Modeling Ecosystem Services in the Mink Creek Watershed

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A Watershed in the Wildland-Urban Interface

- Located just southwest of the urban area of Pocatello, Idaho
- Consists of private, USFS, and BLM land
- Increasing residential density
- Expanding multi-season recreational use
- Recently experienced a wildland fire with anthropogenic causes

How have ecosystem services changed over time in the Mink Creek watershed?

Methods

- Land use change over time will be assessed (e.g. Daily et al. 2009) with the use of aerial and satellite imagery (decadal historical aerial imagery, WorldView 2, Multispectral (R,G,B, and NIR) and unmanned aerial system (UAS) imagery).
- Historical photos will be digitized and interpolated for feature extraction. Orthomosaic and terrain models will be generated using softcopy photogrammetry.
- SOCTET GXP and Agisoft PhotoScan Professional will be used to construct high resolution DEMs from imagery.
- Vector layers representing population/housing density, recreation, and land use will be constructed using compiled land cover, demographic, and statistical vector data.
- Compiled raster and vector data will be used within the ecosystem modeling programs ENVISION and InVEST to generate projected land use models for land use under variable land use scenarios.

Ecosystem Services:

Contributions of ecosystem structure and function to human well being (Burkhard et al. 2012)

Why Model Ecosystem Services?

- Provides the ability to visualize ‘what-if’ scenarios under varying management practices
- Allows for the visual assessment of spatial and temporal trends in natural resource prioritization
- Provides a decision support tool for sustainable use and development
- Paves an avenue for sustainable policy making

Application of Anticipated Results

- Output models will provide a basis on which we can better manage ecosystem services within the wildland-urban interface.
- ‘What-if’ scenario models will expand the knowledge base for variable management practices and policy implications.
- Results of this study will help local planning to better account for sustainable ecosystem services within the watershed and possibly other local areas.
- Visual valuation of the ecosystem services provided by the watershed will convey to policy makers the connection between ecosystem services and human well being.

References: