Valuing the ecosystem services of forest conservation programs: The economic benefits of protecting water quality

By: Melissa Kreye, School of Forest Resources and Conservation, University of Florida

Forested ecosystems protect water quality by reducing nutrient loading while providing several other ecosystem services such as recreation, wildlife habitat and climate regulation. However, information about the economic benefits associated with preserving Florida’s forest lands is scarce. Quantifying these values can help formulate cost-effective conservation and land use policies that maximize the provision of ecosystem services from forest conservation programs given fixed budgets.

As part of the Stewardship Ecosystem Services Project, a CFEOR project sponsored by the Florida Forest Service, a meta-analysis model of several economic valuation studies was used to estimate willingness to pay (WTP) for water quality protection programs. Results of this analysis indicated that respondents were willing-to-pay:

- Increasingly more each year to protect water quality in relatively unpolluted surface waters.
- Slightly less to protect good water quality in the southeastern United States (US) compared to other regions in the US.
- Slightly more to protect all surface water bodies compared to just rivers and streams alone.
- More for programs that protect water resources within the respondents own drainage basin.
- Less for programs that specifically propose the use of land acquisition or conservation easements compared to programs that do not state how the program would be implemented.

The model was also used in an economic analysis to conduct a benefit transfer of these WTP values to households in 5 counties in the lower Suwannee River watershed, specifically Dixie, Levy, Gilchrist, Lafayette and Suwanee Counties. Results found that an annual household’s WTP was $1.73-$2.29 for programs that use land acquisition or conservation easement strategies, and $33.01-$42.27 for programs where the implementation strategy was not specified. Total annual WTP for the 5 county regions was calculated based on the total number of households and ranged from $79,466-$105,370 for programs that use acquisition/easement strategies and $1,518,400-$1,944,628 for programs where the implementation strategy was not specified. This difference among values suggests that public preferences should be considered when developing conservation programs and land use policies. Researchers on this project will continue to investigate how specific program implementation strategies influence WTP in Florida.

These findings illustrate both the value individuals place on protecting unpolluted water resources as well as provide a better understanding of the priorities individuals may place on forest conservation implementation strategies. The model can also provide a reasonable estimate of the amount of economic resources that can be allocated towards forest conservation policies and programs such as the Florida Forest Stewardship program and Florida Forever. For more information please contact Melissa Kreye at mkreye@ufl.edu.
Applied nucleation as a forest restoration strategy


The pace of deforestation worldwide has necessitated the development of strategies that restore forest cover quickly and efficiently. We review one potential strategy, applied nucleation, which involves planting small patches of trees as focal areas for recovery. Once planted, these patches, or nuclei, attract dispersers and facilitate establishment of new woody recruits, expanding the forested area over time. Applied nucleation is an attractive option in that it mimics natural successional processes to aid woody plant recolonization. To date, results of experimental tests of applied nucleation are consistent with theoretical predictions and indicate that the density and diversity of colonists is higher in planted nuclei than in areas where no planting takes place (e.g. passive restoration). These studies suggest that the applied nucleation strategy has the potential to restore deforested habitats into heterogeneous canopies with a diverse community composition, while being cheaper than projects that rely on plantation designs. We recommend several areas where research would aid in refining the methodology. We also call for further comparisons as nuclei age beyond the 2–13 years that have been studied, thus far, in order to confirm that practical applications continue to match theoretical predictions. Finally, we suggest that applied nucleation could be effective in the restoration of a variety of habitat types or species guilds beyond the ones to which it has been applied thus far.

©Elsevier 2012. To read the full article CFEOR members click here.

Upcoming Events

- Natural Areas Training Academy Conservation Site Assessment and Planning, January 31-February 2, 2012 at Ordway Swisher Biological Station in Melrose Fl. $380 fee includes registration, workshop materials and lunch. To learn more and to register go to natacsap2012.eventbrite.com

- UF Water Institute Symposium: Complex Challenges, Integrated Solutions, February 15 - 16, 2012 in Gainesville, FL. For more information contact University of Florida Water Institute, Wendy Graham, or wgraham@ufl.edu or go to waterinstitute.ufl.edu/symposium2012/

- Florida Chapter of the Wildlife Society and Florida Exotic Pest Council Annual Spring Conference on April 16-19, 2012 at the Ocala Hilton in Ocala, Fl. Additional details will be forthcoming in future conference reminders as well as on wwwfltws.org conference page website.

Upcoming Events

- The 21st International Pepper Conference, November 4-6, 2012 in Naples, FL. For more information contact the Hendry County Extension, Gene McAvoy, 1-863-674-4092 or gmcavoy@ufl.edu.