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A Web-based Application for Non-Indigenous Species Prediction and Management.

Non-indigenous plant species (NIS) management on public lands is often limited by subjective discovery and control of populations (patches), a process which is often based on logistics more than population dynamics. Rew et al. (2005) proposed a predictive occurrence modeling methodology to assist land managers in the process of NIS detection and prioritization for management. The modeling approach makes probabilistic predictions of NIS presence for the entire area of interest based on NIS data collected along transects and corresponding environmental raster datasets. The current project extended this approach by creating a web-based application for land managers to upload NIS presence or presence/absence data and receive predictive maps in return. Map predictions are made at the 10-meter resolution.

The web-application was designed around cost-effective sampling techniques and requires minimal data manipulation by land managers. It is scripted in the python programming language, within the ArcGIS Server environment. Drawing upon datasets covering 10 western states, it provides large-scale coverage and refines the predictive models for each species as managers upload additional data.

The aim of this application is not to define exactly where NIS will occur, but to highlight areas of higher and lower probability at a 10-meter resolution. This output will help narrow the focus of managers to likely NIS habitats, thereby reducing the long-term costs of detection and control.