



**Alaska Region National Park Service
Fire Ecology Annual Report
Calendar Year 2004**

Summary

Record high temperatures and low precipitation resulted in more than six million acres burned in Alaska during the summer of 2004, the largest fire season on record for the state. Over 130,000 acres burned in Yukon-Charley Rivers National Preserve and over 11,000 acres burned in Noatak National Preserve. Wildland fire is a natural process that increases the diversity of vegetation on the landscape by creating mosaics of burned and unburned areas.

The purpose of the Alaska Region Fire Ecology program is to obtain baseline data on the natural variability of fire on the landscape, to monitor the effects of fire or mechanical treatments on vegetation, fuels and soil parameters, and to provide fire ecology information to fire managers, other park staff, and the public. Accomplishments this year included the establishment of nine fire effects plots and re-read of 1 historic plot, the coordination of two fire ecology education programs, and the completion of a fire succession and vegetation landcover User's Guide. A brief description of each project is provided below. Table 1 provides information on the number of plots accomplished during 2004.

Pre/Post Fire Plots – Yukon-Charley Rivers NP and Noatak NP

The large fires in Yukon-Charley Rivers NP and Noatak NP provided the back drop to study how fire burned through varying vegetation types and the effects of fire on vegetation and permafrost. Nine plots were established to document the pre and post condition of the vegetation and fuels during ongoing wildfires. The goals of the study are to 1) validate predictive fire models used by fire managers, 2) determine the vegetative and structural components that are important to fuel models, and 3) identify fire effects under varying burn severity levels.

2004 Accomplishments:

YUCH – 5 plots (3 installed pre fire, 2 installed post fire) Woodchopper/Edwards
NOAT – 4 plots (2 post fire and 2 paired unburned)

Paired Plots Historic Fire Effects- Yukon-Charley Rivers NP

The fire effects paired plot project began in 1981 under the direction of Gary Ahlstrand – NPS Alaska Regional Research Ecologist, over 500 plots were installed throughout 9 parks. This project proposes to re-monitor selected plots in order to determine the vegetative and structural components that have changed over time since fire, utilize data to develop fire successional

models to update landcover vegetation maps and fuels maps, and identify fire effects under varying burn severity levels.

2004 Accomplishments:

YUCH - 1 Plot – Woodchopper Fire

Videography and Landcover Mapping – Denali NP/P

In a few hours of flying, large samples of current vegetation/fuel type were taken from past fires using videography and GPS. Though a process of classifying the frames captured in the video, ground truthing, and unsupervised classification, we hope to be able to update the Denali Landcover map in areas with recent burns. The objectives of this pilot project are to test the use of videography as a method for landcover classification, update the recently burned portions of the Denali Landcover map, and validate successional patterns compared to burn severity.

2004 Accomplishments:

Videography taken in the fall of two transects (~100 km each) in the NW section of Denali

Denali Digital Story Telling – Fire Education and Ecology Plots

Using digital cameras, PDA's, and other electronic gadgets, a group of students were armed to tell the story of fire ecology in Denali. As part of a summer camp, students learned about fire and fire ecology and measured forest plots in a recent burn. NPS fire staff at Denali assisted in instructing and demonstrated field techniques to measure fire effects and succession at the Horse Shoe Lake fire of 2002.

Eagle School – Fire Education and Ecology Plots

The small community of Eagle, Alaska experienced a dramatic fire season in 2004, with over a million acres burning around the area. In coordination with the Eagle school and our fire management staff, we provided a three day fire ecology program. Students from the Eagle school installed three plots in different burn severities to assess how burn severity influenced plant mortality and permafrost depth.



Table 1. Fire Effects Plot Workload 2004

Park	Monitoring Unit	Type of Plot (FMH, photo point, other – describe)	Pre-burn/treatment	Immed. Post	Postburn (1-20 yrs)	Total Plots
Denali NP/P	Black Spruce/Tundra	Videography	2 100-km transects			(2)
Noatak NP	Tussock tundra	Fire Effects Plots	2	2		4
Yukon-Charley Rivers NP	Black Spruce Paper Birch	Fire Effects Plots	3	6		9
Total			5	8		13

2004 Staffing

The fire ecology program in Alaska is unique in that there are no formal fire effects monitoring positions. However, the NPS Western and Eastern Area Fire Management Zones include multi-disciplinary forestry technicians and fuels technicians that provide a part of their time to fire

ecology projects. Table 2 provides the staffing of the fuels and forestry technicians that were involved in the fire ecology project work.

Table 2. Staffing 2004

Fuels/Forestry Technicians	Starting Date	Ending Date	# of Pay Periods	Training and Development
Kristi Bulock	3/8/04	11/20/04	15	M-410 Facilitative Instructor
James Savage	3/14/04	11/13/04	14	S-215
Jennifer Mitchell	5/15/04	9/30/04	9	B3
Larry Weddle	1/15/04	12/31/04	24	RX-310, Fire Ecology Statistics
Charlie Reyner	3/01/04	12/31/04	18	RX-310, BioProducts/Wood Conference
Eric Olson	4/25/04	8/14/04	7	Detail RX Grand Canyon, S-131
Dan Ostmann	5/22/04	9/30/04	9	S-131

Ecologist Accomplishments

The regional fire ecologist, Jennifer Allen, worked on the development of an interagency fire ecology monitoring plan, participated in workshops and drafted comments on Fire Regime and Condition Class (FRCC), participated in the National Fire Ecology Steering Committee and Alaska Interagency Fire Effects Task Group meetings, and facilitated coordination between the Fire Ecology program and the Inventory & Monitoring program in Alaska. Other work included, assisting the Burned Area Emergency Response (BAER) team during their assessment of the 2004 fires in Alaska and collaborating on Joint Fire Science proposals.

Two publications were completed during 2004 that will benefit the fire program. As part of the Inventory & Monitoring Landcover Mapping program, a User's Guide was completed for Yukon-Charley Rivers National Preserve that provides descriptions and diagrams of plant associations and successional sequences due to fire (Fig 2). Vegetation data collected by fire staff over the past decade was utilized to develop the guide. The Alaska Region completed their field verification of remotely sensed burn severity data and published the results of their work in Alaska Park Science (Fig 3).

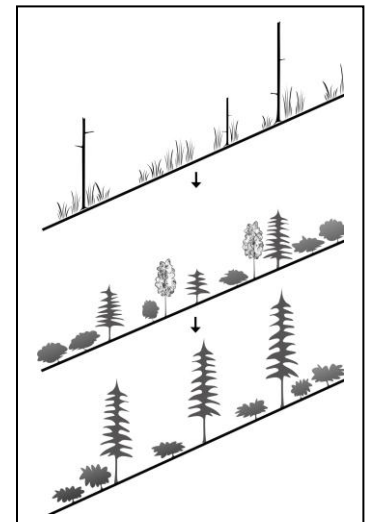


Figure 2. Successional model for east-facing slopes in Yukon-Charley NP.

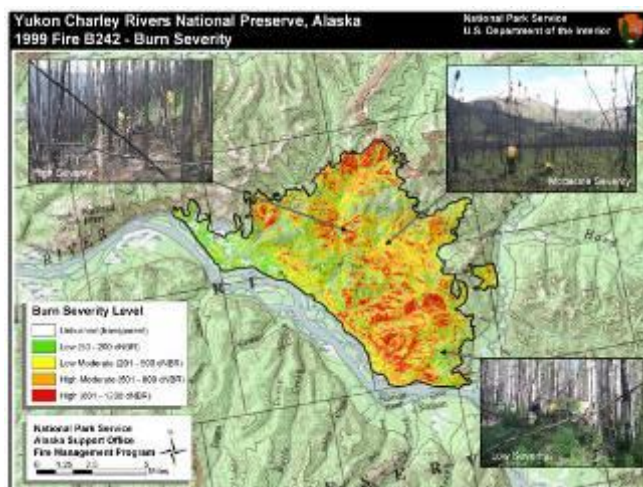


Figure 3. Graphic from burn severity article in upcoming publication in Alaska Park Science.