

Land Use

Key science questions that address expected management challenges resulting from expected ecological changes in the GYA:

1. How can development (exurban, energy, recreational etc) be managed to minimize impacts on natural process (ie wildlife ecology, fire etc)?
2. What processes can be maintained within their range of natural variability? What is the impact losing processes that are incompatible with development?
3. How do processes that are altered at the boundary of parks and conservation areas affect dynamics within the public lands, or vice versa? (How do changes in landscape hydrology in areas surround Yellowstone influence thermal features within the park?)
4. How do changes in the structure and function of protected ecosystems and the surrounding landscape feedback to change human attitude and trajectories of development.
5. How do changes in land use and land cover associated with consumption of natural resources (grazing, mining, logging, energy development)

impact natural processes inside and outside of conservation areas.

6. What are the ecological of changing from “extractive” land uses to settlement?
7. What processes with limit growth in amenity communities?
8. How do social / political processes operate to change biological processes through management decisions? How do changes in human demographics and values shape the operation of these decision making processes.
9. There is a need for forecasting models that honestly estimate uncertainty.

Criteria for evaluating research questions:

1. Does research question meet immediate need of managers?
2. Does question enhance fundamental/ basic understanding of impacts of land use change on the operation of key natural processes?
3. Does research question provide better understanding of basic principals of interactions between human and natural systems?
4. Can the research question provide forecasts that help a manger deal with surprises?

Top Research Priorities

1) How does development (exurban, energy, recreational etc) shape the operation of natural process (ie wildlife ecology, fire etc)?

- What is the impact of losing processes that are incompatible with development?
eg How do changes in land use and land cover associated with consumption of natural resources (grazing, mining, logging, energy development) impact natural processes inside and outside of conservation areas?
- What are the ecological effects of changing from “extractive” land uses to settlement?

2) How can we manage the effects of development to mitigate the effects on operation of natural processes?

- What processes can be maintained within their range of natural variability?
- How do we develop a toolkit for land managers

3) How do processes that are altered at the boundary of parks and conservation areas affect dynamics within the public lands, or vice versa?

- How do changes in landscape hydrology in areas surround Yellowstone influence thermal features within the park?
- How do boundary harvests effect wildlife distribution and demographics? Disease effects?

4) How do changes in the structure and function of protected ecosystems and the surrounding landscape feedback to change human attitude and trajectories of development?

- How do social / political processes operate to change biological processes through management decisions?
- How do changes in human demographics and values shape the operation of these decision making processes?

5) To what extent does human population size and composition interact with policy and behavior to impact ecosystems?

6) What processes (political, natural, amenities) will limit growth and distribution in human communities?

As part of all: There is a need for forecasting models that honestly estimate uncertainty.