



Crowning Chronicles

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Aspen Forest Duff Moisture Depletion and Ground Fire Potential

By, Marty Alexander, Senior Researcher, formerly with FERIC Wildland Fire Operations Research Group

Is the title of a recently completed thesis by Steve Otway in partial fulfillment of the requirements for an M.Sc. degree in the Department of Agricultural, Food and Nutritional Science at the University of Alberta. Steve successfully defended his thesis on August 29, 2005. The abstract from his thesis is presented below. Steve is an employee of Parks Canada and is currently the Manager for Resource Conservation at Elk Island National Park located east of Edmonton, Alberta. Steve's supervisor at the University of Alberta was Dr. Edward Bork. Kerry Anderson of the Canadian Forest Service and I served as collaborators and as members of Steve's thesis supervisory committee.



Steve Otway at one of his plastic fuel moisture "exclusion tents" designed to artificially decrease long-term fuel moisture levels in the deeper layers of aspen forest floor by excluding rainfall in order to extend the range in the DMC and DC components of the Canadian Forest Fire Weather Index System.

Steve's work has furthered some of the initiatives taken to extend the development and application of the Canadian Forest Fire Danger Rating System initiated in the late 90s. For example, Steve was able to identify from his fuel moisture sampling and sustained smouldering ignition testing a critical threshold for sub-surface fire persistence around a Duff Moisture Code (DMC) 27 and Drought Code (DC) 300.

Steve and his colleagues are currently preparing manuscripts on the results of this thesis research project for

publication in scientific journals. A user-oriented guide is also planned.

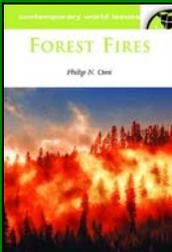
Elk Island National Park (EINP) has maintained a robust prescribed fire program, but ground fire may limit its use. The Fire Weather Index System is the nationally recognized means of assessing moisture. The Duff Moisture Code (DMC) and the Drought Code (DC) report moisture in the

In a Select Group

Dr. Marty Alexander was one of 23 individuals identified in Dr. Phil Omi's (Colorado State University) recent book *Forest Fires: A Reference Handbook* as having influenced wildland fire policy and knowledge globally and one of only two Canadians. The group included scientists, managers, academicians, and politicians.

For more information, see the publisher's description of the book:

<http://www.abc-clio.com/products/overview.aspx?productid=108716&viewid=1>



shallow and deep duff layers, but have not been evaluated for the aspen forest. This study developed and validated DMC and DC relationships and quantified duff ignition within aspen stands of EINP. The role of soil bulk density and inorganic content were also evaluated. Moisture relationships and ignition thresholds at various DMC and DC were established. The DMC, as modelled from summer moisture under leaf-on conditions, appears suitable as a conservative tool for assessing fire risk. This research may also form the basis for new moisture codes for the D-1 aspen fuel type, improving prediction of ground fire occurrence.

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