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# Iterative Model Development for Natural Resource Managers: A Case Example in Utah's Grand Staircase-Escalante National Monument

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## Abstract

Non-native plant species, which threaten native plant diversity, are a major concern to managers of Grand Staircase-Escalante National Monument in Utah. Predictive spatial maps with Inverse Distance Weighting provided an effective way to identify "hot spots" of occurrence for three cover types of interest: native species richness, cryptobiotic soil crust cover (lichen, moss, algae, and bacteria), and cover of non-native cheatgrass (*Bromus tectorum*). Maps based on regression tree analysis showed that *B. tectorum* was found throughout the Monument with cover usually < 0.1%, but has heavily invaded mesic sites and areas of disturbance, (cover ranging from 3.4 to 17.8 %). The analysis also showed that *B. tectorum* cover could be predicted by positive correlations with percent soil nitrogen and phosphorous (ppm). We also found a significant inverse relationship between high native plant species cover and cryptobiotic soil crust cover. These methods provide managers with an effective way to concentrate mitigation and conservation programs.

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