

February 2021

## Demonstrating the Public Value of Extension Forestry Programming Through Benefit Transfer Analysis

Daniel L. Goerlich  
*Virginia Tech*

John F. Munsell  
*Virginia Tech*

Heather H. Boyd  
*University of Notre Dame*

Klaus Moeltner  
*Virginia Tech*



This work is licensed under a [Creative Commons Attribution-Noncommercial-Share Alike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/).

---

### Recommended Citation

Goerlich, D. L., Munsell, J. F., Boyd, H. H., & Moeltner, K. (2021). Demonstrating the Public Value of Extension Forestry Programming Through Benefit Transfer Analysis. *Journal of Extension*, 57(6). Retrieved from <https://tigerprints.clemson.edu/joe/vol57/iss6/6>

This Ideas at Work is brought to you for free and open access by TigerPrints. It has been accepted for inclusion in *Journal of Extension* by an authorized editor of TigerPrints. For more information, please contact [kokeefe@clemson.edu](mailto:kokeefe@clemson.edu).

## **Demonstrating the Public Value of Extension Forestry Programming Through Benefit Transfer Analysis**

### **Abstract**

Cooperative Extension produces public value through educational programming that benefits the greater community. Forests provide numerous valuable benefits to society through the provision of ecosystem services. Cooperative Extension educational programming positively affects forest owners, who, in turn, conduct actions that enhance ecosystem services. An understudied relationship exists between Cooperative Extension and ecosystem services that can be drawn on to document Extension's public value. Applying ecosystem services values to Extension natural resources-related programmatic outcomes through benefit transfer provides an avenue through which Extension can potentially make significant advancements in monetizing its public value.

**Keywords:** [public value](#), [forests](#), [ecosystem services](#), [benefit transfer](#)

**Daniel L. Goerlich**  
Associate Director,  
Economy, Community,  
and Food  
Virginia Cooperative  
Extension  
Blacksburg, Virginia  
[dalego@vt.edu](mailto:dalego@vt.edu)

**John F. Munsell**  
Associate Professor  
and Extension  
Specialist  
Department of Forest  
Resources and  
Environmental  
Conservation  
Virginia Tech  
Blacksburg, Virginia  
[jfmunsell@vt.edu](mailto:jfmunsell@vt.edu)

**Heather H. Boyd**  
Research  
Development Program  
Director  
University of Notre  
Dame  
Notre Dame, Indiana  
[hboyd@nd.edu](mailto:hboyd@nd.edu)

**Klaus Moeltner**  
Professor  
Department of  
Agricultural and  
Applied Economics  
Virginia Tech  
Blacksburg, Virginia  
[moeltner@vt.edu](mailto:moeltner@vt.edu)

## **Introduction**

There are three primary ways Extension programs create public value: by addressing concerns about fairness, by closing an information gap, and/or by encouraging actions that benefit the greater community (Kalambokidis, 2014). Although each of these can serve as a criterion to justify public sector involvement, Kalambokidis (2014) observed that most Extension programs focus on the third type of value creation: benefiting the greater community. Many Cooperative Extension educational programs assert positive environmental outcomes (Marcouiller, Ray, Schreiner, & Lewis, 1992; Munsell & Germain, 2004; Straka & Franklin, 2008). These outcomes have broader implications for society that go beyond benefiting private individuals. For example, forests benefit the public and general societal welfare by providing ecosystem services (Boyd & Banzhaf, 2007; Fisher & Turner, 2008; Fisher, Turner, & Morling, 2009; Moore, Williams, & Rodriguez, 2011). These include scenery, carbon sequestration, filtered air and water, biodiversity, enhanced national security, and family values, among others (Haskell, Uchida, Swallow, & Uchida, 2010; Hull, 2011; Liu, Costanza, Troy, D'Agostino, & Mates, 2010; Ma, Kittredge, & Catanzaro, 2012; Raunikaar & Buongiorno, 2006).

The peer-reviewed body of scientific literature endeavoring to place monetary values on ecosystem services is extensive. Krieger (2001) summarized numerous studies addressing the economic value of forest ecosystem services. Binder et al. (2017) likewise provided a comprehensive review on nonurban forest ecosystem services valuation research.

We theorize that used appropriately, benefit transfer can serve as a critical link between articulation of Cooperative Extension public value and ecosystem services valuation literature. The benefit transfer process involves obtaining study results from one area and applying them to a similar situation in another location, but one for which primary studies are not available due to high costs, lack of time, or other constraints (Johnston, Rolfe, Rosenberger, & Brouwer, 2015; Liu et al., 2010). Benefit transfer is useful when monetary values are needed to inform decisions but highly precise estimates are not required (Johnston & Wainger, 2015).

## The Application

To test our theory, we reviewed a 5-year follow-up survey conducted by a Virginia Cooperative Extension (VCE) district forestry agent (Fisher, 2011). As part of the survey, forest landowner education program participants identified practice changes made following attendance at one or more landowner education programs between 2006 and 2011 (Fisher, 2011). Landowners reported taking numerous actions, such as establishing riparian buffers, placing land in a conservation easement, and thinning timber to promote forest health. These actions also have been shown to provide positive services to society, such as improved water, air, and aesthetic quality (Moore et al., 2011). In total, landowners reported nonproduct-oriented practice changes affecting 28,004 ac.

We then worked to identify a primary study whose values could be applied to Fisher's (2011) data via benefit transfer. Among the considerations for accurately portraying benefit transfer are similarities between the site characteristics, valuation contexts, and populations at the study site (the previously studied site from which values are taken) and the policy site (the site to which the values will be applied) (Loomis & Rosenberger, 2006). Splash and Vatn (2006) found lower numbers of transfer errors when the following conditions were matched at the study and policy sites: the environmental good/service, its quantity/quality, and the change in quantity/quality; the population, their use of the good/service, and their characteristics; constructed market characteristics; institutional setting; time between primary collection and transfer; and geographical location.

We applied the Splash and Vatn (2006) criteria to three primary studies—Campbell and Tilley (2014), Moore et al. (2011), and Liu et al. (2010)—and concluded that Moore et al. (2011) provided the best match for transferring values (Goerlich, 2017). These values ranged from \$264 per acre to \$13,442 per acre annually, with higher values originating from forested wetlands or riparian forests in urban areas and lower values from nonwetland forests in rural areas. We applied the low end of this range to Fisher's (2011) data due to the predominance of nonwetland, rural forests in the policy site and determined that the following claim could be made: 135 forest landowners attending Cooperative Extension educational programs in the Virginia Southern Piedmont Region between 2006 and 2011 took one or more positive management actions that brought about forest health improvements valued at approximately \$7,393,056 by the general public ( $\$264/\text{ac} \times 28,004 \text{ ac}$  affected). Adding the \$580,000 in timber income reportedly received by survey respondents would result in a combined public and private value of \$7,973,056 (Goerlich, 2017). However, would making this claim be accurate?

It is important to note that the applicability of benefit transfer contexts along with causation, correlation, and marginality all must be given careful consideration in this process. Time and resources permitting, a properly designed causal study would be necessary as a next step to fully answer the question of Cooperative Extension forestry programming implications for ecosystem services public value. That said, however, if we assume that even 10% of the case data calculation (or \$797,306) relates to causation, there still exists an opportunity to focus the public value conversation (Goerlich 2017).

## Conclusion

Since 2004 a segment of the Cooperative Extension literature has been focused on public value (Franz, 2011, 2014; Kalambokidis, 2004, 2011). Existing literature generally focuses on the importance of articulating public value (Kalambokidis, 2004), processes for incorporating public value thinking into organizational culture (Franz & Van Ginkel, 2011; Kalambokidis, 2011), and aggregating private value in an attempt to arrive at public value (DeBord, 2005). However, concrete examples for how to assign a credible monetary value to Extension's public impact are lacking. A credible process, along with organizational buy-in, that provides legitimacy to public value financial impact claims is needed to achieve the goals public value advocates propose. Without such a process, funding partners, employees, and stakeholder groups will continue to view Extension's public value claims with skepticism.

In summary, forests provide numerous valuable benefits to society through ecosystem services, and Cooperative Extension educational programming positively affects forests. Thus we are optimistic that, through application of benefit transfer principles, Cooperative Extension can articulate monetized public value resulting from programming efforts that enhance the provision of ecosystem services to society. This story can be told through intentional evaluation, data collection, and analysis of educational program offerings, supplemented by benefit transfer of existing values where appropriate and necessary.

## Acknowledgments

We thank Michael J. Mortimer, director and senior fellow, Virginia Tech Center for Leadership in Global Sustainability, and Bruce Hull, senior fellow, Virginia Tech Center for Leadership in Global Sustainability, and professor, Department of Forest Resources and Environmental Conservation, for their contributions on the topic addressed herein.

## References

- Binder, S., Haight, R. G., Polasky, S., Warziniack, T., Mockrin, M. H., Deal, R. L., & Arthaud, G. (2017). *Assessment and valuation of forest ecosystem services: State of the science review* (Report NRS-170). Newtown Square, PA: U.S. Department of Agriculture Forest Service. Retrieved from [https://www.fs.fed.us/nrs/pubs/gtr/gtr\\_nrs170.pdf](https://www.fs.fed.us/nrs/pubs/gtr/gtr_nrs170.pdf)
- Boyd, J., & Banzhaf, S. (2007). What are ecosystem services? The need for standardized environmental accounting units. *Ecological Economics*, 63(2007), 616–626.
- Campbell, E., & Tilley, D. R. (2014). Valuing ecosystem services from Maryland's forests using environmental accounting. *Ecosystem Services*, 7(2014), 141–151.
- DeBord, K. (2005). Communicating program value of family life and parenting education programs to decision

- makers. *Journal of Extension*, 43(2), Article 2IAW2. Available at: <http://www.joe.org/joe/2005april/iw2.php>
- Fisher, K. J. (2011). [Forest landowner survey—Virginia Cooperative Extension central district]. Unpublished raw data.
- Fisher, B., & Turner, R. K. (2008). Ecosystem services: Classification for valuation. *Biological Conservation*, 141(2008), 1167–1169.
- Fisher, B., Turner, R. K., & Morling, P. (2009). Defining and classifying ecosystem services for decision making. *Ecological Economics*, 68(2009), 643–653.
- Franz, N. K. (2011). Advancing the public value movement: Sustaining Extension during tough times. *Journal of Extension*, 49(2), Article 2COM2. Available at: <https://www.joe.org/joe/2011april/comm2.php>
- Franz, N. K. (2014). Measuring and articulating the value of community engagement: Lessons learned from 100 years of Cooperative Extension work. *Journal of Higher Education Outreach and Engagement*, 18(2), 5–16.
- Franz, N. K., & Van Ginkel, M. (2011). Determining and sharing the public value of FCS: Telling the story. *Extension and Outreach Research Scholarship*, 103(4), 53–54.
- Goerlich, D. L. (2017). *The value of Cooperative Extension's public benefit explored through enhancements to forest ecosystem services provision* (Doctoral dissertation). Retrieved from <https://vtechworks.lib.vt.edu/handle/10919/92586> (2019-08-01T06:00:31Z)
- Haskell, J. M., Uchida, E., Swallow, S. K., & Uchida, H. (2010). *Willingness to pay for forest ecosystem services in Rhode Island: Do payment elicitation mechanisms matter?* Unpublished manuscript.
- Hull, R. B. (2011). Forestry's conundrum: High value, low relevance. *Journal of Forestry*, 109(1), 50–56.
- Johnston, R. J., Rolfe, J., Rosenberger, R. S., & Brouwer, R. (2015). Introduction to benefit transfer methods. In R. J. Johnston, J. Rolfe, R. S. Rosenberger, & R. Brouwer (Eds.), *Benefit transfer of environmental and resource values: A guide for researchers and practitioners* (pp. 19–60). Dordrecht, Netherlands: Springer.
- Johnston, R. J., & Wainger, L. A. (2015). Benefit transfer for ecosystem services valuation: An introduction to theory and methods. In R. J. Johnston, J. Rolfe, R. S. Rosenberger, & R. Brouwer (Eds.), *Benefit transfer of environmental and resource values: A guide for researchers and practitioners* (pp. 237–274). Dordrecht, Netherlands: Springer.
- Kalambokidis, L. (2004). Identifying the public value in Extension programs. *Journal of Extension*, 42(2), Article 2FEA1. Available at: <http://www.joe.org/joe/2004april/a1.php>
- Kalambokidis, L. (2011). Spreading the word about Extension's public value. *Journal of Extension*, 49(2), Article 2FEA1. Available at: [https://www.joe.org/joe/2011april/pdf/JOE\\_v49\\_2a1.pdf](https://www.joe.org/joe/2011april/pdf/JOE_v49_2a1.pdf)
- Kalambokidis, L. (2014, February 3). How do your programs create public value? [Blog post]. Retrieved from <http://publicvalue.cfans.umn.edu/news/how-do-your-programs-create-public-value>
- Krieger, D. J. (2001). *The economic value of forest ecosystem services: A review*. Retrieved from <https://www.sierraforestlegacy.org/Resources/Conservation/FireForestEcology/ForestEconomics/EcosystemSe>

[rvices.pdf](#)

Liu, S., Costanza, R., Troy, A., D'Agostino, J., & Mates, W. (2010). Valuing New Jersey's ecosystem services and natural capital: A spatially explicit benefit transfer approach. *Environmental Management*, 45, 1271–1285.

Loomis, J. B., & Rosenberger, R. S. (2006). Reducing barriers in future benefit transfers: Needed improvements in primary study design and reporting. *Ecological Economics*, 60(2006), 343–350.

Ma, Z., Kittredge, D. B., & Catanzaro, P. (2012). Challenging the traditional forestry Extension model: Insights from the woods forum program in Massachusetts. *Smallscale Forestry*, 11, 87–100.

Marcouiller, D. W., Ray, D., Schreiner, D., & Lewis, D. K. (1992). Estimating economic impacts of programming. *Journal of Extension*, 30(3), Article 3FEA6. Available at: <https://joe.org/joe/1992fall/a6.php>

Moore, R. T., Williams, T., & Rodriguez, E. (2011, July). *Valuing ecosystem services from private forests*. Paper presented at the meeting of the Agricultural and Applied Economics Association and the Northeastern Agricultural and Resource Economics Association, Pittsburgh, PA. Retrieved from <http://ageconsearch.umn.edu/bitstream/103717/2/AAEA%20paper.pdf>

Munsell, J., & Germain, R. H. (2004). Forestry Extension participation and written forest management plan use in New York City's water supply system. *Journal of Extension*, 43(2), Article 2RIB7. Available at: <http://www.joe.org/joe/2004april/rb7.php>

Raunika, R., & Buongiorno, J. (2006). Willingness to pay for forest amenities: The case of non-industrialized owners in the south central United States. *Ecological Economics*, 56(2006), 132–143.

Splash, C. L., & Vatn, A. (2006). Transferring environmental value estimates: Issues and alternatives. *Ecological Economics*, 60(2006), 379–388.

Straka, T. J., & Franklin, R. M. (2008). Extension efforts enhance lowcountry South Carolina conservation forestry. *Journal of Extension*, 46(3), Article 3IAW4. Available at: <https://joe.org/joe/2008june/iw4.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](#)