

Colorado Forest Restoration Institute-Colorado State University

FY2011 ACCOMPLISHMENT REPORT– December 2012

For FY2011 for Colorado Forest Restoration Institute (CFRI) at Colorado State University was allocated \$722,500 to meet the intent of the Southwest Forest Health and Wildfire Prevention Act of 2004. This includes \$500,000 in base operating funds through the USDA Forest Service’s Wildland Fire-Hazardous Fuels funds and \$222,500 from individual national forest units and the Rocky Mountain Research Station (RMRS) for specific project activities and deliverables.

This annual report for FY2011 contains information on the following:

- A comparison of actual accomplishments to the goals established for each work plan project. Where the output of a project can be readily expressed in numbers, a computation of the cost per unit may be required if that information is useful.
- Reason for delay if established goals were not met.
- Additional pertinent information including, when appropriate, analysis and explanation of cost overruns or high unit costs.

Explanations are provided for changes or incomplete deliverables. A federal financial report is submitted separately from the Office of Sponsored Programs at Colorado State University to the Southwest Regional Office.

Project 1: Linking science and evidence to stewardship

Project components:

- CFRI works with various research organizations to compile, synthesize, and translate current scientific research and evidence to meet the knowledge needs of managers and interested and affected entities for effective decision-making.
- In cases where there is a gap in scientific knowledge, CFRI communicates these needs and questions to researchers Colorado State University, the USDA Forest Service Rocky Mountain Research Station, and other academic and federal forest research institutions.
- CFRI contributes to field-based assessments and applied research to generate locally-specific data and information to support place-based decision-making. A special emphasis is placed on compiling and analyzing existing monitoring information on hazardous fuel reduction and forest restoration treatments across federal and non-federal lands
- CFRI works closely with land managers and stakeholders to design and monitor future restoration treatments to enhance their effect on mitigating unwanted fires at stand and landscape scales.

Proposed Project Deliverable

Between 1-3 researcher-manager workshops to identify overlaps and gaps between forest science research and restoration and/or wildfire mitigation management needs.

Actual Project Deliverable

1) June 15, 2011 – Convened and facilitated a field workshop to examine forest restoration and hazard reduction treatment projects on the Pike National Forest. The workshop included over 30 individuals from the US Forest Service, Colorado State Forest Service, Rocky Mountain Research Station, conservation organizations, timber industry, local community residents, and local elected officials. Primary contact: Jeff Underhill, Forester, Pike-San Isabel National Forest.
2) June 30, 2011 – Convened and facilitated a field workshop to examine forest restoration and hazard

	reduction treatment projects on the Arapaho-Roosevelt National Forest. The workshop included over 30 individuals from the US Forest Service, Colorado State Forest Service, Rocky Mountain Research Station, conservation organizations, timber industry, local community residents, and local elected officials. Primary contact: Dick Edwards, Forester and Planner, Canyon Lakes Ranger District.
Between 1-3 field-based workshops for various types of stakeholders, including: short courses; on-site visits and training; and routine engagement with affected entities to transfer scientific information and facilitate researcher-manager interactions.	1) October 21-22, 2010, "Economic sustainability and ecological compatibility: where is there room to move?", field-based workshop involving 60 individuals from federal, state, and local governments, forest industry, environmental interests, and research scientists to examine post-insect outbreak forest management options.
Between 1-3 written reports summarizing monitoring results and learning concerning hazardous fuel reduction and forest restoration treatments, and their actual or potential effect on mitigating high impact wildfires in Southwestern Colorado. (Fall 2012)	1) Completed report: Korb, J.E. 2011. <i>The effect of tree harvesting on soil resistance to penetration (compaction): BioFuel Project, Pagosa Ranger District, San Juan National Forest- Pre-treatment report</i> . Available online: http://coloradoforestrestoration.org/wp-content/uploads/2012/12/2011_BiofuelSoil_PreTreatment_Korb.pdf
Between 1-3 field-based workshops involving scientists, managers and stakeholders to examine and refine desired conditions for warm-dry mixed-conifer forests in Southwestern Colorado.	Due to the Region 3 Desired Conditions Field Workshops in Fall 2011, the SW Colorado workshop planning was postponed to FY2012 work plan period (a field-based workshop was co-convened November 8-9, 2012 with the Pagosa Ranger District of the San Juan National Forest and the San Juan Headwaters Forest Health Partnership).

Project 2: Post-Mountain Pine Beetle "Future Forest"

Project components:

- Convening and facilitating collaborative learning among scientists and managers about current available science about post-mountain pine beetle forest trends, risks, and management impacts
- Assess "future range of variability" of post-mountain pine beetle forests
- Provide best available science in language and formats accessible to the Colorado Governor's Forest Health Advisory Council, forest managers, elected officials, communities, and place-based collaborative partnerships such as the Colorado Bark Beetle Cooperative.

Proposed Project Deliverable	Actual Project Deliverable
A document summarizing current scientific knowledge on the potential future range of variability of post-beetle forest growth and development, and potential fire risk and behavior and fuel loads, especially relative to changing climate and potential fire regimes. (Fall 2012)	1) Completed report: <i>Beyond the Bugs: the Future Range of Variability of Communities and Forest Landscapes</i> (Fall 2010). Available online: http://coloradoforestrestoration.org/CFRlpdfs/2010_BeyondBugsConferenceReport.pdf 2) Completed research brief: <i>Signs of recovery for Colorado forests in the wake of the mountain pine beetle</i> (Fall 2011), with USDA Forest Service Rocky Mountain Research Station. Primary contact: Chuck Rhoades Available online: http://coloradoforestrestoration.org/wp-

content/uploads/2012/12/2011_SignsofRecovery_RMRS-CFRIBrief.pdf

Validation and refinement of Region 2 future forest projection models, in partnership with Region 2 Vegetation Ecologist and Silviculturist.

In process:
 1) Field data was collected July 2012 at Fraser Experimental Forest to ground-truth and validate prior data. Data is being processed and analyzed Fall 2012.
 2) An additional field dataset is being compiled by Claudia Regan, Regional Vegetation Ecologist, and will be delivered to CFRI Fall 2012.
 3) A spatial model estimating forest composition and structure will be developed and run Fall 2012-Winter 2013, with expected results in early Spring 2013.
 Primary contact: Claudia Regan

Project 3: Supporting Landscape-Scale Restoration and Forest Health Management in Western Colorado

Project components:

- Ongoing technical assistance for the Uncompahgre Plateau Mesas Forest Restoration Project: treatment design, ecological and socio-economic monitoring, and adaptive management

Proposed Project Deliverable

A document summarizing treatment effects and lessons learned from the Uncompahgre Mesas Forest Restoration Project.

Actual Project Deliverable

In process: This deliverable was intended to involve the Ouray District forester, who retired Spring 2012. Transition in district staff delayed work on this deliverable until Spring 2013.

Multi-party ecological and socio-economic monitoring protocol report, baseline data inventories, and database management for the UP Collaborative Landscape Restoration Program

Completed report: *Multi-party monitoring for the Uncompahgre Plateau Collaborative Restoration Project* (May 2011). Available online: http://coloradoforestrestoration.org/CFRIpdfs/MultiPartyMonitoring_UP-CFLR_2011-05.pdf

Project 3a: Science and Technical Support for the Uncompahgre Mesas Forest Restoration Project

Project components:

- Address specific ecological monitoring components for the Uncompahgre Plateau Collaborative Forest Landscape Restoration project
- Support local community organizations' capacity to implement science-based assessment and monitoring to support the Uncompahgre Plateau Collaborative Forest Landscape Restoration project
- Generate and report locally-relevant data on changing forest conditions

Proposed Project Deliverable

Report summarizing pre-treatment assessments for the Uncompahgre Mesas Forest Restoration Project.

Actual Project Deliverable

Completed report: Keralis, M., D. Binkley, T. Cheng. 2011. *Current forest conditions for the Uncompahgre Mesas Forest Restoration Project* (June 2011). Available online: <http://coloradoforestrestoration.org/wp->

	content/uploads/2012/08/2011_UncMesas_CurrentConditionReport.pdf
Report summarizing findings from the aspen browse study.	Completed summary: <i>How old are aspens on the Uncompahgre Plateau?</i> (August 2011) Available online: http://coloradoforestrestoration.org/CFRIpdfs/2011_AspenAgeStructureUncompahgre.pdf
Report summarizing findings from the Burn Canyon monitoring project	Completed report: <i>Burn Canyon Vegetation Monitoring: Final Report</i> (October 2011). Available online: http://coloradoforestrestoration.org/wp-content/uploads/2012/12/2011_BurnCanyonReport2011_final-1-26-11.pdf
Development of a webskin and website to store the multi-party monitoring data and information from the UP-CFLR projects.	Multi-party monitoring/citizen science website is available: http://citsci.org/cwis438/Browse/Project/Project_List.php (view under "U", Uncompahgre Partnership)
Report summarizing findings from unroaded old-growth forest areas within the Uncompahgre Mesas Forest Restoration Project area.	Completed report: <i>Forest structure in unroaded old-growth: understanding the influence of soils on variability of long-term vegetation dynamics and fire history.</i> Available online: http://coloradoforestrestoration.org/wp-content/uploads/2012/08/2012_UnroadedUnharvestedMesasResearchSummary.pdf

Project 3b: Social assessment accompanying the ecological and economic assessments of sustainable biomass harvesting associated with forest restoration treatments on the Uncompahgre Plateau

Project components:

- This project is pursuant to a specific request by the Rocky Mountain Research Station (lead contact: Nate Anderson, Research Forester) for CFRI to lend assistance in conducting a targeted assessment of social beliefs and perceptions of what constitutes sustainable biomass harvest associated with forest restoration treatment on the Uncompahgre Plateau. Specifically, the request is for Jessica Clement to provide assistance to Pam Motley, Uncompahgre Partnership, in developing and testing a Q-Methodology, and analyzing raw data from the Q-method.

Proposed Project Deliverable	Actual Project Deliverable
Pre-tested q-methodology	Completed Spring 2011
Report summarizing findings of q-methodology	Q-methodology findings were reported Sept. 27, 2012 at the Uncompahgre Biomass Assessment workshop, Montrose, CO. A manuscript for peer-reviewed journal is being prepared and submitted, with Jessica Clement (formerly with CFRI, now at Univ. of Wyoming), Nate Anderson (RMRS-Missoula), and Pam Motley (West Range Reclamation) as co-authors.

Project 4: Supporting Landscape-Scale Restoration and Wildfire Risk Mitigation on the Front Range

Project components:

- Provide technical and analytical support for the landscape-scale forest restoration and wildfire hazard reduction efforts in Colorado’s Front Range.
- Provide leadership on multi-party monitoring of ecological, social and economic goals, working collaboratively with the Front Range Roundtable.

Proposed Project Deliverable	Actual Project Deliverable
A collaboratively-developed multi-party monitoring plan for the Front Range Collaborative Forest Landscape Restoration Program	Completed report: <i>Front Range Roundtable Collaborative Forest Landscape Restoration Project: 2011 ecological, social, and economic monitoring plan</i> (June 2011). Available online: http://coloradoforestrestoration.org/CFRIpdfs/MultiPartyMonitoring_FR-CFLRP_2011-0625.pdf
A series of reports, between 2-4 documents, characterizing desired conditions consistent with landscape restoration and hazardous fuel reduction objectives, and tailored to the specific geographic and social contexts covered by the Front Range Collaborative Forest Landscape Restoration project.	In process: A General Technical Report published by the Rocky Mountain Research Station on the science basis for restoring Ponderosa pine-dominated forests in Colorado’s Front Range is being prepared by CFRI, with participation from the Rocky Mountain Region Office, Rocky Mountain Research Station, the Natural Resource Conservation Service, The Wilderness Society, and the Pike-San Isabel and Arapaho-Roosevelt National Forests. Planned completion: Spring 2013. Work on this deliverable falls under Mod 2 of the USFS-CFRI agreement, which was expected to carry work through 2013. Progress on this deliverable was anticipated to occur following the summer 2012 field season.
Refinement and implementation of a landscape restoration monitoring program for Front Range CFLR projects to ensure Forest Service treatments are achieving the goal of reducing the hazard of large, uncharacteristic wildfire while restoring desired forest structure and composition and landscape processes.	CFRI organized a work group of the Landscape Restoration Team of the Front Range Roundtable to identify components of a landscape monitoring strategy. The draft strategy was presented at the Landscape Restoration Team meeting on November 14, 2012 for review and revision. http://coloradoforestrestoration.org/wp-content/uploads/2012/12/2012_FR-CFLR_SpatialHeterogeneityMethod_2012Nov_PPT.pdf A draft report is available online: http://coloradoforestrestoration.org/wp-content/uploads/2012/12/2012_FR-CFLR_SpatialHeterogeneityMethod_2012Nov_FINAL.pdf Work on this deliverable falls under Mod 2 of the USFS-CFRI agreement, which was expected to carry work through 2013.
Between 1-4 monitoring summary reports describing monitoring results and providing management recommendations for Front Range CFLR projects.	Completed report: <i>Pre-Treatment Stand Structure Within CFLRP Projects on the Pike and Arapaho-Roosevelt National Forests</i> (Nov. 2012). Available online: http://coloradoforestrestoration.org/wp-content/uploads/2012/12/2012_FR-CFLR_PreTreatmentReport2011.pdf

	<p>Completed report: <i>Colorado Front Range Collaborative Forest Landscape Restoration Project: Social and Economic Monitoring Report for 2011</i> (Nov. 2012). Available online: http://coloradoforestrestoration.org/wp-content/uploads/2012/12/FR-CFLR-SE-monitoring-report_Final.pdf</p>
Development and dissemination of geospatial landscape restoration monitoring information and tools to land managers and stakeholders	<p>In process: CFRI is pooling resources with the Natural Resource Ecology Lab at Colorado State University to develop spatial data and tools for landscape-scale forest restoration monitoring (Winter 2012-Spring 2013). Initial spatial products on Front Range Forest Reconstruction project are expected Spring 2013.</p> <p>Work on this deliverable falls under Mod 2 of the USFS-CFRI agreement, which was expected to carry work through 2013. Progress on this deliverable was anticipated to occur following the summer 2012 field season.</p>

Project 4a: Science and Field Support for the Front Range Collaborative Forest Landscape Restoration Project

Project components:

- Analysis of existing and ongoing Forest Service forest assessment and monitoring data for the Front Range Collaborative Forest Landscape Restoration project
- Conduct field data collection, analysis, and reporting to reconstruct historical stand structure and disturbance history across select sites on the Arapaho-Roosevelt and Pike national forests
- Socio-economic monitoring plan development and implementation for the Front Range Collaborative Forest Landscape Restoration project
- Develop and apply landscape monitoring strategy

Proposed Project Deliverable	Actual Project Deliverable
Between 1-3 reports on pre-treatment forest conditions and indicators for units scheduled for proposed actions in 2011 and 2012.	Completed report: <i>Pre-Treatment Stand Structure Within CFLRP Projects on the Pike and Arapaho-Roosevelt National Forests</i> (Nov. 2012). Available online: http://coloradoforestrestoration.org/wp-content/uploads/2012/12/2012_FR-CFLR_PreTreatmentReport2011.pdf
Between 1-3 reports on post-treatment forest conditions and indicators for treated units in 2011 and 2012.	In process: The Pike and Arapaho-Roosevelt National Forests have only recently completed post-treatment data collection and compilation for 2011 treatment units. Analysis comparing pre- and post-treatment forest conditions will be conducted Winter 2012 and Spring 2013, with draft report expected April 2013.
Methodology for reconstructing historic stand structure and disturbance history	Completed Spring 2012, prior to the summer 2012 field season. Available online: http://coloradoforestrestoration.org/wp-content/uploads/2012/12/2012_FRFRNet_SamplingProtocols_2012May.pdf
Written report on historic forest stand structure and	In process: The report is being developed in collaboration

<p>disturbance history of select sites on the ARNF</p>	<p>with the Rocky Mountain Research Station and Rocky Mountain Tree Ring Research. Processing and analysis of field samples is proceeding Fall – Winter 2012. A final report is expected late Spring 2013.</p> <p>Preliminary results were presented as a poster at the International Fire Congress, Dec. 2012: http://coloradoforestrestoration.org/wp-content/uploads/2012/12/2012_FRFRNet_Poster_2012Dec_AFE.pdf</p>
<p>Development and dissemination of geospatial landscape restoration monitoring information and tools to land managers and stakeholders</p>	<p>CFRI organized a work group of the Landscape Restoration Team of the Front Range Roundtable to identify components of a landscape monitoring strategy. The draft strategy was presented at the Landscape Restoration Team meeting on November 14, 2012 for review and revision. http://coloradoforestrestoration.org/wp-content/uploads/2012/12/2012_FR-CFLR_SpatialHeterogeneityMethod_2012Nov_PPT.pdf</p> <p>A draft report is available online: http://coloradoforestrestoration.org/wp-content/uploads/2012/12/2012_FR-CFLR_SpatialHeterogeneityMethod_2012Nov_FINAL.pdf</p>
<p>Co-convene, with Region 2 social science team, a socio-economic monitoring work group to further refine SE indicators and measures</p>	<p>Completed Fall 2011</p>
<p>Develop a written socio-economic monitoring plan identifying topics, indicators, and measurement strategies</p>	<p>Socio-Economic monitoring indicators and methods are included in the completed report: <i>Colorado Front Range Collaborative Forest Landscape Restoration Project: Social and Economic Monitoring Report for 2011</i> (Nov. 2012). Available online: http://coloradoforestrestoration.org/wp-content/uploads/2012/12/FR-CFLR-SE-monitoring-report_Final.pdf</p>
<p>Pilot test socio-economic monitoring strategy on a CFLR project</p>	<p>Completed report: <i>Colorado Front Range Collaborative Forest Landscape Restoration Project: Social and Economic Monitoring Report for 2011</i> (Nov. 2012). Available online: http://coloradoforestrestoration.org/wp-content/uploads/2012/12/FR-CFLR-SE-monitoring-report_Final.pdf</p>
<p>An organized work group dedicated to developing a landscape monitoring framework to examine effectiveness of restoration treatments</p>	<p>CFRI organized a work group of the Landscape Restoration Team of the Front Range Roundtable Summer-Fall 2012 to identify components of a landscape monitoring strategy. The draft strategy was presented at the Landscape Restoration Team meeting on November 14, 2012 for review and revision. http://coloradoforestrestoration.org/wp-content/uploads/2012/12/2012_FR-CFLR_SpatialHeterogeneityMethod_2012Nov_PPT.pdf</p>
<p>A white paper describing the landscape monitoring framework</p>	<p>Completed report: <i>Proposed Methods for Monitoring “Groupy-Clumpy” Forest Cover Characteristics at the Stand Scale – November 2012</i>. Available online: http://coloradoforestrestoration.org/wp-content/uploads/2012/12/2012_FR-CFLR_SpatialHeterogeneityMethod_2012Nov_FINAL.pdf</p>

	content/uploads/2012/12/2012_FR-CFLR_SpatialHeterogeneityMethod_2012Nov_FINAL.pdf
Pilot test of the landscape monitoring framework	The pilot test was completed and reported in the report: <i>Proposed Methods for Monitoring “Groupy-Clumpy” Forest Cover Characteristics at the Stand Scale – November 2012</i> . Available online: http://coloradoforestrestoration.org/wp-content/uploads/2012/12/2012_FR-CFLR_SpatialHeterogeneityMethod_2012Nov_FINAL.pdf

Project 5: Supporting forest restoration collaborations

Project components:

- Enable networking and learning opportunities among place-based collaboratives, and between collaboratives and management agencies and policy-makers

Proposed Project Deliverable	Actual Project Deliverable
Assist the Governor’s Forest Health Advisory Council to enable networking and learning opportunities among place-based collaboratives, and between collaboratives and management agencies and policy-makers	CFRI organized and facilitated a work session of Colorado’s forest collaboratives, October 11, 2012 and co-sponsored the Colorado Forest Summit, October 12, 2012.
1-3 technical reports on collaboration ‘best practices’ and lessons learned	Completed brief: <i>Collaboration in Land and Resource Management: Key Concepts and Components</i> (October 2012). http://coloradoforestrestoration.org/wp-content/uploads/2012/08/2012_CFRI_collaborationconcepts.pdf This has become a widely distributed resource for Colorado forest collaboratives and a resource for the 67,000 acre Upper Monument Creek Landscape Restoration Initiative.

Project 5a: Supporting collaborative project planning on the Bridger-Teton National Forests

Project components:

- Integrate social science into BTNF projects and ongoing collaborative efforts at various stages of development: 1) Energy: oil and gas (PxP and 447 EIS); 2) Recreation: Snake River Wild & Scenic River management plan; and 3) Vegetation: Ham’s Fork vegetation plan.

Proposed Project Deliverable	Actual Project Deliverable
Provide the data to the Leadership Team as an overview in a helpful, accessible and applied manner of the social science information that the Forest has at its fingertips and discuss ways that the team would like to use it in the future	After consultations with the BTNF Planning staff, presentations were created tailored to the BTNF Forest Supervisor and her staff in relation to the above three subjects and all other social science data. In-depth discussions based on the data resulted in decision-making regarding the need for additional data re. energy subjects (it was decided the 2007 data was enough), and implementation of the Ham’s Fort vegetation plan.

Make additional presentations to provide the same overview to the Forest Districts interested in this information

After consulting with each District Ranger, presentations were created tailored to each District, and presented to each District Ranger and his/her staff and other constituents each county commissioners and county attorneys. One example of a result of these presentations is the creation of a collaborative process in the Star Valley regarding motorized recreation and other travel issues. During the presentation, the researcher advised on collaborative process guidelines to enhance success.

Prepare follow-up report in a way that provides an easy overview on how Forest staff can use the information in the future (with an eye to future forest planning) based on the experiences of the project areas

Each District received tailored data in a report that contained Forest wide data and county-specific data.