

Taking the Next Step: Sharing Lessons and Tools as Fire Management and Conservation Goes Global

Ed Brunson, The Nature Conservancy Global Fire Initiative, USA

Abstract

Throughout North America and Australia there are a wide variety of ecosystems that have historically been heavily influenced by periodic fire. Land managers and conservationists on both continents recognize the ecological significance of fire in these systems to maintain and restore biodiversity. In recognition of this, multiple efforts to collaboratively plan for and implement ecologically beneficial wildland fire management on multi-ownership landscape scales are in progress in Australia and North America. The common issues and challenges being addressed include; a desire for conservation of biodiversity values, the need for communities to be safe from wildfire risk, diverse ownership and management interests and a recognition that they cannot successfully meet individual objectives without working collaboratively with other land management partners. This paper examines three examples of regional and national collaboration in Australia and North America. Commonalities of objectives and process are identified and compared. While these collaborative fire and ecosystem restoration efforts are having success regionally, the potential for these and other similar regional projects to benefit from the work of others is relatively untapped. A look to the future shows that staff exchanges, mentoring and research and technology exchanges are all ways these projects could have conservation influence well beyond their current geographic boundaries. These opportunities and challenges are briefly discussed as well.

Introduction

In the past 10 years a variety of multi-party efforts have developed in the United States and Australia to collaboratively use fire proactively as a biodiversity conservation tool. Land managers, conservationists and private property owners in both countries recognize the ecological significance of fire to maintain and restore biodiversity. The common issues and challenges being addressed through collaborative projects include; conservation of biodiversity values, the need for communities to be safe from wildfire risk, diverse ownership and management interests and recognition that they cannot successfully meet individual objectives without working collaboratively with other land management partners. Three collaborative projects are compared. The Fire Learning Network (FLN) is a USA based collaborative effort of The Nature Conservancy (TNC), The United States Forest Service (USFS) and the land management agencies of the US Department of Interior (DOI). The FLN functions at regional and national levels. The Hotspots Fire Project is a regional collaborative project based in New South Wales, Australia, led by the Nature Conservation Council (NCC) of New South Wales. The Southeast Queensland Fire and Biodiversity Consortium (SEQFABC) is led by Griffith University and includes broad representation from state and local fire and natural resource agencies, conservation organizations and academic institutions. While not working together, these three collaborative projects share similar goals and considerations including a desire to conserve biodiversity values and provide for community safety from fire risk. They also recognize they cannot successfully meet individual objectives without working collaboratively with other land management partners. The FLN, Hotspots Project and SEQFABC are demonstrating success that can be of benefit to other regional and national efforts. The lessons learned from these projects can be shared through staff exchanges, mentoring and research and technology exchanges. The challenges of implementing these activities are substantial, but not insurmountable.

Collaborative Projects Review: **Fire Learning Network Review, Process and Results:**

In the United States fires are behaving differently now than they have throughout history, largely as a result of human actions. (Pyne, 1982) An estimated 80% of U.S. forests and rangelands have altered fire dynamics. (Schmidt, 2002) In recognition of the magnitude of this alteration and the need to work together to address the issue, The U.S. Fire Learning Network is engaging dozens of multi-agency, community-based projects in a process that accelerates the restoration of landscapes that depend on fire to sustain native plants and animals. The FLN was initiated in January, 2002 and is a tool for community-based, multi-stakeholder planning and implementation. The FLN places significant emphasis on collaboration. Network projects cover more than 76 million acres and operate at local, regional and national levels. The FLN facilitates progress through a four step collaborative process. (Fulks, 2002).

The FLN is presently composed of ten regional networks, each of which involves 5-10 sites: 1. Centennial Valley 2. Great Plains 3. Intermountain West Rangelands 4. Laurentian Mixed Forests (upper Midwest/Great Lakes region) 5. Northeast USA 6. Northwest USA 7. Southcentral USA 8. Southeast USA 9. Southwestern USA 10. Trinity Basin of Northern California

The FLN regional networks focus on (1) overcoming the specific barriers faced by participating landscapes, (2) technical training in the best available science-based tools for fire management planning, or (3) providing expert input or validation of new fire science research. (Decker, 2006) The FLN works to build capacity disseminate lessons learned and exchange information, while leading the landscapes toward their goals.

The FLN is a strategy to address the threats of altered fire regimes in multi-owner public and private landscapes. Participants work through tightly knit landscape-based project teams. The two overarching goals of the network are (1) accelerate ecosystem restoration at a set of high-priority fire-adapted landscapes where multi-agency teams are poised to implement strategies, and (2) transfer lessons learned at the landscape scale to scientists and key decision-makers who may ultimately bring about larger-scale change The FLN is a facilitated form of multi-level collaboration. The partners (TNC, USFS, DOI) provide oversight, limited technical support and partial funding to participants.

Regional FLN workshops focus on one of two topics: achieving tangible progress and transferring lessons learned in adaptive fire management, or building technical capacity in application of the best available fire science tools. For example, workshops have been designed to develop interagency fire

management plans, prioritize treatments across partner lands, assess alternative treatment scenarios using spatial modeling and project expected treatment effects using fire behavior modeling.

Products and results of the FLN:

Ten Regional Fire Learning Networks are actively operating as part of the FLN (Figure 1). Each multi-partner Regional Network consists of one or more anchor sites and associated participating sites. Most sites engaged in the network for three years or more have made significant progress toward identifying and overcoming barriers to restoring fire adapted-ecosystems at meaningful scales. The anchor sites in each network serve as models and mentors to their participating sites, many of which are new to the process.

Significant progress has been made by each Regional Network. Networks have continued to develop, and the number of participating sites within several networks has increased. Currently, a total of 73 sites and 444 partner groups are engaged in the Regional FLNs. (Brunson et. al 2007) The total acreage of sites that participated in the FLN process is more than 90 million acres in 34 states. FLN sites have leveraged more than \$12 million to support the restoration of fire-adapted landscapes. Projects are increasingly moving into implementing their plans, and the total area treated for fuels reduction and/or ecological restoration purposes is more than 450,000 acres.

Figure 1. Ten Regional FLNs and their anchor sites as of December 31, 2006.



HOTSPOTS Review, Process and Results:

The Hotspots Fire Project is unique in New South Wales and Australia. The Project is managed and delivered by the Nature Conservation Council (NCC) of NSW. Regional partners include the New South Wales Rural Fire Service, New South Wales Department of Environment and Conservation, the Catchment Management Authorities, and New South Wales Farmers Association. Hotspots is funded by the New South Wales Environmental Trust and is testing this collaborative approach in four regions of New South Wales - the Northern Rivers, Southern Rivers, Hawkesbury-Nepean and Central West.

This Hotspots project is an innovative pilot that looks at how fire can be managed to conserve native plants and animals (native biodiversity) as well as the human cultural values associated with the landscape. Hotspots uses a coordinated program of research, training and education initiatives to present the latest developments in ecological fire management in a management framework for land managers and regional communities.

Hotspots objectives (aim): (Conroy, 2006)

Improve the management of fire as a tool for conserving biodiversity in New South Wales

Improve landholders' understanding and knowledge of the role of fire and ability to manage fire for healthy landscapes

Improve the capacity of communities to work together to manage fire

The first three objectives will lead to:

Biodiversity and other environmental values always being considered as assets worth protecting, Landholders successfully manage fire for a mixture of outcomes, Communities have the capacity to maintain understanding, knowledge, skills and comfort with respect to fire and people can enjoy healthy landscapes which support a mosaic of burnt patches, refuges, niches and habitats for biodiversity.

HOTSPOTS process, products and results:

The Hotspots Team is primarily NCC staff and it works with a diverse range of people interested in fire - from landholders and rangers to fire fighters, ecologists, government agencies and others. Essentially, the Hotspots Team extensively researches and compiles fire management information that is of value to fire and land managers, bundles that information for practical application and then ensures this information reaches key people in the regions through a series of practical workshops. The Hotspots project demonstrates collaboration at two levels. First, the primary partners (NCC etc.) work closely in the overall development and adaptation of the project.

Secondly, in application the project is facilitating collaboration at the regional level. There are currently 4 regional projects. The information and tools provided by Hotspots provides workshop participants with a vantage point to start the community collaborative effort.

The Team has created a set of booklets and other resources relevant to each region. Non-scientific language is used to explain fire planning, ecological fire regimes, biodiversity issues, legislation, and monitoring. The booklets and resources provided by the Team assist landholders, extension staff and others to access information and advice.

The Hotspots Team facilitates a series of workshops in each of the regions where the bundled resource information is widely distributed. Workshop goals are to improve the capacity of communities to work together to manage fire, offer a hands-on approach to fire management within and between properties; and demonstrate an approach that addresses the goals of different land uses such as farm production and biodiversity conservation.

The Northern Rivers Region is the most advanced of the four test sites. The test program of introductory workshops was held in the Northern Rivers region in the Winter/Spring of 2005. Over 130 landholders and community representatives participated. Each of the workshops was held in a different social community, ranging from semi urban to large land holdings in excess of 10,000 hectares; in different landscapes – from coastal dunes to the gorges of the Northern escarpment; and in differing vegetation communities – from heath land to rainforest. In addition, each workshop addressed a different suite of issues for each target community. The focus ranged from fuel loads in State Forest, to protection of dwellings immediately adjacent to National Parks, and protecting rainforest remnants on private property from the effects of fire. Through a series of steps that test, refine and expand the project materials and methods, and in the context of the NSW political and regulatory environment; the Hotspots fire project is developing a framework, and a model for translating science into management for landholders in NSW. Resource materials and workshops have been well received by Landowners and managers in the Northern Rivers region and the framework established there is currently being applied to three other regions (Southern Rivers, Central West and Hawkesbury Nepean). (Conroy, 2006)

The Southeast Queensland Fire and Biodiversity Consortium Review, Process and Results:

The SEQFABC was initiated in 1998. Representation in the Consortium is diverse, with all Southeast Queensland fire councils and key state government agencies (the Queensland Rural Fire Service, the Queensland Parks and Wildlife Service, the Department of Natural Resources and the Department of Primary Industry). Community and conservation groups represented include World Wildlife Fund for Nature, and Greening Australia. Griffith University

oversees the Consortium management. The Consortium currently has approximately 40 core members covering the agencies and groups mentioned above. These groups and their representatives form the core of a broad network of land managers, fire managers, researchers, extension officers, policy developers and planners with an interest in the role of fire in biodiversity conservation. The Consortium brings together people from diverse backgrounds and provides a forum for networking, a nexus for information exchange and opportunities for increased understanding of the diverse viewpoints and skills that necessarily form part of managing fire. (Tran, 2005)

The Consortium's initial overall goal has been to gather and disseminate information on fire management practices that will support conservation of Southeast Queensland's biological diversity. (Watson, 2001). The Consortium is now closely affiliated with Griffith University, and has an objective to conduct and present research that will increase knowledge of the effects of fire on the landscape and will better protect the people, property and biodiversity in southeast Queensland.

Consortium products and results:

The Consortium works to produce resources which will be useful well beyond the life of the time-limited Consortium project.

Most of the Consortium's work takes place in relation to a number of working groups, covering education, monitoring and future research, and project oversight. Each group contains a subset of Consortium members with a range of skills, experience and affiliations. Groups meet every six-eight weeks, depending on the work-flow for that element of the project. All work closely with the Griffith University based project coordinator.

The Consortium has developed a variety of materials and products targeting a wide audience. The Consortium is regional to SE Queensland and the products focus primarily on this region. Material is available in written or electronic format and is designed for practical interpretation and application.

Consortium products include literature reviews, kits, operational tools and educational materials.

The first document produced by the Consortium is a *Comprehensive Literature Review* that was completed in August 2000. It is a comprehensive review of the information currently available on fire ecology. Review material also includes Ecological Guidelines and Potential Research.

Kits and Landowner support Material include Fire Monitoring Manual, The Individual Property Planning Kit, Operation Manual and Strategic Manual. Education Materials for the general public include an introductory brochure on fire ecology, an in depth booklet on fire ecology and a Fire Management for Protected Vegetation fact sheet. The Consortium has also developed an operational tool, the Fire Danger Meter and House Survival Meter.

The success of this first-stage of the Consortium project resulted in the continuation into the second (current) phase. The current working group is representative of what the Consortium has found to be an effective regional model.

Discussion

The FLN, Hotspots and SEQFABC represent three different approaches to achieve similar goals. It is noteworthy that independently three partnership approaches have developed to address almost exactly the same conservation challenge. Each of these collaborative projects is striving to effect fire management that results in stronger conservation of biodiversity values and provides for improved community safety. They also recognize they cannot successfully meet individual objectives without working collaboratively with other land management partners.

Scale: The FLN is national with nested regional activity. Hotspots and the Consortium are very focused multi-regional and regional projects.

Oversight and support: All have financial means to provide central administrative oversight, this is essential to the success of all three.

Scope: The FLN stresses “full spectrum collaboration” (objective setting, planning, work plan development and implementation but places less emphasis on providing or using technical tools. The FLN primarily supports a structured process at many sites. Hotspots and the Consortium are more advanced in tool and technology development and distribution, with somewhat less emphasis on the collaborative process (Hotspots) or significantly less (Consortium).

Distribution of lessons and success stories outside of the Project, technology transfer: All three projects readily make material and products available via general web site access. The Consortium has well organized material designed specifically for general use. The FLN and Hotspots material is specific to participants in those projects. None have established international distribution methods.

Training and mentoring: All focus within the respective project. None are oriented externally to any significant degree.

Conclusion

The FLN, Hotspots and SEQFABC are models of innovative, effective conservation through fire science and management. Capacity and scope limitations combine to restrict the areas (number of large landscapes) where these projects can have an impact. In order to increase the collective impact

of these projects and other similar efforts not discussed here the international fire management and conservation community should consider leveraging opportunities.

International mentoring: There is a relatively small pool of expertise in effective fire management related collaboration for biodiversity conservation. These three projects collectively have several hundred practitioners. A minimum of this expertise is shared outside of the local projects, and no mentoring is happening in high biodiversity areas fire sensitive areas of high risk such as Indonesia, tropical Central and South America and Africa.

Extended exchange of personnel with expertise: Wildfire suppression emergency situations frequently result in extended exchanges of fire suppression personnel. These sharing exercises can be mimicked for proactive fire and conservation purposes. Cost is currently a major barrier to this approach

Organized programs to distribute, review and utilize technology that supports effective collaboration and restoration: These projects are developing a wide variety of tools, the majority of which are available electronically. A consolidation of tools, lessons learned and contacts in one access point would be a valuable central resource for managers, scientists, conservationists and land owners outside of these efforts.

Linking areas regions with high fire management and science capacity with areas of low capacity but high fire related risk to biodiversity: From a global biodiversity conservation standpoint there is a critical need to apply fire and conservation science and effective management in areas of high biodiversity and high fire related risk. Current Global fire partnership efforts led by FAO and international conservation organizations could can utilize the tools, expertise and methods of these three examples in the development of these linkages.

References

- Brunson, E., L. Butterfield, L. Decker, W. Fulks. 2007. Restoring Fire Adapted Ecosystems, 2006 Semi-Annual Report to USDA Forest Service. 37 p.
- Conroy, N. 2006. Hotspots Fire Project, What's It all About? Nature Conservation Council of New South Wales, internal publication. 6 p.
- Decker, L., E. Brunson, S. Lindblom. 2006. Fire, Landscapes and People: A Conservation Partnership Vision and Framework, 2007-2011. The Nature Conservancy report to USDA Forest Service. 27 p.

- Fulks, W. 2002. Learning Networks: Key Elements of Success. The Nature Conservancy publication. 13 p.
- Pyne, S. J. 1982. Fire in America - A cultural history of wildland and rural fire, Princeton University Press. 654 p.
- Schmidt, K. M., J. P. Menakis, C. C. Hardy, W. J. Hann and D. L. Bunnell. 2002. Development of Coarse-Scale Spatial Data for Wildland Fire and Fuel Management. USDA / Forest Service. General Technical Report. RMRS-GTR-87. 41 p. + CD
- Tran, C., P. Watson. 2005. Fire In Bushland Conservation, The Role of Fire in the Landscape and How We Can Manage it for Biodiversity Conservation. Fire and Biodiversity Consortium. 20 p.
- Watson, P. 2001 The Southeast Queensland Fire and Biodiversity Consortium: a case study in interagency cooperation and community education. In Bushfire 2001. Proceedings of the Australasia Bushfire Conference, 3-6 July 2001, Christchurch, New Zealand, pp 205-211