Northeast Region Planning Unit:

Marginal Values Assessment to Determine Fire Priorities

HEARST FOREST - 2007 FMP
Marginal Values Assessment
Term 1 (10 Years)

Ontario

Priority Setting

In Northeastern Ontario we use marginal values from our forest estate model to help make decisions on setting forest fire priorities.

The premise for marginal values is that the value of any part of the forest is the value of its contribution to the objective function for which the forest is being managed.

MV = change in Z

What if we added 1 additional hectare to A$_{ij}$

Calculating Marginal Values

The marginal values are a result of the execution of the Strategic Forest Management Model (SFMM), the forest estate model being used in Ontario. We evaluate six different scenarios which apply an emphasis on different time frames that vary between the first 10 years through to the first 100 years in SFMM and this gives six sets of marginal values. We then recalculate these values by subtracting the post fire marginal value. These new marginal values are then linked to the forest inventory that was used in SFMM in order to determine the spatial location of the values.

Marginal Values Assessment - the Concept

The values depicted in this map are derived from the approved FMP forest modelling results, and are an indication of the relative contribution of each hectare within a forested stand toward the forest management objective function of this management unit.

Therefore, the higher the value, the more that particular unit contributes to the objective function. A negative value indicates that its value would be greater relative to the objective function if it were to succeed along a different ecological pathway.

Hearst Forest Marginal Values Assessment
Percentage of Maximum Marginal Value

Visualization and Results

In order to compare the values across multiple forest management units with unique models, we normalize the marginal values into percentages which allows for assessments at a larger scale. The percentages represent their relative importance to the objective function where positive numbers continue to contribute to the objective function and negative values may benefit from a fire. This spatial ranking helps to set fire priorities when used in conjunction with either existing or potential fire perimeters. This process was successfully used in the summer of 2003 on three fires in the Wawa District.
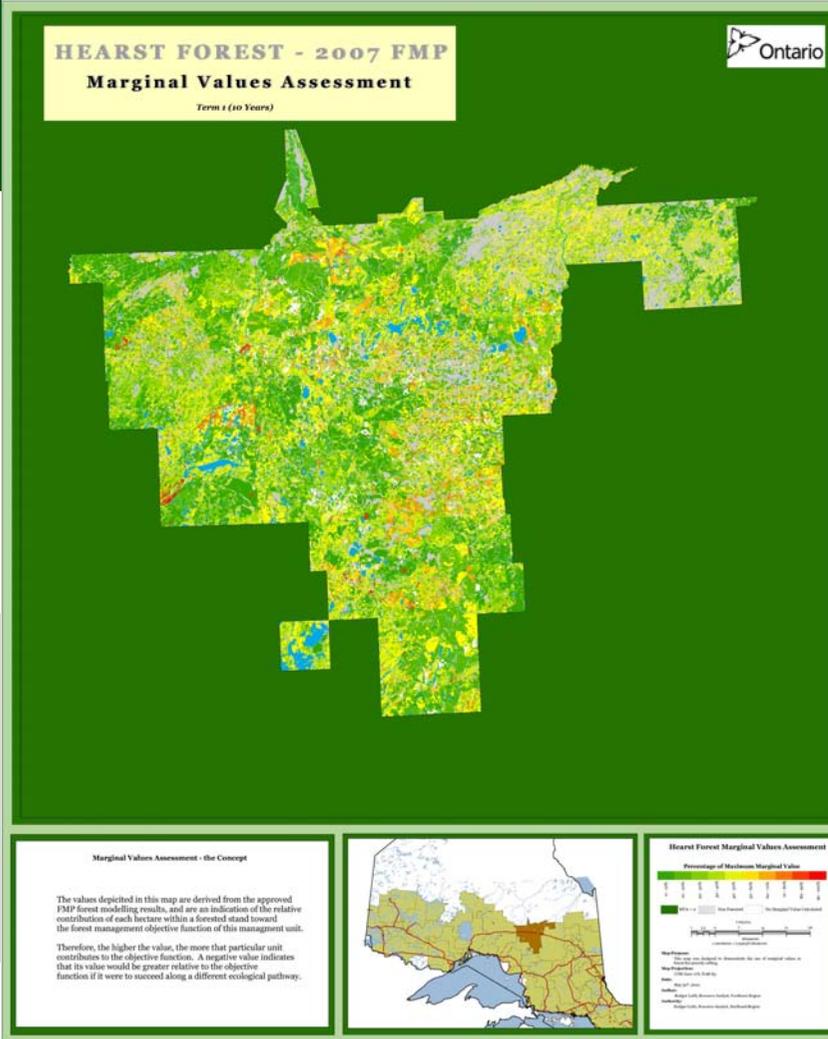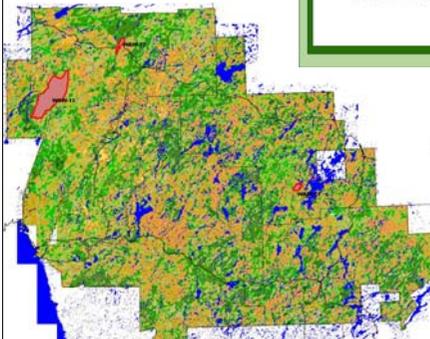
Potential Uses

1. Fire Priority Setting (fire flap decision making)

2. Estimating Fire Cost (based on fire predictions)

3. Modified Response Strategies (negative MV's)

*4. Fire Resource Allocation and Fire Smart Forest Management (MV*Fire Probability)*

5. Estimate Other Landbase Removal Cost (parks etc.)