

Quantifying conservation return-on-investment

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Project duration: 12 months
Total project cost: \$50,000.

With limited resources and seemingly limitless challenges, conservationists have to make hard choices about how and where to invest based on consideration of both the biodiversity benefits and the costs. One way to make those choices is to think about conservation return-on-investment (ROI), defined as the biodiversity benefit per dollar spent (“bang-for-the-buck”), and set priorities that maximize marginal conservation ROI. Analyses by Ando et al. (1998), Wilson et al (2005) and Hoekstra et al. (2006) have demonstrated that the ROI approach can significantly improve the efficiency of conservation investment, delivering far greater biodiversity conservation with limited resources than other conservation approaches.

Analyses done to-date have examined *expected* ROI based on estimated costs and assumed species-dollar relationships that are derived either from species-area curves or from assuming an adequately size reserve is sufficient to conserve all species located in a given region. In this project, we propose to quantify estimates of *realized* ROI of conservation projects based on actual budgeted costs (acquisition and management cost), and the “value” of biodiversity represented. We will define biodiversity “value” in relation to quantitative goals stated in ecoregional assessments to create a consistent currency for measuring and comparing conservation ROI. This is likely to be the most challenging aspect of this project, because there are not standardized or widely adopted metrics, or even general agreement about how to combine or compare proverbial apples and oranges of biodiversity. Our attempts to do so will help explore alternatives and focus attention on the types of data that are most needed to measure biodiversity gain and conservation costs.

Our results will provide an empirical benchmark of conservation ROI that can be used by decision-makers to inform evaluation of future conservation projects, and help to establish protocols for others to track their own ROI. Results will also be used to validate and calibrate more general ROI models so that they can be more confidently applied in situations where empirical data are lacking.

Cost data for conservation projects will be gleaned from TNC Board books at the Worldwide Office, and from selected state programs. Biodiversity values will be derived from project descriptions of intended conservation targets and stated goals for the same from ecoregional assessments. Sampled projects will need to be set within ecoregions for which adequate biodiversity data is available. We will initially focus sampling in programs that have well-managed ecoregional data systems in place – e.g., Washington, Oregon, Arizona, New England.

Project results will be reported in at least one manuscript to be published in a peer-reviewed scientific journal, and communicated to TNC staff through the Science Chronicles. Data will be made freely available through ConserveOnline or another suitable portal for others to examine and use for further analyses. The PI’s will collaborate with science staff in selected state programs to determine biodiversity values (these collaborations are still to be determined and arranged). Funding will be used to support a graduate RA who will do much of the work on data collection and initial analyses, and to cover some of the travel and meeting costs for the project team.

Citations

Ando, A., Camm, J., Polasky, S. and Solow, A. 1998. Species distributions, land values, and efficient conservation. *Science*, 279: 2126-2128.

Hoekstra, J.M., W.W. Murdoch, S. Polasky, H.P. Possingham, K.A. Wilson. 2006. Playing for keeps: Prioritizing conservation for maximum biodiversity return-on-investment. In prep.

Wilson, K. A., M. McBride, M. Bode, and H. P. Possingham. 2006. Prioritising global conservation efforts. *Nature* 40:337-340.