Project Title:	**Compiling, Synthesizing and Analyzing Existing Boreal Forest Fire History Data in Alaska (JFSP Project No. 06-3-1-26)**
Announcement for Proposals and task statement this proposal is responding to:	**Joint Fire Science Program AFP 2006-3, Task 1**: *Support the needs of wildland fire managers and policy makers in understanding past, current and future natural fire regimes* (specifically, taiga [boreal forest] ecosystems) *and aid in the ability to assess current departures from historic conditions.*
Principal Investigator: Affiliation: Address: Phone: Email:	**Diana L. Olson** USDA Forest Service, Pacific Northwest Research Station 400 N. 34th Street, Suite 201, Seattle, WA 98103 206-732-7844 dlolson@fs.fed.us
Co-Principal Investigator: Affiliation: Address: Phone: Email:	**James B. Cronan** Yale University, School of Forestry & Environmental Studies 370 Prospect Street, New Haven, CT 06511 206-406-9883 james.cronan@yale.edu
Co-Principal Investigator: Affiliation: Address: Phone: Email:	**Ann E. Camp** Yale University, School of Forestry & Environmental Studies 360 Prospect Street, New Haven, CT 06511 203-436-3980 ann.camp@yale.edu
Co-Principal Investigator: Affiliation: Address: Phone: Email:	**Jennifer L. Allen** National Park Service 201 First Ave. Fairbanks, AK 99701 907-455-0652 Jennifer_Allen@nps.gov
Co-Principal Investigator: Affiliation: Address: Phone: Email:	**Donald McKenzie** USDA Forest Service, Pacific Northwest Research Station 400 N. 34th Street, Suite 201, Seattle, WA 98103 206-732-7824 donaldmckenzie@fs.fed.us
Point of Contact:	Diana L. Olson USDA Forest Service, Pacific Northwest Research Station 400 N. 34th Street, Suite 201, Seattle, WA 98103 Email: dlolson@fs.fed.us Phone: 206-732-7844 Fax: 206-732-7801
Federal Cooperator:	Diana L. Olson USDA Forest Service, Pacific Northwest Research Station 400 N. 34th Street, Suite 201, Seattle, WA 98103 Email: dlolson@fs.fed.us Phone: 206-732-7844 Fax: 206-732-7801
Federal Collaborators:	Karen Murphy, US Fish and Wildlife Service Andrew De Volder, US Fish and Wildlife Service
Non-Federal Collaborators:	Glenn Juday, University of Alaska, Fairbanks Scott Rupp, University of Alaska, Fairbanks Robert Ott, Alaska Department of Natural Resources
Federal Fiscal Representative:	David Caswell, Management and Program Analyst USDA Forest Service, Pacific Northwest Research Station 333 SW First Avenue, Portland OR 97204 (surface) PO Box 3890, Portland, OR, 97208 (mail) E-mail: dcaswell@fs.fed.us Phone: 503-808-2107 Fax: 503-808-2130

Abstract:
The Alaska Interagency Fire Management Plan recognizes the critical role of wildland fires in maintaining the ecological integrity of boreal forests. Identifying and maintaining natural fire regimes is an important component of fire management and is a wise undertaking from both an economic and ecological perspective. We have identified 24 existing research projects in the boreal forests of Alaska that directly or indirectly address historical fire regimes, and there are undoubtedly more projects we have yet to identify. Thirteen of the 24 identified projects are either unpublished, have an extensive amount of unprocessed samples, or their data were used for other purposes. Furthermore, there has not been a compilation and comprehensive assessment of these data to provide a more complete understanding of how fire has historically impacted the boreal forest ecosystems of Alaska. The objectives of this proposed project are to compile, synthesize and analyze boreal forest fire history datasets that already exist in Alaska. This proposal is being presented in two parts. Part 1 will review, compile, synthesize, and provide access to existing fire history datasets. This includes a literature review of fire history publications in boreal forests in Alaska, and incorporation of the reference information into the Alaska Fire Reference Database (accessible through FIREHouse, the Northwest and Alaska Fire Research Clearinghouse: http://www.fs.fed.us/pnw/fera/firehouse). Existing published and unpublished fire history datasets will be compiled (and processed, as necessary) into a standardized database (the Alaska Boreal Forest Fire History Database). Access to the database will be provided both statically (as a downloadable database) and dynamically (within the Alaska Fire Effects Plots Map ArcIMS project on FIREHouse). Data compiled in the Alaska Boreal Forest Fire History Database will be submitted to the International Multiproxy Paleofire Database (IMPD: http://www.ncdc.noaa.gov/paleo/impd/paleofire.html). Finally, the literature review and compiled data will be synthesized and published in report format as the Alaska Boreal Forest Fire History Synthesis. The synthesis will be made available to managers and researchers as a hardcopy publication, as well as a digital publication through FIREHouse. If the data compiled in Part 1 are temporally and spatially explicit enough to justify large-scale spatial and temporal analyses (e.g. comparisons between fire history and topography, vegetation, climate, etc.), such analyses will be conducted during Part 2 of the proposed project. Findings of the spatial and temporal analyses would be made available through a peer-reviewed journal article and included in the Alaska Boreal Forest Fire History Synthesis. A summary of the findings and a link to the publication will be provided on FIREHouse. Updates and results for both Parts 1 and 2 of this project would be presented to Alaska fire managers and researchers at the annual Alaska Fall Fire Workshop and the AWFCG Fire Effects Task Group meetings in 2007 and 2008. If Part 1 of this proposal is funded, the additional budget request necessary to conduct Part 2 (if warranted) would be submitted to the Joint Fire Science Program Office and Board in December 2007. **Funding for Part 2 is not being requested at this date**; it is simply being identified as funding we would request at a later date, contingent on the results of Part 1.

I. Introduction

1) Project Justification

The importance of historical fire regimes is recognized in the Federal Wildland Fire Management Policy and Program Review Report (USDI and USDA 1995), which directs federal land management agencies to use information about fire regimes as a basis for developing fire management goals and objectives that restore and maintain sustainable ecosystems. Subsequently, the five federal land management agencies that own 60% of the land (ACE 2005) encompassed by the Alaska Interagency Wildland Fire Management Plan (AWFCG 1998) must consider historical fire regimes when deciding upon fire management objectives for the lands they manage. While this policy is especially relevant to boreal forests in Alaska where wildland fire is a primary disturbance influencing ecosystem processes (Dyrness et al. 1986), land managers are constrained in their ability to incorporate fire regime information into their decision-making because this information is often inaccessible or lacking.

Boreal forests in Alaska typically experience little or no direct management. As growing populations expand the size of the wildland-urban interface, there is an increasing concern about wildfire hazards in the boreal forest. Such growth increases the need for fuels management in the wildland-urban interface and increases demands on local timber resources. Global warming is another widespread change with major implications for boreal forests. Temperatures in Alaska have risen 4°C degrees in the 20^{th} century (NAST 2001) and the Arctic is projected to warm an additional 4-7°C over the next 100 years (ACIA 2004). Warming temperatures increase the likelihood that disturbances such as insect outbreaks and forest fires could increase in frequency, severity, and duration (ACIA 2004). Two of the three largest recorded annual acreages burned occurred in 2004 and 2005 (6.7 and 4.6 million acres respectively; Alaska Fire Service 2004 and 2005). An improved understanding of the frequency and spatial extent of historical fire regimes is important for: 1) identifying where current fire regimes have departed from their historical range of variability, 2) modeling the impacts of climate change scenarios, and 3) assessing the effects of future forest management practices on boreal forest ecosystems.

Several fire history reconstructions have been conducted over the last few decades within boreal forests of Alaska (Berg unpubl.; De Volder 1999; Earle et al. 1996; Fastie et al. 2002; Gabriel and Tande 1983; Gracz et al. unpubl.; Lutz 1956; Lynch et al. 2002; Lynch et al. 2004; Mann et al. 1995; Mann and Plug 1999; Potkin 1997; Yarie 1981), and a number of other studies have data with the potential for reconstructing fire histories, but the data were analyzed for other purposes (Allen unpubl.-a, unpubl.-b; Cronan unpubl.; Edwards and Barker 1994; Hollingsworth unpubl.; Hu et al. 1993; Juday unpubl.; Ott unpubl.; Roland unpubl.; Rupp unpubl.; USDA Forest Service 2005). A few of these studies have provided information about fire regimes in boreal forests and have given land managers and policy makers a general idea of the spatial dimensions and temporal distributions of fire in Alaska. However, results of these studies are not all widely accessible. Of the 24 studies we identified during the development of this proposal, only 11 resulted in published fire history information, two of which are masters' theses that have not been widely accessible. The remaining 13 studies either were not published or their data were used for purposes other than fire history reconstructions. In addition to the aforementioned studies, at least two studies (Duffy et al. 2005; Kasischke et al. 2002) have analyzed Alaska fire regimes based on the mapped perimeters of large fires documented by Alaska's wildland fire managers since 1950 (AGDC 2005). It is likely that additional published and unpublished boreal forest fire history and stand age data exist, but have yet to be identified.

A common limitation of fire history data is that their spatial applicability is typically restricted to the site where the research was conducted. Another limitation is that the temporal range for boreal forest fire history studies is often only 50-150 years, a period falling within the period of Euroamerican settlement in Alaska. While there has been only minimal impact from the fire suppression activities in Alaska in the second half of the 20^{th} century, studies incorporating wider temporal ranges indicate there was an increase in fire activity following Euroamerican settlement beginning in the mid-19^{th} century (De Volder 1999; Fastie et al. 2002; Lynch et al. 2002).

In response to Joint Fire Science Program AFP 2006-3, Task 1, we propose to develop a spatially and temporally explicit compilation of existing Alaska boreal forest fire history datasets that can be readily accessed by land and fire managers. **Such a compilation of fire history information has been identified as a research goal by the Alaska Wildland Fire Coordination Group (AWFCG).** This proposal specifically addresses an AWFCG request for a "compilation of fire return intervals for the entire state" which "would enable fire managers and resource managers to make more informed decisions about fire and fuels treatment." A compilation of fire history information would also identify those regions and vegetation types in Alaska known to be affected by fire, but lacking a knowledge base, guiding future research efforts to specifically target those areas. We also propose to synthesize the existing Alaska boreal forest fire history information, making it more accessible to managers as well as researchers.

Additionally, we propose to conduct large-scale spatial and temporal analyses of the existing Alaska boreal forest fire history data, providing that the compiled datasets are of sufficient spatial and temporal resolution. Kasischke et al. (2002) show fire in the boreal forests of Alaska is influenced broadly by geographic location. Duffy et al. (2005) correlate climate and annual area burned in Alaska. Ideally, the data compiled through this project could be used to better understand the regional-scale variation in relationships between fire and climate, which would aid fire managers in assigning hazard risk levels to regions throughout Alaska. Observations by Fastie et al. (2002) indicated that topography controls fire spread. Smaller-scale spatial analyses of the compiled datasets may lead to a better understanding of the relationship between fire regimes and vegetation and topography at a scale useful for fire management.

2) Project Objectives

The objectives of this project are to compile fire history information and disseminate it to land and fire management agencies throughout Alaska. Potentially, it will also provide more explicit information about the spatial and temporal patterns of historical fires in Alaska. The proposal is presented in two parts, with the work proposed for Part 2 contingent on the resolution of the spatial and temporal data compiled in Part 1.

Part 1 – Review, compile, synthesize, and provide access to existing fire history datasets.

1) Conduct a literature review to assess the depth and breadth of published work addressing fire history in boreal forests in Alaska.
2) Process and analyze underutilized samples, including samples that were not analyzed for fire history data and samples that were collected for the purpose of determining fire history information, but were never processed.
3) Compile existing published and unpublished fire history datasets into a standardized database (the Alaska Boreal Forest Fire History Database).
4) Crosswalk data compiled in the Alaska Boreal Forest Fire History Database to the International Multiproxy Paleofire Database (IMPD: http://www.ncdc.noaa.gov/paleo/impd/paleofire.html), a repository for high-quality paleofire records from around the world.
5) Synthesize existing literature and compiled data into an Alaska Boreal Forest Fire History Synthesis (published as a General Technical Report or as a comparable publication).
6) Provide access to project information, the Alaska Boreal Forest Fire History Database, and the Alaska Boreal Forest Fire History Synthesis through the FIREHouse website (the Northwest and Alaska Fire Research Clearinghouse: http://www.fs.fed.us/pnw/fera/firehouse).

Part 2 – Conduct large-scale spatial and temporal analyses of the datasets compiled in the Alaska Fire History Database. Present findings in a peer-reviewed journal article and as part of the Alaska Boreal Forest Fire History Synthesis. Provide a summary of the findings and a link to the publication through FIREHouse.

Please note, Part 2 will only be conducted if the data compiled in Part 1 is of sufficient spatial and temporal resolution to justify large-scale spatial and temporal analyses. If warranted, toward the end of the Part 1 timeframe, the PIs will submit an amendment to this proposal to the Joint Fire Science Program (JFSP) Program Office and Board to request additional funding for Part 2 (please refer to the Project Duration and Budget sections for more specific information).

3) Background

There are three primary methods for examining fire regimes in Alaska, each with strengths and weaknesses. Sediment cores from lakes can provide a record of vegetation composition and fire history that can extend back almost 10,000 years. These studies are relatively complex technically, and require laboratory equipment not readily available to federal agencies. Sample processing is very labor-intensive, making it difficult to conduct studies with large sample sizes. Dendrochronological studies rely on tree cores and cross-sections. Age structure data and fire scars can provide highly accurate information about fire history. These studies require less labor than sediment-based studies, and are easier to conduct over large areas with a large number of samples. Dendrochronological data can be used to determine fire frequency, extent and seasonality; however, the data are often limited to a time period extending no farther than the previous two stand replacing fires at any one site. Fire mapping studies use wildland fire management files to assess fire history. This approach provides a fine spatial resolution, but encompasses the shortest temporal scale (i.e., just over 50 years; AGDC 2005). These records exist entirely within the time period that Euroamerican settlement has influenced fire regimes in Alaska, making them less representative of historical fire regimes than sediment cores or dendrochronological data.

Lynch et al. (2002) and Lynch et al. (2004) collected sediment cores from three lakes in boreal forests within three regions of Alaska: the Copper River Valley, the Kenai Peninsula and the western Tanana River Valley. Results of these studies indicate that fire frequencies over the past 9000 years were longer when the pollen records were dominated by hardwood species (ranging from 200 year fire return intervals to no recorded fires) and shorter when the pollen records were dominated by black spruce (with fire return intervals ranging from 90-210 years).

The most intensive dendrochronological fire history work in Alaska was conducted within black spruce forests of the Kenai National Wildlife Refuge (southcentral Alaska; De Volder 1999). It involved sampling over 2000 cores and basal cross-sections, resulting in a 300-year fire history reconstruction with an average fire return interval of 89 years. Fire frequencies for black spruce forests in other regions of the state can range from roughly 40 years (Yarie 1981) in eastern interior Alaska, to longer than 100 years in the Caribou-Poker Creek Research Watershed (interior Alaska; Fastie et al. 2002). These differences suggest there is regional (climate) and/or topographical variation in fire frequencies within comparable forest types. Additionally, both dendrochronological and sediment studies indicate longer fire return intervals for white spruce forests relative to black spruce forests (Lynch et al. 2004; Yarie 1981).

Kasischke et al. (2002) used fire perimeter data compiled for interior Alaska since 1950 to examine regional-scale spatial dynamics of fire cycles. The interior-most regions experienced the shortest fire cycles (<120 years); regions west, north and south of these regions experienced longer fire cycles (120-240 years); the farthest west regions and a large upland region experienced even longer fire cycles (240-360 years); and the longest fire cycle (>360 years) occurred in the northern-most region. This analysis also showed that 94% of fires in interior Alaska occur below 600 meters in elevation. Additionally, the analysis found a positive correlation between fire cycle length and growing season precipitation, and a negative correlation between fire cycle length as well as growing season temperature.

Previous fire history studies were conducted at a variety of spatial scales and sampling resolutions, making comparisons difficult. For example, the Yarie (1981) study spanned 3.6 million hectares (371 sampling locations), but only three to five samples were collected at each location. This allowed for general fire history interpretations across an extensive area, but did not provide intensive information regarding fire frequencies at individual locations. Conversely, Fastie et al. (2002) collected several hundred samples that allowed an intensive fire history reconstruction, but the study area was less than a couple thousand hectares in size.

While these fire history studies shed light on the fire regimes of boreal forests, they are far from a comprehensive review of fire regimes for this vast region in Alaska, most of which is comprised of vegetation that is fire-adapted. As described earlier, additional sources of data have been identified, many of which have not been published or were used for purposes other than reconstructing fire histories. Managers of Alaska's boreal forests often resort to using a general range of 40 to 200 years for fire return interval values. However, managing ecosystems with 40-year fire return intervals requires different strategies than managing ecosystems with 200-year fire return intervals, especially if management goals include maintaining ecological health or managing fire hazard.

Furthermore, global warming is occurring in Alaska at a rapid rate (ACIA 2004). If the evaporation caused by increased temperatures exceeds increases in precipitation (as expected; NAST 2001), fire danger will increase. Spatially and temporally accurate fire history information is necessary to understand how global warming is impacting boreal forest fire regimes.

II. Materials and Methods

The objectives of the project will be addressed as follows:

Part 1 – Review, compile, synthesize, and provide access to existing fire history datasets.

1) *Conduct a literature review to assess the depth and breadth of published work addressing fire history in boreal forests in Alaska.*

An extensive literature review will be conducted to identify studies in Alaska's boreal forests that explicitly address fire history information, or where data have the potential to be reanalyzed to provide fire history information. The review will include not only peer-reviewed publications, but also agency reports that would not normally be found in the published literature.

2) *Process and analyze underutilized samples, including samples that were not analyzed for fire history data and samples that were collected for the purpose of determining fire history information, but were never processed.*

Datasets that have been processed for other types of information (e.g., datasets with tree cross-sections that have been aged but whose fire scars have been ignored) will be re-processed using dendrochronological methods. Datasets will be analyzed to determine stand ages and fire history information. Unprocessed samples will be processed and analyzed to reconstruct fire history information, as appropriate. Because the largest (and potentially most valuable) datasets have thousands of samples in need of processing (specifically, the Allen, Juday and Rupp datasets), this component of the research is expected to require an extensive amount of work. Fire-scarred samples that require analysis will be visually crossdated using standard dendrochronological techniques (Stokes and Smiley 1968) and, when necessary, reviewed for accuracy using a crossdating software program (COFECHA; Holmes 1983). Crossdating will ensure the accuracy of fire history reconstructions and enable comparisons among them at annual scales. This portion of this project necessitates setting up a "tree-ring lab," which requires purchasing a stereo zoom microscope, stand and lighting (capitalized equipment); a tree-ring measuring system (capitalized equipment); a desktop computer (capitalized equipment); software; and a belt sander and sanding supplies.

3) *Compile existing published and unpublished fire history datasets into a standardized database (the Alaska Boreal Forest Fire History Database).*

This objective will include the identification and compilation of existing datasets. Table 1 describes datasets for which we've already secured access, and additional datasets have been identified (refer to the Project Justification section). We expect more datasets will be identified during the literature review.

Table 1. Tree age and fire scar datasets in Alaska for which we currently have identified and been permitted access; others have already been identified, and more will be identified during the literature review and further interviews with Alaska researchers.

Dataset	**Description**	**Study Area(s)**
Allen unpubl.-a	Tree cores and cross-sections from ~485 NPS fire paired vegetation plots, in burned and representative unburned habitat adjacent to burned areas of varying ages.	9 National Parks
Allen unpubl.-b	Two datasets: 1) NPS ground truth plot data with tree cores and cross-sections (~100 plots); 2) spruce bark beetle study cores from the largest trees at 136 plots, and presence/absence of fire evidence was recorded for each plot. (Sample processing required.)	Wrangell-St. Elias National Park and Preserve
Berg unpubl.	121 radiocarbon-dated soil charcoal samples (covering 2500 years) from upland white spruce forests. Detailed lake sediment charcoal data from Paradox Lake (covering 14,000 years).	Kenai Peninsula
Cronan unpubl.	Tree cross-sections (including fire-scarred cross-sections) from 24 plots. (Sample processing required.)	Throughout Interior Alaska
De Volder 1999	Lowland black spruce fire history dataset (1,022 cross-sections and 771 increment cores). (Published as a master's thesis.)	Kenai National Wildlife Refuge
Fastie et al. 2002	Fire history dataset: includes data from fire-scarred trees, fire-killed trees, and tree recruitment dates, as well as tree radial growth increases, and aerial photographs. (Published as a journal article.)	Caribou-Poker Creek Research Watershed (near Fairbanks)
Hollingsworth unpubl.	Stand age and fire history data from 150 black spruce sites.	Interior (along the Dalton, Elliot, Steese, Parks, Richardson, and Parks highways)
Juday unpubl. (and published)	Nearly 2000 tree ring and cross-section samples collected from ~350 sites. (Sample processing required.)	Throughout Interior Alaska and the Kenai Peninsula
Ott unpubl.	Stand age data for numerous plots.	Vicinity of Tok
Potkin 1997	Fire history dataset from the Kenai Mountains (includes fire-scarred cross-sections and tree cores).	Chugach National Forest
Roland unpubl.	Stand age data from 68 Long Term Ecological Monitoring plots. (Sample processing required.)	Denali National Park
Rupp unpubl.	Tree cross-sections (including fire-scarred cross-sections) from the oldest trees at ~200 plots. (Sample processing required.)	Throughout Interior Alaska
USDA Forest Service 2005	Tree age information for hundreds of Forest Inventory and Analysis plots.	Southcentral Alaska
Yarie 1981	Stand age data from 371 stands (3-5 samples collected per stand).	Eastern Interior Alaska

A relational database will be created to standardize and compare individual datasets. Because the condition of data will vary between datasets, so will the effort expended. Datasets developed and analyzed specifically as fire history studies will be added to the database without further processing or interpretation.

The resulting standardized Alaska Boreal Forest Fire History Database will be available as an independent, downloadable database file, and it will also be crosswalked to the IMPD and incorporated into the dynamic Alaska Fire Effects Plots Map (refer to objectives four and six). At a minimum, spatially-explicit historic fire regime data will be provided for specific study locations, and where appropriate, the dates and extents of historic fires will be mapped.

4) *Crosswalk data compiled in the Alaska Boreal Forest Fire History Database to the International Multiproxy Paleofire Database (IMPD: http://www.ncdc.noaa.gov/paleo/impd/paleofire.html), a repository for high-quality paleofire records from around the world.*

Programming code will be developed that will extract information from the Alaska Boreal Forest Fire History Database and convert it to the "FHX2" format (Grissino-Mayer 2001) used by the IMPD. The IMPD currently requests tree-ring based records and charcoal-sediment based records to be submitted in specific formats. Personnel in this project will work with the IMPD database manager to ensure compliance with IMPD standards.

5) *Synthesize existing literature and compiled data into an Alaska Boreal Forest Fire History Synthesis (published as a General Technical Report or as a comparable publication).*

A publication will be produced that summarizes and interpret the results of existing fire history research and summarizes fire history sampling methods. Results of the fire history research literature review and information compiled in the Alaska Boreal Forest Fire History Database will be summarized and interpreted, then synthesized as a report, which will be made available to managers and researchers in a paper format and as a digital publication.

6) *Provide access to project information, the Alaska Boreal Forest Fire History Database, and the Alaska Boreal Forest Fire History Synthesis through the FIREHouse website (the Northwest and Alaska Fire Research Clearinghouse: http://www.fs.fed.us/pnw/fera/firehouse).*

In addition to general project information and access to the synthesis through the standard FIREHouse display, publications located during the literature review will be incorporated into the Alaska Fire Reference Database, and access to the Alaska Boreal Forest Fire History Database will be made available statically (as a downloadable database) and dynamically (within the Alaska Fire Effects Plots Map ArcIMS project).

Part 2 – Conduct large-scale spatial and temporal analyses of the datasets compiled in the Alaska Fire History Database. Present findings in a peer-reviewed journal article and as part of the Alaska Boreal Forest Fire History Synthesis. Provide a summary of the findings and a link to the publication through FIREHouse.

If the spatial resolution and temporal depth of the data are sufficient, possible analyses could include: 1) an analysis of the spatial and temporal variation of fire histories within and between the various study locations, where differences in vegetation, topography, lightning patterns, climate patterns, etc., are quantified in relation to fire history; and 2) development of statistical models that enable spatial interpolation of fire-regime attributes to unsampled landscapes.

Aside from the tree-ring lab materials necessary for the sample processing, the only other materials necessary for this project (that would be purchased with funding requested from the Joint Fire Science Program) are a laptop computer (for James Cronan), software for the laptop, and software for web and reference applications. Access to web server space and server software would be provided by the USDA Forest Service and the University of Washington (through FIREHouse). The USDI Bureau of Land Management–Alaska Fire Service would provide the platform (i.e., ArcIMS server and support, through the Alaska Fire Effects Plots Map on FIREHouse) for the dynamic map interface for the Alaska Boreal Forest Fire History Database.

III. Research Linkage

This proposal is directly linked to data collected through numerous studies (refer to those cited in Table 1 and others cited in the Project Justification section), which include the JFSP-funded projects listed in Table 2. As already mentioned, we will identify additional studies during the literature review and further interviews with Alaska researchers.

Table 2. JFSP-funded projects linked to this proposal.

Grant Program	Project or Proposal Description / Identification	Project Completion Date
JFSP	01-1-1-02: Development of a Computer Model for Management of Fuels, Human-Fire Interactions, and Wildland Fires in the Boreal Forest of Alaska	August 2005
JFSP	04-2-1-96: Refinement and Development of Fire Management Decision Support Models Through Field Assessment of Relationships Between Stand Characteristics, Fire Behavior and Burn Severity	May 2006
JFSP	05-2-1-07: Post-Fire Studies Supporting Computer-Assisted Management of Fire and Fuels During a Regime of Changing Climate in the Alaskan Boreal Forest	July 2008
JFSP	05-4-2-03: Expanding FIREHouse (the Northwest Fire Research Clearinghouse) to Alaska	Nov. 2006

IV. Science Delivery and Application

This project will deliver results in a variety of ways. The compiled fire history data will be made publicly available online as the Alaska Boreal Forest Fire History Database, both statically as a downloadable file, and dynamically as a separate map layer within the Alaska Fire Effects Plots Map ArcIMS project on FIREHouse. Fire history information compiled in the database will also be crosswalked to the IMPD. Published and unpublished results of existing fire history research in Alaska will be summarized and interpreted, then presented in the Alaska Boreal Forest Fire History Synthesis (as a General Technical Report or a comparable publication). If spatial and temporal analyses are conducted with the compiled data, the results will be submitted for publication in a peer-reviewed journal, and will also be incorporated into the synthesis publication. Project updates and deliverables will be presented at the annual Alaska Fall Fire Workshops and at the AWFCG Fire Effects Task Group meetings in 2007 and 2008, as well as through fact sheets and e-mail correspondence.

V. Deliverables

Deliverables are summarized in Table 3. In addition to these deliverables, annual progress summaries will also be submitted to the JFSP.

Table 3. Proposed project deliverables.

Deliverable	Description	Delivery Date
Alaska Boreal Forest Fire History Database	Existing Alaska fire history and stand age datasets compiled into a standardized, online, publicly-available database.	October 2007
Online fire-history map	Access to the database as a separate map layer within the Alaska Fire Effects Plots Map ArcIMS project (on FIREHouse).	December 2007
Incorporation of Alaska fire history data into the IMPD	Fire history data compiled in the Alaska Boreal Forest Fire History Database will be submitted to the IMPD.	March 2008
Alaska Boreal Forest Fire History Synthesis	Synthesis of literature review and datasets compiled through this project into a General Technical Report (or a comparable publication).	Submit September 2008
Journal publication	Peer reviewed manuscript presenting the results of the spatial and temporal analyses (if warranted and funded). Results will also be incorporated into the synthesis.	Submit September 2008
Final report	Final report to the JFSP.	September 2008

VI. Expected Benefits of the Proposal

This project will benefit land managers, fire managers and the research community by providing the most comprehensive compilation and synthesis (and potentially large-scale spatial and temporal analyses) to date of existing fire history data in the boreal forests of Alaska. By providing a more complete understanding of historical fire regimes in Alaska's boreal forests (at local and regional scales), this project will 1) help land managers identify where fire regimes have departed from the historical range of variability, 2) aid land managers in the development of fire management goals and objectives that restore and maintain sustainable ecosystems, and 3) provide more complete baseline information for use in modeling the effects of future climate change scenarios on fire regimes.

VII. Personnel involved in project, and their responsibilities.

Personnel	**Responsibilities**
Diana Olson – USDA Forest Service	PI; coordinate project; manage budget; technical oversight of fire history data compilation; oversee incorporation of data and information into FIREHouse; coordinate submission of data to IMPD; contribute to literature review and oversight of Alaska Boreal Forest Fire History Synthesis.
James Cronan – Yale University	Co-PI; collection of existing data sets; oversight of and participation in sample processing; oversight of literature review; contribute to Alaska Boreal Forest Fire History Synthesis.
Ann Camp – Yale University	Co-PI; manage Yale's budget requirements; collection of existing datasets and content guidance.
Jennifer Allen – National Park Service	Co-PI; data contribution and content guidance.
Don McKenzie – USDA Forest Service	Co-PI; manage budget; oversight of large-scale spatial and temporal analyses.
Paige Eagle –University of Washington	Develop Alaska Boreal Forest Fire History Database and manage data structure; facilitate integration of data into existing FIREHouse data structure.
Lara Kellogg –University of Washington	GIS support and data structure guidance; conduct large-scale spatial and temporal analyses.
Data Technician – USDA Forest Service	Literature review and sample processing.
Karen Murphy– U.S. Fish and Wildlife Service	Collaborator; content guidance.
Andrew De Volder – U.S. Fish and Wildlife Service	Collaborator; data contribution and content guidance.
Glenn Juday – University of Alaska, Fairbanks	Collaborator; data contribution and content guidance.
Scott Rupp – University of Alaska, Fairbanks	Collaborator; data contribution and content guidance.
Robert Ott – Alaska Department of Natural Resources	Collaborator; data contribution and content guidance.

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