

## MARK TWAIN NATIONAL FOREST

### FINAL MONITORING PROGRAM APPROVED

The Mark Twain National Forest has updated the Forest Plan monitoring program to comply with the forest Service's 2012 Planning Rule (36 CFR 219.) As we reviewed our existing monitoring questions for compliance with the monitoring program transition requirements, we also evaluated them to see if they maintain relevance and will continue to provide us with meaningful information between now and our next Forest Plan revision, when the entire monitoring program will be reviewed for possible revision. Our goal throughout this process has been an updated monitoring program that meets the requirements of the new regulations, provides the information needed to guide ongoing Forest management efforts, informs the next Plan revision effort, and is within our technical and fiscal capabilities.

The monitoring portion of the new planning regulations (36 CFR 219.12(a)(5)) require that every Forest's monitoring program address eight resource items with at least one monitoring question and associated indicator(s). The eight monitoring topics we must address are:

- The status of select watershed conditions.
- The status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems.
- The status of focal species to assess ecological conditions.
- The status of a select set of ecological conditions that contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern.
- The status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives.
- Measureable changes on the plan area related to climate change and other stressors that may be affecting the plan area.
- Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities.
- The effects of each management system to determine that they do not substantially and permanently impair the productivity of the land (16 USA 1604(g)(3)(c)).

In addition to addressing the eight monitoring topics, the following changes were also made to comply with the 2012 Planning Rule:

- A biennial report will take the place of an annual monitoring report. Our first report is expected in 2018.
- An evaluation report every 5 years is no longer needed.
- The monitoring of Management Indicator Species (MIS) is no longer required.

This action is not subject to administrative review as it is considered an administrative change to the Forest Plan (36 CFR 219.13(c)) rather than a Plan Amendment.

The final monitoring program is described below. If you are interested in knowing more you can contact Laura Watts at [ljwatts@fs.fed.us](mailto:ljwatts@fs.fed.us), or by phone at 573-341-7471.

## Final Monitoring Program for Mark Twain National Forest

The following table depicts the final monitoring program for the Mark Twain National Forest. It shows the Planning Rule monitoring requirements, the questions used to respond to those requirements, the indicators to be used to answer those questions, and whether the question existed in our current monitoring program, is a variant of an existing question, or is a completely new question. Following this table is a list of those existing monitoring questions that were removed from the monitoring program.

2012 Planning Rule monitoring requirements	Monitoring Question Number	Monitoring Question	Indicators	Original Wording
Status of select watershed conditions (36 CFR 219.12(a)(5)(i))	1	To what extent is Forest management affecting water quality?	BMP Implementation and Effectiveness Monitoring (use National BMP protocols, evaluate % implemented; % effective)	To what extent is Forest management affecting water quality, quantity, and the physical features of aquatic, karst, riparian, or wetland ecosystems?
	2	To what extent is Forest management affecting priority watershed condition?	Watershed Condition Class Score (25 indicators)	New Question
The status of select ecological conditions including key characteristics of the terrestrial and aquatic ecosystems (36 CFR 219.12(a)(5)(ii))	3	Are vegetation management practices moving conditions towards desired natural community type structural characteristics?	Table A-1 Parameters for NCs (% canopy, basal area, understory, shrub layer, ground cover)	Are timber management practices maintaining or restoring natural forest types, and encouraging healthier, more resilient and sustainable oak and oak-pine forests?
	4	Are restoration activities increasing plant species richness and native plant cover for woodlands, glades and forests?	Change in native species richness and cover	Are restoration activities increasing plant species richness for woodlands, glades and forests?  AND Are we moving toward desired condition for groundcover and natural community type structural characteristics?
	5	To what extent are prescribed fires used to mimic natural processes, maintain/improve vegetative conditions and/or restore natural processes and functions to ecosystems?	Acres of prescribed burn completed in Management Prescriptions 1.1, 1.2, 8.1 and 5.1	How, where, and to what extent will prescribed fire be used to maintain desired fuel levels, and/or mimic natural processes, and /or maintain/improve vegetative conditions, and/or restore natural processes and functions to ecosystems?

2012 Planning Rule monitoring requirements	Monitoring Question Number	Monitoring Question	Indicators	Original Wording
	6	To what extent are hazardous fuels being treated in the Wildland - Urban Interface (WUI) and/or in high risk areas?	<ul style="list-style-type: none"> <li>• Acres of prescribed burn and mechanical work completed in WUI</li> <li>• Acres of prescribed burn and mechanical work completed in High Risk Areas designated in LRMP FEIS Appendix G - Fire Risk Assessment</li> </ul>	How, where, and to what extent will prescribed fire be used to maintain desired fuel levels, and/or mimic natural processes, and /or maintain/improve vegetative conditions, and/or restore natural processes and functions to ecosystems?
	7	To what extent are fuel treatments affecting the successful suppression of wildfires?	Number of wildfires burned into fuel treatment units AND number of those with fire suppression/behavior impacts; OR percent of wildfires which burn into fuel treatment units where suppression or fire behavior changed due to fuel treatment	Are fuel treatments effective?
	8	Are lentic ecosystems providing habitat for fish and other aquatic species?	<ul style="list-style-type: none"> <li>• Number of lakes stocked</li> <li>• Number of vernal pools constructed</li> </ul>	New Question
	9	Are lotic ecosystems providing habitat for fish and other aquatic ecosystems?	Number of stream miles enhanced (AOP barriers removed, streams cleaned-up, large woody debris projects, etc)	New Question
The status of focal species to assess the ecological conditions required under 219.9 (36 CFR 219.12(a)(5)(iii))	10	To what extent is Forest management contributing to the maintenance and establishment of shortleaf pine and pine-oak woodlands as described in Appendix A?	<ul style="list-style-type: none"> <li>• Abundance of Eastern wood-pewee and *Prairie warbler in CFLR project area</li> <li>• Nest success for Eastern wood-pewee and *Prairie warbler in CFLR project area</li> </ul>	New Question  *Pine warbler was incorrectly specified in the proposed monitoring program. It has been corrected to prairie warbler for the final.

2012 Planning Rule monitoring requirements	Monitoring Question Number	Monitoring Question	Indicators	Original Wording
The status of select set of the ecological conditions required under 219.9 to contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern (36 CFR 219.12(a)(5)(iv))	11	<p>To what extent is Forest management contributing to the conservation of threatened, endangered, and sensitive species and moving toward objectives for their habitat conditions?</p> <p>(NOTE: This question will be adjusted to include species of conservation concern when that list is determined by the Regional Forester)</p>	<ul style="list-style-type: none"> <li>• Acres of key successional habitats provided (open lands, regeneration, etc.</li> <li>• Specialized habitats (caves, fens, seeps, springs, cliffs, rock outcrops, wetlands, etc) being protected, maintained and restored.</li> <li>• Summer roosting habitats for bats (snags)</li> <li>• Bat caves gated</li> </ul>	<p>To what extent is Forest management contributing to the conservation of sensitive species and moving toward objective for their habitat conditions?</p> <p style="text-align: center;">AND</p> <p>To what extent is Forest management contributing to the conservation of threatened and endangered species and moving toward objective for their habitat conditions?</p> <p style="text-align: center;">AND</p> <p>To what extent is Forest management providing habitat to maintain viable populations of native and desired non-native species?</p>
The status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives. (36 CFR 219.12(a)(5)(v))	12	What is the status and trend of visitor use, visitor satisfaction, and progress toward meeting recreation objectives in the plan?	<ul style="list-style-type: none"> <li>• Annual visitation estimates by type of visit, day use, developed, general forest area</li> <li>• Description of visit-- demographics, visit descriptions, activities</li> <li>• Economic information--spending, substitute behavior, etc.</li> <li>• Visitor Satisfaction</li> </ul>	New Question
	13	To what extent do Forest recreation facilities and opportunities meet accessibility, health, safety, and maintenance requirements and achieve resource and social objectives?	<ul style="list-style-type: none"> <li>• Water quality at swimming beaches</li> <li>• Facility inspections for compliance with critical and other standards from INFRA</li> <li>• Water quality of drinking water</li> </ul>	To what extent do Forest recreation facilities and opportunities meet accessibility, health, safety, cost, and maintenance requirements and achieve resource and social objectives?

2012 Planning Rule monitoring requirements	Monitoring Question Number	Monitoring Question	Indicators	Original Wording
	14	To what extent are management activities meeting Recreation Opportunity Spectrum objectives?	Projects that are consistent with ROS objectives	To what extent are Forest management activities in semi-primitive management areas within the Recreation Opportunity Spectrum Objectives (ROS)?
	15	How are management activities affecting unauthorized OHV use?	Comparison of citations issued, documentation of resource damage, and public complaints to areas of management activities	How effective are forest management practices managing OHV use?
Measureable changes on the plan area related to climate change and other stressors that may be affecting the plan area. (36 CFR 219.12(a)(5)(vi))	16	How is the occurrence of mortality across the plan area changing on an annual basis?	Acres of mortality	New Question
Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities. (36 CFR 219.12(a)(5)(vii))	17	How close are projected outputs and services to actual?	*Timber volume sold, acres harvested, product mix (sawtimber and pulpwood.)	Existing Question  *Timber target, volume harvested annually, and acres sold annually were removed focus on most pertinent and available information
	18	What progress has been made towards meeting objectives in the plan?	Quantitative objectives from Chapter 1 of Forest Plan	New Question

<b>2012 Planning Rule monitoring requirements</b>	<b>Monitoring Question Number</b>	<b>Monitoring Question</b>	<b>Indicators</b>	<b>Original Wording</b>
The effects of each management system to determine that they do not substantially and permanently impair the productivity of the land (NFMA -- 16 U.S.C. 1604 (g) (3) C) (36 CFR 219.12(a)(5)(viii))	19	Are the effects of forest management, including prescriptions, resulting in significant changes to productivity of the land?	Summary of results of monitoring using the National Soils protocols.	Existing Question

## Existing Questions Used as Indicators

In reviewing the existing monitoring program, the Forest identified several existing questions that we felt were better used as indicators for broader monitoring questions. These are listed below, organized by the monitoring question for which they serve as indicators.

Question 9: Are lotic ecosystems providing habitat for fish and other aquatic ecosystems?

- How many lakes and streams are being treated to improve down woody material?

Question 11: To what extent is Forest management contributing to the conservation of threatened, endangered, and sensitive species and moving toward objectives for their habitat conditions?

- How many acres are moving toward old growth desired future condition?
- Are key successional habitats being provided (open lands, regeneration, etc)
- Are specialized habitats (caves, fens, seeps, springs, cliffs, rock outcrops, wetlands, etc) being protected, maintained and restored
- Are key terrestrial habitats (hard mast, snags, down woody material, etc) being provided?

Question 13: To what extent do Forest recreation facilities and opportunities meet accessibility, health, safety, and maintenance requirements and achieve resource and social objectives?

- Does water in Forest-provided drinking water sources and swimming beaches meet standards of quality protective of human health and aesthetics?

## Questions Removed from the Monitoring Program

The Forest removed the following questions from the existing monitoring program for a number of reasons. Some questions are so vague that it is difficult to determine how to answer them; some are no longer relevant due to changes in the Planning Rule or changes in the resource; some do not provide information that is useful in testing planning assumptions of measuring management effectiveness; some are adequately answered by other program reporting requirements; and some are beyond the capability of the Forest to monitor in terms of expertise and available funding.

- How close are projected costs to actual?
- Are harvested lands adequately restocked after five years?
- To what extent is timber management occurring on lands suitable for such production?
- Are insect and disease populations compatible with objectives for restoring or maintaining healthy forest conditions?
- To what extent are forest management activities providing habitat for Management Indicator Species?
- What are the effects of off-road vehicle use on the physical and social environment?
- Are avoidance or mitigation measures effective and being followed as recommended in project designs?
- Are heritage resources being affected in non-project areas?
- How successful is the Forest's land adjustment program in support and enhancement of Forest Plan desired conditions and objectives and contributing to efficient and effective stewardship?
- Are mineral exploration, development, and production stipulations effective and being followed as recommended in project designs?

- To what extent is the Forest providing a range of motorized and non-motorized recreation opportunities that incorporate diverse public interests yet achieve applicable MA and LE objectives?
- Does Forest management of utility, recreation, and other use permits meet Forest Plan and agency direction?
- To what extent is Forest management contributing or responding to non-native invasive species?
- What level of wildland fire on the landscape is appropriate and desirable and to what extent is unwanted wildland fire on the landscape suppressed?
- To what extent is the Forest management contributing or responding to air quality effects on ecosystems, human health, or human enjoyment?
- Are air quality related values of the Class I air sheds being maintained? (Hercules Wilderness)
- To what extent has domestic livestock grazing been removed from glades and woodlands in MP 1.1 and 1.2?
- What are the economic and social trends of this area?
- What are the effects of MTNF management on people and communities in areas adjacent to the forest?
- Is a minimum transportation system being provided and maintained to meet resource management objectives?
- How many miles of road have been decommissioned? Are unneeded roads being decommissioned in an effective manner?