WILDFIRE NEWS & NOTES

The 1990 Stephan Bridge Road Fire in Michigan:

A Canadian Perspective on the Fire Danger Conditions

By
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The NFPA Fire Investigations Division has done an excellent job in preparing their case study report on the Stephan Bridge Road Fire, which occurred in northern lower Michigan during the 1990 fire season. This wildfire represents a classic example of high-intensity, wind-driven crowning through jack pine forests in flat country. The Stephan Bridge Road Fire will certainly be of interest to fire managers in Canada because of the general paucity of well-documented examples of significant wildland/urban interface fire incidents and the similarity of fuel types, topography, synoptic-scale weather, and fire behavior. As a result, one might ask: What would the basic indexes of the forest fire danger rating system used in Canada have been?

To answer this question, the daily 2:00 pm EDT records of the fire weather station operated by the Michigan Department of Natural Resources (MDNR) at Grayling were obtained through the assistance of Ronald Wilson at the MDNR's Forest Management Division office in Lansing. The data were converted to metric quantities and computer calculation of the six standard components of the Canadian Forest Fire Weather Index (FWI) System was then generated.

The fire weather observations recorded at the basic observation time of on May 8 prior to the major fire run were:

Dry-bulb temperature	- 27.8°C
Relative humidity	- 26%
10-m open wind	- SW @ 28 km/h
Days since rain	- 14

The fuel moisture codes and fire behavior indexes of the FWI System calculated from the daily fire weather observations were as follows:

Fine Fuel Moisture Code (FFMC)	- 93.6
Duff Moisture Code (DMC)	- 68
Drought Code (DC)	- 112
Initial Spread Index (ISI)	- 29.1
Buildup Index (BUI)	- 68
Fire Weather Index (FWI)	- 52

These conditions would be rated as extreme according to any fire danger classification scheme used in west-central or eastern Canada.

Hourly observations from the National Weather Service station at Houghton Lake on May 8 were kindly provided by Dr. Fred Nuremburger, Michigan State Climatologist. Although indicating a slight decrease in temperature with a corresponding increase in relative humidity, the data does suggest the winds in the fire area averaged about 30 km/h during the major run between 3:40 and 7:30 pm before the cold frontal passage.

The FWI System components associated with the *Black Tiger Fire Case Study* and several other well-known U.S. wildfires are documented in a paper prepared by the author published in the proceedings of the international symposium "Fire and the Environment: Ecological and Cultural Perspectives," USDA Forest Service General Technical Report SE-69, 1991.

Characteristics of Major Run from 3:40 to 7:30 pm May 8, 1990

Elapsed Time:	3 hours, 50 min
Forward Spread Distance:	12.9 km
Head Fire Spread Rate:	56 m/min or 3.36 km/h
Head Fire Intensity:	54,000 kW/m
General Fire Description:	Continuous crowning
Elliptical Fire Shape:	6.0:1 L/B
Fire Area:	1,817 ha*
Fire Perimeter:	28.0 km*

*Final size 2,394 ha and 39.5 km

The International System (SI) of units is used in the above tabulation, as is the practice in Canada.

The Stephan Bridge Road Fire burned 76 homes, 125 other structures, 37 vehicles and almost 6,000 acres as high winds pushed the fire along an 8-mile path composed mostly of Jack pine. Canadian representatives have been active in the National Wildland/Urban Interface Fire Protection Initiative.