Measuring the Welfare Effects of Forests in Tanzania: An Application of the Travel Cost Model

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I. Introduction

Rural agricultural households depend on natural capital and ecosystem services to meet their daily needs. To date, little work has been done in valuing the non-market benefits households receive from having access to these resources. In this project, I apply environmental economics methods to a data set of approximately 800 households in rural Tanzania (Kagera, Tanzania). The data contain four sets of observations for each household across four years. I estimate how the number of firewood collection trips a household makes varies as a function of the trip time per collection trip. Ultimately, I provide dollar-value estimate for the benefit of forest access to households in the region and discuss how these measures correlate to observed household firewood expenditure and household income. My findings show that rural households, on average, do make fewer firewood collection trips as trip time increases. The magnitude of the effect, however, is small and adds to a growing body of economics literature showing that fuelwood consumption in many rural areas is inelastic. Additionally, I present evidence that households that place the largest value on forest access are, on average, the least well-off households (as measured by household income per capita). These benefit estimates are one of the few estimates based in developing countries and are important to policy-makers for evaluating the benefits and costs of conservation policies and land use land cover changes.

II. Financial Summary

I was awarded $9,910.00 from the Life Sciences Consortium for the July 2012 - July 2013 funding cycle. The funds were used as (1) a personal stipend support for a summer to fully develop my proposal in preparation for my preliminary oral exam and (2) travel support for a two week trip to Kagera, Tanzania to learn more about land management, forest use, and forest conservation in Kagera, Tanzania. A breakdown of the exact use of funds is provided in the table below.

III. Results and future project plans

This research project will comprise one essay in my dissertation. To date, I have already presented preliminary results at the International Livestock Research Institute regional office
in Addis Ababa, Ethiopia (June 5th, 2013). In the future, I plan to present this paper at the Applied Economics development economics seminar (Fall 2013) and to submit the paper to conferences (Spring 2014). I also plan to have the paper ready for submission to an environmental economics or development economics field journal by June 2014.

The work that I have done on this project has been invaluable in building the base of my research portfolio. My future work will build on what I have learned from this project and field visit in a number of ways. For example, children in Tanzania collect a significant proportion of the household firewood. I will extend my work to analyze the impact that increased firewood collection time by children has on children’s school attendance and educational achievement. Additionally, I plan to look at the impact of reduced household firewood access on a household’s nutritional status and food consumption. This fall I will enter the economics job market where I hope to pursue a career in natural resource policy and management in developing countries. My expected graduation date is July 2014.