CFLR Ecological Indicator Progress Report

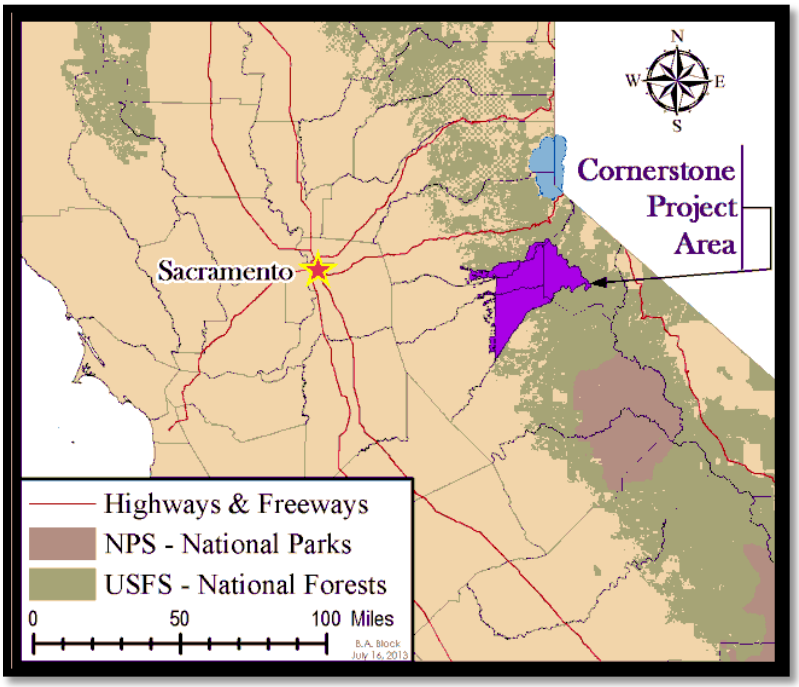
Project Name: Amador Calaveras Consensus Group (ACCG) Cornerstone **State: California**

The Amador-Calaveras Consensus Group, Cornerstone Collaborative Forest Landscape Restoration (CFLR) project was initially funded in 2012. As such, the summary of progress towards achieving the desired conditions for our Ecological Indicators represents a 3-year implementation window. The implementation of many of the restoration projects are still underway, and have not undergone formal implementation or effectiveness monitoring.

The Collaborative is actively completing their monitoring strategy (expected Summer 2015) that will provide guidance in:

- Determining if our restoration projects are implemented in accordance with the project design and intent.
- Determining if the outcomes and effects of our restoration actions are achieving desired conditions.
- Identifying whether the restoration treatments need to be modified to accommodate results of monitoring.

The Cornerstone CFLR project is focused in the upper reaches of the Mokelumne River headwater, located in the central Sierra Nevada Mountains of California. The project area is within Amador, El Dorado, Calaveras, and Alpine Counties in the Eldorado and Stanislaus National Forests.



The Cornerstone CFLR project area encompasses approximately 390,904 acres, representing 76% USFS, 22% private, and < 1% state and county. As such, individual fire regime restoration, fish and wildlife habitat, watershed improvement, and invasive species control projects funded by the Collaborative Forest Landscape Restoration (CFLR) initiative were planned within a 297,087 acre planning area on Forest Service administered lands.

The Cornerstone CFLR project did not propose to meet every desired condition on every acre or to achieve landscape scale objectives on every acre within the planning boundary. Acres planned (expected) to be treated are substantially less than planning acres in the Cornerstone project area. The Cornerstone proposal indicated that approximately 32,431 acres are expected to have treatment, representing approximately 11% of the planning area. Within these 32,431 expected treated acres, multiple projects (fuels reduction, wildlife habitat improvement, stream restoration, watershed improvement, etc...) would contribute toward moving the Cornerstone landscape towards our desired conditions, and yield integrated accomplishments.

Performance measures associated with each Ecological Indicator at the landscape scale were identified and the total planned accomplishment for the 10 year implementation window stated in the Cornerstone CFLR proposal was provided for each Ecological Indicator (Table 1). Additional performance measures may be identified and tracked as part of the Cornerstone Monitoring Program.

Table 1. Performance measures and total expected treated acres, miles, or accomplishment numbers for each Ecological Indicator. Percent of the Cornerstone project area expected to be treated under each performance measure (acres) is provided.

Ecological Indicator	Performance Measure	Total Expected Treated Acres/Miles/ Number (rom Proposal)	Percent of FS Lands in Cornerstone Project Area
Fire Regime Restoration			
	Acres of hazardous fuels treated outside the wildland/urban interface (WUI)	12,852	4.3%
	Acres of hazardous fuels treated inside the wildland/urban interface (WUI)	9,317	3.4%
	Percent of Forest Service Lands in the Cornerstone Project Area Used in Landscape Evaluation		**8.0%**
Fish and Wildlife Habitat Restoration			
	Acres of lake habitat restored or enhanced	32	<1%
	Acres of terrestrial habitat restored or enhanced	3,820	1.3%
	Miles of stream habitat restored or enhanced	7	
	Number of stream crossings constructed or reconstructed to provide for aquatic organism passage	10	
	Percent of Forest Service Lands in the Cornerstone Project Area Used in Landscape Evaluation		**1.0%**
Watershed Condition			
	Acres of water or soil resources protected, maintained or improved to achieve desired watershed conditions.	930	0.3%
	Miles of high clearance system roads receiving maintenance	84	
	Miles of passenger car system roads receiving maintenance	482	
	Miles of system road decommissioned	5	
	Miles of passenger car system roads improved	132	
	Miles of high clearance system roads improved	84	
	Percent of Forest Service Lands in the Cornerstone Project Area Used in Landscape Evaluation		**1.0%**
Invasive Species Severity			
	Acres managed for noxious weeds and invasive plants	5,480	1.8%
	Percent of Forest Service Lands in the Cornerstone Project Area Used in Landscape Evaluation		**2.0%**

Prescribed fire used to transition the Cornerstone landscape towards desired conditions. Photos by USFS.

Landscape Scale Desired Conditions

Fire Regime Restoration

*Desired Conditions Target for **Fire Regime Restoration**: **30%** change relative to the desired condition (Table 2) occurs across **8%** (Table 1) of the Forest Service lands in the Cornerstone project area by the end of **FY 2014.***

Desired Condition 10+ year landscape level:
Forest structure and condition allow fires to burn in a mosaic of low and mixed severity within the range of their natural variability and result in the reduction of threats to human life and property loss.

Table 2. Total number and percent acres treated from 2012-2014 for the Fire Regime Restoration Ecological Indicator.

Ecological Indicator	Performance Measure	Total Expected Treated Acres (from Proposal)	Total Number of Acres Treated (2012-2014)	Percent Accomplished
Fire Regime Restoration				
	Acres of hazardous fuels treated outside the wildland/urban interface (WUI)	12,852	2,832	22.0
	Acres of hazardous fuels treated inside the wildland/urban interface (WUI)	9,317	3,441	36.9
		Average Percent Accomplished (2012-2014)		**29.5%**

Fish and Wildlife Habitat Restoration

*Desired Conditions Target for **Fish and Wildlife Habitat Restoration**: **54%** change relative to the desired condition (Table 3) occurs across **1%** (Table 1) of the Forest Service lands in the Cornerstone project area by the end of **FY 2014**.*

Desired Condition at the 10+ year landscape level:
Forest structure, function, and ecological processes promote aquatic and terrestrial health, biological diversity, and habitat for a variety of native species, especially Forest Service sensitive species.

Table 3. Total number and percent acres, miles or number of stream crossings treated from 2012-2014 for the Fish and Wildlife Habitat Restoration Ecological Indicator.

Ecological Indicator	Performance Measure	Total Expected Treated Acres/Miles/Numbers (from Proposal)	Total Number of Acres/Miles/ Numbers Treated (2012-2014)	Percent Accomplished
Fish and Wildlife Habitat Restoration				
	Acres of lake habitat restored or enhanced	32	4	12.5
	Acres of terrestrial habitat restored or enhanced	3,820	1,760	46.1
	Miles of stream habitat restored or enhanced	6.5	7	107.7
	Number of stream crossings constructed or reconstructed to provide for aquatic organism passage	10	5	50.0
		Average Percent Accomplished (2012-2014)		**54.1%**

Watershed Condition

*Desired Conditions Target for **Watershed Condition**: **28%** change relative to the desired condition (Table 4) occurs across **1%** (Table 1) of the Forest Service lands in the Cornerstone project area by the end of **FY 2014**.*

Desired Condition at the 10+ year landscape level:
Water quality, quantity, and sequestration (timing and duration of runoff) are maintained or improved for human and wildlife use. Stressors to watershed conditions are minimized and watersheds outputs meet state water quality objectives.

Table 4. Total number and percent of acres and miles treated from 2012-2014 for the Watershed Condition Ecological Indicator.

Ecological Indicator	Performance Measure	Total Expected Treated Acres/Miles (from Proposal)	Total Number of Acres/Miles Treated (2012-2014)	Percent Accomplished
Watershed Condition				
	Acres of water or soil resources protected, maintained or improved to achieve desired watershed conditions.	930	1053	113.2
	Miles of high clearance system roads receiving maintenance.	84	4	4.8
	Miles of passenger car system roads receiving maintenance.	482	87	18.0
	Miles of road decommissioned.	5	1	20.0
	Miles of passenger car system roads improved.	132	0	0.0
	Miles of high clearance system road improved.	84	8	9.5
		Average Percent Accomplished (2012-2014)		**27.6%**

Invasive Species Severity

*Desired Conditions Target for **Invasive Species Severity**: **7%** change relative to the desired condition (Table 5) occurs across **2%** (Table 1) of the Forest Service lands in the Cornerstone project area by the end of **FY 2014**.*

Desired Condition at the 10+ year landscape level:
The cover and frequency of noxious/invasive plants remain stable or are reduced to levels that are not influencing native biodiversity.

Table 5. Total number and percent of acres treated from 2012-2014 for the Invasive Species Severity Ecological Indicator.

Ecological Indicator	Performance Measure	Total Expected Treated Acres (from Proposal)	Total Number of Acres Treated (2012-2014)	Percent Accomplished
Invasive Species Severity				
	Acres managed for noxious weeds and invasive plants	5,480	381	7.0
		Average Percent Accomplished (2012-2014)		**7.0%**

Landscape Scale Scoring

Expected progress for each performance measure was defined using 3-year benchmarks based on a percentage of the expected treated acres, miles, or accomplishment numbers that are specified in the Cornerstone proposal (see Table 1). As such, we would expect that approximately 30% of each performance measure has been completed by year three.

Progress towards meeting desired conditions were described in categories of Good, Fair, and Poor, and were based on the following criteria:

- Good = Expected progress is being made towards Desired Conditions across ≥ 30% of the CFLR landscape area.
- Fair = Expected progress is being made towards Desired Conditions across 16% - 29% of the CFLR landscape area.
- Poor = Expected progress is being made towards Desired Conditions across ≤ 15% of the CFLR landscape area.

For landscape scale evaluations, the percent accomplished for each performance measure was found by dividing the total number of acres, miles, or accomplishment numbers treated (FY 2012 - 2014) by the total number of expected treated acres, miles, or accomplishment numbers as stated in the project proposal. The percent landscape in which progress is being made toward desired conditions was found by averaging the percent accomplished of the performance measures in each Ecological Indicator target group.

Summary of our progress in achieving each performance measure is provided in Table 6. Table 7 provides a summary of progress in achieving the desired conditions for each Ecological Indicator and a brief explanation of our progress

Table 6. Percent accomplished at the end of FY 2014 for each performance measure and progress score.

Ecological Indicator	Performance Measure	Percent Accomplished (See Tables 2-5)	Progress Category		
			Good ≥ 30%	Fair 16-29%	Poor ≤ 15%
Fire Regime Restoration					
	Acres of hazardous fuels treated outside the wildland/urban interface (WUI)	22.0		X	
	Acres of hazardous fuels treated inside the wildland/urban interface (WUI)	36.9	X		
Fish and Wildlife Habitat Restoration					
	Acres of lake habitat restored or enhanced	12.5			X
	Acres of terrestrial habitat restored or enhanced	46.1	X		
	Miles of stream habitat restored or enhanced	106.9	X		
	Number of stream crossings constructed or reconstructed to provide for aquatic organism passage	50.0	X		
Watershed Condition					
	Acres of water or soil resources protected, maintained or improved to achieve desired watershed conditions.	113	X		
	Miles of high clearance system roads receiving maintenance	2.7			X
	Miles of passenger car system roads receiving maintenance	18.1		X	
	Miles of road decommissioned	18.0		X	
	Miles of passenger car system roads improved	0.0			X
	Miles of high clearance system road improved	9.0			X
Invasive Species Severity					
	Acres managed for noxious weeds and invasive plants	6.9			X

Table 7. Landscape-scale scores for each Ecological Indicator were determined by averaging the percent accomplished for performance measures in each Ecological Indicator (see Table 6) and by using the good, fair, poor ranking criteria as listed above.

Ecological Indicator	Datasets and/or Databases of Records	Good, Fair, Poor and (%) landscape across which progress is being made towards desired conditions	Achieving CFLRP Objectives? (Yes/No)	Brief Explanation
Fire Regime Restoration	FACTS	Good (30%)	Yes	Extremely dry conditions in the Sierra Nevada have limited the availability of burn windows to accomplish prescribed fire. Nevertheless, the Cornerstone project is achieving the objectives through hand and mechanical treatments, and pile and burn operations.
Fish and Wildlife Habitat Restoration	WIT, FACTS	Good (54%)	Yes	Projects planned and implemented in the Cornerstone project area have addressed fish and wildlife habitat concerns. We expect to continue our progress in restoring sensitive habitats within the project area.
Watershed Condition	WORKPLAN	Fair (28%)	Yes	Progress was made towards improving watershed conditions in the project area. Much of the roadwork needed to improve watershed condition has not been implemented. Likewise, delays in green sales have delayed forest implementation projects related to this objective. Progress towards these performance measures is expected in the next 2-years.
Invasive Species Severity	FACTS	Poor (7%)	Yes	Concern areas of invasive species occurrences in the Cornerstone project area are limited to a few key sites that are currently undergoing NEPA analyses. Control efforts on small occurrences occur yearly. Treatments specifically designed to increase our progress for this Ecological Indicator is expected in the next 3-years.

Project Level Scoring

Project scale scoring is based on how well the results of an individual management activity work toward meeting project level objectives. The implemented treatments have not been formally monitored, but progression is underway for finalization of the monitoring plan. In order to evaluate progress toward desired conditions at the project level the following guidelines were used:

- Evaluations were restricted to the footprint where treatments were applied.
- Only treatments implemented during the 3-year evaluation window were evaluated.
- Projects that yielded multiple performance measures were evaluated independently.
- Assessments were based on a subjective evaluation, but may be updated once quantitative data is available.

Across the Cornerstone project area, a total of 44 completed or partially completed projects were assessed in terms of the outcome achieved toward individual project-level objectives.

The outcomes of each completed or partially completed project was ranked using the following criteria:

- Good = 75% or more of implemented treatments result in progress towards individual project level objectives.
- Fair = 26%-74% of implemented treatments result in progress towards individual project level objectives.
- Poor = 25% or less of implemented treatments result in in progress towards individual project level objectives.

Table 8. Project level scoring of Fire Regime Restoration.

Ecological Indicator	Activity	Project	Good ≥ 75%	Fair 26-74%	Poor ≤ 25%
Fire Regime Restoration					
	Fuel Break				
		Lake Alpine WUI Fuel Break	X		
		Bear Valley WUI Fuel Break	X		
		Blood's Ridge WUI Fuel Break	X		
		Ramsey WUI Fuel Break	X		
	Prescribe Fire				
		Irish/O'Manuel Prescribe Fire	X		
		Sourgrass Fuels Reduction		X	
	Pile and Burn				
		Cottage Springs		X	
		Calaveras District Piles	X		
		Camp Wolfeboro		X	
		Amador District Piles		X	
		Old Gulch Plantation Thin Burn Piles		X	
		Sand Flat Piles		X	
	Pre-Commercial Thinning				
		Skyhigh	X		
		Lost Horse SMZ(Streamside Management Zone)	X		
		Meadowmont WUI Fuel Break	X		
		Northwoods		X	
		Oski Bear PAC (Protected Activity Center)		X	
		Amador District Pre-Commercial Thinning	X		
		Ham's Thinning	X		
		View 88 Stewardship Contract	X		
		Mokey Bear Stewardship Contract	X		
		Silver Lake WUI	X		
	Commercial Thinning				
		San Domingo Canyon		X	
		Power lines	X		
Percent of projects that were implemented where treatments resulted in 75% or greater progress towards project level objectives			**63%**		

Forested area with dense shrub foliage and high fuel loading. Photo by USFS.

Same forested area immediately following a prescribed burn that reduced ground and ladder fuels. Photo by USFS.

Table 9. Project level scoring of Fish and Wildlife Habitat Restoration.

Ecological Indicator	Activity	Project	Good ≥ 75%	Fair 26-74%	Poor ≤ 25%
Fish and Wildlife Habitat Restoration					
	Fuels Reduction in or near PACs (Protected Activity Centers)and HRCAs (Home Range Core Areas)				
		Bailey Plantation Health		X	
		Lake Alpine WUI Fuel Break		X	
		Meadowmont WUI Fuel Break		X	
		Skyhigh		X	
		Sourgrass		X	
		Ramsey WUI Fuel Break		X	
		Crescent Cove		X	
		Camp Wolfeboro		X	
		Cottage Springs		X	
		Power lines		X	
		Oski Bear PAC (Protected Activity Center)		X	
	Meadow/Aspen/Aquatic Restoration				
		Cultural/Meadow Restoration	X		
		Deer Valley Conifer Removal	X		
		Foster Meadow Conifer Removal	X		
		Beebe Lake Fish Removal		X	
		Indian Valley Meadow Restoration	X		
		Barney Meadow Conifer Removal		X	
		Amador District Wide Invasive Treatments		X	
	Habitat Connectivity in or near PACs and HRCAs				
		6N64 Culvert Removal	X		
		Callecat Non System Route Decommissioning	X		
Percent of projects implemented where treatments resulted in 75% or greater progress towards project-level objectives			**30%**		

California spotted owls (Strix occidentalis occidentalis) prefers multi-story forests with large diameter trees. Prescribed fire and other fuels reduction projects may reduce the impact from large-scale fire events.

Photo by John Macmillan.

Table 10. Project level scoring of Watershed Improvement.

Ecological Indicator	Activity	Project	Good ≥ 75%	Fair 26-74%	Poor ≤ 25%
Watershed Condition					
	Watershed Improvement				
		Bailey Plantation Health	X		
		Indian Valley Meadow Restoration	X		
		Cat Creek Dispersed Camp Restoration	X		
		Ramsey WUI Fuel Break		X	
		Amador District Wide Invasive Treatments		X	
		Ellis Road Patching	X		
	Road Work to Reduce Risk of Hydrological Connections				
		Forest Creek Roads		X	
		Callecat Non System Route Decommissioning	X		
		6N64 Culvert Removal		X	
Percent of projects that were implemented where treatments resulted in 75% or greater progress towards project-level objectives			**56%**		

Culverts can greatly reduce the velocity of stream flow and limit the movement of animals such as frogs and fish. Photo represents pre-treatment. Photo by USFS.

The culvert was removed to allow passage for aquatic organisms. Photo by USFS.

Table 11. Project level scoring of Invasive Species Severity.

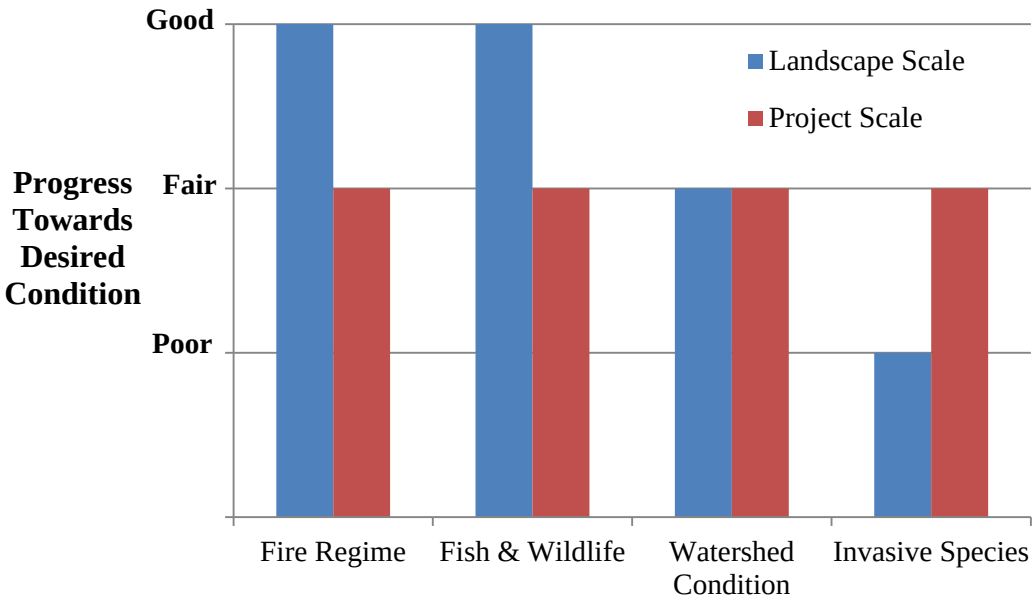
Ecological Indicator	Activity	Project	Good ≥ 75%	Fair 26-74%	Poor ≤ 25%
Invasive Species Severity					
	Control Efforts				
		Amador District Wide Invasive Treatments	X		
		Hathaway Pines Work center		X	
		Heli-spot near 14E22 and 4N94 junction		X	
		Mokelumne Wilderness		X	
		PG&E FERC License Area	X		
		Scotch Broom		X	
		Highway 4 Spotted Knapweed		X	
Percent of projects that were implemented where treatments resulted in 75% or greater progress towards project-level objectives			**29%**		

Removal of spotted knapweed (Centaurea maculosa) along Highway 4. Photo by USFS.

The final score for Ecological Indicators at the project level was estimated by calculating a percentage of the total number of projects given a score of "good" versus the total number of treatments for each indicator (See Tables 8-11). This percentage determined the score (Good, Fair, Poor) using the same raking system as defined above for the individual treatments/performance measures (Table 12).

Table 12. Current project scale evaluations for each Ecological Indicator.

Ecological Indicator	Datasets and/or Databases of Records	Project Level Good, Fair, Poor and (%) treatments resulting in measurable progress as defined above	Achieving CFLRP Objectives? (Yes/No)	Brief Explanation
Fire Regime Restoration	FACTS, Annual Reports, Expert Opinion	Fair (63%)	Yes	During proposal development, treatments related to fire regime restoration were envisioned to be predominately prescribed fire. Due to extremely dry conditions, few acres of prescribed fire have been conducted. Where appropriate, treatments have been replaced with hand and/or mechanical treatments with pile burn of excessive fuels. There may be a perception that hand/mechanical treatments may not be as effective as prescribed fire, thus resulting in a "Fair" rating. Project effectiveness monitoring will aid in this evaluation. Additional fuels reduction treatments and prescribed fire treatments are planned.
Fish and Wildlife Habitat Restoration	WIT, FACTS, Annual Reports, Expert Opinion	Fair (30%)	Yes	Many of the treatments implemented have a beneficial effect to fish and wildlife habitat. However, many of these projects were not designed to maximize fish and wildlife outcomes. Projects specifically designed to have fish and/or wildlife habitat restoration as a primary objective need to be implemented and are currently in the planning phases. As such, we expect this rating to increase over the next 5-years. Further, effectiveness monitoring of projects will aid in this evaluation.
Watershed Condition	WORKPLAN, Annual Reports, Expert Opinion	Fair (56%)	Yes	Many of the projects that have actions to decommission, maintain, or improve roads have not yet been implemented in the Cornerstone project area. Over the next 2-years, more projects are expected to have actions related to improving watershed conditions by improving the road network. In addition, vegetation (forest thinning) and meadow projects will contribute greatly to this objective. We anticipate the implementation of these large landscape endeavors in the next 2-3 years.
Invasive Species Severity	FACTS, Annual Reports, Expert Opinion	Fair (29%)	Yes	Large occurrences of noxious and invasive plants are not abundant in the Cornerstone area. Current management effort is focused on controlling the extent of known small populations. However, additional NEPA is underway to treat greater areas of concern. Performance towards this indicator should greatly improve within the next 3-4 years.



Summary of progress made towards meeting the desired condition for the Ecological Indicators. Landscape level assessment included evaluating progress based on performance measures, whereas project level evaluations were based on qualitative assessments from experts in regards to how well individual projects were achieving desired conditions. Formalized monitoring will help refine progress estimates.

Summary Narrative:

The Cornerstone CFLRP is in the 3rd year of implementation. As such, our progress towards moving the landscape towards the desired condition and achieving the long-term Collaborative goals is somewhat limited. In addition, responses from management actions may not be effectively determined for several years post implementation. Projects or portions of projects that have been implemented have not undergone formal implementation or effectiveness monitoring.

The Cornerstone monitoring plan is expected to be completed in the summer of 2015. Once monitoring begins, solid quantitative data will be available to track our progress toward the 10+ year desired condition for each Ecological Indicator. Monitoring will also allow for treatments that do not reach the expected level of results to be modified through adaptive management.

However, even in the absence of a formalized monitoring data, this Ecological Indicator report clearly illustrates areas of strengths and weakness in achieving our ecological outcomes. A reasonable amount of accomplishment has been made toward the Fire Regime Restoration and Fish and Wildlife Habitat Restoration indicators on a landscape scale, but greater restoration efforts need to be focused on Watershed Condition and Invasive Species Severity Indicators, both at landscape and project level.

The Central Sierra Nevada around the Cornerstone project area experienced two large wildfires. The Stanislaus National Forest and Yosemite National Park experienced a 257,314 acre wildfire in August 2013, and the Eldorado National Forest experienced a 97,717 acre wildfire in September 2014. These fires continue to challenge our accomplishments, as post-fire salvage logging has inundated local saw mills, leaving a limited market for green sales. In FY 2015 and 2016, the Cornerstone Collaborative will continue on-the-ground implementation of several large projects that should improve our performance towards the Ecological Indicators, including the Bailey Plantation Health Improvement, West Calaveras Plantation Thin, Callecat and Foster Firs Stewardship projects, and Power Fire Restoration.