

Projecting land use changes and policy effects

A study based on landowner surveys in northern Idaho

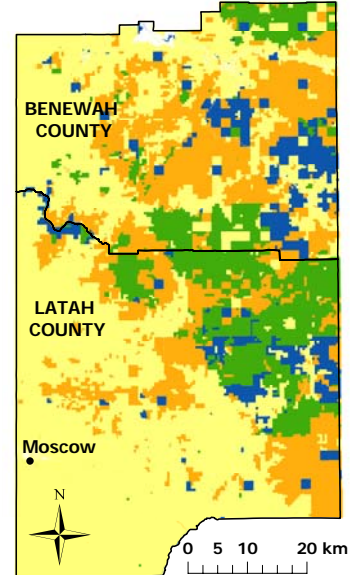


Agricultural and forested lands dominate this northern Idaho landscape.



Land ownership

- Private, non-industrial
- Private, industrial
- Federal
- State



78% of the land in the study area is privately owned.

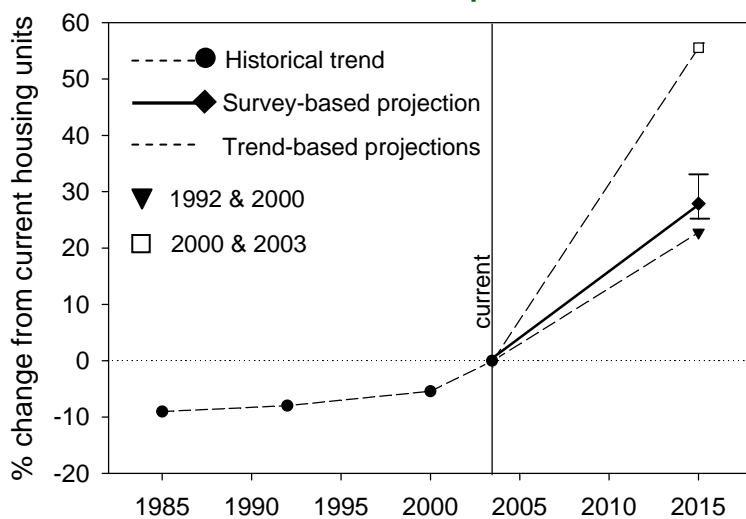
Using surveys to sample landowner intentions

Mail surveys were sent to a random sample of owners of non-industrial private parcels in the two counties (442 surveys returned; 54% response). We asked about their future plans for 4 focal land uses and how these plans would change given increases in financial incentives or technical assistance.

Modeling land use change

We projected land use change to 2015 (10 years) based on survey results, ownership parcels, and land cover maps. These projections were compared with those from a trend-based modeling approach based on changes in land cover over time.

Rural residential development increasing



Rural housing units have increased since 1985, and all projections indicate a much greater increase by 2015. The pairs of years for the trend-based projections represent the two times between which land cover changes were measured; the highest and lowest of 5 trend-based projections are shown here. Survey-based results are also shown.

STUDY OBJECTIVES

- Simulate land use changes into the future, using 2 modeling approaches
- Demonstrate potential effects of alternative policies on 2 land uses

FOCAL LAND USE TYPES

- Agriculture
- Conservation Reserve Program (CRP)
- Forest
- Residential Development

POLICY SCENARIOS

- CRP enrollment & forest thinning
- Given increased 1) financial incentives or 2) technical assistance

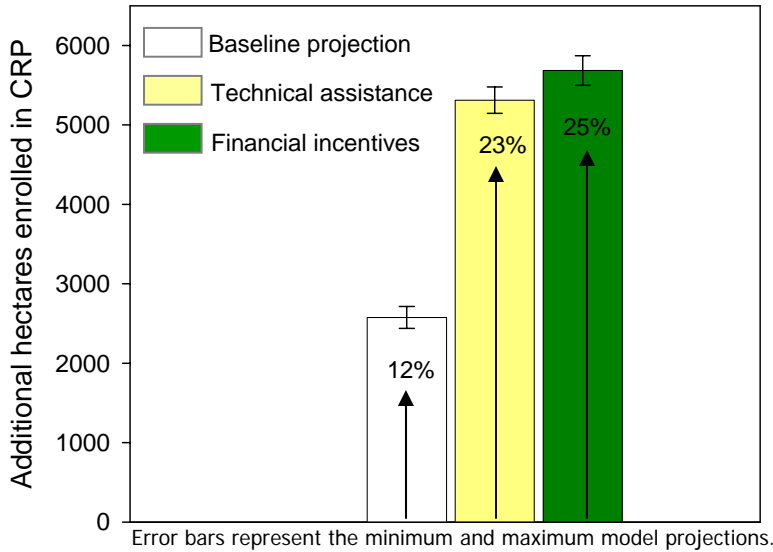
MODELING APPROACHES

- Survey-based: landowners stated their land use intentions, which were modeled across all ownership parcels.
- Trend-based: projections were based on changes between historical and current land cover amounts.



The survey-based model projected that rural housing units will increase 25 to 33% by 2015.

High demand for the Conservation Reserve Program (CRP)



The Conservation Reserve Program places highly erodible agricultural lands into perennial vegetation cover.

The CRP is a land use option that is in demand. However, enrollment is currently constrained by federal funding. We projected that without the federal funding cap, the area enrolled in CRP would increase by 12% by 2015 and by up to 25% given an increased annual rent or improved technical assistance.



Wheat and legumes are grown in the productive soils of this region.



Thinning forests can reduce fire hazard near rural homes.

Decline in agriculture

The amount of land area used for agricultural crops was projected to decrease by 6 to 9% in the survey-based model and by 5 to 22% in the trend-based models. CRP enrollment and residential development both contributed to this trend, and development on agricultural lands may be more pronounced if current CRP funding is not increased.

Forest thinning to increase

The amount of low-density forest on private, non-industrial lands was projected to increase by 20% by 2015 using the survey-based model. Forest thinning decisions showed little response to changes in policies (1% increase). This may reflect the current focus on and funding for reducing fire hazards around rural communities as a result of recent large and severe fires.

This study used a multi-faceted approach to projecting rural land use change, incorporating both historical trends and landowner intentions, and is unique for its survey-based approach to simulating future changes.

This research has been peer-reviewed and should be cited as follows:

Pocewicz, A., M. Nielsen-Pincus, C.S. Goldberg, M.H. Johnson, P. Morgan, J.E. Force, L.P. Waits, & L. Vierling. Predicting land use change: comparison of models based on landowner surveys and historical land cover trends. *Landscape Ecology*, In Press. <http://www.webpages.uidaho.edu/~niel9897/>

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