

# Restoration Highlights

## Society for Ecological Restoration

### Northwest Chapter



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### Ecological Burning for South Puget Sound Prairies and Oaks

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A diverse mosaic of fire dependent prairies and oak woodlands once dominated the south Puget Sound region. Lack of managed fire during the past 150 years has contributed to significant habitat loss and impact to native species. The reintroduction of fire to these now rare habitats has long been identified as critical for successful conservation of prairies and oak woodlands and the species that depend on them.

Unable to rely on local fire suppression agencies to support ecological burns at the needed scale, Center for Natural Lands Management (CNLM) and its partners in South Puget Sound have established a collaborative prescribed ecological burn program with capacity to accomplish burning at the landscape level. Prior to 2008, partners were only conducting one to two burns annually. Since then, we have steadily scaled up our operational capacity, currently completing 70-90 burns and up to 2500 acres in a year (Figure 1).

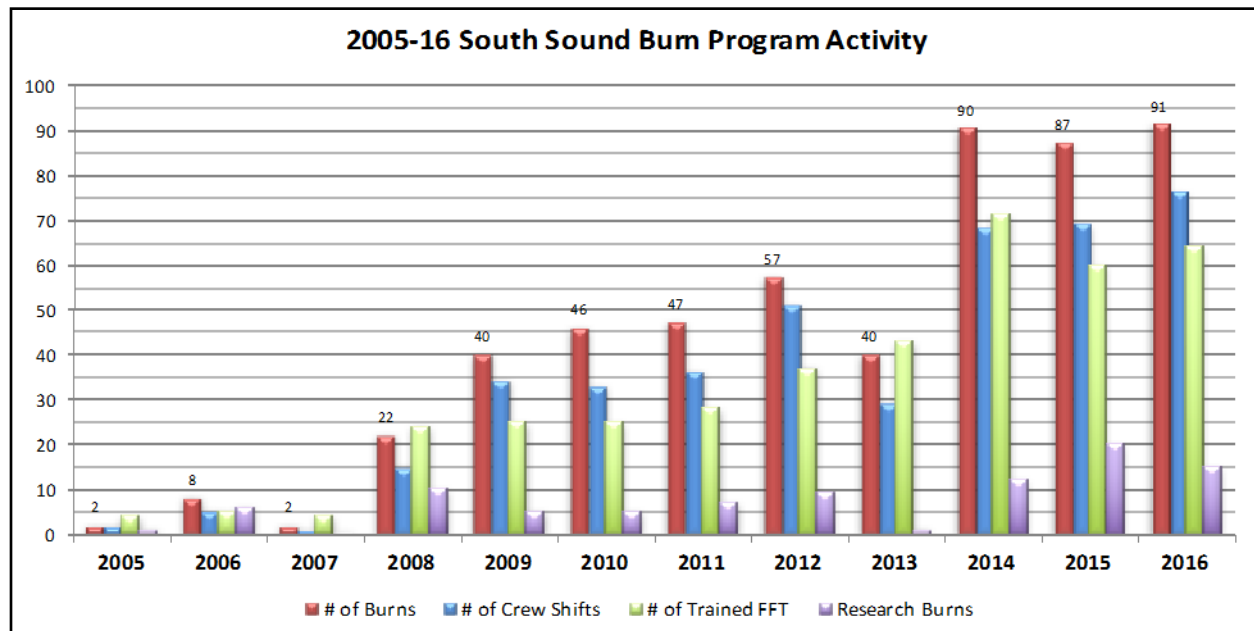


Figure 1. 2005-2016 summary of south and north sound burn activity. A total of 520 burns have been completed since 2008 when the program ramped up.



**Figure 2. Spring 2015 pre-burn (left) and spring 2016 post-burn (right) comparison at JBLM 13<sup>th</sup> Division Prairie showing a typical increase in open space and reduction of exotic grass cover. Photos: B. Kronland.**

Though there are numerous challenges to applying ecologically appropriate fire 50-65 days out of the year (next to the state capital and in a region with a burn window that is highly limited by weather), our partners have clearly built the capacity to use fire at a scale relevant to the landscape. Since 2008, there have been ample opportunities to celebrate success, learn from mistakes and grapple with the ever-present and changing challenges. Following is a rundown of some of our key outcomes and lessons learned.

### **Fire for Fire's Sake**

Although fire is an important ecological process, it not simply an end in itself. It is one of several tools we utilize in our conservation approach. Fire is being returned to a highly-fragmented system that has been altered by invasive plants and lack of fire. Rare populations of plants and animals also need special consideration when planning and applying fire, especially when habitat structures have been altered by invasives and fuel build-up. Fire is one part of our integrated and evolving science-based restoration approach that also includes:

weed control measures; establishment of native plants (seed and plugs); and species specific strategies to recover the rarest species.

### **Strength in Collaboration**

A core principle behind the Puget Sound ecological burn program is collaboration: together we are more effective and efficient at meeting our shared objectives than we are on our own. By pooling resources, each partner's overall commitment of resources can remain relatively low, but when combined, the team has remarkable capacity that is more resilient over the long-term. The list of partners is long, and includes federal, state, and county agencies, non-profit organizations, and private landowners. Our biggest partner for regional conservation is Joint Base Lewis-McChord (JBLM). At Tenalquot Prairie, for example, CNLM manages the preserve for The Nature Conservancy to restore prairie habitat and rare species recovery (Figure 3). The site is one in a network of properties that support Department of Defense objectives for recovery of protected species off JBLM, to reduce regulatory impacts on military training



**Figure 3. Tenalquot Prairie following burning, weed control, seeding and plugging native plants in preparation for future Taylor's checkerspot butterfly release. Photo: S. Freed.**

lands. Recovery efforts are collaboratively supported throughout the region by WA Department of Fish and Wildlife, WA Department of Natural Resources, as well as other non-profit and private landowners.

### **Fire Team Cohesion**

All our partner firefighters are also biologists and resource managers, which integrates intimate knowledge of goals and objectives throughout burn operations. It has proven invaluable to maintain a core team of well-trained firefighters. This approach improves crew cohesion, safety, and productivity and our overall ability to conduct more complex tasks. It also allows us to support influxes of less experienced or outside firefighters.

### **Research and Adaptive Management**

From the beginning, research and fire effects monitoring have guided fire management. Early research helped us demonstrate need and secure funding. New information regularly helps us validate assumptions or change

tactics to better meet objectives. For example, research has helped us minimize impacts to specific species and improve conditions for weed control and native seed establishment through improved weather and fuel conditions prescriptions.

### **Rare Species**

All four of our federally listed species have been found to respond favorably to well-managed fire. South Sound's Taylor's checkerspot butterflies have persisted in areas with regular fire and will rapidly colonize areas that have recently burned.



**Figure 4. Early morning blackline operation during driest part of burn season to improve safety margin for burn later in day. Photo: M. Thompson.**

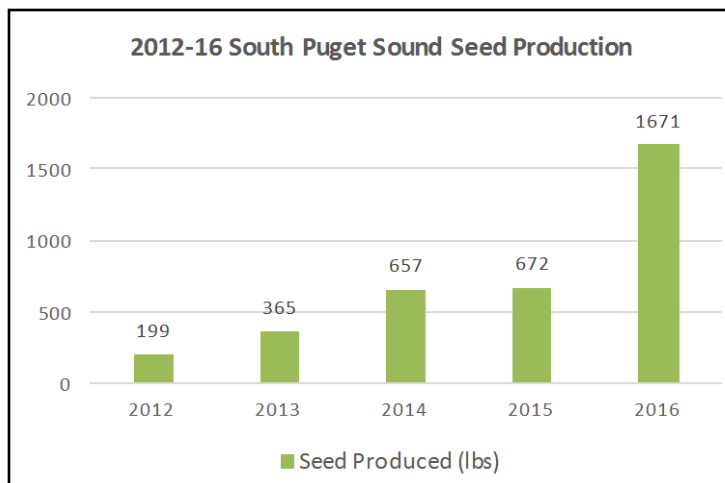
Mazama pocket gophers and streaked horned lark greatly benefit from open habitat, and are more likely to move into areas that have recently burned. Golden paintbrush recovery has been greatly improved by incorporation of fire.

### **Native Seed Establishment**

Fire can be an important first step in large-scale seeding projects. When done under the right conditions, fires will remove moss and thatch buildup - a barrier to seedling success. Fires top-kill native plants, providing an opportunity to chemically treat invasive plants that typically green up weeks earlier than the natives. Removal of invasives reduces competitive stress on natives. Fire continues to be a useful habitat maintenance tool following seed establishment, providing opportunities for further weed control, in-situ native recruitment and introductions of new native plant species.

### **Invasives**

Fire is a proven invasive species control tool. It directly kills established Scotch broom (a robust prairie invader) and stimulates broom seed germination, allowing rapid seedbank depletion with further burning. While many other exotic plants are not directly controlled and may respond favorably to fire, it does provide opportunities for improved detection and more effective chemical control. Native woody plants are also regular invaders of our prairies and oak woodlands. Appropriately-timed fire will kill or reduce these species, promoting a more open habitat structure.



**Figure 5. 2012-16 seed production from South Sound Nurseries (excludes fescue contracts with commercial growers).**

### **Regulations, Politics and the Public**

Our program contends with numerous socially derived issues, with risk perception and smoke featuring prominently. Upholding practices that meet national fire standards goes a long way to assuring all stakeholders. Current WA regulations and policies originated in a bygone era, and we actively work with regulators and legislators to shape perceptions on burning. Public outreach is always complex, and proactive and responsive approaches have been helpful to improve local acceptance of fire. We also cooperate with the Washington Prescribed Fire Council to improve training, policy, and outreach opportunities at the state level.

### **Success Builds Success**

Program growth and improvement opens the door to new opportunities. For example, more burned acres per year allows more native seeding, leading to seed nursery expansion, more acres that can be actively restored and improved research on seedling establishment success (Figure 5). Increased capacity to



**Figure 6. Post-burn seed sowing and spring bloom following fire and seeding. Photos: M. McKinley and A. Dechaine**

burn, leads to a more experienced crew that is better able to tackle tricky fuels and minimize undesirable impacts. Success attracts outside interest and increases the pool of fire resources that want to participate for training, increasing our ability to do more work.

### **Conclusion**

Returning fire to a landscape that has been altered by more than a century of fire suppression, land management, and social values is a challenge. Yet fire is one of the most significant ecological processes in North America. It is often

easier to give up when faced with the long list of “reasons why fire will never work”. However, as we found in the South Sound, it may be more feasible than first anticipated. Each small success opens the door for more support and increased capacity. There is a wide network of burn programs throughout the country, each with their own unique approach to fire. Our successes have depended on generous support from other burn programs, local partner support for fire and the determination of a handful of individuals.