

## Rolling Thunder Prairie Management

You've just become the biologist at Rolling Thunder NWR in the upper Midwest. Years ago, the refuge acquired several prairie parcels to protect rare orchids. These plants only grow in open grasslands, usually requiring direct habitat manipulation to limit the invasion of woody species. Management objectives on these parcels have also included maintaining habitat for game birds, especially winter vegetation cover. More recently, conservation objectives have been expanded to include sustaining rare butterfly and beetle populations, which are also endemic to these prairie habitats. Meanwhile, residential development has increased and is now in proximity to these areas, prompting new constraints on management to avoid conflicts with local residents.

The refuge manager has asked you to tell her the best options for managing the grassland vegetation. Though she is also very concerned about costs, neighbor complaints, and maintaining rancher support via opportunities for grazing, and of course, conservation of birds, plants, butterflies, and beetles.

Draft Decision statement: You must decide how to conserve the rare orchid throughout its range, as well as beetles and butterflies, while improving relations with local residents and considering grazing on the refuge.

Formula:

Decision Maker (**D**) is trying to do **X** to achieve **Y** over time **Z** and in place **W** considering **B**.

- **Decision Maker** – Refuge manager
- **Trigger** – Must conserve the rare species (legal mandate)
- **Action** – Choose actions to be taken to conserve the species, while maintaining rancher support
- **Constraints** – Cost, Neighbor complaints
- **Frequency and Timing** – One time decision; yearly – burn cycles are annual
- **Scope** – Limited to the Refuge (the area controlled by the manager's actions)

**Problem statement:** The refuge manager is deciding on the optimal strategy this year to manage grassland vegetation to improve conservation of the orchids, beetles and butterflies on the refuge, while minimizing costs and neighbor complaints, keeping rancher support (grazing opportunity).