

Alaska Fire Science Consortium

A JFSP KNOWLEDGE EXCHANGE CONSORTIUM

THE ALASKA FIRE SCIENCE CONSORTIUM

Boundary Organization for Better Collaboration
Between Fire Science and Fire Management

Sarah Trainor, PI
Scott Rupp, Co-PI
Alison York, Coordinator
Randi Jandt, Fire Ecologist





Joint Fire Science Program

Research Supporting Sound Decisions

www.firescience.gov

14 Regional Science Delivery Consortia



http://www.firescience.gov/JFSP_Consortia.cfm

Alaska Fire Science Consortium

...working together to bridge the gap in fire science delivery and outreach

Primary Goals:

- Coordinate current science delivery efforts
- Facilitate communication between scientists & agency land/fire managers
- Create formal outreach mechanisms for effectively delivering fire science information
- Work with managers to ensure delivery is practical and useful for agencies

Alaska Fire Science Consortium

Personnel and Advisory Board

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Consortium PI

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Alison York, UAF
Consortium Coordinator

Randi Jandt, UAF
Fire Ecologist
Science-Management Liaison

Sharon Alden, NPS
Fire Weather Program Manager

Jennifer Barnes, NPS
Regional Fire Ecologist

Eric Geisler, BLM
Forestry/Soils Lead

Marsha Henderson, Alaska DOF
Fire Planner

Teresa Hollingsworth, USFS
Research Ecologist

Kato Howard, BLM-AFS
State Fuels Management
Specialist

Mary Lynch, BLM-AFS, retired
Planning & Environmental
Coordinator

Eric Miller, BLM-AFS
Fire Ecologist

Jen Northway, NPS
Fire Ecologist

Diana Olson, UI-FRAMES
FRAMES Project Manager

Lisa Saperstein, USFWS
Regional Fire Ecologist

How can the Consortium help you with your outreach goals?

October Consortium Workshop

- Share your latest results
- In-person discussion
- Exposure to statewide fire community

Webinars

- Introduce new projects
- Give on-going project updates

Previous Webinar:



Australia.

Tundra burning in Alaska: Rare events or harbinger of climate change?

Presented by: Dr. Philip Higuera, Assistant Professor, University of Idaho

Philip's current research is focused on how climate, vegetation, and human activities interact with fire occurrence and fire regimes (from across years to across millenia). He is also the Director of the [Paleoecology and Fire Ecology Lab](#) where students and researchers work on charcoal and pollen analysis in lake-sediment records, dendrochronology, and spatially-explicit modeling and analyses for areas in the US Rocky Mountains, Alaska, and abroad in Tasmania,

In Summary: Dr. Philip Higuera presented results from past and ongoing research focused on understanding the causes and consequences of tundra burning in the past, present, and future. The talk integrated several lines of work, including reconstructing tundra fire history in the recent and distant past (2000–14,000 yr), quantifying relationships among modern climate, vegetation, and tundra burning, and anticipating future tundra burning given future climate scenarios.

Webinar Products:

- [Presentation](#) (pdf, 4.4 MB)
- [Watch the Recording](#) or [Download the Video](#) (mp4 or wmv)
- [Webinar Summary](#) (pdf, 2.6 MB)

Publications:

- Higuera, P. E., J. L. Barnes, M. L. Chipman, M. Urban, and F. S. Hu. 2011. *Tundra fire history over the past 6000 years in the Noatak National Preserve, northwestern Alaska*. *Alaska Park Science* 10:37–41. [Link to Publication](#)
- Higuera, P.E., Chipman, M.L., Barnes, J.L., Urban, M.A., and F.S. Hu. 2011. *Variability of tundra fire regimes in Arctic Alaska: millennial scale patterns and ecological implications*. *Ecological Applications*, 21: 3211–3226. [Link to Publication](#)
- Hu, F.S., P.E. Higuera, J.E. Walsh, W.L. Chapman, P.A. Duffy, L.B. Brubaker, and M.L. Chipman. 2010. *Tundra burning in Alaska: linkages to climatic change and sea-ice retreat*. *Journal of Geophysical Research - Biogeosciences*, 115, G04002, doi:10.1028/2009JG001270. [Link to Publication](#)
- Joint Fire Science Program, Final Report (2010): [Reconstructing fire regimes in tundra ecosystems to inform a management-oriented ecosystem model](#)

Field Site Visits

- Give managers direct exposure to research sites & scientists
- Demo products & tools in the field

Other Outreach Tools: Research Summaries/ Newsletters Factsheets

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2010 Consortium Workshop Summary

Tanacross Shaded Fuel Break—Treatment in Action

In 2003, the Village of Tanacross partnered with the Tanana Chiefs Conference, BLM—Alaska Fire Service, Alaska Division of Forestry, and US Fish and Wildlife Service to begin a proactive and coordinated approach to hazardous fuels reduction. Through this unique interagency effort, BLM—Alaska Fire Service was able to obtain funding from the National Fire Plan to implement shaded fuel breaks around the potentially high risk community of Tanacross. This partnership also provided training and employment opportunities for local residents.

Approximately 52 acres of predominantly white spruce forest were thinned to 15 x 15 foot spacing and low branches (snider fuels) were limbed. Three monitoring plots were also installed to assess vegetation changes within the fuel break. (More information on the effects of thinning on stand dynamics can be found in the 2008 Tanacross Monitoring Project Report linked below.)

In late May 2010, this shaded fuel break treatment was put to the test by the Eagle Trail Fire. Although the fuel break was not directly impacted by the head fire, it played a key role in operational decisions and resource allocations. By opening the canopy, fire fighters were able to function efficiently and conduct a burnout from the edge of the fuel treatment. The fuel break also altered the community's perception of risk, allowing them to react calmly in a stressful and potentially dangerous situation.

Speakers:
Tami DeFries (BLM)
Hans Smith (DFF)
Eric Miller (BLM)


Key Discussion Points & Questions:

- There is no "one size fits all" prescription for fuel treatments. There are many factors that need to be considered to minimize adverse impacts and maximize treatment effectiveness.
- Most of the grass cover within the Tanacross fuel break is not continuous and would also limit surface fire spread.
- There are still many unknowns in discussing shaded fuel break treatments including, the minimum and maximum effective spacing, maintenance, duration of effectiveness, methods of treatment, regeneration, and stand type conversion goals.
- The village of Tanacross is a very proactive and "fire aware" community. The installation of a shaded fuel break around the community in combination with Firewise practices around individual homes proved to be very beneficial, allowing fire fighters to effectively execute suppression tactics.

Additional Information:

- View the presentation slides (pdf) or the recording (wav) on the Consortium website at: <http://fames.nsl.gov/alaska/consortium/workshops/oct2010>
- Tanacross Shaded Fuel Break Project information on FIREhouse: <http://firehouse.nsl.gov/infocenter/infocenter.jsp?project=501&cmrview=0>
- 2008 Tanacross Shaded Fuel Break Monitoring Report: http://fames.nsl.gov/documents/alaska/consortium/TANACROSS_5_2008_SUMMARY.pdf

Photo (Right): Installation of the shaded fuel break around the Village of Tanacross. Photo from Tracy DeFries.



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Menana Ridge Project Update—What have we learned so far?

The Menana Ridge Experimental Fuels Treatment Research Project was funded by the Joint Fire Science Program and supported with additional contributions from local state and federal agencies. This project was designed to quantify the effects of fuels reduction treatments on fire behavior and post-fire vegetation dynamics in Alaska black spruce. The study began in 2006 with installation of four 3-acre treatment blocks. Two blocks were thinned to 8 x 8 foot spacing and limbed, one was shearbladed, and one was shearbladed and windrowed. These four blocks were replicated in the adjacent forest unit, with the intent to burn each unit separately.

On June 17, 2009, a prescribed fire was ignited in one of the Menana Ridge units to test the effectiveness of these treatments. The burn had marginal success in the lower, wetter half of the unit but picked up momentum as weather improved and ignitions proceeded up the slight slope. A crown fire was attained and impacted both shearbladed treatments and one of the thinned treatments.

Photo: Thinned treatment (8 x 8 foot spacing)

Photo: Shearbladed treatment

Photo: Shearbladed and windrowed treatment

Photo: Researcher installing a camera box to assess fire behavior *Photo: Crown fire burning through the unit* *Photo: Researcher measuring fuel consumption*

Pre-fire vegetation data and fuel moistures were collected along with duff (forest floor) consumption measurements. Fire proof camera boxes and sensor packages, designed to collect data on air temperature, heat energy transfer, and air flow, were installed to monitor fire behavior in the treatments and in control areas (undisturbed forest). Portable weather stations were deployed to collect weather data. Aerial infrared images (which indicate heat intensity) were also collected from a helicopter during the prescribed burn.

Preliminary results from the thinning treatment revealed that the top moss and duff layers were drier than the control due to increased solar radiation and wind but less forest floor was consumed in the burn. The CONSUME Model was able to predict the amount of biomass consumed reasonably well. These results are important as forest floor biomass and moisture are key components of fire in boreal ecosystems and often drive fire behavior. The amount of duff or forest floor consumption directly impacts smoke, permafrost melting, erosion and vegetation succession.

Fire behavior data from the prescribed burn also provided key information on the effectiveness of thinning treatments. The active crown fire was indeed brought down to a surface fire, burning only 50 to 100 feet into the thinned treatment.

Submit project updates, new publications, or feature your project

Consortium Webpage

- Individual project pages
- Post new publications
- Download recorded webinars & presentations
- Upcoming Events Calendar

Want to Participate?

Contacts:

Alison York, ayork@alaska.edu

Randi Jandt, rjandt@alaska.edu

<http://akfireconsortium.uaf.edu>

The screenshot shows the homepage of the Alaska Fire Science Consortium. The header features the title "Alaska Fire Science Consortium" and "A JFSP Knowledge Exchange Consortium" with a navigation menu including "AFSC Home", "About", "Events", "Library", "Partner Groups", "Products & Tools", and "Projects". Below the header is a "FRAMES Home" link. The main content area includes a large image of firefighters, a "Letters of Support" section with a "READ MORE >>" link, and a "2013 JFSP Funding Opportunities" section. On the right side, there is a "Sign Up for Emails" section with a "JOIN THE ALASKA CONSORTIUM" button, a "Connect with us" section with social media icons for WordPress, RSS, Twitter, Email, and Facebook, and a "Webinar - Management of" section.

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AFSC Home About Events Library Partner Groups Products & Tools Projects

FRAMES Home

Letters of Support
Submitting a JFSP proposal? Contact us for help with your outreach and science delivery plan. [READ MORE >>](#)

2013 JFSP Funding Opportunities

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Fire Science News & Highlights

Webinar Dec 20th- What is Live Fuel Moisture? A New Look at the Combustion of Live Plants
Wednesday, December 12, 2012
Date: Thursday, December 20, 2012 Time: 10:00 - 11:30 AM (AK Time) Presented by: Matt Jolly, PhD Research Ecologist, USFS Fire, Fuel and Smoke Science Program Missoula Fire Sciences Laboratory Live fuel moisture is measured frequently throughout th...

Feb 12 Webinar - Management of

2012 Accomplishments:

Webinars

- Live Fuel Moisture: A New Look at the Combustion of Living Plants
- Tundra Burning in Alaska: Rare Events or Harbinger of Climate Change?
- Once Burned, Twice Shy: Repeat Fires Result in Black Spruce Regeneration Failure

Hands-on Workshops

- ⦿ Fire Modeling Workshop, March
- ⦿ Fuel Moisture Sampling Workshop, May
- ⦿ Fire Science Workshop, October



2012 Accomplishments: *But wait, there's more!*

- **ART OF FIRE** project—received National Recognition
- Letters of support for researchers seeking grant funding
- Publication on fire science knowledge exchange (Trainor)
- Newsletters, tweets, announcements
- “Help desk” to facilitate science-management partnerships
- Maintained regional fire science reference database
- Posters and presentations at Assn. Fire Ecology Conference, others



Other on-going collaborations with Fire Managers:

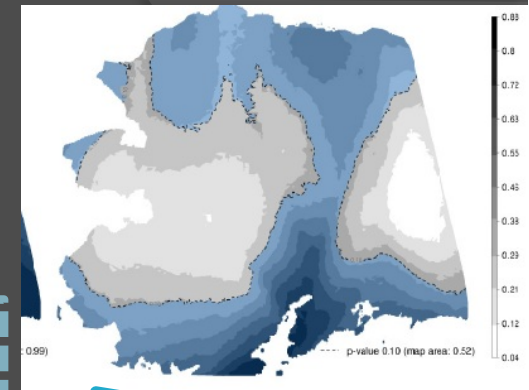
- 2011-2013 Alaska Research Needs List
- Fire Behavior Modeling Discussion Group
- Boreal Fire History Project
- CFFDRS in Alaska
- Seasonal Fire Forecast Using Climate Variables



Here's what we're working on:

Conversion Date Tool

New proposal using climate and fire correlations to make a tool for managers: before the Alaska Fire Season and during the critical "conversion date" period July 10.



- Art of Fire project going to NSF in D.C.!
- Workshop for new Fire/Fuels management decision and spatial analysis tool (IFTDSS) on 3/12
- Spring webinars:
 - ❖ WIMS (Weather Information Management System) 2/25
 - ❖ Changing Fire Regimes in Alaska in Response to Different Future Climate Change Scenarios 3/20
- Field trips with managers/scientists
- **AFSC Advisory Board Meeting and Manager-Scientist Social**

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