TECHNICAL BRIEF
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Go Big or Go Home?

Tools and Processes for Scaling Up Collaborative Forest Restoration

Forest Service Managers' Perceptions of Landscapes and Computer Models

U.S. Forest Service personnel are increasingly expected to manage national forests at landscape scales through programs such as the Landscape Scale Restoration grant program, Collaborative Forest Landscape Restoration Program, and Joint Chiefs' Program with the Natural Resource Conservation Service. These programs emphasize management at larger spatial scales, working across boundaries, and increasing the pace of activity. Achieving those outcomes often requires treatment strategies that account for complex relationships between management actions and resource conditions that vary across spatial scales and time. "Best available science", including computer models, is attracting interest to help explore potential landscape outcomes and tradeoffs from different management strategies. The output of computer models may be combined with other sources of information, such as stand surveys, remotely-sensed imagery, or experience/intuition, in informing management decisions. Participatory modeling may also be used to incorporate stakeholder perspectives and values. However, there has been little examination of how on-the-ground managers in the Forest Service view scientific information and tools like computer models. To explore this, we administered an online survey to 455 Forest Service employees[1] in the contiguous western U.S. states[2] and obtained 205 usable responses (response rate 61%).

[1]Invitees included line officers (e.g., district rangers), resource specialists who are members of interdisciplinary teams (IDT), such as fish biologists or silviculturalists, and NEPA or natural resource planners. We developed our list for this survey from 1) online listings where available on websites of individual Forest Service units, and 2) names and email addresses gathered from existing contact lists, email distribution lists, and distribution by regional office planning coordinators.

[2]We were not trying to draw a representative sample from Forest Service regions. Approximately half of the respondents were from the Northern and Intermountain regions, which include Montana, North Dakota, Idaho, Nevada, and Utah.

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Scientific knowledge vs public values

- When there is a low-level of public consensus around management priorities, 81% of respondents thought scientific knowledge should have greater influence in management decision-making than public priorities. An additional 15% of respondents thought equal weight should be given to scientific knowledge and public priorities in situations of low consensus.
- When public consensus on management priorities is high, perspectives shifted. Thirty-six percent of respondents thought equal weight should be placed on both scientific knowledge and public priorities. When public consensus was high, the share of respondents placing more, or much more, weight on scientific knowledge in decision-making declined to 45%.
- Slightly more than half of respondents changed their response about the influence of science in guiding decision-making as public consensus changed. Those changing their position most frequently moved one step towards placing more weight on public priorities in decision-making.
- More significant among those changing positions were those who changed the balance of the scale between science findings and public priorities. Fifteen percent of respondents switched from science being the primary influence on decision-making to public priorities being the primary influence on decision-making as consensus about public priorities moved from low to high.

The role of computer models

- Very few respondents thought computer models alone should guide management decision-making. Respondents most commonly (48% of respondents) thought information from computer models should be combined equally with other sources of information (e.g., on the ground sampling, local knowledge) when making management decisions. Nearly half of respondents went further and indicated that 'somewhat more weight,' or 'much more weight,' should be placed on other sources of information, relative to computer models, when making decisions.
- The personal activity most frequently reported as increasing confidence in using a computer model in decision-making was understanding how the model operates and its key assumptions; 61 percent of respondents stated this was very important.
- About ¾ of respondents stated that having access to model output to review on their own time was very important or important in enhancing their comfort with a model.
- Statements by a scientist that a given model was appropriate for a landscape or question under consideration were very important (24 percent) or important (48 percent) to increasing comfort. Slightly more than half of respondents indicated that hearing from managers that a model was appropriate for intended use was important or very important to enhancing the comfort with the model.

Implications for practice

The role of science in collaborative and public dialogue about management priorities should continue to be explored in research and practice. Scientific and public participation processes typically differ in purpose, timelines, and activities, but they can be integrated in well-facilitated processes. Scientists may help facilitate manager engagement with models by providing details such as the general operation of the model, if any trusted or widely-used models or tools are embedded, parameters or model options that have a known strong influence on model results, and key assumptions. Specific information about the conditions and questions to which the model is most applicable can help managers understand if the model is appropriate for the resource decision under consideration. Co-developing model simulations may be a valuable way for scientists and managers to jointly explore and improve understanding about landscape system processes and outcomes from alternative management actions.

About Go Big or Go Home?: The goals of this research project were to analyze how public land managers and stakeholders in Oregon's east Cascades can plan and manage at landscape scales using scientific research and participatory simulation modeling (Envision). **To learn more, visit:** gbgh.forestry.oregonstate.edu

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