

United States  
Department of  
Agriculture

Forest Service  
Northern Region

**FOREST PLAN**  
**MONITORING AND EVALUATION REPORT**  
**Fiscal Years 2010-2013**  
**Bitterroot National Forest**



*The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).*

*To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.*

# Table of Contents

<b>Monitoring Item</b>	<b>Page</b>
Introduction .....	1

## **Terrestrial Ecosystems**

### **Ecosystem Composition and Structure**

Silvicultural and Fuel Prescriptions - Item 14 .....	3
Timber Mortality - Item 15.....	5
Management Effects on Soils - Item 31.....	6
Lands Adequately Restocked - Item 33.....	14
Size Limit for Harvest Areas - Item 35.....	16
Visual Quality - Item 4.....	17

### **Ecosystem Processes**

Fire Management.....	18
Insect and Disease Status as a Result of Management Activity and Mountain Pine Beetle Infestation and Harvest of Moderate to High Risk Mountain Pine Beetle Stands - Items 25, 36 & 37.....	23

### **Plant Communities**

Old Growth - Item 6 .....	27
Invasive Plants - Item 10 .....	30
Sensitive Plant Species Inventories .....	38
Rare Plants Species Inventories and Monitoring .....	41

### **Wildlife**

Elk Habitat Effectiveness - Item 7.....	44
Elk Population in Relation to Habitat Changes - Item 38 .....	45
Pine Marten Population in Relation to Habitat Changes - Item 39.....	48
Pileated Woodpecker Population in Relation to Habitat Changes - Item 40.....	52
Threatened and Endangered Wildlife Species .....	55
Sensitive Wildlife Species.....	63
Neotropical Migratory Birds .....	84
Hunter Season and Trends - Item 8 .....	87
Diversity - Item 5.....	88

## **Aquatic And Riparian Ecosystems**

Riparian Area Condition - Item 22 .....	90
Water and Sediment Yield Monitoring - Item 17.....	148
Cumulative Watershed Effects Monitoring - Item 19 .....	156
Validation of Aquatic Habitat Quality and Fish Population Assumptions Used to Predict Effects of Activities and Cutthroat Trout Population in Relation to Habitat Changes - Items 21 and 41 .....	172
Watershed Modeling and Assumption Monitoring - Items 18 and 20.....	242

## People

### **General Social and Economic**

Emerging Issues and Changing Social Values Toward Forest Activities - Item 27 .....	243
Law Enforcement Efforts on the Bitterroot National Forest.....	245

### **Recreation**

Recreation Opportunity Spectrum - Item1 .....	249
Condition of Developed Recreation Sites - Item 2 .....	251
Off-Highway Vehicle Effects on Lands - Item 28.....	253
Recreation Site and Trail Use Effects on Land - Item 29.....	256
Roadless Areas - Item 3.....	259
Road Construction, Mitigation and Maintenance - Item 24 .....	262

### **Commodities**

Timber Suitability - Item 34.....	268
Timber Volume and Area Offered and Sold - Item 11 .....	269
Timber Volume Offered by Logging System and Harvest Method - Item 13.....	271
Livestock Effects and Grazing Permit Revision Status - Item 30... ..	274
Timber Yields per Acre - Item 16.....	277
Benefit Values for Outputs - Item 26 .....	278
Lodgepole and Ponderosa Pine Volume - Item 12.....	279
Mineral Activities - Item 23 .....	280

## Administration

Administrative Appeals of Project Decisions .....	282
Forest Plan Amendments .....	284
Effects of National Forest Management on Adjacent Land and Communities - Item 42 .....	285
Effects of Other Government Agency Activities on the National Forest - Item 43 .....	287
Research Needs - Item 44.....	289

## Contents by Monitoring Item Number

<b>Monitoring Item Number</b>	<b>Page</b>
Item 1 – Recreation Opportunity Spectrum .....	249
Item 2 - Condition of Developed Recreation Sites .....	251
Item 3 - Roadless Areas .....	259
Item 4 – Visual Quality.....	17
Item 5 – Diversity .....	88
Item 6 - Old Growth .....	27
Item 7 - Elk Habitat Effectiveness.....	44
Item 8 – Hunter Trend and Season .....	87
Item 10 – Invasive Plants .....	30
Item 11 – Timber Volume and Area Offered and Sold .....	269
Item 12 – Lodgepole and Ponderosa Pine Volume.....	279
Item 13 – Timber Volume Offered by Logging System and Harvest Method.....	271
Item 14 – Silvicultural and Fuel Prescriptions .....	3
Item 15 – Timber Mortality.....	5
Item 16 – Timber Yields Per Acre.....	277
Item 17 – Water and Sediment Yield Monitoring.....	148
Items 18 & 20 – Watershed Modeling and Assumptions Monitoring.....	242
Item 19 – Cumulative Watershed Effects Monitoring .....	156
Items 21 & 41 - Validation of Aquatic Habitat Quality and Fish Population Assumptions Used to Predict Effects of Activities And Cutthroat Trout Population in Relation to Habitat Changes .....	172
Item 22 – Riparian Area Condition .....	90
Item 23 – Mineral Activities.....	280
Item 24 – Road Construction, Mitigation and Maintenance .....	262
Items 25, 36 & 37 - Insect and Disease Status as a Result of Management Activity, Mountain Pine Beetle Infestations, Harvest of Moderate to High Risk Mountain Pine Beetle Stands... ..	23
Item 26 – Benefit Values for Outputs.....	278
Item 27 – Emerging Issues and Changing Social Values Toward Forest Activities.....	243
Item 28 – Off-Highway Vehicle Effects on Lands.....	253
Item 29 – Recreation Site and Trail Use Effects on Land .....	256
Item 30 – Livestock Effects and Grazing Permit Revision Status .....	274
Item 31 – Management Effects on Soils.....	6
Item 33 – Lands Adequately Restocked.....	14
Item 34 – Timber Suitability .....	268
Item 35 – Size Limit for Harvest Areas .....	16
Item 38 – Elk Population in Relation to Habitat Changes .....	45
Item 39 – Pine Marten Population in Relation to Habitat Changes .....	48
Item 40 – Pileated Woodpecker Population in Relation to Habitat Changes .....	52
Item 42 – Effects of National Forest Management on Adjacent Land and Communities.....	285
Item 43 – Effects of other Government Agencies Activities on the National Forest.....	287
Item 44 – Research Needs .....	289
NA – Administrative Appeals of Project Decisions .....	282
NA – Fire Management .....	18
NA – Forest Plan Amendments .....	284
NA – Law Enforcement Efforts on the Bitterroot National Forest.....	245
NA – Neotropical Migratory Birds .....	84
NA – Rare Plants .....	41
NA – Sensitive Plant Species Inventories .....	38
NA – Sensitive Wildlife Species.....	63
NA – Threatened and Endangered Wildlife Species .....	55

## Introduction

The Bitterroot National Forest continued its monitoring program and research collaboration in the reporting period 2010-2013.

Forest Land and Resource Management Plans (Forest Plans) are intended to provide long-range management direction for each National Forest. Forest Plans provide guidance for balancing the physical, biological and social components of forest management in the form of goals, objectives, standards and guidelines. The Bitterroot Forest Plan was approved by the Regional Forester in September 1987.

As required by the Forest Plan, monitoring and evaluation provide a control system for Forest management. The results provide Forest line officers and employees, Regional and Washington offices, Congress and the public information on the progress and results of implementing the Bitterroot Forest Plan. Forest Plan monitoring involves gathering information and observing management activities to document their effects on people and the environment. There are three types of Forest Plan monitoring:

- “ **Implementation monitoring** is used to determine if goals, objectives, standards and management practices are implemented as detailed in the Forest Plan. In other words, did we do what the Forest Plan said we were going to do?
- “ **Effectiveness monitoring** is used to determine if management practices, as designed and executed, are effective in meeting Forest Plan standards, goals and objectives. Did the management practice do what we wanted it to do?
- “ **Validation monitoring** is used to determine whether the data, assumptions and coefficients used in the development of the Forest Plan are correct. Are the goals and objectives set by the Forest Plan valid?

Two other types of monitoring are presented for some resources. **Base line monitoring** establishes a basis for assessing change from current conditions, making comparison to future conditions possible. **Tracking** is useful as a way to report on the additional activities we are engaged in, such as numbers of wildfire ignitions and law enforcement incidents.

The Forest Plan monitoring requirements still provide the basic framework for the monitoring today. However, the actual monitoring techniques have evolved and improved over time to provide a more realistic, accurate and efficient monitoring package to evaluate the effects of management. Some of the newer techniques do not fit the original framework as well as older techniques; with a few additions, the format of this report is similar to past reports and provides some continuity until the upcoming Forest Plan revision that is currently planned to begin late in FY2016.

For each resource discussed in this report we present the objective of the monitoring, the data source, frequency, acceptable level of variability, evaluation and the results for the fiscal year (i.e., FY2007). The item number following most resource titles refers back to the Forest Plan monitoring item, found in Table IV-1 of the Plan (pages IV-6 through IV-9). The sections without item numbers are additional information we provide, but are not required Forest Plan monitoring.

The following is a partial glossary of acronyms found throughout this Monitoring Report:

- . *BAR* Bitterroot Burned Area Recovery Project
- . *BMP* Best Management Practices
- . *BNF* Bitterroot National Forest
- . *DEIS* Draft Environmental Impact Statement
- . *EA* Environmental Assessment
- . *EAWS* Ecosystem Analysis at the Watershed Scale
- . *EIS* Environmental Impact Statement
- . *ESA* Endangered Species Act
- . *FP* Bitterroot National Forest’s Forest Plan
- . *FSM* Forest Service Manual
- . *FWP* Montana Department of Fish, Wildlife and Parks
- . *FWS* United States, Dept. of Interior, Fish and Wildlife Service
- . *FY* Fiscal Year
- . *GIS* Geographic Information System
- . *HD* Hunting District
- . *IRA* Integrated Resource Analysis
- . *MA* Management Area
- . *MBF* Thousand Board Feet
- . *MMBF* Million Board Feet
- . *NEPA* National Environmental Policy Act
- . *NF* National Forest
- . *NFMA* National Forest Management Act
- . *RD* Ranger District
- . *TMDL* Total Maximum Daily Load
- . *TS* Timber Sale
- . *USFWS* United States Department of Interior, Fish and Wildlife Service

**Table 1 – List of Preparers**

Resource	Name and Position
Administrative Appeals	Marilyn Wildey, Acting Environmental Coordinator.
Fire Management	Jacque Parks, Assistant Fire Management Officer.
Fisheries	Rob Brassfield and Mike Jakober, North and South Zone Fisheries Biologists.
Heritage	Mary Williams, Forest Historian.
Insect and Disease Status	Cheri Hartless, Silviculturist.
Law Enforcement	Jackie Clark, Law Enforcement Investigative Assistant.
Invasive and Sensitive Plants	Diane Bessler-Hackett, Rangeland Management Specialist; Robin Taylor-Davenport, Botanist, Gil Gale, Weeds and Range Program Leader.
Minerals	Kristen Swindle, Realty Specialist.
Recreation	Erica Strayer, Recreation Program Manager.
Research Needs	Marilyn Wildey, Acting Environmental Coordinator.
Riparian Condition	Rob Brassfield, Mike Jakober, North and South Zone Fisheries Biologists.
Roadless Areas	Deb Gale, Wilderness Program Manager
Road Construction and Mitigation	Jacob Pintok, Transportation Engineer.
Soils	Cole Mayn, Soil Scientist
Watershed	Ed Snook, Marilyn Wildey, Hydrologists.
Wildlife	Dave Lockman and Andrea Shortsleeve, Wildlife Biologists.
Wilderness	Deb Gale, Wilderness Program Manager

Review: Rob Brassfield, North Zone Fisheries Biologist  
 Shirley Ehmann, Editorial Assistant

Approval: Julie K. King, Forest Supervisor