

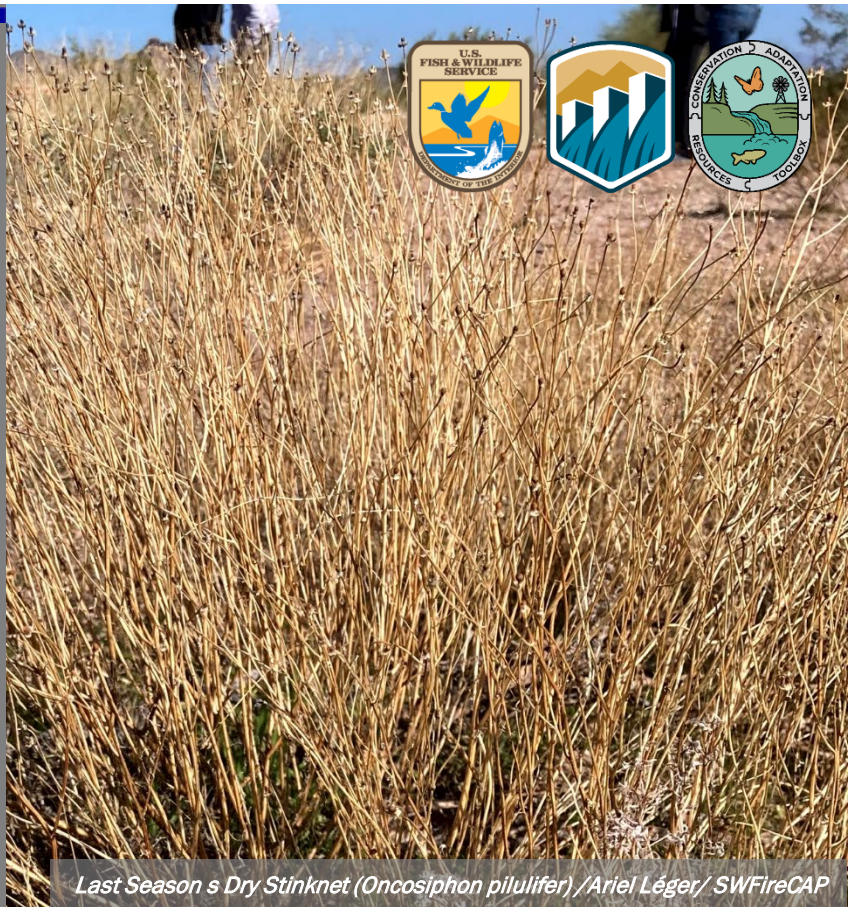
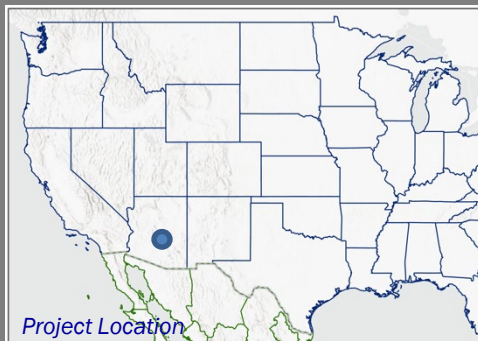
FIRE MANAGEMENT

Novel Approaches to Fuel Breaks and Invasive Species Management in the Sonoran Desert



INTRODUCTION

The Sonoran Desert lies within the southwestern US and northern Mexico. It is semi-arid, with both summer monsoon rains and temperate winter storms. Sonoran Desert plant communities are not fire-adapted. Invasive fire-adapted grasses and forbs threaten to convert the desert into a grassland by outcompeting native plants for resources, and creating new, more frequent fire regimes that the desert plants cannot withstand. Siphon Draw Environmental Services (SDS) started various projects around the city of Apache Junction, Arizona, to establish fuel breaks and manage invasive species including hand removal of vegetation, using wood chips and hand-held torches.



KEY ISSUES ADDRESSED

Hotter, drier climate patterns have increased the risk of ignition in the desert: summer monsoons have brought less water and winter months are becoming warmer, leading to longer fire seasons. Invasive species have also increased fire susceptibility of the landscape, making it more prone to frequent ignitions. Non-native perennial grasses and forbs disrupt the fuel-limited landscape of the Sonoran Desert by creating fuel continuity in natural fuel breaks, allowing high-severity fires that native vegetation cannot withstand to quickly spread. It may be more realistic for land managers to focus on managing invasive species in heavily invaded areas rather than striving for eradication.

PROJECT GOALS

- Develop fuel breaks that cause minimal impact on the native ecosystem and establish fire resilience if a fire is ignited
- Explore methods of invasive species management that emphasize creating minimal soil disturbances and restoring and maintaining the natural vegetation distribution of the Sonoran Desert

GRASSIFICATION THREAT

The increased fire risk in the Sonoran Desert is not because of excessive fire-suppression, but rather because of the increase in non-native, fire-adapted grasses and forbs.



Mesquite (Prosopis velutina) with Mosaic of Burning /Alan Sinclair/SDES

PROJECT HIGHLIGHTS

Establishing Fuel Breaks to Achieve Fire Resistance: The Lost Dutchman Fuel Break Project aimed to establish new fuel breaks on Bureau of Land Management land and mitigate fire spread if an ignition were to occur. SDES project staff used chainsaws and pruning tools to thin or remove vegetation. Heavy vegetation removal was done up to 15 feet from the fence line, with less vegetation removed 15 to 150 feet from the fence line.

Mulching to Stop New Plant Establishment: Thick layers of wood chips were used to limit new stinknet growth. Wood chips will burn at a lower intensity than invasive grasses, and the natural distribution of vegetation can be maintained. Additionally, woodchips reduce the amount of “green waste” produced by periodic removal and pruning of woody plants.

Torching Disrupts Horizontal Fuel Continuity: SDES project staff used portable propane tanks to torch fine fuels after removing heavy woody material and invasive grasses with large biomass such as buffelgrass and fountain grass. Removing fine fuels with torches in fuel breaks helps slow spread of future fires by creating a mosaic of burned and unburned vegetation that disrupts the continuity of continuous fine fuels leaving the natural structure of native desert plants intact.

Collaborators

- Siphon Draw Environmental Services
- Bureau of Land Management
- City of Apache Junction

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LESSONS LEARNED

SDES learned that aggressively removing plants via cutting, limbing, or burning can create opportunities for encroachment of non-native plants. Therefore, SDES recommends **only removing enough** vegetation to **restore historical fuel-limited landscapes**. Dead ironwood trees were left in place to provide habitat for lizards and cavity-nesting birds. SDES has learned that **frequent communication across jurisdictional boundaries** is important to establish collaborative approaches for invasive species management. Regular communication helps managers understand how the Sonoran Desert is changing and what actions can be taken to create and manage fuel breaks. Without collaboration with landowners, unmanaged land adjacent to treated land will still be susceptible to high-severity fire. Large-scale communication helped land managers share alternative ideas, approaches, and techniques for managing invasive species. SDES has learned that **fuel breaks need to be maintained regularly** once they have been developed. Currently, SDES recommends to start by **removing large downed and dead vegetation** from the fuel break in fall or winter months. After vegetation removal, SDES recommends **burning in spring and fall** to remove fine fuels and invasive species from the fuel break and **routine maintenance and monitoring** to ensure the fuel break remains effective.

NEXT STEPS

- Study long-term effects of management strategies on invasive species and incorporate results into adaptive management strategies
- Improve understanding of good fire in the Sonoran Desert and create tailored fire prescriptions

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Wildflowers Intentionally Left in Place After Burn/Alan Sinclair/SDES