THE FIRE EFFECTS INFORMATION SYSTEM—SERVING MANAGERS SINCE BEFORE THE YELLOWSTONE FIRES

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This presentation will describe the current status of the Fire Effects Information System (FEIS) and explore lessons learned from this 23-year-old project about the application of science to Āre management issues. FEIS contains literature reviews covering biology and Āre ecology for approximately 1,100 species in North America: plants and animals, native and nonnative. Established in 1985 and continually updated, the system has served managers, researchers, students, and the general public for >20 years. Species reviews in FEIS provide information that can help managers plan a prescribed Āre, write a Āre or fuel management plan, determine the need for post-Āre rehabilitation, or assess the potential for increase of invasive species after Āre. FEIS is cited in nearly half of EISs written by federal wildland Āre managers. Research Project Summaries, a recent addition to FEIS, supplement species reviews and provide information on Āre effects for an additional 250 species. To ensure that the latest science is within reach of the manager seeking information, FEIS reviews are clearly organized and widely available on the Internet. Reviews are updated depending on needs identiĀed by users and support available. To use science syntheses effectively, managers must combine critical reading with understanding of the local ecosystem and its condition. FEIS reviews are constructed to convey general patterns of plant and animal response reported in the literature and also to describe exceptions to those patterns. Managers can use this information to infer the likelihood that local responses will Āt the patterns and exceptions reported in the literature. FEIS reviews identify uncertainties, contradictions in research Āndings, and knowledge gaps so managers and planners can be aware of inconsistent Āndings and topics that are not well understood. FEIS reviews describe the location and results of individual studies to indicate their breadth of application, answering questions such as: Is a report based on a single observation or an extensive Āeld study? Is it limited to a small geographic region or representative of a large area? Is it reported with a known level of conĀdence resulting from statistical analysis, or from anecdotal observation? The level of certainty conveyed in FEIS reviews may indicate to managers that a particular plant or animal response to Āre is likely and chances of different results are low, or that a response is possible but uncertain, warranting post-Āre monitoring and possibly an adaptive response by management.

SOME LIKE IT HOT: USING BURN INFORMATION TO BETTER PREDICT INVASIVE SPECIES POST-FIRE RESPONSES

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A growing body of literature links Āre to the rapid colonization and proliferation of particular invasive plants. Despite this work, the potential for increased risk of invasion due to Āre remains unknown for many exotic species at the regional level. We employed habitat suitability models (statistical models linking species responses at speciĀc locations to environmental conditions) in order to 1) test species responses to burn variables, 2) create species habitat maps, and 3) infer relationships between Āre and the species of interest based on parameter estimates. Whereas most habitat suitability models omit disturbance processes such as Āre, we speciĀcally incorporated burn characteristics (burn severity, occurrence, and time-since-Āre), in addition to a standard suite of environmental variables used to predict species potential distributions (e.g., topographic, vegetative, and hydrologic data). We tested models using occurrence data for two exotic species that are currently invading the Greater Yellowstone Ecosystem: *Carduus nutans* (musk thistle) and *Linaria dalmatica* (Dalmatian toad-Èax). Our results indicate that both species are inÈuenced by burn characteristics and that for *C. nutans*, the effect of time-since-burn depends on the vegetation type. The relative odds of *C. nutans* presence continues to rise for the Ārst decade following Āres within several vegetation types, but the relative odds decreases during this range of years for other types. Each species also responded differently to burn severity (as measured through the Landsat-derived index, dNBR). Since each species responds to multiple environmental factors, habitat suitability models that include burn variables afford a greater degree of inference and potential predictive ability than either nonburn habitat suitability maps or direct burn-severity (dNBR) maps such as those used by Burned Area Emergency Rehabilitation teams. The habitat suitability maps we present can be used for demarcating areas of concern prior to prescribed Āre as well as directing post-Āre invasive species management at a regional to national level.