



Non-native Plant Inventory

Introduction

Non-native plant species are a major management concern across the Klamath Region and were the Klamath Network's top ranked vital sign. Many invasive species are ecologically harmful. They displace native species and are unutilized by wildlife. Thus, biodiversity tends to decrease with non-native species invasion. Non-natives can also impair the natural functioning of biological communities in many other ways, and degrade visitor experience. The relative level of concern for non-native plant species varies among parks and habitats, which has implications for prioritizing management actions aimed at controlling non-native species.

In 2003, we documented non-native plants in the Klamath Network using three survey methods, singly or in combination: (1) site profile surveys of known disturbed areas, (2) targeted mapping of invasive species, and (3) measuring the abundance of non-natives in quantitative belt plots at varying distance from roads or trails. Additionally, environmental conditions and general vegetation characteristics were quantified for each survey site.

Inventory Objectives

- ◆ Document 90% of the non-native vascular plant species believed to occur in each park.
- ◆ Gather information on the presence, distribution, and abundance of non-native plant species.

Results

The mean richness of non-native species in the 1 ha belt subplots declined sharply from low elevations to the higher elevations (Figure 1). At low elevations, richness declined with distance from the road or trail, but this pattern was not evident at mid and high elevation sites.

We also noted that the number of non-native species was much lower in forest and chaparral vegetation than in more open steppe or woodland environments. In densely forested habitats, many species were most common near roads, but in open habitats this is not the case. Tree or shrub canopy cover, therefore, appears to be a major factor influencing the distribution and spread of non-native plants.

Discussion

Our key findings were that species richness of non-native vegetation declined with elevation and overstory cover of native vegetation. Consequently, areas most susceptible to invasion by non-native plant species in the Network include low elevation parks with more open habitat, as well as the more open environments of parks like Whiskeytown and Lava Beds, especially where disturbance has removed tree or shrub canopy. However, higher elevations and undisturbed areas are not immune to invasion by non-native plants.

These broad scale patterns of non-native plant richness give an overview of the distribution of non-native species in the Klamath Network, but leave many questions unanswered: What are the controls on vigor and dominance of individual non-native species? How are native species and communities affected? Where, when, or how can these species be eradicated? Which species constitute the greatest threats? How do they persist after disturbance? Although each park has some sense of what the priority species are, there is no common set of criteria for assessing invasion risk that incorporates the habitat variation in the Klamath Network parks. The Network will be addressing these questions in its non-native species monitoring protocol, which will focus on areas most susceptible to invasion, as informed by this inventory. There is clearly much more applied work to be done, but these findings illustrate the importance of landscape and vegetation context to the issue of non-native species distributions in the biophysically complex Klamath Region.

More Information

Klamath Network Non-native Species Inventory: http://science.nature.nps.gov/im/units/klmn/Inventories/Invasives/Sarr_Invasives_2003.cfm
Klamath Network Non-native Species Monitoring: http://science.nature.nps.gov/im/units/klmn/Monitoring/vs/Invasives/vs_edis.cfm

Network Web Site: <http://science.nature.nps.gov/im/units/klmn/index.cfm>



A non-native infestation at Lava Beds National Monument. There are several non-native species in this picture, the most prominent being common mullein (*Verbascum thapsus*). Open environments like this are more prone to non-native infestations than closed canopy environments.

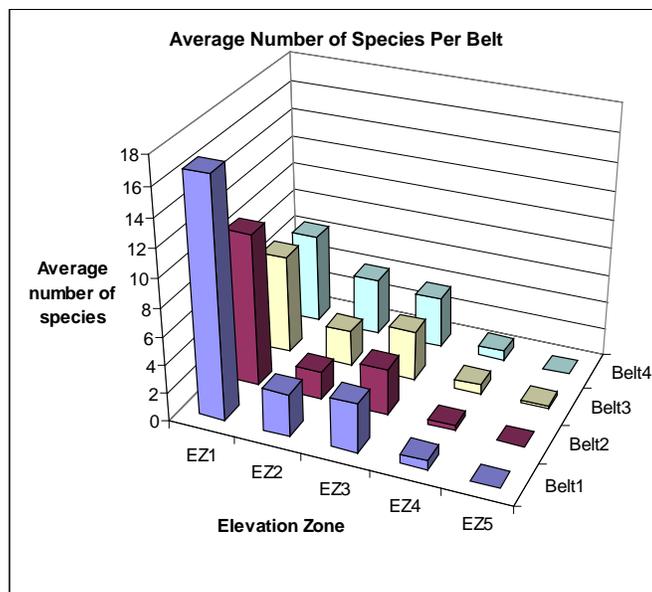


Figure 1. Average species richness in (1 ha) quantitative belt blots grouped by elevation zone (EZ1 = 0-500 m, EZ2 = 500-1000 m, EZ3 = 1000-1500 m, EZ4 = 1500-2000 m, EZ5 = 2000-2500 m) and belt distance from a road or trail. (Belt 1 = 0-25 m, Belt 2 = 25-50 m, Belt 3 = 50-75 m, Belt 4 = 75-100 m).