Invasive plants have many serious impacts on rangeland throughout the world. They can displace desirable species, alter the ecological function of the ecosystem, destroy wildlife habitat, decrease productivity, and facilitate frequent wildfires, with impacts costing billions of dollars annually. Major invasive plant management programs are established in most countries. Although a substantial effort to manage plant invasions is underway in the United States, the conservation benefits are questionable because these programs are expensive and risky to implement for the long term. Ecologically Based Invasive Plant Management (EBIPM) has the potential to provide an improved decision-making process, but managers are often uncertain about how to get started implementing this type of program.

Because invasive plant management is expensive and programs are often underfunded, it is critical to develop a simple method for prioritizing invasive plant management strategies. Careful allocation of scarce dollars is necessary. A simple tenet of such a prioritization would be to optimize the benefits from expenditures by gaining as much ecological and economic value for each dollar as possible. This requires managers to systematically implement the least costly, most successful, and most beneficial strategies progressively over time. Using this tenet, the more risky and more costly strategies are delayed until after the more effective solutions are fully implemented. Our purpose in this paper is to describe a process for prioritizing invasive plant management strategies, while implementing landscape-scale EBIPM.

Cursory Mapping and Evaluation

For many managers, the first step toward EBIPM is to conduct a cursory mapping survey to gain a general understanding of the location of invasive plants across the entire management area. This mapping can be initiated by simply querying local personnel to get an estimate of invasive plant species and their locations. Some on-the-ground confirmation of these locations might provide greater understanding of the reliability of the information. Map accuracy does not necessarily need to be high because, as management continues, maps should be continually amended and updated. For the purposes of prioritization, these maps only need to identify three basic conditions: 1) land that has no infestation or lightly scattered patches of invasive weeds (Figure 1); 2) areas with a substantial infestation, but where there is enough desired vegetation growing in association with them to recover if the invasive plants are weakened or reduced (Figure 2); and 3) areas where the invasive weeds dominate in monocultures (Figure 3). One simple way of collecting relatively accurate data for maps is to use a sample mapping strategy and interpolating conditions between sample points. A number of mapping strategies are detailed in Establishing a Weed Prevention Area.¹

First Priority: Prevention

To optimize costs/benefits, the highest priority is to focus prevention strategies on land identified as relatively invasive weed-free. Traditionally, management has focused on controlling invasive plants on already infested rangeland, whereas protecting noninfested rangeland has a lower priority. A proactive program focuses on systematic prevention; early control of newly arriving infestations provides positive economics returns. A single dollar spent on prevention can avoid 17 dollars in later expenses.² The main components of programs aimed at preventing the invasion

Figure 1. Land without infestation of invasive weeds.