

**V(A). Planned Program (Summary)**

**Program # 9**

**1. Name of the Planned Program**

Climate Change: Forest Management

Reporting on this Program

**V(B). Program Knowledge Area(s)**

**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
112	Watershed Protection and Management	10%		0%	
122	Management and Control of Forest and Range Fires	15%		0%	
123	Management and Sustainability of Forest Resources	40%		30%	
131	Alternative Uses of Land	10%		0%	
132	Weather and Climate	5%		10%	
211	Insects, Mites, and Other Arthropods Affecting Plants	0%		30%	
213	Weeds Affecting Plants	5%		0%	
215	Biological Control of Pests Affecting Plants	5%		30%	
216	Integrated Pest Management Systems	10%		0%	
	<b>Total</b>	100%		100%	

**V(C). Planned Program (Inputs)**

**1. Actual amount of FTE/SYs expended this Program**

Year: 2014	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	3.4	0.0	2.0	0.0
<b>Actual Paid</b>	4.2	0.0	2.2	0.0
<b>Actual Volunteer</b>	0.0	0.0	0.0	0.0

**2. Actual dollars expended in this Program (includes Carryover Funds from previous years)**

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
110585	0	76022	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
110585	0	76022	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
84468	0	327958	0

## V(D). Planned Program (Activity)

### 1. Brief description of the Activity

Forest Management team members reported 7,717 direct educational contacts through Extension and 222,338 indirect contacts. Team members published three refereed journal articles, four articles for trade publications, and 21 web page articles (including 15 for eXtension). The Forest Management team participated in projects funded by \$218,211 in grants.

As part of our investment in Climate Change and Sustainable Energy, participation in a regional Northwest Advanced Renewables Alliance biofuels project is a continuing effort for Forest Management Team members. This alliance with private industry and universities is taking a holistic approach to building a supply chain to use forest residuals in the production of aviation biofuel. We also continue involvement with the Bioenergy Alliance Network of the Rockies to explore the use of diseased trees and other forest biomass as a bioenergy feedstock.

In 2014, Forest Management programs resulted in more than 6,000 educational contacts, largely centered in the forest-rich Idaho Panhandle and Northcentral Idaho regions. Education delivered for loggers included beginning LEAP courses in Coeur d'Alene and Moscow and LEAP updates in six other communities. Extension also is a contributing partner on the Idaho Pro Logger Steering Committee. Programs for forest owners included the Forestry Shortcourse (in two communities) and the Forest Owners Conference (also in two communities). The Idaho Master Forest Stewards program continues to work with forest owners to develop their skills and to provide information and education in schools and community events. As part of the Idaho Forest Stewardship program, UI Extension delivered 22 workshops and organized and presented at a dozen tours, field days and contributed to numerous other educational events as part of the program titled "Strengthening Forest Stewardship Skills" designed to strengthen forest owners' ability to improve forest health and growth. These included workshops about using GPS technology, measuring trees, forest insects and diseases, root diseases, invasive species, and other forest health topics. Significant emphasis was placed on Firewise (and other fire prevention programs), including numerous workshops and supervision of a new Firewise intern.

Panhandle forest owners can choose from over 140 forestry Extension publications available through local UI Extension offices. Extension videos on water quality, "selective" logging, and forest tax management, and can access archived Woodland Notes articles, a database of consulting foresters, links to relevant websites, and a variety of other useful information on the UI Extension Forestry Web site, maintained by Extension forestry staff on the UI Moscow campus.

UI Extension collaborated with most Idaho forest products companies that participate in the "Sustainable Forestry Initiative" (SFI), a national effort of the American Forest and Paper Association. Partially stimulated by SFI, a statewide logger education committee recently developed the Idaho "Pro-Logger" program, administered through the Associated Logging Contractors of Idaho (ALC). Among other

standards, the Pro-Logger credential requires participation in LEAP and 16 credits of continuing education annually. With the increased emphasis on providing educational opportunities for loggers, Extension has worked to integrate logger education needs into other education programs as well.

The Forest Management Team continued to write articles for several trade publications and for the Idaho Forests website. Team members also contributed to the eXtension Community of Practice on Climate, Forests, and Woodlands.

**2. Brief description of the target audience**

The traditional primary audiences for this topic team are family forest owners, loggers and natural resource professionals. Expansion of audiences for 2014 included outreach to fire and emergency professionals, landscape architects, Master Gardeners, teachers, and youth.

**3. How was eXtension used?**

Team members contributed to the eXtension CoP in Climate, Forests, and Woodlands.

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	6745	220338	972	1362

**2. Number of Patent Applications Submitted (Standard Research Output)**

**Patent Applications Submitted**

Year: 2014

Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2014	Extension	Research	Total
<b>Actual</b>	3	0	3

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- Number of workshops, field days, etc.

<b>Year</b>	<b>Actual</b>
2014	49

**Output #2**

**Output Measure**

- Number of participants in workshops, field days, etc.

<b>Year</b>	<b>Actual</b>
2014	1560

**Output #3**

**Output Measure**

- Number of articles in popular and trade press.

<b>Year</b>	<b>Actual</b>
2014	10

**Output #4**

**Output Measure**

- Number of web site "hits".

<b>Year</b>	<b>Actual</b>
2014	12987

**Output #5**

**Output Measure**

- Continuing Education hours for foresters, loggers, & other natural resource Professionals.

<b>Year</b>	<b>Actual</b>
2014	2862

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	O: Other scientists are aware of our research findings. I: Number of refereed scientific journal articles.
2	O: An increase in the number of trained graduate students prepared to enter the workforce. I: Number of M.S. and Ph.D. candidates relevant to this topic team.
3	Outcome (fire): Forest owners, managers, green industry professionals, and fire and emergency services personnel will be knowledgeable about and adopt best management practices that increase the health and safety of their forests and decrease catastrophic risk from wildfire in wildland and urban/interface areas. Indicator: Numbers of stakeholders indicating they will adopt recommended practices
4	Outcome (biomass): Sustainable, economically viable ecosystems that are compatible with current environmental and social issues will benefit Idaho landowners and small business entrepreneurs by the increased utilization of forest biomass. Indicator: Numbers of stakeholders indicating they will adopt recommended practices that increase biomass utilization leading to increased value of biomass harvested.
5	Outcome (forest health): Knowledge about insect and disease outbreaks and awareness of the effects of climate change on forest ecosystems increases use of recommended best management practices that benefit Idaho forests by increasing the quality and/or quantity of timber, wildlife habitat, and air and water and air quality. Indicator: Numbers of participants that have indicated they will adopt recommended practices
6	Forest and Natural Resource Workforce Development: Workers in forest management related occupations have increased job skills and maintained certification requirements. indicator: Numbers of participants indicating they will adopt various specific recommended practices.
7	Forest and Natural Resource Workforce Development: Workers in forest management related occupations have increased opportunities to receive professional development to improve job skills and maintain certification requirements. Indicator: Numbers of programs offered for formal continuing education credits (e.g., Society of American Foresters CFEs, ISDA pesticide credits, Idaho pro-logger credits, etc.)
8	Forest and Natural Resource Workforce Development: Workers in forest management related occupations have increased job skills and maintained certification requirements. Indicator: Numbers of Idaho loggers gaining or maintaining enrollment in the Idaho Pro-logger program.
9	Forest and Natural Resource Workforce Development: Workers in forest management related occupations have increased job skills and maintained certification requirements. Indicator: Numbers of foresters gaining or maintaining enrollment in the SAF Certified Forester program.
10	Forest and Natural Resource-based Economic Development: Forest owners, managers, entrepreneurs, and decision-makers are taking greater advantage of economic opportunities related to forest lands, improving rural economies. Numbers of participants that have indicated they will take greater advantage of economic opportunities related to forests.
11	Forest Productivity and Sustainability: The productivity and sustainability of Idaho's working forests has improved, and forest owners and managers are more successful at achieving their management goals. Numbers of participants indicating they will adopt various specific recommended forest management practices:

### **Outcome #1**

#### **1. Outcome Measures**

O: Other scientists are aware of our research findings. I: Number of refereed scientific journal articles.

Not Reporting on this Outcome Measure

### **Outcome #2**

#### **1. Outcome Measures**

O: An increase in the number of trained graduate students prepared to enter the workforce. I: Number of M.S. and Ph.D. candidates relevant to this topic team.

Not Reporting on this Outcome Measure

### **Outcome #3**

#### **1. Outcome Measures**

Outcome (fire): Forest owners, managers, green industry professionals, and fire and emergency services personnel will be knowledgeable about and adopt best management practices that increase the health and safety of their forests and decrease catastrophic risk from wildfire in wildland and urban/interface areas. Indicator: Numbers of stakeholders indicating they will adopt recommended practices

Not Reporting on this Outcome Measure

### **Outcome #4**

#### **1. Outcome Measures**

Outcome (biomass): Sustainable, economically viable ecosystems that are compatible with current environmental and social issues will benefit Idaho landowners and small business entrepreneurs by the increased utilization of forest biomass. Indicator: Numbers of stakeholders indicating they will adopt recommended practices that increase biomass utilization leading to increased value of biomass harvested.

Not Reporting on this Outcome Measure

## **Outcome #5**

### **1. Outcome Measures**

Outcome (forest health): Knowledge about insect and disease outbreaks and awareness of the effects of climate change on forest ecosystems increases use of recommended best management practices that benefit Idaho forests by increasing the quality and/or quantity of timber, wildlife habitat, and air and water and air quality. Indicator: Numbers of participants that have indicated they will adopt recommended practices

Not Reporting on this Outcome Measure

## **Outcome #6**

### **1. Outcome Measures**

Forest and Natural Resource Workforce Development: Workers in forest management related occupations have increased job skills and maintained certification requirements. indicator: Numbers of participants indicating they will adopt various specific recommended practices.

### **2. Associated Institution Types**

- 1862 Extension

### **3a. Outcome Type:**

Change in Action Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2014	790

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Foresters and other natural resource professionals must continually stay current with emerging scientific and technological developments to practice sustainable forestry. UI Extension is uniquely situated to provide local continuing education opportunities for field foresters, loggers, and other professionals engaged in forest systems including realtors and local decision makers. K-12 teachers must also stay updated and are continually looking for local opportunities to hone their skills. They also value research-based sources of forestry education to integrate into their classrooms.

#### **What has been done**

Workshops on thinning and pruning, tree planting, forest economics and log marketing, forest health, LEAP and LEAP update were offered to provide continuing education for natural resource

professionals. A new program was offered on rural land purchasing attended by many realtors for continuing education. IDAH2O Master Water Stewards and the Surf and Turf programs offer professional development credits. IDAH2O expanded the effort to train K-12 teachers. Insect and disease diagnosis and control recommendations were delivered through classes and, one-on-one, through the tree clinic.

### Results

In 2013-2014, Society of American Foresters' continuing forestry education ('CFE') credit was provided for Extension programs titled: "Current Topics in Forest Health", 'Using your GPS', 'Root Disease ? The Hidden Menace', and the "Forest Insect & Disease Field Day". In response to requests from K-12 teachers, we also offer University of Idaho credit for applicable Extension programs, such as the Forestry Short Course. This allows teachers to obtain university credit for programs that help them integrate forest science into their classrooms. 40 Boundary and Bonner County Realtors improved knowledge about legal, regulatory, administrative, and scientific principles by at least 50% above pre-course tests. Realtors are better prepared to properly represent property, and intend to pass on their knowledge about water quality issues to their customers, many of whom are from far away states. Approximately 80% of attendees in LEAP workshops reported that they would, or probably would, adopt recommended practices learned. Family forest owners attending programs were similarly motivated to adopt recommended practices: 194 attendees will monitor for insect, disease, or animal damage; 173 will favor tree species that resist insects and disease; 100 will reduce unwanted vegetation; 68 will monitor/manage weedy non-native species; 60 will contact a forester for additional assistance; 51 will identify Idaho trees 44 will thin forest trees; 41 will improve organization of their documents for succession planning 41 will attend additional forestry education programs 40 will complete a forest management plan; 39 will use free computer mapping tools to create or revise a map of their property showing physical attributes or features; 39 will prune forest trees; 38 will use internet data sources to help manage their forest; 37 will plant forest tree seedlings 36 will contact an attorney about your succession planning 34 improve log manufacturing; 33 will interact with an accountant about your succession planning.

### 4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
123	Management and Sustainability of Forest Resources
211	Insects, Mites, and Other Arthropods Affecting Plants

### Outcome #7

#### 1. Outcome Measures

Forest and Natural Resource Workforce Development: Workers in forest management related occupations have increased opportunities to receive professional development to improve job skills and maintain certification requirements. Indicator: Numbers of programs offered for formal continuing education credits (e.g., Society of American Foresters CFEs, ISDA pesticide credits, Idaho pro-logger credits, etc.).

#### 2. Associated Institution Types

- 1862 Extension

**3a. Outcome Type:**

Change in Condition Outcome Measure

**3b. Quantitative Outcome**

Year	Actual
2014	16

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

**What has been done**

**Results**

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
112	Watershed Protection and Management
123	Management and Sustainability of Forest Resources
211	Insects, Mites, and Other Arthropods Affecting Plants

**Outcome #8**

**1. Outcome Measures**

Forest and Natural Resource Workforce Development: Workers in forest management related occupations have increased job skills and maintained certification requirements. Indicator: Numbers of Idaho loggers gaining or maintaining enrollment in the Idaho Pro-logger program.

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

Year	Actual
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2014 669

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

**What has been done**

**Results**

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
112	Watershed Protection and Management
123	Management and Sustainability of Forest Resources
211	Insects, Mites, and Other Arthropods Affecting Plants

**Outcome #9**

**1. Outcome Measures**

Forest and Natural Resource Workforce Development: Workers in forest management related occupations have increased job skills and maintained certification requirements. Indicator: Numbers of foresters gaining or maintaining enrollment in the SAF Certified Forester program.

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2014	20

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

**What has been done**

**Results**

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
122	Management and Control of Forest and Range Fires
123	Management and Sustainability of Forest Resources
132	Weather and Climate
211	Insects, Mites, and Other Arthropods Affecting Plants
216	Integrated Pest Management Systems

#### Outcome #10

##### 1. Outcome Measures

Forest and Natural Resource-based Economic Development: Forest owners, managers, entrepreneurs, and decision-makers are taking greater advantage of economic opportunities related to forest lands, improving rural economies. Numbers of participants that have indicated they will take greater advantage of economic opportunities related to forests.

##### 2. Associated Institution Types

- 1862 Extension

##### 3a. Outcome Type:

Change in Action Outcome Measure

##### 3b. Quantitative Outcome

Year	Actual
2014	100

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

Rural economies depend on forest products for harvest and manufacture and for forest ecosystems to provide water, wildlife, recreation, and other desired amenities.

###### **What has been done**

Several educational programs were designed to encourage landowners to better utilize their timber resources for better ecological and economic outcomes. Faculty members actively participate in a number of community forest collaborations and regional efforts aimed to encourage better land management for ecological and economic health of the area.

###### **Results**

Attendees at workshops reported their intention to apply the knowledge and skills gained. The Clearwater Basin Collaborative made progress in launching new projects on federal lands that will improve the economy and the landscape.

#### 4. Associated Knowledge Areas

<b>KA Code</b>	<b>Knowledge Area</b>
112	Watershed Protection and Management
123	Management and Sustainability of Forest Resources
131	Alternative Uses of Land

#### Outcome #11

##### 1. Outcome Measures

Forest Productivity and Sustainability: The productivity and sustainability of Idaho's working forests has improved, and forest owners and managers are more successful at achieving their management goals. Numbers of participants indicating they will adopt various specific recommended forest management practices:

##### 2. Associated Institution Types

- 1862 Extension

##### 3a. Outcome Type:

Change in Action Outcome Measure

##### 3b. Quantitative Outcome

<b>Year</b>	<b>Actual</b>
2014	1001

##### 3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**

**What has been done**

**Results**

#### 4. Associated Knowledge Areas

<b>KA Code</b>	<b>Knowledge Area</b>
112	Watershed Protection and Management
122	Management and Control of Forest and Range Fires

123	Management and Sustainability of Forest Resources
211	Insects, Mites, and Other Arthropods Affecting Plants
213	Weeds Affecting Plants

#### **V(H). Planned Program (External Factors)**

##### **External factors which affected outcomes**

- Government Regulations

##### **Brief Explanation**

#### **V(I). Planned Program (Evaluation Studies)**

##### **Evaluation Results**

Nearly 1,500 loggers have attended the 43 LEAP sessions offered annually in the Idaho Panhandle since 1994. A survey conducted with 163 loggers in the three LEAP Update sessions held in the Idaho Panhandle in 2014 revealed that

75% of LEAP attendees had been cited for FPA unsatisfactory practices prior to taking LEAP and 82% have not had one since.

51% feel Forest Practices Act unsatisfactory citations cost >\$1000.

Of the 1,500 loggers in Idaho who have become LEAP certified, this data indicates that 1,125 had citations before, and 1,200 have not been cited since. In addition to the environmental benefits for complying with the law, this reduction in citations represents a conservative savings of \$75,000 dollars for loggers.

##### **Key Items of Evaluation**