

Potential Expansion of CDFA's Noxious Weeds Based on a Climate Matching Model

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Risk assessment is the evaluation of current and potential future impacts. It is a critical component of invasive plant management and policy, and is essential to implementation of state and federal plans. With budget reductions, private and public land managers must focus their effort on high priority species and areas to produce the most effective ecosystem restoration. Predictive models have been used to assist in early detection of invasive species by forecasting where invasive plants may spread and predicting the effects of global climate change. Although there are 200 invasive species of wildlands in California (California Invasive Plant Council Inventory, 2006), we limited our initial work to evaluating the current and predicted range of 36 of these plant species. We surveyed Weed Management Areas for data on current extent and population status (stable, increasing, decreasing due to control). To predict future spread, we used information on the native and introduced ranges of these plants globally and applied this information through the climate-based modeling software CLIMEX. We then applied a climate-change scenario to the predictions to determine the potential suitable habitats within the state. Results show that some of these species have the potential to greatly expand their ranges with or without climate change. Individual species showed wide variation in their response to climate change, with some species showing a doubling in the amount of suitable habitat while others showed over 75% reduction in their potential range. Results may help land managers set priorities for vegetation management and design early detection programs.