



UNCOMPAHGRE PLATEAU COLLABORATIVE FOREST LANDSCAPE RESTORATION PROGRAM: FORESTRY INTERNSHIP PROGRAM PHOTOSERIES

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The **Colorado Forest Restoration Institute (CFRI)** was established in 2005 as an application-oriented, science-based outreach and engagement organization hosted at Colorado State University (CSU). Along with centers at Northern Arizona University and New Mexico Highlands University, CFRI is one of three institutes that make up the Southwest Ecological Restoration Institutes, which were authorized by Congress through the Southwest Forest Health and Wildfire Prevention Act of 2004. We develop, synthesize, and apply locally relevant, actionable knowledge to inform forest management strategies and achieve wildfire hazard reduction goals in Colorado and the Interior West. We strive to earn trust through being rigorous and objective in integrating currently available scientific information into decision-making through collaborative partnerships involving researchers, land managers, policy makers, interested and affected entities, and communities. CFRI holds itself to high standards of scientific accuracy and aims to promote transparency in the production and communication of science-based information. Always carefully evaluate sources for rigor and appropriateness before applying in your own work.

Land Acknowledgment: Colorado State University acknowledges, with respect, that the land the university is on today is the traditional and ancestral homelands of the Arapaho, Cheyenne, and Ute Nations and peoples. This was also a site of trade, gathering, and healing for numerous other Native tribes. Additionally, the Uncompahgre Plateau and surrounding landscapes are the traditional and ancestral homelands of the Tebeguache (Uncompahgre) Ute people. We recognize the Indigenous peoples as original stewards of this land and all the relatives within it. As these words of acknowledgment are spoken and heard, the ties Nations have to their traditional homelands are renewed and reaffirmed. CSU is founded as a land-grant institution, and we accept that our mission must encompass access to education and inclusion. And, significantly, that our founding came at a dire cost to Native Nations and peoples whose land this University was built upon. This acknowledgment is the education and inclusion we must practice in recognizing our institutional history, responsibility, and commitment.

Document Development Statement: Over the course of the many years of the Uncompahgre Collaborative Forest Landscape Restoration Program, photos of project areas were a key resource to discuss project implementation, monitoring, and helped to foster collaborative learning. By request of the collaborative in 2015, CFRI began taking “photopoints” in treatment areas to document forest change following treatments over time in addition to the photos that were already documenting forest change at monitoring

plots within treatment areas. Additionally, photos of the Forest Internship Program (FIP) interns served as an important resource to help collaborative members understand the daily activities of the FIP and the data being collected to inform the collaborative adaptive management process of the group. CFRI Uncompahgre CFRLP project manager, Marin Chambers, led the development of this document, including creating protocols for photo collection, framing document, writing descriptions, and selecting photos. Lyle Motley, crew leader for the FIP between 2016-2024, was a critical contributor to documenting these photos with the interns, ensuring high quality repeat photos, and this document would not be possible without his contributions. Karissa Courtney helped develop the framework for the document, aided in copyediting, and provided layout of the photoseries. Sierra Flood aided in photo collection, layout and writing. Alex Smilor and Kate Landis supported the creation of this document by sorting, identifying, and organizing the photos in this document.

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Introduction

The Forestry Internship Program (FIP), an ecological monitoring internship program that was part of the Uncompahgre Plateau Collaborative Forest Landscape Restoration Program (CFRLP), performed ecological monitoring of forest restoration treatments which were designed to enhance the resiliency, productivity and diversity of key landscapes on the Uncompahgre Plateau, Colorado. The FIP crew gained skills, insights and experience in forestry, ecological monitoring and natural resource management as part of a paid summer internship. The crew collected ecological data across the Love, Cottonwood, Sawmill, Lockhart, 7N, Monitor and 25 Mesas treatment areas on the Uncompahgre National Forest in western Colorado. This document uses photos taken of and by the FIP interns to illustrate the work of the FIP

as well as the changes to these landscapes following mechanical thinning and prescribed burning of ponderosa pine and mixed conifer forests before and after treatment. For more information on the results of the data the FIP crew collected, please visit https://cfri.colostate.edu/wp-content/uploads/sites/22/2026/03/Parish_Uncompahgre-Plateau-CFLRP-Forestry-Internship-Program-.pdf. To learn more about the full suite of monitoring that occurred as part of the CFLRP project on the Uncompahgre Plateau, please visit <https://cfri.colostate.edu/wp-content/uploads/sites/22/2026/02/MultiParty-Monitoring-for-the-Uncompahgre-Plateau-Collaborative-Forest-Landscape-Restoration-Project.pdf>.



Forestry Internship Program interns performing field collection. (Left) Interns are measuring the diameter at breast height (DBH) on an aspen tree and recording data on data sheets. (Right) An intern is making observations on tree health and recording data.

Forestry Internship Program - Daily Activities



Part of the daily activities for FIP interns included navigating to monitoring plots using GPS units (bottom right), using tools to identify plots (bottom left), setting up plots with standard measurement tapes (top left), and measuring slope or aspect of the plot (top right).



A common task during the ecological monitoring that the FIP interns performed was measuring Diameter at Breast Height (DBH), a common metric to assess tree size, volume, and carbon storage. Crews did this on live and dead trees as well as stumps. While crews did this, they also assessed tree species, status and health.

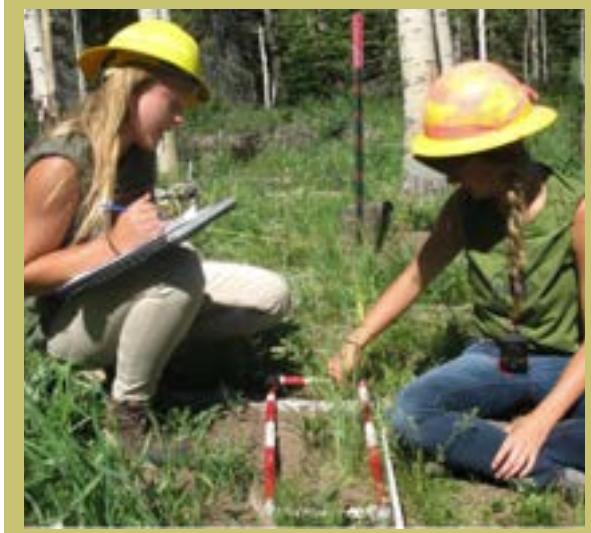




A key component of understanding the ecological change of forest restoration treatments was how treatments changed wildfire risk. To assess this, the FIP interns measured woody fuels and shrubs, data which is used to model surface fire risk.



FIP interns were also trained to assess cover of understory vegetation to the functional level (e.g., graminoids, forbs or shrubs) to better understand impacts to biodiversity following forest restoration treatments. The crew used standard Daubenmire quadrats to measure cover (%) of vegetation, which is a challenging feat, even for trained botanists!





The FIP interns also had unique opportunities to better understand and participate in forest management activities as opportunities arose. For example, interns were able to visit the local mill where forest products are processed (top left and top right), and one year they were able to participate in a U.S. Forest Service tree planting effort (left middle). They were invited to the annual CFRLP field trip to participate and learn from manager and researcher presentations (bottom left) and were even able to provide a demonstration and explanation of their daily forest monitoring during field trips (bottom right).



While the crew spent the majority of their time collecting ecological data using standard measurement tools and datasheets, they also took many photos to capture change in these forest restoration treatment areas. They took photos at plots and also within the treatment areas outside of plots at “photopoints”. At photopoints, they took great care to try to recreate photos previously taken to help illustrate the exact same angle to help illustrate the change over time in the same exact area of the forest. The remainder of this document illustrates “photoseries” of monitoring plots and photopoints for insights into forest change following mechanical cutting and prescribed burning.



Photopoints - Mechanical Treatment Areas



Comparison photo-points in the 7N mechanical treatment area. Pre-treatment conditions are illustrated (left), 1-year post-treatment (middle), and 3-years post (right). The pre-treatment photo is dense with ponderosa pine, Douglas-fir, subalpine fir, Engelmann spruce, and aspen, as well as significant understory growth. Ponderosa pine and aspen, along with the occasional Douglas-fir, were mainly retained, while the forest canopy opened up drastically and much of the understory growth was reduced in the 1-year post-treatment photo. Additionally fine and coarse woody fuels are scattered in dense groups throughout the forest floor. Three-years post-treatment, considerable regrowth of the understory is evident in the photo, especially of shrub species.



Comparison photo-points in the 7N mechanical treatment area. Pre-treatment conditions are illustrated (left), 1-year post-treatment (middle), and 3-years post-treatment (right). The pre-treatment photo depicts a dense mixed conifer and aspen forest, with a tall understory composed of small to medium statured shrubs. In the 1-year post-treatment photo, forest density has been considerably reduced, with mainly aspen species remaining in the foreground and ponderosa pine and Douglas fir trees remaining in the background. The canopy is much more open and the understory was reduced but shrubs still cover the forest floor in the foreground of the photo, while fine and coarse woody fuels are piled in large slash/burn piles. The 3-year post-treatment photo has similar forest composition and structure conditions, but the slash piles have been removed, while the understory is recovering with clear regeneration of aspen.



Comparison photo-points in the Lockhart mechanical treatment area. Pre-treatment conditions are illustrated (left), 1-year post-treatment (middle), and 6-years post-treatment (right). The pre-treatment photo shows a dense mixed conifer forest that included ponderosa pine, Douglas-fir and subalpine fir, Engelmann spruce, and aspen, with a thick understory and abundant shrubs. In the 1-year post-treatment photo two larger ponderosa pine trees and aspen trees remain, while many of the fire-intolerant species (e.g., spruce and fir) were removed. Shrubs remain in the foreground of the 1-year post-treatment photo, with a large juniper shrub present in the bottom left corner, with sparser understory in the background, and clear evidence of fine and coarse woody fuels. The 6-year post-treatment photo has similar overstory tree conditions, and it is evident that understory vegetation has recovered, with less of a presence of shrub species at the time of the photo.



Comparison photo-points in the Lockhart mechanical treatment area. Pre-treatment conditions are illustrated (left), 1-year post-treatment (middle), and 6-years post-treatment (right). The forest in the pre-treatment photo illustrates an abundance of Engelmann spruce and Douglas- and subalpine fir, with two prominent large ponderosa pine trees. Forbs and shrubs are the dominant vegetation types in the understory. Many Douglas- and subalpine fir and Englemann spruce trees and one of the ponderosa pine trees were removed by the treatment which can be seen in the 1-year post-treatment photo. Most of the understory was impacted by the treatment with one shrub remaining by the stump of the cut ponderosa pine tree, and a few scattered forbs, with abundant fine and coarse woody fuels visible in the 1-year post-treatment photo compared to the pre-treatment photo. The 6-year post-treatment photo has similar overstory conditions, but the understory has started to grow back, with higher cover of grasses than the other two photos.

Photopoints - Prescribed Fire Treatment Areas



Comparison photo-points in the Cottonwood prescribed fire treatment area. Pre-burn conditions are illustrated (left), 1-year post-burn (middle), and 5-years post-burn (right). The forest in the pre-burn photo consists mainly of ponderosa pine trees with a few Douglas-fir trees. Numerous ponderosa saplings and a few aspen seedlings/saplings are present. In the 1-year post-burn photo, burned needles are visible on the lower branches of ponderosa pine saplings, while the aspen seedlings and sapling were consumed. A new dead and down tree is present on the right side of the photo and the understory is burned. In the 5-year post-burn photo, understory vegetation has grown back close to pre-burn levels and the lower branches of ponderosa pine sapling have been pruned, increasing the resilience of these small trees to future wildfire.



Comparison photo-points in the Sawmill prescribed fire treatment area. Pre-burn forest conditions are illustrated (left), 1-year post-burn (middle), and 6-years post-burn (right). The pre-burn photo shows a ponderosa pine dominated forest with a few aspen and Douglas-fir trees. The foreground of the pre-burn photo is covered in fine woody fuels with no vegetation cover, while grasses and shrubs dominate the understory in the background. Evidence of the prescribed burn can be seen in the 1-year post-burn photo from the circles of blackened soil around trees, consumption of some of the fine woody fuels, burned pine needles on lower branches of ponderosa pine trees, and a reduced load of grasses and shrubs in the background of the photo. The 6-year post-burn photo has similar overstory conditions, but the understory has grown back and expanded into the foreground of the photo, and the lower limbs of the ponderosa pine trees have been pruned from the burn.



Comparison photo-points in the Sawmill prescribed fire treatment area. Pre-burn forest conditions are illustrated (left), 1-year post-burn (middle), and 5-years post-burn (right). The pre-burn photo shows a mixed conifer forest with ponderosa pine, Douglas-fir, and aspen. In the foreground of the pre-burn photo, there is a meadow with a concentrated understory composed of shrubs, grasses and forb, and aspen seedlings. There are a few larger dead and downed aspen trees that are visible in both the pre- and 1-year post-burn photos. The vegetation of the meadow in the 1-year post-burn photo has been reduced, but shrubs and aspen seedlings are still present. Drier conditions are present in the 1-year post-burn photo. Evidence of the prescribed fire is apparent from the blackened soil around the ponderosa pine tree in the right corner of the 1-year post treatment photo, and a burned ponderosa pine sapling just behind that tree. In the 5-year post-burn photo, shrubs have taken over the understory, and the aspen seedlings have grown a considerable amount.



Comparison photo-points in the Sawmill prescribed fire treatment area. Pre-burn forest conditions are illustrated (left), 1-year post-burn (middle), and 5-years post-burn (right). The pre-burn photo illustrates a mixed conifer forest with ponderosa pine, Douglas-fir and aspen trees in the overstory. There is a meadow with a dense understory of taller gamble oak shrubs, aspen seedlings/saplings, and grasses and forbs. Most of the understory was consumed by the prescribed fire in the 1-year post-burn photo, leaving burned stems of gamble oak, burned ponderosa seedlings, and burned branches of ponderosa trees. The dead aspen tree that is standing in the pre-burn photo fell between the pre- and 1-year post-burn photo, and is still present in the 5-year post-burn photo. Grasses, forbs, and smaller shrubs and aspen are growing back in the 5-year post-burn photo, but there is still a drastic reduction of larger gamble oak shrubs and aspen seedlings compared to the pre-burn photo.

Rapid Assessment Plots- Mechanical Treatment Monitoring Plot Photos



Comparison photos at a monitoring plot in the 7N mechanical treatment area. Pre-treatment conditions are illustrated (left), 1-year post-treatment (middle), and 4-years post-treatment (right). The pre-treatment photo is dense with ponderosa pine, Douglas-fir, subalpine fir, Engelmann spruce, and aspen, with evidence of understory growth. In the 1-year post-treatment photo, ponderosa pine and aspen, along with the occasional Douglas-fir were retained, while openings were created, forest density was reduced, and ample fine wood remained on the forest floor. Four-years post-treatment, overstory conditions remained the same post-treatment, while ample regrowth of the understory is evident, especially of shrub and forb species, while fine wood is not as evident.



Comparison photos at a monitoring plot in the 7N mechanical treatment area. Pre-treatment conditions are illustrated (left), 1-year post-treatment (middle), and 4-years post-treatment (right). The pre-treatment photo is dense with ponderosa pine, Douglas-fir, subalpine fir, Engelmann spruce, and aspen of all age classes, and ample shrub cover. In the 1-year post-treatment photo, ponderosa pine along with the occasional Douglas-fir and some aspen were retained, spruce species were dramatically reduced, while fine wood dominates on the forest floor and it is evident that understory vegetation was dramatically reduced. Four-years post-treatment, overstory conditions remained the same, while ample regrowth of the understory is evident, especially of forb species in the foreground.



Comparison photos at a monitoring plot in the 7N mechanical treatment area. Pre-treatment conditions are illustrated (left), 1-year post-treatment (middle), and 4-years post-treatment (right). The pre-treatment photo illustrates an opening in the foreground, while ponderosa pine, Douglas-fir, subalpine fir, Engelmann spruce, and aspen are illustrated in the background. A single fir sapling is evident growing mid-photo near an aspen tree. This same fir sapling is evident in the 1-year post-treatment photo, and it is clear that ponderosa pine, Douglas-fir and numerous aspen were retained during mechanical treatment, while more fire-intolerant spruce and fir species were reduced. Additionally, fine and coarse wood is abundant on the forest floor; while some shrubs remain, particularly to the right of the fir sapling mid-photo, understory vegetation was clearly reduced. Four-years post-treatment, the fir sapling has grown larger, ample regrowth of the understory, especially of forb species in the foreground, is evident and fine wood is no longer as visible, while some coarse wood remains.



Comparison photos at a monitoring plot in the 7N mechanical treatment area. Pre-treatment conditions are illustrated (left), 1-year post-treatment (middle), and 4-years post-treatment (right). The pre-treatment photo illustrates a mixed conifer forest with aspen saplings in the foreground. In the 1-year post-treatment photo, ponderosa pine, Douglas-fir and numerous aspen of multiple age classes were retained during mechanical treatment, while the forest floor is covered in fine and coarse wood and minimal understory vegetation is growing. Four-years post-treatment, the area has abundant aspen regeneration occurring that covers the forest floor and any evidence of fine and coarse wood present.

Rapid Assessment Plots- Prescribed Burning Monitoring Plot Photos



Comparison photos at a monitoring plot in the Sawmill prescribed fire treatment area. Pre-burn forest conditions are illustrated (left), 1-year post-burn (middle), and 6-years post-burn (right). The pre-burn photo illustrates a ponderosa pine dominated forest with small openings and some ponderosa pine saplings grouped in the middle of photo. There is evidence of some shrubs to the left of the photo, while the rest of the understory is dominated by graminoids and forbs. In the 1-year post-burn photo, some of the understory was consumed by the prescribed fire, while the base of the large ponderosa pine in the foreground is surrounded by scorched soil, and the group of ponderosa saplings have clearly been scorched on the lower boles. Six-years post-burn, graminoids and forbs, and to some extent, smaller statured shrubs are growing back, while it appears that some of the ponderosa saplings in the middle of the photo have died.

Regeneration Monitoring Plot Photos



Comparison photos at a regeneration plot in a prescribed burn area, although this plot did not receive fire during the prescribed burn. Forest conditions are illustrated in 2015 (top left), in 2018 (top right), in 2021 (bottom left) and in 2024 (bottom right). Each photo illustrates a ponderosa pine tree on the left and an aspen tree on the right paired in the middle of the photos (at different angles each year the photo was taken, see blue arrows identifying the same trees). The photos do not illustrate change from treatment per se, but rather illustrate change in understory and shrub abundance over time. All photos are taken in July, with 2018 appearing to be a particularly dry year. Additionally, a ponderosa pine seedling is starting to grow in the 2018 photo (bottom right), and continues to grow in size in the 2021 and 2024 photos.



Comparison photos at a regeneration monitoring plot in the Sawmill prescribed fire treatment area. Pre-burn forest conditions are illustrated (left), 1-year post-burn (middle), and 6-years post-burn (right). The pre-burn photo illustrates a ponderosa pine dominated forest, with a prominent ponderosa pine bole in the foreground with ample low and tall statured Gambel oak and some ponderosa pine and Douglas fir saplings. In the 1-year post-burn photo, there is clear evidence of scorching on the boles of the larger ponderosa pine trees, lower branches and needles of ponderosa pine saplings have been burned, and Gambel oak has been dramatically reduced, but has begun resprouting. Six years post-burn, Gambel oak is abundantly sprouting, while ponderosa pine samplings in the background appear to have grown and dropped their lower branches.



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