

# Joint Fire Science Program

## 5-Year Program Review Report

10 January 2009

## **Acknowledgments**

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## **Executive Summary**

The Joint Fire Science Program (JFSP) was initiated by Congress in 1998 as an interagency research, development, and applications partnership between the U.S. Department of the Interior and the U.S. Department of Agriculture. Its original charge was to pursue scientific knowledge in four areas related to fuels management, and to focus primarily on applied science. Following the creation of the National Fire Plan in 2001, the JFSP's areas of inquiry were expanded to four additional areas. The program continues to pursue science in these eight primary areas useful to fuels and fire managers.

Throughout the past 10 years, the program has grown, evolved, and managed a variety of challenges. Periodic assessments of the program's progress, status and direction provide the Governing Board, the funding agencies, and the Congress with information and analysis necessary to maintain and improve the program as well as to make adjustments based on experience and changing needs. At the request of the program manager and Governing Board an interagency and interdisciplinary Review was convened to conduct a review and evaluation of the program. The Review Team was charged with assessing the status, effectiveness, relevance, and future direction of the program, as well as reviewing progress made following a prior assessment conducted in 2003.

This report represents the Review Team's work. It includes a discussion of the program, its funding and areas of inquiry, along with the methodology used to conduct the review and evaluation. More importantly, it details the group's findings and recommendations. While a full list of these findings and recommendations can be found elsewhere in the report, there were a number of key elements and findings that emerged throughout the process. These are summarized here and, where appropriate, explored in greater detail later in the report.

### **Key Element: Commendations**

More than 400 research projects have been funded which has led to an increase in knowledge applicable to fire and fuels management. An additional result, though not an explicit objective of the original program, is to support a new generation of well-trained fire scientists and fuels managers. The Review Team also found the program has made good progress in addressing the recommendations presented in the prior review, and made strides in improving all aspects of the program's mission, including governance, the breadth and quality of research questions asked, outreach, science delivery and technology transfer.

Further, the Review Team found that a primary strength of the program is its ability, demonstrated over the years, to capture a wide range of relevant science and maintain a useful focus on applied questions.

In the course of the review and evaluation, the Review Team repeatedly heard that the quality of the program management and staff, are among the JFSP's strengths. The JFSP staff is to be commended for its high degree of responsiveness to critical issues of concern to fire and fuels managers and for being open, accessible, and responsive. While the findings and recommendations in this report acknowledge the work done by the JFSP, the report also notes where improvements can be made.

## Key Findings and Suggestions

In the course of its work, the Review Team found a number of themes repeatedly rising to the surface. These themes are presented here as key findings, along with recommendations where noted.

*Finding:* JFSP is responsive to current needs of managers as determined by various “sensing” methods; however the program could do more to anticipate future management needs.

*Finding:* The JFSP was established to focus on applied research, rather than basic research, and is meeting that objective.

*Finding:* Among those interviewed by the Review Team there is a perception that the JFSP is not devoting sufficient attention and resources to social, behavioral, or economic science research. This may limit the types of questions being asked and reduce the breadth of experience necessary to solve some of the critical applied science questions of interest to managers. The 2003 review noted the limited funding of social science, largely due to the number, type, and quality of proposals received. There is a perception among some of those interviewed that social and economic researchers tend to avoid responding JFSP requests for proposals and view the program negatively because social and economic research has not been fully integrated into JFSP planning.

***Recommendation:*** To achieve greater synthesis in the applied science on coupled natural and human systems, more attention should be placed on social science perspectives. The JFSP should encourage more social science inputs into the sensing processes used to develop its annual research plan and into review panels and the selection of funded proposals. The Governing Board needs to expand its access to expertise in the social sciences and strategically look at targeting specific social science research topics relevant to the program’s mission and goals.

*Finding:* There is a need for a process to measure and track outcomes as well as outputs. Science results, generated by the JFSP needs to support a change in outcomes for particular fires and landscapes.

***Recommendation:*** Conduct a systematic analysis of outcomes as well as outputs, to determine the actual implementation and impact on fuels and fire management activities on the ground.

*Finding:* The synthesis work done by JFSP significantly benefits local managers who otherwise have little time to stay abreast of the plethora of research being done.

*Finding:* There has been improvement in the past 5 years in the breadth and quality of questions being asked.

***Recommendation:*** Continue and expand the synthesis work solicit input from the field regarding topics to be analyzed.

*Finding:* The JFSP is to be commended for its recent emphasis on outreach and technology transfer. However, the Review Team is concerned that some of the science results generated are not making it out into field applications and there is still improvements to be made in this area.

*Finding:* The Governing Board uses its members, along with outreach activities by the program office staff, to define key issues and questions around which research grant proposals will be based. There has been increased outreach to fire organizations, managers, and researchers to develop these questions. However, needs assessments appear to be more ad hoc than strategic interactions with key agency personnel.

***Recommendation:*** While improvements have been made, the Review Team notes the JFSP should consider developing a an even more comprehensive outreach program that might include a web portal and/or community of practitioners with one-stop science application shopping for specific issues. Additionally, the JFSP should work with agencies and partners to develop training programs that specifically target users and applications of new methods developed from the JFSP.

*Finding:* Although the intent of JSFP is not to fund long-term research, there are some pertinent questions about fire effects that cannot be answered in the current funding timeframe of 3-5 years.

***Recommendation:*** Within the general overall framework of the JFSP allow for flexibility to address issues that do not lend themselves to the 3-5 year timeframe. This could be done by retaining some critical questions from year to year to allow refined, integrated proposals to be developed and submitted, by using a mechanism for supplemental funding to extend the grant period to accommodate longer-term research that meets the needs of managers, or by recognizing cases where useful data collection and analysis require longer than normal time frames.

## **Overall Conclusion**

The JFSP continues to fulfill its mission of producing research and expanding scientific knowledge that serves fire management activities and fuels and fire managers. As the program has matured, the roles and responsibilities of the Governing Board and program staff have been clarified improving the overall operation of the program. Additionally, there have been strides made in outreach and collaboration with its constituents, as well as in science delivery and meeting the needs of the field. The synthesis work done by the program is a prime example of the latter.

The program, however, does face challenges in funding, integrating social and behavioral science, in tracking outputs and outcomes, and in meeting longer-term research needs that currently fall outside the parameters of the program. These and other challenges, however, are not insurmountable. The program has an excellent staff and Governing Board, and adjustments in these identified areas of challenge will enhance their continued success in meeting the research needs of the field.

## **Introduction**

The Joint Fire Science Program is in its tenth year of operation. When it was established in 1998, Congress directed five bureaus of the Department of the Interior -- the bureaus of Land Management and Indian Affairs, the U.S. Fish and Wildlife Service, National Park Service, and U.S. Geological Survey -- and the Department of Agriculture's Forest Service to work together in supplementing existing research capabilities. The principles of the program established a process for awarding contracts to meet the research and tool development needs of the fire and fuels program managers and specialists on the ground, and to monitor progress toward achieving program goals.

Initially, the program was directed to pursue applied science research and knowledge in four areas: 1) fuels inventory and mapping; 2) fuels treatment planning, scheduling, and risk assessment; 3) fire effects and fire behavior; and 4) monitoring and evaluation. In 2002, these areas were expanded to also include restoration of fire-adapted ecosystems, post-fire stabilization and rehabilitation, remote sensing, and developing and integrating research information for local land managers.

Since its inception, the program has funded 413 research projects. A highly competitive, peer-review process consisting of land managers, technical specialists, and scientists ensures the best projects are accepted for funding. On average, about 20 percent of the submitted proposals are selected.

More than 90 colleges and universities have collaborated on and partnered with JFSP-sponsored research projects. By engaging masters and doctoral candidates in these projects, the program is training the next generation of resource managers and scientists. This collaboration extends to private, non-profit organizations and Tribal, state, county, and local governments. In all, nearly 200 organizations have become partners in JFSP-sponsored research.

One area in which the program has made notable progress is in its outreach efforts, both in gathering ideas for research and in sharing the results. This progress is largely attributed to the addition of a Technology Transfer Specialist and the implementation of what are familiarly called Roundtables and Road Shows. Roundtables are structured, interactive brainstorming sessions that have drawn participants from across the country to help identify research needs. Road Shows are geographically focused sessions, similar to staff rides, designed to share tools and products that have been developed.

## **Oversight, Direction and Funding**

The JFSP has a program manager and primary staff of three located at the National Interagency Fire Center in Boise, Idaho. A 10-person Governing Board provides direction and oversight. The board is composed of five members from the Forest Service and five members -- one each from the five bureaus -- of the Department of the Interior.

The board sets program priorities and direction, maintains budget oversight, approves all plans and reports, issues Requests for Proposals, elects and awards successful proposals, and oversees the operations conducted at the program management office. Additionally, although it has had limited success, a Stakeholder Advisory Group, chartered under the Federal Advisory Committee Act and comprised of equal numbers of federal and non-federal representatives, was established to assist and advise the Governing Board regarding priorities and strategies.

The program was initially funded at \$8 million, with the Forest Service and Department of the Interior contributing equal amounts of \$4 million. With the creation of the National Fire Plan, funding was doubled in 2001 to a total of \$16 million, again with the Forest Service and DOI contributing equal amounts of \$8 million.

In 2006, the DOI contribution was reduced by \$2 million and by an additional \$2 million in 2007, dropping the total program funding to \$12 million. Two million dollars was restored in 2008 but is expected to drop by that amount again in 2009. The Forest Service funding has remained consistent at \$8 million since 2001.

Although the funding agencies have varied their contributions over the years, decisions on the types and priorities of projects funded have not been determined by those contributions.

The program staff and members of the Governing Board expressed concern that declining funding, lack of year-to-year consistency of funding, and changing funding shares between the Forest Service and Interior could have long-term consequences for the program. Inconsistent funding hampers the ability of the program to make multi-year commitments to various lines of inquiry. Changing funding commitments over several years could be perceived by some as a lack of commitment to the overall JFSP mission and could be perceived as tantamount to one agency subsidizing work principally benefitting another agency.

The JFSP allocates 90 percent of its budget to fund awards for research, 7 percent for product delivery (technology transfer), and 3 percent for program management. The basic business model for JFSP has been to rely on principal investigators to bear the major responsibility for technology transfer of their results. The Review Team applauds the program for devoting this high level of funding to research projects. However, an essential component of JFSP is to put usable, accessible results in the hands of field users in a timely manner. The Governing Board and the program management staff may want to reassess how technology transfer is conducted, and the level of resources applied to that function.

## **Purpose and Scope of the Review**

As the Joint Fire Science Program completes its tenth year of operation, the purpose of this review falls into two primary areas. The first purpose is to assess the progress made since the prior review that was conducted at the 5-year mark. The second is to evaluate the status of the program; its relevance; the effectiveness of its products, science delivery and governance; and to consider the future direction and challenges.

In its review process, the Review Team addressed six primary questions designed to probe and discover a comprehensive view of the JFSP, from administration to solicitations to science delivery. These primary questions were supplemented by secondary questions and independent document review. The six primary questions are:

- Is the program asking the right questions in its proposal solicitations and addressing the right question in its program of work?
- Is the program effectively delivering results to the field and research committees?
- Is the program generating high-quality and relevant science?
- Is the science produced making a difference on the ground and in the science community?
- Are the operations of the Governing Board and program office effectively organized and administered?
- How can the program its effectiveness or refocus its direction to meet new challenges?

Ultimately, the purpose of the review is to assist the JFSP staff and Governing Board in confirming, refining, or redirecting the program to meet future challenges and to deliver science that is relevant and useful to their clients.

### **Methodology for the Review**

An 8-member Review Team was selected by the JFSP manager and Governing Board. The Review Team represents a cross-section of government and non-government managers, research specialists and academia, as well as provides a geographic representation from coast to coast.

Prior to convening in Boise, Idaho the week of November 16, 2008 each Review Team member received a notebook prepared by the JFSP staff containing information and documents about the program including its initial implementation, the 5-year review report, operating guidelines, copies of RFPs, annual reports, and other miscellaneous but detailed information. The packet also contained an extensive list of potential interview subjects to better inform the Review Team members. This information was reviewed independently by the Review Team members.

On the morning of November 17, 2008, the Review Team met with the JFSP manager and staff, and three JFSP Governing Board members. In this meeting, the Review Team received an overview briefing about the program and had the opportunity to ask questions. The review process and agenda for the remainder of the week also were outlined.

Subsequently, in order to better inform the review process, the Review Team conducted phone conferences with four interview panels comprised of end-users of the research, subject matter experts, researchers, and others familiar with the JFSP. The program management staff solicited suggestions for the panels from the agency fire leadership and others familiar with the program and assembled interview panels based on a mix of geographic, agency, and functional backgrounds as well as a mix of experiences and views with the program. Although those interviewed seemed to represent a variety of backgrounds and views, in the end the group was

limited by availability and was not intended to be a random sample. Review Team members also conducted more in-depth interviews with the JFSP manager and staff and separately with the three members of the Governing Board.

The Review Team believes it was able to speak with a diverse group of individuals with a variety of experiences with the JFSP and obtained a good overall understanding of the program, its work, and its strengths and weaknesses. However, in the absence of a more structured and larger sample size, the results are necessarily impressionistic.

## **Findings and Recommendations**

### **1) How and What is Funded**

*Finding:* The purpose of this program is applied research. Some individuals interviewed expressed a desire for the program to also support basic, fundamental science and research.

*Finding:* Some academic scientists interviewed believed that the JFSP is geared toward funding federal scientists rather than academic scientists. This perception may inhibit the breadth and diversity of proposals received.

*Finding:* The Review Team is concerned that among those interviewed by the Review Team there is a perception that the JFSP may not be devoting sufficient attention and resources to social, behavioral, or economic science research. This may limit the types of questions being asked and reduce the breadth of experience necessary to solve some of the critical applied science questions of interest to managers. The 2003 review noted the limited funding of social science, largely due to the number, type, and quality of proposals received.

*Finding:* The Review Team noted an apparent lack of social and economic science questions being pursued. The shortage of questions in these areas may be due to a lack of expertise in these areas on the Board and among program managers. This results in a lack of pertinent research being pursued in these areas.

**Recommendation:** The Review Team encourages the JFSP to seek input from additional people from a broader range of experiences and disciplines, such as social and economic scientists, to formulate its set of research questions and evaluate proposals.

**Recommendation:** To achieve greater synthesis in applied sciences coupling natural and human systems, more attention should be placed on social science perspectives. The JFSP should encourage more social science inputs into the sensing processes used to develop the annual research plan, and into review panels and the selection of funded proposals.

**Recommendation:** The Board should expand its access to expertise in the social and economic sciences, and strategically look at targeting specific social science research topics relevant to the mission and goals of the JFSP.

*Finding:* Funding for the Joint Fire Science Program is provided by both the USDA Forest Service and the Department of the Interior wildland fire appropriations. Initial funding levels were increased concurrent with development of the National Fire Plan in 2001 and remained consistent for several years. Since 2006, the Department of the Interior share has fluctuated, and decreased overall. The reduced level and fluctuation have inhibited the ability of the JFSP to deliver a predictable and stable program and has the potential to undermine the interagency partnership and cooperation that typify the program.

***Recommendation:*** Stable, predictable funding by both the USDA Forest Service and the Department of the Interior should be pursued to promote multi-year program stability and to maintain an interagency commitment to providing science support to management in all agencies. Leadership in both Interior and Forest Service should demonstrate their commitment to this program.

*Finding:* Administrative costs for the Joint Fire Science Program and the product delivery cost are low with the majority of the funds being distributed toward research projects. The Review Team applauds the program for devoting this high level of funding to research projects. However, an essential component of JFSP is to put usable, accessible results in the hands of field users in a timely manner.

***Recommendation:*** To improve the overall success of the program, the Governing Board should consider a realignment of the JFSP budget to put more funds towards increasing the science delivery and field acceptance by the program staff, rather than relying on principal investigators.

## **2) Operations (Board and Staff)**

*Finding:* There has been an evolution of the roles of the Governing Board and the program management staff since the start of the program 10 years ago. Both the Board and the program staff have strived to understand appropriate roles and responsibilities. Over the past several years the Governing Board has been striving to be more “strategic” and less involved in program administration matters. This evolution is not complete, but the board continues to meet regularly to resolve these issues. Both members of the Board and program staff expressed a high degree of satisfaction with the evolution of roles and responsibilities. The Board and program management staff have developed operating guidelines to document their business practices.

*Finding:* Members of the Board expressed concern that success of the JSFP depends on a board that strives for and maintains a diversity of backgrounds and perspectives and were concerned that when agencies appoint representatives that diversity be recognized and supported.

***Recommendation:*** Implement the Operating Guidelines developed in October 2008 to address succession issues, board diversity, and the interaction between the board and program office

staff. The Board should revisit the 1998 implementation plan and update as needed to reflect current roles, responsibilities and governance.

*Finding:* The JFSP has done a great job of implementing more efficient planning and operational methods, such as higher quality Requests for Applications (RFAs) and review processes, which have resulted in the ability of the JFSP to diversify and address more research issues with less funding.

*Finding:* The Governing Board uses its members, along with outreach activities by the program office staff, to define key issues and questions around which research grant proposals will be based. There is significant outreach to fire organizations, managers, and researchers to develop these questions. However, strategic interaction with agencies at different levels regarding needs seems to be ad-hoc and could be expanded.

***Recommendation:*** Develop a more formal process for allowing broader agency input on key research areas before detailed RFAs are written.

***Recommendation:*** The Review Team encourages the JFSP to use other mechanisms, such as Request for Information (RFI) solicitations, to identify emerging issues and to broaden the input from the fire science community.

***Recommendation:*** The Review Team encourages the JFSP to seek input from additional people from a broader range of experiences and disciplines - most notably social and economic scientists - to formulate its set of research questions and evaluate proposals.

***Recommendation:*** The JFSP could increase stakeholder involvement by way of informing strategic planning and the direction of the JFSP.

*Finding:* The 1998 implementation plan envisioned a formal Stakeholder Advisory Group to provide input on program priorities and content. Though initially established, the costs (dollar and organizational) of maintaining that group proved too high. As a result there is currently no formal mechanism to engage outside interests in the JFSP.

***Recommendation:*** The Board and the program management staff should explore means to effectively and systematically engage and solicit input from outside stakeholders, either through reconstitution of the Stakeholder Advisory Group or through other means such as “town hall” meetings or bringing advisors onto the Board.

*Finding:* Considerable energy and effort by the Governing Board and program staff has resulted in relatively good awareness of the JFSP research opportunities and announcements. However, despite these efforts there is an indication that several groups of potential researchers don't know about these opportunities. Expanding the network of potential grantees will increase the number and quality of research proposals.

***Recommendation:*** The Review Team recommends that the JFSP explore additional avenues to get RFA announcements out to a broader audience.

*Finding:* Among those interviewed by the Review Team there is a perception that JFSP is not devoting sufficient attention and resources to social, behavioral, or economic science research. This may limit the types of questions being asked and reduce the breadth of experience necessary to solve some of the critical applied science questions of interest to managers. The 2003 review noted the limited funding of social science, largely due to the number, type, and quality of proposals received. There is a perception among some of those interviewed that social and economic researchers tend to avoid responding JFSP requests for proposals and view the program negatively because social and economic research has not been fully integrated into JFSP planning.

***Recommendation:*** To achieve greater synthesis in the applied science on coupled natural and human systems, more attention should be placed on social science perspectives. The JFSP should encourage more social science inputs into the sensing processes used to develop its annual research plan and into review panels and the selection of funded proposals. The Governing Board needs to expand its access to expertise in the social sciences and strategically look at targeting specific social science research topics relevant to the program's mission and goals.

### **3) Short- vs. Long-Term Vision and Funding**

*Finding:* Although the intent of JSFP is not to fund long-term research, there are some pertinent questions about fire effects that cannot be answered in the current funding timeframe of 3-5 years.

*Finding:* Until recently the program lacked programmatic themes of research that continued over multiple years, resulting in reactive proposals and inhibiting the submission of refined or integrated proposals.

*Finding:* While recognizing the program was set up to deliver science in the short term, the 3-5 year timeframe limits the ability to gain knowledge in some areas and limits the types of questions that can be asked.

***Recommendation:*** Within the general overall framework of the JFSP allow for flexibility to address issues that do not lend themselves to the 3-5 year timeframe. This could be done by retaining some critical questions from year to year to allow refined, integrated proposals to be developed and submitted, by using a mechanism for supplemental funding to extend the grant period to accommodate longer-term research that meets the needs of managers, or by recognizing cases where useful data collection and analysis require longer than normal time frames.

*Finding:* On a broader scope, overall program funding has been unstable in recent years. This places limitations on what the program and program managers are able to accomplish in terms of planning and research.

**Recommendation:** Given the variability in federal budgets, the Governing Board should explore alternatives to funding projects every year such as moving toward a bi-annual request for proposals. If this recommendation were adopted, there could be a focus on delivery of results and documentation of outcomes in the intervening years.

#### **4) Program Satisfaction and Improvement**

*Finding:* As noted previously, the JFSP was established to focus on applied, rather than basic, research and it is meeting that objective. Some individuals interviewed however, expressed a desire to see more basic research included. Also, the Review Team found there has been a high degree of responsiveness from the JFSP manager and staff to critical issues and issues of concern to management in most areas.

*Finding:* The synthesis work done by JFSP significantly benefits local managers who otherwise have little time to stay abreast of the volumes of research in progress and completed.

*Finding:* There has been improvement in the past five years in the breadth and quality of questions being asked.

**Recommendation:** Continue pursuing and developing the synthesis work, including asking agencies and field managers what areas would be most useful to have synthesized to continue meeting their needs.

#### **5) Proposal Review Process**

*Finding:* There was general agreement among Review Team members that additional expertise should be included in the proposal review process. Some interview respondents expressed a perceived need to include more scientists and subject matter experts in the review process.

*Finding:* Previous research grantees may be a benefit to the review process through providing experience and expertise about the process.

**Recommendation:** JFSP should seek to expand its pool of reviewers. The inclusion of a wider range of scientists and others having expertise would enhance and improve the overall review process.

#### **6) Science and Product Delivery**

*Finding:* The program produces a number of good scientific products, including journal articles and reports. There has been an increase in the synthesis of science products and outreach documents related to communication and technology transfer over the last ten years. However, the review of non-journal reports and other products appears to be the

responsibility of the JFSP manager and the reports include a disclaimer stating that the report may or may not have been peer-reviewed. Some agency scientists who provide these reports have required peer-reviewed procedures they must follow, while others do not. Managers and scientists have a need to know about the relative quality and uncertainty in the results.

**Recommendation:** Develop a more rigorous process for tracking and reporting quality control and whether or not a work has been peer-reviewed. It should be clear on the website whether or not each individual product has undergone peer review.

**Recommendation:** Develop a process to track outcomes stemming from JFSP results. Reprioritize funding to acquire expertise to design and implement a tracking program. .

**Recommendation:** Consider expanding the program capability to allow expansion of knowledge transfer by the JFSP and consideration of mechanisms for full implementation by managers.

**Recommendation:** Given that the web is a critical avenue for JFSP to deliver information, web technology should be maximized to deliver information. To be most effective, the web site should be updated in a timely manner and other options, such as partnering with other organizations, should be explored.

**Finding:** There was a general concern amongst researchers that not all of their research results were being utilized by the field.

**Recommendation:** The JFSP should consider developing a more comprehensive outreach program that might include a web portal and/or community of practitioners with one-stop science application shopping for specific issues. Additionally, the JFSP should work with agencies to develop training programs that specifically target users and applications of new methods developed from the JFSP.

## 7) Measuring Success

**Finding:** Although the program staff supported a literature review of NEPA documents to determine how often JFSP research was cited, there remains a lack of thorough knowledge and understanding of the program's accomplishments and successes, including whether and how results are used in the field.

**Recommendation:** The JFSP should pursue a systematic evaluation of the program's success and accomplishments, through publications, the number and type of citations, products and product use and effectiveness in the field.

**Recommendation:** The JFSP should pursue a mechanism to track and share successful application of JFSP research.

**Recommendation:** The JFSP should consider investing in a program outcome evaluation, including assessment of the effectiveness and use of delivered tools and products.

*Finding:* There are no formal or systematic means to define program success or to measure that success. The program recently supported a literature review of NEPA documents to determine how often JFSP research was cited, but overall there remains a lack of thorough knowledge and understanding of the program's accomplishments and successes, including whether and how results are used in the field.

*Finding:* The program has done a good job of emphasizing outreach and technology transfer. This has been a major advancement since the early days of the program. The program aspires to provide science for sound decisions and to be an "outcome" versus "output" program. However, the Review Team found no systematic process for evaluating outcomes. Moreover, measures of outcomes were largely anecdotal. The Review Team places a high priority on the implementation of such a process and system. The Review Team, however, recognizes that some of the outcomes take time to manifest in the field.

***Recommendation:*** The JFSP should pursue a systematic evaluation of the program's success and accomplishments, through publications, the number and type of citations, products and product use and effectiveness in the field.

***Recommendation:*** The JFSP should pursue a mechanism to track and share successful application of JFSP research and allocate funding to acquire expertise to design and implement a tracking program

***Recommendation:*** The JFSP should consider investing in a formal program outcome evaluation, including assessment of the effectiveness and use of delivered tools and products.

## **Additional Findings**

In addition to the six principal areas targeted by the Board and Program Manager for the program review, three additional issues surfaced during the review. These issues, while pertinent to the JFSP, address larger management issues within the agencies.

*Finding:* Despite a priority and emphasis within the JFSP for putting applied research results in the hands of field users, the Review Team heard a number of concerns that products and results have not been used or adopted. There are likely many causes for this: materials are not making their way to those could need or could use them; materials are not organized and presented in a manner that is useful; users are not aware of the value and significance of the results generated by JFSP projects. While JFSP can, and should, continue to develop new means to distribute results (as recommended earlier in this report), it is also incumbent on agency leadership to continue to emphasize the importance of using these program results to improve the quality and effectiveness of fire and fuels management.

*Finding:* As the JFSP has become an increasingly important component of the set of fire science capabilities in the Forest Service and Department of the Interior, the funding for other fire science programs has eroded. One consequence has been that federal agency fire scientists

and programs have become dependent on JFSP funding to support many of their traditional programs and activities. In some cases those programs have been more focused on basic and longer term fire science questions, resulting in expectations or pressure for JFSP to fund that type of work in addition to the core mission of shorter term, applied fire science.

*Finding:* The JFSP is one component of a number of fire science programs in the Forest Service and the Department of the Interior, as well as in other federal agencies and academia. There seems to be no formal or systematic process for assessing long term, basic fire research needs as well as shorter term applied needs, determining what kind of work is being done in the various programs, and how to best conduct fire science and research to meet agency management needs. The agencies should consider developing a mechanism or clearinghouse to gather, analyze, and act on the needs of management for fire science and research. Such a mechanism or clearinghouse would reduce the potential for parallel or duplicative work and would provide the agencies with a best comprehensive understanding of needs to support future program and budget development.

### **The 2003 Report and Subsequent Progress**

One task given the Review Team was to assess progress made since the prior review was conducted in 2003. The previous report identified 31 action items as recommendations. Of those 31 recommended actions, the JFSP addressed 26 of them. Five were not responded to due to changes in the program, or other reasons.

One of the key findings identified in the 2003 report was the “need to continue to encourage diverse viewpoints and expertise in the proposal review process and on the Governing Board.” While some progress has been made in this direction, the current Review Team notes that more systematic efforts need to be made to include under-represented perspectives and expertise.

The following are the current Review Team’s comments regarding progress made since the 2003 review:

#### **Program Direction**

1. The Review Team acknowledges that the stakeholder advisory group is not working, but concurs with the finding that a “proactive identification of emerging issues” through broad participation is still necessary.
2. While the JFSP is now using roundtables to gain line officer and manager input as per the 2003 recommendation to include their input, a more formal mechanism is needed to gain agency input into the research call.
3. The JSFP is doing a good job in requiring field testing of products and making project summaries available on line.

#### **Technology Transfer**

1. The JSFP has increased its capability in the arena of technology transfer, but this is only the beginning. Further expansion and the creative use of technology will assist agencies in utilizing the science produced.

2. The recommendations to modify operational guidelines and technology transfer plans have been accomplished.

### **Stakeholders**

1. The roundtables provide good input into research questions, but a broader range of disciplines should be included (e.g. social science, humanities).
2. The current breadth of expertise on the Governing Board is good, but continued attention to diversity of the Board is needed, including adding ad hoc members for issues where there is limited expertise.
3. Performance measures still need to be developed so the success of the program can be measured.

### **Concluding Remarks**

The Joint Fire Science Program has evolved, improved, and broadened its role in the national fire science community in its first ten years, and has made notable strides since the first review was completed in 2003. The research it has funded has broadened fire and fuels-related scientific knowledge and has benefitted fire managers and the fire community as a whole.

The program continues to face challenges, however. Chief among these are the need to effectively integrate economic and social science, to broaden the scope of input to include additional expertise in developing research questions, to develop a method of funding some longer-term projects, and to develop a mechanism to track the use and success of outcomes in the field. Perhaps the greatest challenge, however, will be to accomplish these things in an unstable budget climate.

Overall, the program as a whole, including the Governing Board and program management and staff, are working effectively and are well-positioned to address the challenges they face.

## **Appendix I. Review Team Members**

### **Review Team Leaders**

Bruce Jones – Chief Scientist for Biology, U.S. Geological Survey, Reston, Virginia  
Cal Joyner – Acting Regional Forester, Region 6, U.S. Forest Service, Portland, Oregon

### **Review Team Members**

Kimberly Brandel – District Ranger, U.S. Forest Service, Payette National Forest, McCall, Idaho  
Susan Cutter – Carolina Distinguished Professor and Director, Hazards & Vulnerability Research Institute, University of South Carolina  
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Gary Morgan – Chief Executive Officer, Bushfire Cooperative Research Centre, Melbourne, Australia.  
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### **Editorial Support**

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## **Appendix II. Charge to the Review Team**

### **Purpose**

The Joint Fire Science Program (JSPF) Governing Board believes a program review is timely and will greatly benefit the program. JFSP is completing its tenth year of operations in 2008 and the program is planning a ten-year report documenting program accomplishments and planned future directions. Results from the program review will likely help shape significant portions of this report. The JFSP Board will benefit from hearing the views of an independent Review Team to help confirm, refine, or redirect the program to meet future challenges and deliver science useful to our clients.

### **Questions for Review**

Although a number of secondary and follow-up questions were posed to the interview panels, representatives of the Governing Board, and the JFSP staff, the primary questions driving this review are the following:

- Are we asking the right questions in our proposal solicitations and addressing the right questions in our program of work?
- Are we effectively delivering results to the field and research communities?
- Are we generating high-quality and relevant science?
- Is the science we are producing making a difference on the ground and in the science community?
- Are the operations of the Governing Board and Program Office effectively organized and administered?
- How can we improve effectiveness or refocus program direction to meet new challenges?