

## **Appendix O. Prescribed Burning Prioritization Model**

### **Background**

Environmental Conservation Branch (ECON) personnel viewed a presentation by a member of The Nature Conservancy (TNC) in June 2004. The presenter was highlighting a new model developed at Eglin Air Force Base. The model used a variety of management criteria to output prescribed burn priorities.

In October 2004, staff from TNC, Eglin Air Force Base and Camp Lejeune met at Camp Lejeune to discuss the development and functions of the Eglin model. Following this meeting, GIS and ECON staffs, undertook the development of a model for Camp Lejeune.

The objective in undertaking the model development was to better manage the Camp Lejeune landscape, basing prescribed burn priorities on the total ecosystems relative need for fire. The development and implementation of the model transitioned the prescribed burning program from one of burning areas on a set schedule, to a program that allows for adaptive management and underscores the relative need for fire among the various habitats throughout the landscape.

### **Development**

Following the October 2004 meeting a team, consisting of ECON staff members and contracted GIS support was assembled to begin work on designing a model for use at Camp Lejeune. No software development was required.

There were seventeen factors initially discussed for inputs to the model. These were discussed and pared down to twelve factors. Further analysis reduced the list to eight factors. Some of the decision making criteria used in finalizing the factor list were, data availability, redundancy, value in maintaining ecosystem integrity and desired future landscape conditions.

The final eight factors are: Natural Communities, RCW Recruitment Sites, Longleaf Plantations, Threatened and Endangered Plant Species, Bullhog Operations, Time Since Last Burn, EcoBurn Area and RCW Clusters.

The next step for the team was to assign weights to each of the eight factors and determine internal model scaling values. This process determines how much influence each of the factors contributes to the model output.

RCW clusters can serve as an example for the weighting process. Policy requires each RCW cluster to burn on a three-year cycle. Based on that criterion, figure 1 illustrates the weight and scaling factors for RCW clusters.

Figure 1. Chart showing the weighing and scaling factors for RCW clusters.

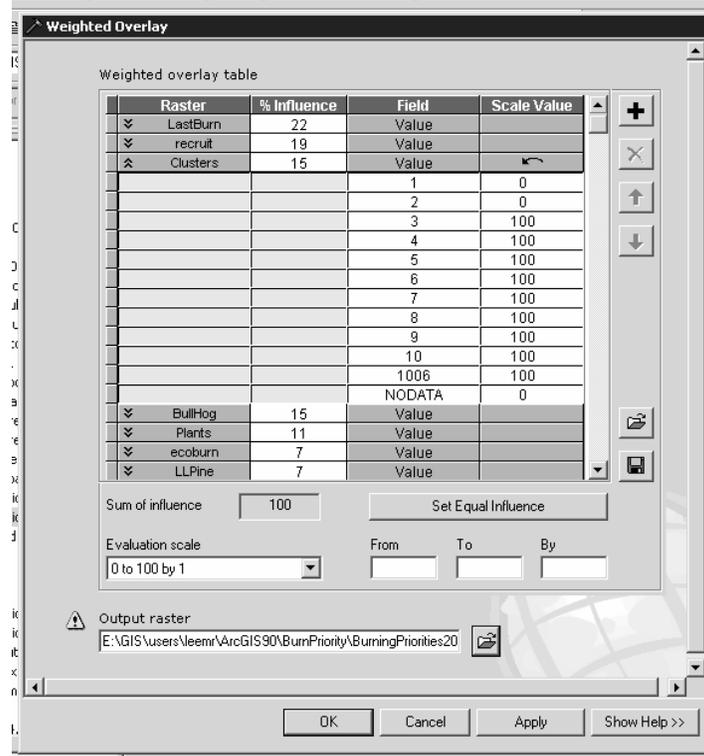


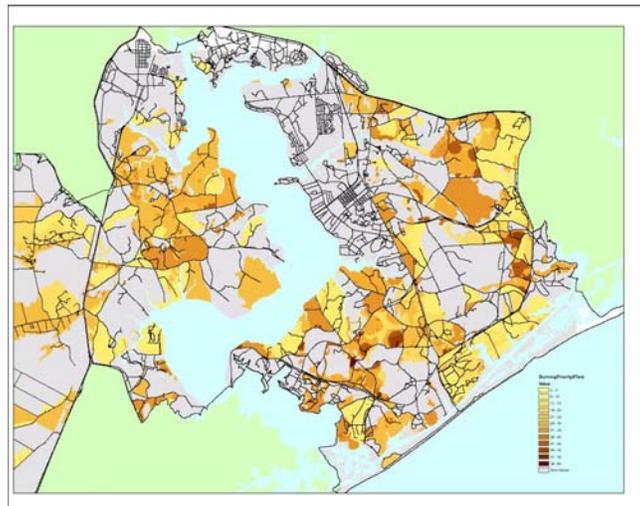
Figure 2. This is a process diagram of one phase of the model.



With all of the inputs defined, weighted and scaled, GIS support went through the process of building and running the initial model (Figure 2).

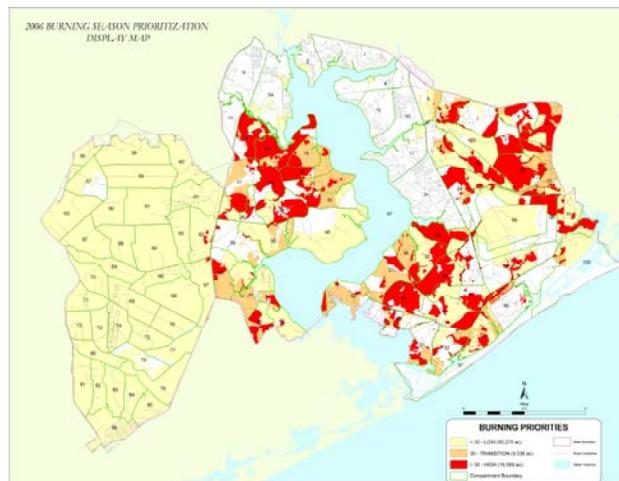
Initial runs of the model showed data gaps in the historical burning data. Areas that were scheduled to burn in the future, but had not burned recently, had no data for the model to assess. In figure 3 these areas are shown in grey. The initial runs also pointed out opportunities to fine-tune the weighting and scaling values.

Figure 3. Initial run of model showing data gaps in grey.



With the data gaps identified and corrected and weighting and scaling values adjusted a final development run was conducted. Priorities were defined by cutting the output scores to achieve the 25,000 acres per year prescribed burning target. The GSRA shows very few high priority burn acres. This is due to the limited number of weighing factors that relate to the area. Figure 4 shows the final run results classified by general priorities.

Figure 4. final run output with highest burn priorities in red.



## Implementation

The model has been implemented for the FY-06 prescribed burn planning. Figure 5 shows the final FY-06 plan. Areas chosen using the model output total 23,400 acres. 16,000 of the 23,400 acres will directly target prescribed burning for ecosystem management.

The model highlights recent advances in GIS capabilities to solve natural resources questions. This model will not answer all the questions. This model will assist managers in the process of developing landscape level burn plans. The implementation of this model will allow for the efficient use of prescribed burning resources in areas that will receive multiple benefits. The effect will be the restoration and management of the ecosystem across the landscape.

Figure 5. Final model output for FY-06 prescribed burning planning,

