

Guidance: Tracking and Reporting Ecological Outcomes of the Collaborative Forest Landscape Restoration Act

Background

Title IV of the Omnibus Public Land Management Act of 2009, which established the Collaborative Forest Landscape Restoration (CFLR) program, requires a five year report to Congress that assesses whether, and to what extent, the program is fulfilling the purposes of the title. This ecological indicator is one of a suite of indicators developed in order to fulfill this requirement. Each project will report on progress towards meeting these desired conditions in FY2014 in order to feed the five year report to Congress.

Goal

To assess the ecological outcomes of landscapes funded under the Collaborative Forest Restoration Act in a way that is relevant to the individual collaborative groups and their specific desired conditions, while also allowing for national summary to feed the five year report to Congress.

Challenge

The Collaborative Forest Landscape Restoration Act provides support to landscape collaboratives with diverse sets of stakeholders that occur across a number of different ecosystems throughout the United States. This diversity is reflected in the ecological objectives that each CFLR Landscape has chosen to address within their respective proposals. This situation makes it unlikely that any single metric or index value will be sufficient for describing the ecological impacts of the Act. An approach is needed that reflects the values and ecological restoration objectives of each Collaborative while maintaining the ability to provide a national summary of the Act's impacts. In addition, this approach should allow a person with limited resource background to determine how each Collaborative is moving forward in achieving their stated ecological objectives with the benefit of matching, leveraged, and CFLR funds. In other words, this approach should provide a simple and transparent method of accounting for **each collaborative's activities, the objectives for those activities, and the resulting response of the landscape**, throughout the 10 year CFLR funding period and the 15 year monitoring period.

Developing Desired Conditions

All of the Collaborative Forest Landscape Restoration landscapes identified broad ecological goals in their initial proposal. Many if not all of the CFLRP Landscapes and their stakeholders are in the early stages of identifying the quantifiable targets that management must achieve to realize these broad ecological goals. Once the Collaboratives are able to set these targets, the outcome measures described in this document can use national and monitoring data to assess whether management is meeting expectations. These quantifiable targets based on desired conditions should take the following format:

Desired Conditions Target for Fire Regime Restoration: ____ change (relative to the desired condition) occurs across ____% of the landscape area by ____ date.

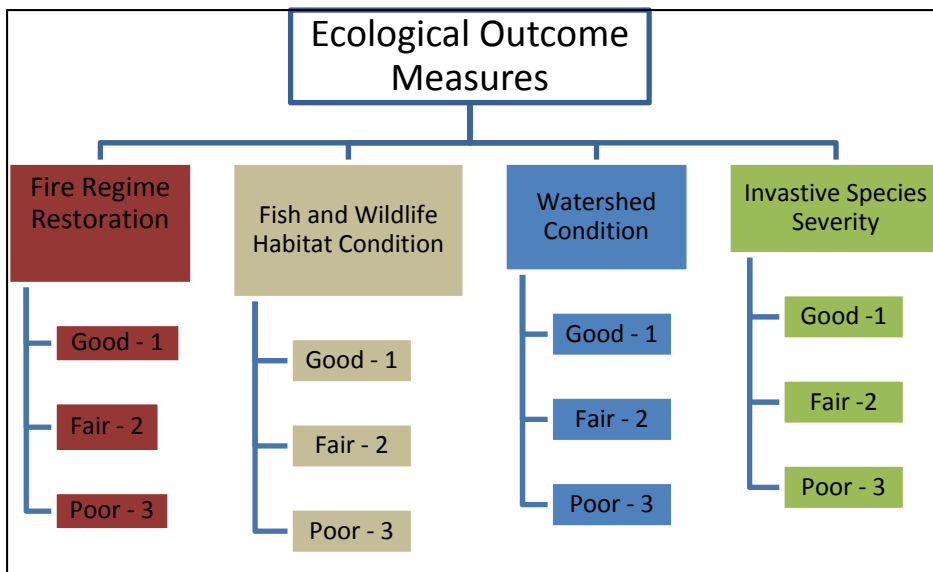
Desired Conditions Target for Fish and Wildlife Habitat Condition: ____ change (relative to the desired condition) occurs across ____% of the landscape area by ____ date.

Desired Conditions Target for Watershed Condition: ____ change (relative to the desired condition) occurs across ____% of the landscape area by ____ date.

Desired Conditions Target for Landscape Scale Invasive Species Severity: ____ (%) of the CFLR landscape area was restored by reducing invasive species severity (preventing, controlling, or eradicating targeted invasive species) to meet desired conditions by ____ date.

Ecological Indicators

Figure 1. Conceptual diagram of the four components of the CFLR Ecological Outcome Measure. Each component is reported individually.



Each project will develop a set of indicators (Figure 1) that are evaluated based on each individual CFLRP Landscape’s progress towards its Desired Conditions (DCs), as reflected by a set of key objectives, within the four ecological categories explicitly identified within the Act. This maintains each Landscape’s ability to be evaluated on the

basis of its own unique objectives while providing a set of metrics that tiers directly to the Act and the proposals that were submitted for funding under the Act. Progress towards each DC will be evaluated based on the standardized scoring system described below. Scores are assigned at the Landscape (defined by the area in the CFLR proposal) and the project (referring to individual management units) level to allow Landscapes to report on both short-term and long-term progress.

Within each outcome measure category, there are likely to be multiple Desired Conditions; these scores can be averaged to provide a summary of a Landscape’s progress within that outcome measure. These scores will be based on a uniform scale with standardized criteria, allowing scores to be averaged across CFLR Landscapes to provide a national summary of progress towards the ecological objectives of the Act. This information, in conjunction with the Collaborative Forest Landscape Restoration Annual Reports,

will provide both the outputs (as summarized by the performance measures) and the outcomes (as summarized by the indicators) for the purpose of national reporting.

Glossary

CFLR Landscape – Includes entire project boundary proposed for funding under the Collaborative Forest Landscape Restoration Act. Sometimes referred to as CFLR Project

Project-level- NEPA planning areas or implementation areas.

For the purpose of this document, **landscape will be used to refer to entire CFLRP boundary areas; project will refer to NEPA planning units.**

Treatment Area – Individual management units with the CFLR Landscape. Where “project-level” monitoring occurs.

Desired Condition – Landscape and resource conditions as defined collaboratively by stakeholders and land managers to achieve and maintain over time for each CFLR Landscape. Desired conditions are outcome-, not output-driven and should encompass 10+-years.

Indicator – an ecological outcome variable that can be assessed through different metrics; e.g. fire regime restoration.

Metric – a quantifiable variable used to assess indicators. Metrics need to be measurable in a repeatable way through time, with defined desired conditions or objectives.

Ecological Outcome Measures 1: Fire Regime Restoration

From the Act: *...a collaborative forest landscape restoration proposal shall-- describe plans to—*

(A) reduce the risk of uncharacteristic wildfire, including through the use of fire for ecological restoration and maintenance and reestablishing natural fire regimes, where appropriate;

Description and Justification

CFLRP Landscapes were funded to implement forest restoration treatments to facilitate the reduction of wildfire management costs, including through reestablishing natural fire regimes, and reducing the risk of uncharacteristic wildfire. In frequent-fire landscapes, restoration treatments may also reduce the risk of high severity fire and comport with goals to reduce risk to communities and high resource values. Desired Conditions under this indicator should identify objectives for restoring fire behavior characteristics and/or forest structure important to fire behavior within the natural range of variability for each landscape.

Guidance on Specifying Desired Conditions for Use in National Reporting

- Objectives within the DC should be quantifiable.
- Desired Conditions related to NRV should identify which components of NRV they are addressing.
- The DC statement should clearly identify the metric that will be used to determine its status (i.e., changes in Fire Regime Condition Class vs. changes in modeled fire behavior).
- At the landscape scale, Desired Conditions should, where appropriate, utilize LANDFIRE data to ensure consistency with other national reporting efforts
- If more specific or other finer resolution (<30m) data is available, landscapes should use those other national or local data sources and cite their source.
- The spatial scale (e.g., treatment, landscape, etc.) of the DC should be explicitly identified.
- The temporal scale (e.g., FY, 3 year, 5 year, etc) of the DC should be explicitly identified.

Scoring for National Reporting

Landscape-scale scoring

Few (if any) CFLR-funded Landscapes propose to achieve landscape scale objectives through the mechanical treatment of every acre within their landscape boundary. Rather, the use of strategically placed restoration treatments should facilitate meeting these broader objectives. Scoring at this level reflects the degree to which individual Landscapes are resulting in Desired Conditions at broader spatial extents.

- Good = Expected progress is being made towards Desired Conditions across ____% of the CFLR Landscape area.
- Fair = Expected progress is being made towards Desired Conditions across ____% of the CFLR Landscape area

- Poor = Expected progress is being made towards Desired Conditions across ____% of the CFLR Landscape area

“Expected progress” will be defined using 3, 5, 7 and 10-year benchmarks for each DC based on a percentage of the 10-year outcome specified in each Landscape’s proposal. To meet national reporting requirements on the Act, the 5, 10 and an additional 15-year reporting outcome are needed.

Project-scale scoring

Each management action funded through CFLR will have its own project-level objectives that are designed to contribute to achieving Desired Conditions at larger scales. Project-scale scoring should reflect how well the results of an individual management activity met the objectives for that activity. As such project-scale scoring is conducted following completed management activities by the multi-party monitoring group at each Landscape.

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

Ecological Outcome Measure 2: Fish and Wildlife Habitat Condition

From the Act: ...a collaborative forest landscape restoration proposal shall-- describe plans to—

(B) improve fish and wildlife habitat, including for endangered, threatened, and sensitive species;

Description and Justification

Alteration of forest structure through restoration treatments is likely to impact wildlife habitat through a variety of complex pathways. At larger scales this is likely to occur through changes in the size and arrangement of the various vegetation communities that comprise habitat for various species. At finer scales this is likely to occur through changes in stand structure, composition, and arrangement of key habitat elements for a particular species. For this indicator, CFLR landscapes are encouraged to focus on habitat for a variety of species; however, in some instances National Forest Land Management Plans, the Endangered Species Act, or Stakeholder consensus may identify a suite of species whose habitat requirements are often of concern when implementing restoration treatments. Desired Conditions within this Indicator should identify the species or suites of species presumed to be associated with the habitat in question, clearly articulate the structural and compositional components of those habitats, and/or identify key elements (e.g., snags, coarse woody debris, large-diameter trees, etc) that should be present within those habitats.

Guidance on Specifying Desired Conditions for Use in National Reporting

- Objectives within the Desired Condition statement should be quantifiable and capable of being evaluated against monitoring data (multiparty or otherwise).

- The spatial scale (e.g., project, landscape, etc.) of the DC should be explicitly identified.
- The temporal scale (e.g., FY, 3 year, 5 year, etc.) of the DC should be explicitly identified.
- At the landscape scale, Desired Conditions for “habitat type” should, where appropriate, utilize LANDFIRE Biophysical Setting (BpS) or USFS Land-type Association (LTA) data to ensure consistency with other national reporting efforts
- If more specific (e.g., remotely sensed information on forest structural attributes) or other finer resolution (<30m) data is available, landscapes should use those other national or local data sources and cite their source.
- Desired Condition statements should identify the habitat predicted to be associated with a specific suite of species for effectiveness monitoring.
- Project-scale Desired Conditions should identify the specific structural (e.g., basal area, canopy cover, etc.), compositional (e.g., proportion of various life forms, diameter distribution, etc.), or key habitat components (e.g., snags, coarse woody debris, large-diameter trees, etc) that management will be affecting and a quantifiable range of desired outcomes.
- Diversity and richness characterizations can be extremely difficult and costly. Desired Conditions related to diversity and richness of either species or habitats should explicitly state the method of assessment (e.g. Shannon-Weaver H' , inverse Simpson’s C , Bray-Curtis, Jackknife 2, etc.).

Scoring for National Reporting

Landscape-scale scoring

- Good = Expected progress is being made towards Desired Conditions across ____% of the CFLR landscape area.
- Fair = Expected progress is being made towards Desired Conditions across ____% of the CFLR landscape area
- Poor = Expected progress is being made towards Desired Conditions across ____% of the CFLR landscape area

“Expected progress” will be defined using 3, 5, 7 and 10-year benchmarks for each DC based on a percentage of the 10-year outcome specified in each Landscape’s proposal. To meet national reporting requirements on the Act, the 5, 10 and an additional 15-year reporting outcome are needed.

Project-scale scoring

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

Ecological Outcome Measure 3: Watershed Condition

From the Act: ...a collaborative forest landscape restoration proposal shall-- describe plans to—

(C) maintain or improve water quality and watershed function;

Description and Justification

This indicator will rely on the Watershed Classification and Assessment Tracking Tool (WCATT) to provide information on watershed response to forest restoration treatments. WCATT is an existing database that has already assigned a watershed condition score for **every** 6th Order HUC (subwatershed) containing more than minor amounts of NFS lands within CFLR Landscape Areas. Desired Conditions should be stated as an overall WCATT score. Any reassessment of the WCATT scores must follow Watershed Condition Framework protocols, as outlined in the [Watershed Condition Framework](#) and the accompanying [Watershed Condition Classification Technical Guide](#). It should be noted that the Act requires “plans to maintain or improve water quality and watershed function”. Only in cases where a Landscape’s proposal did not address water quality or watershed function should Landscapes fail to address this indicator.

Guidance on Specifying Desired Conditions for use in National Reporting

- Desired Conditions should explicitly identify the relevant watershed and its relative priority.
- DC should clearly identify which watersheds will be improved and which will be maintained in their current state.
- The DC statement should be expressed in terms of overall impact on WCATT score. The DC statement may also use specific indicators within the WCATT where appropriate; project groups should clearly identify the indicator that will be used to determine its status (i.e., the WCATT score AND number of roads remove, etc.)
- The spatial scale (e.g., treatment, subwatershed, watershed etc.) of the DC should be explicitly identified.
- The temporal scale (e.g., FY, 3 year, 5 year, etc.) of the DC should be explicitly identified.

Scoring for National Reporting

Landscape-scale scoring

- Good = Expected progress is being made towards Desired Conditions across____% of the subwatersheds within the CFLR landscape area.
- Fair = Expected progress is being made towards Desired Conditions across____% of the subwatersheds within the CFLR landscape area.
- Poor = Expected progress is being made towards Desired Conditions across____% of the subwatersheds within the CFLR landscape area.

“Expected progress” will be defined using 3-, 5-, and 7-year benchmarks for each DC based on a percentage of the 10-year outcome specified in each Landscape’s proposal.

Project-scale scoring

- Good = 75% or more of watersheds treated within a year maintain or show improvement in WCATT score
- Fair = 26%-74% of watersheds treated within a year maintain or show improvement in WCATT score
- Poor = 25% or less of watersheds treated within a year maintain or show improvement in WCATT score

Ecological Outcome Measure 4: Invasive Species

From the Act: *...a collaborative forest landscape restoration proposal shall-- describe plans to— (D) prevent, remediate, or control invasions of exotic species*

Description and Justification

The presence of invasive species on the landscape poses a serious risk to native ecosystems. If left untreated, invasive species can alter hydrological systems, degrade habitat, overtake native groundcover, and alter fire behavior and severity ultimately leading to an undesired ecological trajectory. In addition, forest management activities may create site disturbances through the use of mechanical devices and may unintentionally provide pathways and vectors for the introduction and spread of invasive species within the CFLR area. Accounting for both management actions taken on existing infestations as well as new infestations that emerge during the life of the proposed landscape restoration treatments will be critical to assessing whether a landscape has met its objectives with respect to invasive species. Invasive species activities within the CFLR area may include surveys, inventories, and treatments against targeted invasive species, supporting prevention, early detection & rapid response.

Guidance on Specifying Desired Conditions for use in National Reporting

Desired Conditions under this indicator should be directly associated with the restoration outcome for the [unit's or forest's] invasive species program, and may address either the invasive species infestation itself or improving the resilience of the site against new invasions (e.g., increases in native understory species cover or biodiversity). On a landscape-scale (within the broader CFLR area) the number of acres restored against invasive species are those where the targeted invasive species was prevented, controlled, or eradicated for the period of the CFLR landscape restoration and should be based upon annual evaluations of treatment efficacy over the life of the CFLR implementation. This same concept holds true at a smaller, project-level scale for individual treatments within the CFLR area.

For Existing or Known Infestations Within the Landscape

- Utilize species-specific or site-specific risk assessments and a structured decision making approach to set treatment priorities and desired conditions within the Landscape Area.
- The Desired Conditions statement should articulate the restoration outcome (percentage of the area to be restored) and clearly define the actions which will be taken to achieve that outcome.

- The temporal and spatial aspects of the desired restoration outcome should be articulated in the Desired Conditions statement.
- Plan for the number of acres to be restored in the Landscape Area and estimate the desired average treatment efficacy level for activities against existing targeted invasive species infestations in the Landscape Area. Include the estimated number of acres to be restored and the desired average treatment efficacy level in the Desired Conditions statement.
- For national reporting, record all survey, inventory, and treatment data in the national NFS databases of record (NRM-TESP-IS and NRM-FACTS) using the NRM Invasive Species Integrated User Interface. Forests should ensure that all invasive species management data collected by Landscape cooperators are properly recorded in the national databases. Follow all national NFS invasive species program record keeping and reporting protocols and requirements (See [Http://fsweb.wo.fed.us/invasivespecies/](http://fsweb.wo.fed.us/invasivespecies/)).
- Overall restoration performance will be summarized in PAS for all invasive species treatment activities conducted within the Landscape Area. These results can be used to evaluate the overall “Good, Fair, Poor” measures of success for the CFLR. Focus evaluations only within the Landscape Area using data associated with the specific treatment areas.

Early Detection and Rapid Response (Infestations Previously Undetected)

- Whenever possible, utilize existing surveys and inventories of invasive species infestations within the Landscape Area to focus detection activities more efficiently. Assume that some infestations were missed by previous surveys and plan accordingly.
- EDRR activities should focus on new or small infestations across the Landscape Area, or may focus on monitoring high-risk pathways and vectors (construction areas, campgrounds, roads, fuels reduction areas, staging areas, sources of materials, etc.) which may introduce new invaders.
- Utilize species-specific or site-specific risk assessments and a structured decision making approach to set rapid response (treatment) priorities and desired conditions within the Landscape Area.
- For proposed EDRR activities the Desired Conditions statement should include the spatial and temporal aspects of the Landscape.
- With respect to “rapid response”, the Desired Condition statement should specify a planned treatment efficacy level of 100% (eradication) for the targeted infestations within the Landscape Area over the life of the Landscape; articulating that annual follow-up monitoring will be conducted to ensure this level is met by the end of the Landscape period.

Scoring for National Reporting

Overall restoration performance will be summarized in PAS for all invasive species treatment activities conducted within the Landscape Area. These results can be used to evaluate the overall “Good, Fair, Poor” measures of success for the CFLR Landscape Area. Focus evaluations only within the Landscape

Area using data associated with the specific treatment areas. ***A high level of restoration outcome performance (%) will result in a low “severity” level.***

Landscape-scale Scoring

Target for Landscape Scale Invasive Species Severity: ____ (%) of the CFLR landscape area was restored by reducing invasive species severity (preventing, controlling, or eradicating targeted invasive species) to meet desired conditions by ____ date.

- Good (Low Severity) – Treatment activities conducted to meet the Invasive species Desired Conditions result in an **average** restoration performance outcome of 90% – 100% across all invasive species treatment activities within the CFLR Landscape Area over the life of the CFLR Landscape. The **actual** number of acres restored is at least 90% of the **planned** number of acres restored across the entire CFLR Landscape Area.
- Fair (Medium Severity) – Landscape activities conducted to meet the Desired Conditions result in an **average** restoration performance outcome of 70% – 89% across all invasive species treatment activities within the CFLR Landscape Area over the life of the CFLR Landscape. The **actual** number of acres restored is 70%-89% of the **planned** number of acres restored across the entire CFLR Landscape Area.
- Poor (High Severity) – Landscape activities conducted to meet the Desired Conditions result in an **average** restoration performance outcome of 0% – 69% across all invasive species treatment activities within the CFLR Landscape Area over the life of the CFLR Landscape. The **actual** number of acres restored is less than 70% of the **planned** number of acres restored across the entire CFLR Landscape Area.

Project-scale Scoring

Target for Project Scale Invasive Species Severity: ____ (%) of the Treatment Area was restored by reducing invasive species severity (preventing, controlling, or eradicating targeted invasive species) to meet desired conditions of the project by ____ date.

- Good (Low Severity) = Treatment activities conducted to meet the Desired Conditions result in a restoration performance outcome of 90% – 100% across the treatment area for the life of the project. The actual number of acres restored is at least 90% of the planned number of acres restored across the entire treatment area.
- Fair (Medium Severity) = Treatment activities conducted to meet the Desired Conditions result in a restoration performance outcome of 70% – 89% across the treatment area for the life of the project. The actual number of acres restored is 70%-89% of the planned number of acres restored across the entire treatment area.

- Poor (High Severity) = Treatment activities conducted to meet the Desired Conditions result in a restoration performance outcome of 0% – 69% across the treatment area for the life of the project. The actual number of acres restored is less than 70% of the planned number of acres restored across the entire treatment area.