

**Symposium on Fire Management in Cultural and Natural Landscapes,
Nature Conservation and Forestry in Temperate-Boreal Eurasia
Freiburg, Germany, 25-27 January 2008**

**Methodology of Prescribed Burning
Demonstration Plot Description and
Inventory for the Eurasian Fire
in Nature Conservation Network and
the Fire Paradox Russia and Mongolia
Programme**

Michaela Spielmann, Daniel Kraus
Global Fire Monitoring Center

Introduction

- Lack of prescribed burning demonstration sites
 - Effects of fire often not documented/investigated
 - Uncertainty how and when to use prescribed burning techniques:
early or late season?
-

Introduction

- Description of demonstration sites is developed within the Fire Paradox Programme WP 9.1
- Objectives:
 - determine and show differences of fire effects on fuel consumption, burn patterns, resulting heterogeneity
 - determine season for prescribed burnings

Documentation

- Purpose of treatment
- Desired burn conditions to reach objectives
- Site description

Purpose of Treatment:				
Specific Treatment Objectives:			Objectives reached? <input type="checkbox"/> Yes <input type="checkbox"/> No Specify:	
Desired burn conditions to reach objectives (optional or if necessary as general prerequisite)				
Wind speed (m/s):		Wind direction:		
Relative humidity (%):		Soil moisture:		
Air temperature (°C):		Burn period (time of year):		
What problems do occur?				
Site description				
Vegetation type (main species):	Annual mean precipitation (mm/a):	Mean precipitation during time of burn (mm):		
Fuel load (target fuel) (t ha ⁻¹):	Annual mean temperature (°C):	Mean temperature during time of burn (°C):		
Fuel description:				
Topography:	Slope (%):	Aspect:	Altitude (m a.s.l.):	Soil conditions:

Fuel sampling

Possible methods:

Line-Intersect-Sampling (LIS) for dead down woody debris,



Hemispherical photographs for canopy cover and gap fraction



Line-Intersect-Sampling

- Simple, nondestructive method to inventory downed woody material
- Can be applied to natural fallen debris and to slash



- Involves counting downed woody pieces that intersect vertical sampling planes

Line-Intersect-Sampling

- Provides the following information:
 - Weights and volumes per hectare of fine and coarse woody debris
 - Depth of fuel and forest floor duff
- Can be adapted to specific (present?) site conditions
- Problems may arise when species specific values are not provided, e.g. for specific gravity



Hemispherical photographs

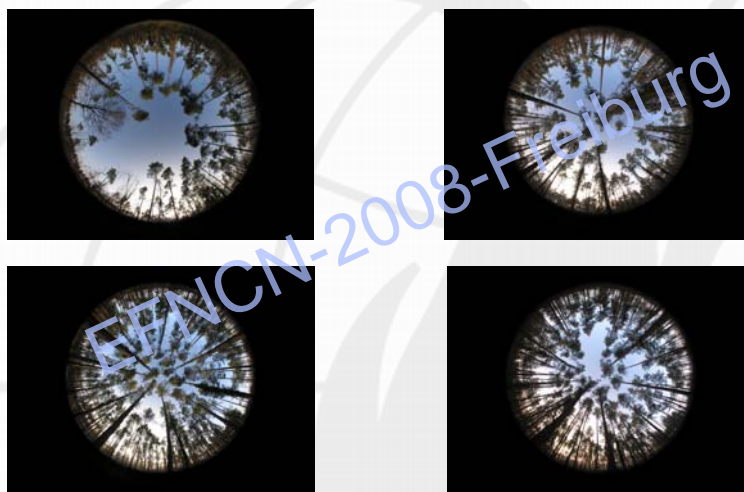
- Easy and rapid method to get an overview on stand and canopy characteristics
- Hemispherical photos provide
 - a detailed map of sky visibility and sky obstruction



Hemispherical photographs

- It is possible to calculate beneath canopy forests
 - solar radiation regimes
 - plant canopy characteristics:
 - Leaf Area Index (LAI)
 - Canopy openness
 - Gap fraction
- LAI is used with estimates of specific leaf area and canopy depth to estimate Canopy Bulk Density
- A number of fire behavior and effects models require CBD to predict crown fire potential/behavior
- Allows to examine correlations between stand structure and surface fuel regimes, e.g. fuel moisture content

Hemispherical photographs



Outlook

Scorch height and percentage of burned surface fuel area will be determined as an indicator for fire severity.

This will provide first indicators on the effects of burning in different seasons on

- emission reduction potential
 - heterogeneity and patchiness
 - fuel reduction potential
 - risk reduction potential
-

EFNCN-2008-Freiburg