

**Economic Valuation of Environmental Benefits and the Targeting of Conservation Programs: The Case of the CRP.** By Peter Feather, Daniel Hellerstein, and LeRoy Hansen, Resource Economics Division, Economic Research Service, U.S. Department of Agriculture. Agricultural Economic Report No. 778.

### **Abstract**

The range of environmental problems confronting agriculture has expanded in recent years. As the largest program designed to mitigate the negative environmental effects of agriculture, the Conservation Reserve Program (CRP) has broadened its initial focus on reductions in soil erosion to consider other landscape factors that may also be beneficial. For example, preserving habitats can help protect wildlife, thus leading to more nature-viewing opportunities. This report demonstrates how nonmarket valuation models can be used in targeting conservation programs such as the CRP.

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## Summary

Many conservation programs, such as USDA's Conservation Reserve Program, improve environmental quality. Improving environmental quality leads to enhanced ecosystem health, in general, and also augments the public's enjoyment of recreational activities. This report examines the effect of environmental targeting of the CRP on the magnitude and type of environmental benefits and outdoor recreational opportunities created by an agricultural land conservation program.

Environmental targeting refers to the practice of directing program resources to lands where the greatest environmental benefit is generated for a given expenditure, or alternatively, specific environmental goals are achieved for the least cost.

Ecosystem health and many outdoor activities, such as water-based recreation, hunting, and nature viewing, are likely to have substantial value to individuals, but these activities typically have no explicit price (or market value) associated with them. In practice, therefore, environmental targeting presents the difficult problem of how to value and aggregate the benefits derived from environmental improvements.

Prior to 1990, CRP targeting was primarily based on soil erodibility. The current CRP targeting method is based on a broader range of environmental effects. Central to the current targeting method is a land-scoring process known as the Environmental Benefits Index (EBI). After the CRP signup period closes, each parcel of land offered under the program is scored based on the EBI. Parcels with the highest score are given priority for acceptance into the program. The EBI includes physical characteristics of land (erodibility, soil leachability, proximity to waterbodies, etc.), and measures of locally affected populations (number of well-water users).

What happens if alternative specifications of the current EBI are used to target the CRP? This report uses nonmarket valuation models for three activities that the CRP is likely to affect—freshwater-based recreation, wildlife viewing, and pheasant hunting—to demonstrate an alternative approach for targeting the CRP. The results are as follows:

- Switching CRP targeting criteria from erodibility to the EBI approximately doubles the benefits of freshwater-based recreation and wildlife viewing.
- CRP wildlife recreation benefits are significantly larger than freshwater-based recreation benefits. Based on the distribution of enrollment as of 1992, benefits include \$348 million per year for wildlife viewing, \$80 million per year for pheasant hunting, and \$36 million per year for freshwater-based recreation.
- Natural resources that are near populated areas are likely to generate larger recreational use benefits simply because they give residents relatively easy access to natural resources. Taking affected populations into account when targeting CRP lands could increase the benefits of several types of outdoor recreation.

- Valuation-based targeting of the CRP is feasible and might improve its performance if public preferences are known and explicit. The major advantage of a valuation-based targeting system is that it is directed by public preferences. Although there will always be some benefits that are difficult to quantify in monetary terms, developing a valuation-based targeting system is feasible.

To fully implement valuation-based targeting of the CRP, more research is required. Nonmarket benefit models would need to be estimated for all of the primary nonmarket activities that are sensitive to the location and characteristics of the CRP. These activities include:

- The remaining recreational uses significantly affected by the CRP,
- Public works and industrial operations that are affected by reduced sediment loadings,
- Improved air quality,
- The public willingness to pay for the existence of wildlife augmented by the CRP,
- Landscape amenities associated with the CRP, and
- The effect of CRP on the quality of surface and ground water used for drinking.