

Assigning Tamarisk Treatments and Estimating Treatment Costs

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Tamarisk or saltcedar (*Tamarix* spp.) is an invasive shrub or small tree introduced to the United States for erosion control and landscaping. Removing tamarisk is expensive and time consuming; large infestations can cost hundreds of thousands of dollars to treat. Land managers must choose from multiple treatment methods, each with accompanying costs and limitations. Treatment selection for tamarisk infestations is difficult, because a detailed analysis must be made of terrain and accessibility for each treatment location. A land manager may have multiple infestation sites, and multiple combinations of terrain and accessibility. This variability complicates treatment selection when assessing large areas. I am creating a GIS-based spatial model which will assign treatments based on accessibility, treatment type cost, and tamarisk infestation attributes such as density and size. The model will calculate costs for the selected treatments to estimate the total project cost. This estimate will inform the treatment planning process, helping land managers understand appropriate treatment types and the financial scope of a proposed tamarisk treatment project. The model can be applied within the state of Colorado. The model will initially use tamarisk GIS extent data from The Tamarisk Coalition stored in the International Biological Information System (IBIS) database (<http://ibis.colostate.edu>). This database can be updated through the Citizen Science website (<http://citsci.org/>), allowing the tool to use the most current tamarisk extent data.

Each tamarisk extent polygon will be assigned a treatment prescription based on terrain within the polygon, polygon accessibility, polygon size, tamarisk density and height, and land use restrictions. Each treatment prescription has an associated cost. Based on area and the cost for the treatment prescription, an estimated treatment cost can be assigned to each polygon. Treatment costs for all the polygons in the area under consideration will be summed, yielding an overall estimate.