

## 18-WILDFIRE SCHEDULER

The scheduling of wildfires is determined by this module. Note that this process takes place outside the LANDCARB model, and although this model does have this capability, a simpler system is used for the Forest Sector Carbon Calculator. Wildfire presence in a grid cell is not restricted either by stand age or previous harvest, prescribed fire, or wildfire. This is not to say that these factors have no impact on fires in terms of severity; however, these interactions are determined in the WILDFIRE module. At both the stand and landscape level the natural fire return interval and fire size distribution for a region, elevation band, and ownership is used to randomly determine when wildfires will occur and how large they will be

**Stand Level.** At the stand level, the user supplies information about past wildfire events that impacted the stand. Future wildfires occur randomly, although the user specifies a level of wildfire suppression that controls the probability of this disturbance. For example, if total suppression is indicated, then no wildfires will occur in the future. If no suppression is indicated, then the natural fire cycle for that location will occur. Finally, if typical fire suppression is indicated, then the average interval between wildfires is doubled. This information is used by a program that schedules future wildfires. When a wildfire occurs at the stand level, all stand grid cells are simultaneously affected.

**Landscape Level.** At the landscape level not all stand grid cells will have wildfires the same year. Wildfires occur at random at the landscape level. To determine the stand grid cells to be burned, the program first determines how many of the stand grid cells must be burned during a time interval (e.g., 10 years) to achieve the desired average return interval of wildfires fires. This sets a total wildfire area for that time period. The program then randomly draws a series of fires of different sizes from a wildfire size distribution until the total wildfire area for a period is reached. These wildfires are then placed randomly in time over the time interval.

For wildfires the Percent Disturbed parameter is set at 100%; which means that almost all the stand grid cells specified in a given year will be equally impacted. A possible exception is the last cell in a given year that is burned. For this cell the Percent Disturbed may be set at a lower value to achieve the total wildfire area that was specified.

At the landscape level, the stand grid cell size interacts with the wildfire size distribution. For example, if the stand grid cell area is set larger than most wildfires, the program will set the Percent Disturbed so the wildfires smaller than the stand grid cell can occur, although wildfires that are less than 10% of the stand grid cell are not allowed to occur. If the stand grid cell size is set lower than most wildfires, then it is possible that the entire landscape will be burned at once and will act essentially like a stand. Regardless of stand grid cell size, a very large fire has the potential to burn over the entire landscape. If one wishes to have a landscape in which there are different wildfire regimes in different locations, then the best way to achieve this is to run a simulation for each fire regime and then to combine them after the fact by using an area weighted average.

**Checking the Realized Regime.** The degree to which the target intervals are achieved at the stand or landscape level can be checked by looking at the Wildfire Events graph or by Run Output file under Output Files-Log Files window.