canopy heights?</li> </ul>						
<ul style="list-style-type: none"> <li>Do you observe a mix of under and mid-story plants?</li> </ul>						
<ul style="list-style-type: none"> <li>Additional considerations</li> </ul>						
Other informational needs:						

<b>Diversity in vegetative species</b>						
• Does one species dominate at the expense of others?						
• Are species of concern missing or failing to thrive?						
• Is there a high presence of non-native invasive species that are pushing out or inhibiting the growth of native plants?						
• Additional considerations						
Other informational needs:						

<b>Diversity in wildlife species</b>						
• Does one species dominate at the expense of others?						
• Are species of concern missing or failing to thrive?						
• Is there a mix of different types of species (birds, small and large mammals, amphibians, insects, etc.)?						
• Additional considerations						
Other informational needs:						

<b>Indicator: Disturbance</b>	Through- out the project area	In some places	Not present	NA	Don't Know	Comments/Notes
<b>Fire</b>						
<ul style="list-style-type: none"> <li>Does the history of fire in the area match the expected natural fire interval?</li> </ul>						
<ul style="list-style-type: none"> <li>Are there areas of the forest that are susceptible to uncharacteristic wildfire?</li> </ul>						
<ul style="list-style-type: none"> <li>Is there a need/opportunity to address areas that have not been subject to a natural fire regime through stewardship/restoration work?</li> </ul>						
<ul style="list-style-type: none"> <li>Additional considerations</li> </ul>						
Other informational needs:						

<b>Insects</b>						
<ul style="list-style-type: none"> <li>To what extent are bark beetles or other insects that affect trees present?</li> </ul>						
<ul style="list-style-type: none"> <li>Additional considerations</li> </ul>						
Other informational needs:						

Indicator: Disturbance (cont.)	Through- out the project area	In some places	Not present	NA	Don't Know	Comments/Notes
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Invasive plants						
<ul style="list-style-type: none"> <li>Do you observe invasive species?</li> </ul>						
<ul style="list-style-type: none"> <li>Additional considerations</li> </ul>						
Other informational needs:						

Other						
<ul style="list-style-type: none"> <li>Additional considerations</li> </ul>						
Other informational needs:						