

Using Market Values for Targetting Ecologically Valuable Natural Resource Land: An Application to Maryland's GreenPrint Program (70)

Karen Palm and Lori Lynch

Thirty-eight U.S. states have programs to preserve land with ecological value yet few consider land acquisition costs in their selection criteria although targeting could improve the efficiency of these programs. Potential improvements generated by employing alternative maximization techniques that incorporate predicted parcel market values based on recent arms-length transactions when ranking and targeting under a land conservation program. The Maryland GreenPrint program developed an assessment method to determine the ecological value of all land and used this method to identify two million acres of prime habitat land for acquisition of the state's 6.2 million acres focusing on a hubs and corridor design. This comprehensive ecological ordinal ranking structure proxies for a systematic, scientific method of ecological valuation however does not incorporate parcel acquisition costs in the targeting protocol. The identified acreage encompasses 63 percent of Maryland's forest land, 87 percent of Maryland's unmodified wetlands, and 88 percent of Maryland's occurrences of rare, threatened, or endangered species (Weber, 2003).

The model variables include the parcels' structural (buildings and house characteristics), and land (current use, size, soil (slope, erodibility, flood plains), waterfront access, etc). The compiled data is used first for the hedonic model estimations, secondly for the parcel land market value predictions, and thirdly for calculating parcels' GreenPrint Desktop Ecological Scores. The primary data set containing the parcel location and size data for the analysis is MDPropertyView 2002. The files include data updated through October 2002 from the State's Department of Assessments and Taxation. The files are spatially referenced for use in GIS, allowing the data to be utilized in conjunction with other state and federal spatially referenced data sets. The data set creation relies on the ArcView 3.2 and ArcGIS 8.2 Geographic Information Systems (GIS) software programs to extract and combine data for geographically referenced parcels. The compiled data set contains one record for each parcel in the State of Maryland of at least 10 acres, with geocoded parcel-level attribute data for each parcel.

A hedonic model is estimated on land characteristics including those that contribute to ecosystem services (land-use, soil quality, erodibility, wetland type, etc...) from recent arms' length market transactions. The estimated parameters are used to predict market values of parcels greater than 10 acres in three southern Maryland counties. The study compares targeting packages developed through overall benefits optimization, specific benefits optimization, and acreage optimization subject to projected budgets. The results suggest including market values permits Maryland's GreenPrint program, designed to protect ecologically valuable land, to preserve more acreage among parcels rated "excellent" for ecological characteristics. Comparing unconstrained parcel choice sets with the study's three county, unimproved parcel, and 100+ acre parcel constraints highlights the benefits of developing targeting packages from unconstrained parcel choice sets.