

Using Modern Digital Photography Tools to Guide Management Decisions on Forested Land

Abstract

Forestland management depends on assessing changes that occur over time. Long-term photo point monitoring is a low-cost method for documenting these changes. Using forestry as an example, this article highlights the idea that long-term photo point monitoring can be used to improve many types of land management decision making. Guidance on establishing photo points in the field and taking and cataloging images is presented. By implementing long-term photo point monitoring, landowners can document land management successes, and Extension professionals can use the resulting images to relay information on proper planning and management.

Brandon Craft
Graduate Student
Auburn University
School of Forestry
and Wildlife Sciences
Auburn, Alabama
bkc0008@tigermail.auburn.edu

Rebecca Barlow
Extension Specialist
and Associate
Professor
Auburn University
School of Forestry
and Wildlife Sciences
Auburn, Alabama
becky.barlow@auburn.edu

John Kush
Research Fellow
Auburn University
School of Forestry
and Wildlife Sciences
Auburn, Alabama
kushjoh@auburn.edu

Charles Hemard
Associate Professor
Department of Art
and Art History
Auburn University
Auburn, Alabama
cjh0009@auburn.edu

Introduction

Forestland management decision making is often based on forest inventorying, which may include assessing forests for tree diameters, tree heights, or measures of tree density (Avery & Burkhart, 2002). Often landowners are not well equipped to conduct forest inventories without the help of a land management professional. In addition, landowners may focus on managing for nontimber objectives, such as preserving land to pass on to heirs, retaining scenic beauty, and using land for recreation (U.S. Forest Service, 2009). Nontimber objectives such as these may be difficult to value through traditional forestry methods. This circumstance can be a challenge for Extension professionals needing additional ways to illustrate land management alternatives to the public. One effective tool that both landowners and Extension professionals have at their disposal, however, is photography. Photography is one of the fastest growing categories of recreational forest use (Wear & Greis, 2013), but it also can be used to document forestland management activities. Today, cameras are relatively affordable and easy to use, making photography a low-cost option for forest assessment.

Using forestry as an example, this article highlights the idea that long-term photo point monitoring is

an option for landowners and Extension educators needing to document land changes over time. The article provides guidance on establishing photo points in the field, developing guidelines for a photo point monitoring endeavor, and taking and cataloging images. It should be noted, however, that this technique can be used beyond the context of forestland management to document a variety of land management activities, including stream-side management endeavors, wildlife habitat improvements, and agricultural practices.

Guidance on the Photo Point Monitoring Process

Establishing Photo Points in the Field

When setting up permanent photo points in a forest, choose a broad range of locations with regard to tree canopy, groundcover, slope, aspect, and ecosystem characteristics. When you have selected a photo point, place a permanent marker to indicate the location of the photo point on the ground. Consider the long-term nature of the area in which the point is located and possible future conditions when deciding how best to mark the point. For example, a wooden or plastic marker may not be well suited to a forest that is regularly burned under a prescribed fire regime. A metal marker, such as rebar or a t-post, may be inappropriate if the point is in an area with high vehicular or foot traffic due to safety and equipment damage concerns. After establishing and marking photo points, record their locations on a map and/or by using a GPS so that you can easily return to them. Or you may use geotagging options that attach location information to photo files, if available.

Developing Guidelines for the Process

Develop and document guidelines for the photo point monitoring process. Field of view, camera settings, time of day, and season are important factors to address. Guidelines should be detailed enough that someone with no knowledge of how the photos have been taken in the past could replicate the conditions. Guidelines should relate to how to frame the photo, what camera and lens to use, how often to take photos, and how to use a field notebook:

1. *Frame the photo the same way each time.* Use a tripod set at the same height and pointed in the same direction. Place a small, visually unobtrusive marker in the plot to be used to line up the image. A compass may be used to establish photo direction, or you may refer to prior images to recreate previous views.
2. *Use the same camera and lens each time.* If possible, use a fixed focal length lens (a prime lens). If a prime lens is not available, set the lens to the same focal length to avoid inconsistent zoom. It may be helpful to simply zoom out as far as the lens will allow to ensure that the zoom is always set the same.
3. *Decide how often photos should be taken.* Depending on objective, accessibility, and activities, the frequency with which photos are taken may range from weekly to yearly. Good times to take photos are just before, during, and after activities such as prescribed fire, herbicide application, harvesting, planting, and other activities that change the appearance of the forest. You also should establish some times of the year that serve as a baseline for when photos are always

taken. Attempt to take photos with similar exposures and at the same time of day.

4. *Document what you see in a field notebook.* Write down everything that may affect photo quality or the visual quality of the forest. Note forest changes you see. These notes can later be associated with file names, dates, and keywords in a photo database.

Cataloging the Images

Commercially available software, such as iPhoto or Picasa, can be used to digitally catalog images (Wolf, 2007). Most photo software has a keyword feature to assure that the same words are used each time for the same treatments or conditions. Keywords should document the location in which and circumstances under which a photo was taken—for instance, "thinned 3 months" or "burned May 2015."

Using the Images as Teaching and Management Tools

Extension educators can use photos from photo point monitoring to develop a narrative that helps stakeholders understand how treatments affect management goals, such as by increasing forest growth or enhancing the beauty of a stand. Photos may be used to answer questions such as the following: Did thinning without prescribed fire make the stand more or less appealing? How large are trees after 5, 10, or 15 years? How do stands of similar ages that have undergone different treatments compare? What could have been done to better achieve goals? This approach could be very similar in format to Smith's (2010) use of forest story cards.

Additionally, an approach similar to use of forest story cards can involve stakeholders in forest planning by using photographs to depict visually the impact of management actions. This process can help landowners see the benefits of proper land management over time. More experienced landowners can use the images to document forest change and management successes and failures. In the end, use of photo point monitoring will result in a forest management plan that better serves all landowners and facilitates more involvement in the management of their land.

Conclusion

By implementing the techniques related to photo point monitoring outlined in this article, Extension educators and landowners can document environmental change, using tools that are readily available. This cost-effective method does not replace traditional assessment techniques but instead can be incorporated into a more holistic management plan. Extension professionals also can use this process to develop a database of land management activity images that illustrate the effects of management over time when travel to an actual site is not possible.

References

- Avery, T., & Burkhart, H. (2002). *Forest measurements* (5th ed.). Boston, MA: McGraw-Hill.
- Smith, S. S. (2010). Forest story cards, a visual survey tool. *Journal of Extension* [online], 48(2) Article 2IAW6. Available at: <http://www.joe.org/joe/2010april/iw6.php>

U.S. Forest Service. (2009). *National woodland owner survey*. Retrieved from the Forest Inventory and Analysis National Program website: <http://www.fia.fs.fed.us/nwos/>

Wear, D. N., & Greis, J. G. (2013). *The southern forest futures project: Technical report* (Gen. Tech. Report SRS-178). Asheville, NC: U.S. Forest Service.

Wolf, M. (2007). Digital photograph album review. *Journal of Extension* [online], 45(1) Article 1TOT7. Available at: <http://www.joe.org/joe/2007february/tt7.php>

Copyright © by *Extension Journal, Inc.* ISSN 1077-5315. Articles appearing in the Journal become the property of the Journal. Single copies of articles may be reproduced in electronic or print form for use in educational or training activities. Inclusion of articles in other publications, electronic sources, or systematic large-scale distribution may be done only with prior electronic or written permission of the Journal Editorial Office, joe-ed@joe.org.

If you have difficulties viewing or printing this page, please contact [JOE Technical Support](#)