



## Final Report

### BRINGING THE FIRE EFFECTS INFORMATION SYSTEM UP-TO-DATE

### AND IMPROVING SERVICE TO LAND MANAGERS

### JFSP task 04-S-01

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**Summary:** This project delivers up-to-date, science-based information about species nominated by wildland managers for revision in or addition to the Fire Effects Information System (FEIS). FEIS now provides 1,081 literature reviews covering 1,139 taxa. This JFSP task has supported the rewriting of 9% of FEIS reviews, addition of reviews that increase FEIS content by 9%, and small updates to 25% of the database. Each FEIS species review addresses the basic biology of the species, fire regimes, fire's role in the life history and persistence of the species, competition and successional patterns, and issues regarding fuel management, prescribed fire, and postfire rehabilitation. In addition to writing and revision of species reviews, this task has supported development of 27 detailed descriptions of prescribed fire research: 23 Research Project Summaries, which are stand-alone documents describing fire effects on multiple species; and 4 Fire Case Studies, which are integrated into species reviews.

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**Objectives and accomplishments:** The objectives of this JFSP task were:

1. Increase the revision/writing of species reviews from the level in 2004 (1%-2% per year) to 4% to 10% per year
2. Establish an Advisory Committee that represents land management agencies from all geographic regions of the United States
3. Base selection of species reviews to be included in FEIS on recommendations from the Advisory Committee and requests from field stations, and use suggestions from the Committee to determine other system changes useful to managers
4. Incorporate FEIS training into fire management classes at national fire training centers, provide BAER teams with FEIS information, and conduct other outreach to increase manager familiarity and facility with FEIS

Objective 1 is met by completely rewriting FEIS literature reviews covering 93 taxa and adding reviews covering 89 taxa, for a total of 167 reviews covering 182 taxa (Table 1). Eight of these reviews cover nonnative plant species, some of which are invasive. In addition to the species reviews, 23 Research Project Summaries and 4 Fire Case Studies have been produced. Fire Case Studies supplement the information in a species review with details from prescribed fire research. An example is "Blue oak seedling response to fire and grazing on the Hopland Field Station, California" in the review of *Quercus douglasii*. Research Project Summaries (RPSs) supplement information in multiple species reviews and also describe fire effects on species not reviewed in FEIS. An example RPS is "[Early postfire effects of a prescribed fire in the southern Appalachians of North Carolina](#)". The RPSs developed for this task cover a total of 256 FEIS species and 355 non-FEIS species (Table 2; also see "[About Research Project Summaries](#)").

**Table 1.** Number and coverage of literature reviews in FEIS produced by this task.

Subject of review	Completely rewritten		New to FEIS	
	No. reviews	Taxa* covered	No. reviews	Taxa covered
<b>Animals</b>	<b>6</b>	<b>8</b>	<b>22</b>	<b>22</b>
amphibian	0	0	1	1
arthropod	0	0	1	1
bird	1	3	11	11
mammal	4	4	7	7
reptile	1	1	2	2
<b>Plants</b>	<b>79</b>	<b>80</b>	<b>59</b>	<b>67</b>
bryophyte	0	0	2	2
cactus	1	1	2	2
fern	0	0	1	4

forb	15	15	26	27
graminoid	17	18	8	11
shrub	22	22	14	14
tree	23	23	4	5
vine	1	1	2	2
<b>Lichens</b>	<b>1</b>	<b>5</b>	<b>0</b>	<b>0</b>
Total:	86	93	81	89
<b>Total:</b>	86 reviews, 93 taxa		81 reviews, 89 taxa	

**Summary: 167 reviews covering 182 taxa**

\*Most FEIS reviews cover a single species. If a review covers more than 1 species (because of ecological similarities or lumping/splitting of taxa), literature specific to each species is identified as such within the review. If a review covers several distinct subspecies or varieties in detail, with substantial literature pertaining to the separate taxa, each taxon is "counted" separately in this table.

**Table 2.** Numbers of plant and animal taxa covered by Research Project Summaries written for this task.

Subject of review	No. FEIS reviews linked	No. non-FEIS taxa covered
<b>Animals</b>	13	67
<b>Plants</b>	242	288
<b>Lichens</b>	1	0
Subtotal:	256	355
<b>Total:</b>	<b>611 species covered by RPSs</b>	

A complete list of reviews produced for this task is in [Appendix 1](#), which links to the reviews online at [www.fs.fed.us/database/feis](http://www.fs.fed.us/database/feis). Electronic copies of the reviews are included on the Final Report CD (in the folder "[FEIS Reviews in task 04-S-01](#)"), and printed copies are provided with this report. However, **users should always consult FEIS online to get the most up-to-date information**, since species reviews may be updated at any time. [Appendix 2](#) lists all Research Project Summaries written for this task, provides links to the RPSs online, and lists all taxa covered within the RPSs. All deliverables are listed in [Appendix 3](#).

Objective 2 is met by establishing and working with an Advisory Committee consisting of fire experts and ecologists from all over the United States. These experts represent major public land management and research agencies and The Nature Conservancy (Table 3).

**Table 3.** FEIS Advisory Committee membership, by region/responsibility/agency, as of 2007. (In the frenzy to complete this task, Committee members have not been contacted yet in 2008.)

Region/role/ ecosystem	Agency or Organization							Total
	BIA	BLM	FS	FWS	NPS	USGS	TNC	
Manager		Theresa Hanley	Sue Stewart, Kim Brandel					3
National	Mary Taber		Michael Hilbruner	Sue Grace				3
Northeast							Joel Carlson	1
Southeast			Steve Croy	Dave Brownlie				2
North-central forest			Ellen Bogardus-Szymaniak					1
Northern & central plains			Mary Lata					1
Rocky Mountains		Jolie Pollet						1
Great Basin		Mike Dolan						1
Chihuahua Desert & Sonoran plains		Dave Borland				Kendra Moseley		2
Desert Southwest						Matt Brooks		1
Sierra Nevada & California chaparral						Rob Klein		1
Pacific Northwest		Louisa Evers						1
Alaska				Jennifer Allen				1
Hawaii*			Boone Kauffmann					1
<b>Total</b>	1	5	7	3	Currently no members	3	1	20

\*Hawaii was not covered by the proposal for this task, but the task has covered some species that occur in Hawaii, notably *Pennisetum ciliare* and *Melinis minutiflora*, which are nonnative invasive species in that state.

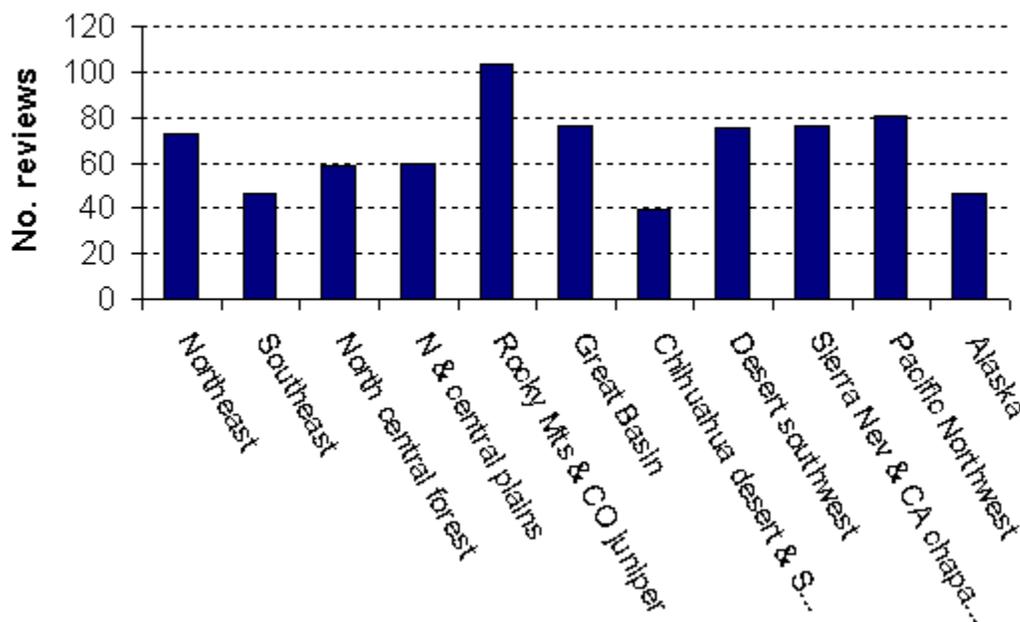
**Objective 3 is met** by developing a "wish list" of 562 species, then selecting taxa for review based on these criteria:

- Number of Advisory Committee members and/or regions requesting the species
- "Age" and quality of existing species review (if suggested for rewrite)
- Amount of literature published on the species, especially regarding fire
- Breadth of species distribution, balance of species among regions
- Balance of "new" vs. "old" species, aiming for approximately half of each

Species nominated for review but not addressed by this task are listed in [Appendix 4](#). The FEIS team will use this list in planning for future work.

At the outset of this task, JFSP governors and Advisory Committee members voiced concerns that the project must cover all geographic regions of the United States, especially avoiding bias toward "western" species. To address this concern, we selected many widespread species for review and tried to balance the remainder of selections so all regions would be served. Figure 2 shows the nation-wide scope of the reviews produced; data for the figure are in [Appendix 5](#). (This task did not propose to cover Hawaiian species, but some have been reviewed under this task-- notably two nonnative invasive grasses, buffelgrass and molasses grass).

**Figure 2. Geographic coverage of FEIS reviews completed for this task**



The Advisory Committee provided crucial information for the "wish list": They nominated species, suggested information sources for some species, and requested Fire Case Studies for several species. Research Project Summaries were designed in response to requests for Case Studies because a single RPS can serve as a "case study" for numerous FEIS reviews. In addition, the Committee has offered guidance on the following questions:

1. Should resources be invested in more sophisticated search and output capabilities for FEIS? (Answer: No, just keep writing reviews.)
2. Is it appropriate to replace the old table of fire regimes with a table derived from LANDFIRE Rapid Assessment? (Answer: Yes. This project was completed in 2007. The [complete Fire Regime table](#) is available from the FEIS homepage. Individual FEIS reviews contain only the table entries that describe historical fire regimes in vegetation communities where the species occurs.)
3. Can we cut back in FEIS reviews on detailed descriptions of distribution and nonfire management issues? (Answer: Yes, but not extensively. Keep a "survey" approach rather than

covering these subjects comprehensively, and provide citations in case the reader wants to follow up.)

4. Would login access be acceptable so statistics on system use could be obtained? (Answer: No.)

**Objective 4 is met** by giving 3 presentations, teaching 4 classes, and hosting 3 poster sessions (Table 4). Copies of the posters are available on the Final Report CD-ROM (in the folder "[FEIS Posters in task 04-S-01](#)"). A presentation entitled "The Fire Effects Information System-- serving managers since before the Yellowstone fires" will be given at the "'88 Fires: Yellowstone and Beyond" Conference, Sept. 23, 2008, Jackson Hole, Wyoming. A paper describing accomplishments of this task has been accepted by *Fire Management Today* and will be published in spring 2009; the manuscript is in [Appendix 6](#). In conjunction with completion of an earlier JFSP task (04-4-1-08), we provided CD-ROMs covering FEIS and the Rainbow Series to Rx310 coordinators and TNC fire management instructors; the CD will be updated to reflect accomplishments of this task and additions to the Rainbow Series; it will be re-released in FY09.

**Table 4.** Presentations to managers, scientists, and the public regarding FEIS and accomplishments in this task.

YEAR	MONTH	ACCOMPLISHMENT	Presenter (primary)	NOTES
FY05	January	Presentation	Smith, J.K.	FEIS and Rainbow Series presentation to fire managers, NE region & Canada 01/26/2004
FY05	January	Class	Howard, J.	FEIS and Rainbow reports to managers in Rx classes
FY06	Sept	Poster session	Smith, J.K.	FEIS and Rainbow reports to JFSP Board of Governors
FY07	January	Presentation	Howard, J.	Present information on Rainbow series and FEIS to 150 fire management trainees (3.5 hours)
FY07	January	Class	Howard, J.	Rx310 Introduction to prescribed Fire - FEIS and Rainbow series -- 3 hours of teaching, 150 class participants
FY07	June	Presentation	Luensmann, P.; Meyer, R.	Professional presentation American Society of Mammalogists 87th annual meeting at the University of New Mexico, Albuquerque, NM Talk entitled "Effects of fire on wildlife: what we need to know" given to approximately 50 professionals.
FY07	October	Presentation	Smith, J.K.	Presentation to Intermountain West Fire Council, about 60 participants -- fire managers - FEIS, Rainbow, FireWorks, visualization and animation of model results
FY07	Nov	Poster session	Zouhar, K.; Smith, J.K.	Kris Zouhar, presenter. Authors: Kris Zouhar, Jane Kapler Smith Fire Effects Information on the Internet
FY08	January	Class	Fryer, J.	Rx310, Introduction to Fire Effects. Presented two classes on FEIS and Rainbow Series to a total of 72 managers.

FY08	Feb	Poster session	Zouhar, K.; Gucker, G.	Poster presentation at "Invasive Species in Natural Areas" conference, Missoula, MT. Presented information on invasive species in Rainbow Series and FEIS.
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### About Research Project Summaries:

**The Research Project Summary (RPS)** is a new type of FEIS document, developed under this JFSP task specifically in response to managers' requests. When members of the FEIS Advisory Committee nominated species to be reviewed under this task, several requested that Fire Case Studies describing recent research be added to existing reviews. Since most publications appropriate for Case Studies describe fire effects on many species (sometimes hundreds), the RPS was developed as a much more efficient and substantial alternative to the Case Study. Instead of being written *within* a species review, like the Case Study, the RPS is a separate, *stand-alone* document. Instead of covering *one* species, like the Case Study, the RPS covers *many* species. All FEIS species mentioned in the RPS are linked to and from that RPS. And the RPS is not limited to species already reviewed in FEIS; it covers *all* species for which fire effects information is provided in the article. To date, the RPSs in FEIS cover a total of 611 species (see Table 2 and Appendix 2). About half of these species are reviewed in FEIS and half are not, either because fire effects information about them is sparse or resources have not been available to write reviews. The "[Fire Studies](#)" page provides more information and a complete list of fire studies in FEIS.

**Fire Modeling Institute *Information Team*:** This task was a team effort, completed by the following staff and contractors (listed alphabetically):

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