

Part I – Agency Profile

Agency Overview

Research mission – investigation into forestry and rangeland resource management problems, forest nursery production, and related areas. Part of the College of Natural Resources, Forest Utilization Research also includes the Rangeland Center with a legislative mandate for interdisciplinary research, education and outreach as suggested by a partner advisory council to fulfill the University's land grant mission (Idaho Code § 38-715), and the Policy Analysis Group with a legislative mandate to provide objective data and analysis pertinent to natural resource and land-use issues as suggested by an advisory committee of Idaho's natural resource leaders (Idaho Code § 38-714).

Core Functions/Idaho Code

The duty of the Experiment Station of the University of Idaho's College of Natural Resources is to institute and conduct investigations and research into the forestry, wildlife and range problems of the lands within the state. Such problems specifically include forest and timber growing, timber products marketing, seed and nursery stock production, game and other wildlife, and forage and rangeland resources. Information resulting from cooperative investigation and research, including continuing inquiry into public policy issues pertinent to resource and land use questions of general interest to the people of Idaho, is to be published and distributed to affected industries and interests. (Idaho Code §§ 38-701, 38-703, 38-706, 38-707, 38-708, 38-709, 38-710, 38-711, 38-714, 38-715)

Revenue and Expenditures:

Revenue	FY 2011	FY 2012	FY 2013	FY 2014
General Fund	\$511,400	\$490,000	\$504,100	\$667,400
Total	\$511,400	\$490,000	\$504,100	\$667,400
Expenditure	FY 2011	FY 2012	FY 2013	FY 2014
Personnel Costs	\$465,244	\$442,430	\$454,800	\$569,200
Operating Expenditures	48,156	47,570	48,750	93,300
Capital Outlay	0	0	550	4,900
Trustee/Benefit Payments	0	0	0	0
Total	\$511,400	\$490,000	\$504,100	\$667,400

Profile of Cases Managed and/or Key Services Provided:

Cases Managed and/or Key Services Provided	FY 2011	FY2012	FY 2013	FY 2014
Number of Private Landowners Assisted: Pitkin Forest Nursery	1300	1400	1400	1550
Number of Seedling Industry Research Projects: Pitkin Forest Nursery	3	3	2	3
Number of:				
• Research Projects:				
Experimental Forest	7	13	11	12
Policy Analysis Group	6	8	7	9
Pitkin Forest Nursery	12	10	10	10
Rangeland Center	2	4	10	15

• Teaching Projects:				
Experimental Forest	21	24	24	25
Policy Analysis Group	20	24	8	13
Pitkin Forest Nursery	5	5	8	5
Rangeland Center	2	9	9	9
• Service Projects:				
Experimental Forest	5	9	9	10
Policy Analysis Group	14	15	16	14
Pitkin Forest Nursery	15	12	15	12
Rangeland Center	2	4	11	13

Performance Highlights:

Experimental Forest:

Highlights:

Research – 12 research projects were established, including a commercial harvesting bioenergy study, new research projects evaluating cable logging safety and timber harvest logistics applications of Global Positioning System personnel tracking technology, new entomological research on wood borer beetles, and a large, manipulative experiment evaluating effects of masticated fuels on fire behavior.

Education – Classroom involvement included 9 faculty, 12 different class courses, 25 field trips, 20 follow up lab sessions, involving more than 300 students with hands-on experience.

Internships – 13 student interns gained hands-on field experience in timber management, including developing critical thinking and problem-solving skills in the field. Student interns worked full time during the summer and part-time during the academic year, and were exposed to a wide array of land management experiences involving multiple resources and the challenge of addressing regulatory policies with scientific information.

Outreach – 9 outreach and engagement activities include school teachers, logging contractors, professional foresters, non-industrial private forest land owners, and interested Idaho citizens. Hosted activities included field tours for the Idaho Forest Products Commission, University of Idaho Extension programs, and Logger Education to Advance Professionalism workshops. .

The centerpiece of the University of Idaho Experimental Forest (UIEF) is the 8,247 acres of forest land on Moscow Mountain that are adjacent to both industrial and non-industrial private forest lands surrounded by dry land farming in Latah County. Most of these lands were a gift from Potlatch Corp. in the 1930s. Today all but 450 acres are managed as working forests, balancing education, research, and demonstration with production of timber, clean water, fire hazard mitigation, smoke particulate management, and wildlife and fisheries habitat. The UIEF also manages 398 acres on two parcels in Kootenai County, and has a life estate of 1,649 acres in Valley County that eventually will come under UIEF management in the future. As noted in the highlights above and details below, these lands provide many research, education and outreach opportunities.

Research conducted on the UIEF in FY2014 included studies by College of Natural Resources faculty, collaborators in the College of Agriculture and Life Sciences, and the USDA Forest Service Rocky Mountain Research Station. Dr. Robert Keefe, Assistant Professor of Forest Operations, supervises research and management activities on the UIEF, under the direction of the Dean. In FY2014, a number of experiments focused specifically on forest utilization, harvesting productivity, efficiency, cost analysis, and logging safety were conducted. Dr. Randy Brooks and Dr. Keefe are evaluating production and costs associate with wood pellet production by small landowners with utility scale wood pellet mills, and are also studying cost effective methods for utilizing beetle-killed timber in bioenergy development. Dr. Keefe and several graduate students conducted pilot studies on the UIEF to evaluate new GPS-VHF personnel tracking technology in logging safety and production efficiency, work that resulted in submission of a large

federal logging safety research proposal. Two large, stand-level research projects on the UIEF were undertaken with partners. First, in collaboration with Joint Fire Sciences Program, three ponderosa pine stands received mastication treatments and will receive prescribed burning in Fall 2014 and 2015 to evaluate effects of masticated fuels on fire behavior. Second, a long-term bioenergy study evaluating commercial harvesting impacts on stand productivity was established.

Education involving hands-on experience to supplement classroom and laboratory exercises is a significant and valuable supplement to a college education in forest utilization. In FY2014 nine faculty members – College of Natural Resources (7), College of Agriculture and Life Sciences (1), and Washington State University (1) – used the UIEF for at least one field trip session during twelve different courses, ranging from an introductory freshman orientation to senior and graduate level courses demonstrating current research knowledge, land management practices, and using forest operations equipment. In total more than 300 university students visited the UIEF on 24 field trips, with an additional 20 follow-up laboratory sessions in which data collected during field trips were analyzed.

Internship opportunities for students have been offered by the UIEF since 1972. In FY2014 the UIEF employed 13 students and successfully completed the 41st consecutive year of the Student Logging Crew Program. Staff provide hands-on education as the students helped plan and accomplish the management objectives in the UIEF Forest Management Plan, helping the College fulfill the duties of the Experiment Station as described in Idaho Code § 38-703 *et seq.* Student employee interns are required to think critically and solve problems on a daily basis, thus are acquiring job skills that are critical for career development. Work assignments include technology transfer as students learn to employ state-of-the-art equipment and techniques, as well as incorporating their interdisciplinary academic learning in an operational and research forest setting. Upon graduation these student employee interns generally have very high success rates finding employment.

An important outreach and engagement highlight for FY2014 was participation in planning two demonstration areas that will show private landowners, contractors, and foresters how to implement the new State of Idaho Class I Stream Shade Rule, enacted in June 2014. These new demonstration sites are being installed in Fall, 2014 and will be used for numerous field tours, workshops and teaching activities in coming years. This work is being conducted in collaboration with Idaho Dept. of Lands and Idaho Dept. of Environmental Quality.

Policy Analysis Group:

Highlights:

Economic Contributions – 3 publications featured the role of the forest products manufacturing industry in the Idaho economy; the information was used in the industry's presentation to the Idaho Legislature's Joint Economic Outlook and Revenue Assessment Committee. The waning economic contribution of federal lands in the State of Idaho and throughout the West was a topic of considerable interest during the year, and based on previous work the Policy Analysis Group was invited to testify in August before the Idaho Legislature's Federal Lands Interim Committee. The committee subsequently requested an economic analysis of a hypothetical transfer of federal lands to the state, which will be completed and delivered in FY 2015; a draft was presented at the Western Forest Economists' 49th annual meeting in May, during which several knowledgeable peer reviewers were enlisted. The Policy Analysis Group is leading the socio-economic and policy analysis components of a new 5-year \$10 million USDA grant to the Biomass Alliance of the Northern Rockies (BANR) project; the objective is utilizing beetle-killed timber as a feedstock for creating a new liquid biofuels industry in Idaho, Montana, Colorado, and Wyoming.

Director Involvement – 13 invited presentations, including the Idaho Legislature's Federal Lands Interim Committee mentioned above, and a similar presentation on alternative governance of federal lands to the Montana Environmental Quality Council. Gave several presentations on the BANR biofuels project (see above paragraph) that proposes to use dead timber on federal lands as a feedstock; also engaged in several media interviews following a UI press release on the BANR project; and served as project leader for the UI BANR team of four faculty members.

Presented results of economic and policy analysis at two continuing education events conducted by the Idaho Forest Products Commission, one for educators, the other for opinion leaders, including legislators and journalists. Continued gubernatorial appointments as chair of the Idaho Strategic Energy Alliance's (ISEA) Forestry/Biomass Task Force and also the ISEA Carbon Issues Task Force. Continued work with the Society of American Foresters' (SAF) Biogenic Carbon Response Team, which focuses on the science of forest carbon accounting, and continued service as an associate editor for the SAF's *Journal of Forestry* and *Forest Science* refereed publications.

Publications – 14 publications, including 3 with estimates of the economic contribution of the state's natural resource-based industries, as mentioned above. Other publications during FY 2014 focused on a variety of natural resource policy issues, including wildland fire management policy, sage-grouse conservation and the wildfire threat, wood bioenergy economics and policy, regulation of greenhouse gas emissions from wood bioenergy, and oil and gas exploration and development policy in Idaho.

The Policy Analysis Group continues to meet its legislative mandate to provide objective data and analysis on natural resource and land-use issues of concern to Idaho citizens. These issues are suggested and prioritized by an Advisory Committee comprised of natural resource leaders in the state, as per our enabling legislation. As analyses of current issues are completed they are replaced by others suggested by the Advisory Committee. Our website was redesigned to improve access to publications and provide easy access to presentation materials (www.uidaho.edu/cnr/pag). In addition to research and outreach duties described in our enabling legislation, the director advised eight Master of Natural Resources students (two completed during the year and were replaced by two others), and served on three graduate student committees.

Pitkin Forest Nursery:

Highlights:

Research – Improve the quality of plant material available for reforestation and restoration throughout Idaho. Working with forest industry and private landowners, studies are designed and maintained with the objectives of improving tree seedling cost effectiveness throughout the establishment period. Developing and refining plant propagation protocols for use in Idaho's nursery industry, including difficult-to-grow species such as whitebark pine and big leaf maple. Current research aimed at conserving water during nursery production and improving energy efficiency through use of LED lighting should provide Idaho's nursery and reforestation industry with advantages over the next few growing seasons.

Education – Supported 5 graduate and undergraduate students through research at the Pitkin Forest Nursery on a variety of issues including stocktype selection problems to help balance forest productivity with reforestation costs, broadening our understanding of the influence of cold temperatures on Great Basin native plants in a restoration context, and the effects of competing vegetation on regenerating forests. These projects build on Idaho's reputation as a leader in reforestation practices and help improve our restoration of degraded forests and rangelands. A semester-long seedling growing project completed by undergraduate students in the Forest Regeneration course provides hands-on learning that translates directly to improved field skills. The Pitkin Forest Nursery program also developed an online course in nursery irrigation and fertilization, which will further enhance state-wide improvements in nursery production.

Outreach – Conducted several workshops and training sessions aimed at improving forest management practices in Idaho, including the Inland Empire Reforestation Council and the Intermountain Container Seedling Growers Association. Activities for children, land management professionals and laypersons provide further instruction and education opportunities.

Teaching – Provided research and teaching facility for several UI courses which require hands-on nursery experience. This provides experience which is sought by forest tree seedling nurseries throughout the United States.

Programmatic Growth – Following the FY 2013 \$3.3 million dollar gift to support activities in teaching, research, and outreach relevant to nursery production, the nursery program has expanded its research capacity and is undergoing continued improvements on-site.

The Pitkin Forest Nursery continues to actively engage with Idaho landowners, natural resource industries, and citizens. Graduates of the College of Natural Resources with experience working in the Pitkin Forest Nursery are in high demand and continue to find placement in highly desirable fields upon graduation. As has been a focus for several years, ongoing research into improved forest management practices included studying the effects of stocktype (the method of production of nursery stock for reforestation and restoration) selection on seedling development continues to be a priority area for both industrial and non-industrial stakeholders. This research provides important information and decision support across the state that helps streamline nursery production practices with the site-specific reforestation needs; a second layer of complexity (managing competing vegetation in the field) will further develop the utility of this information for Idaho. Similar research with candidate species for rangeland restoration is also underway. In FY2014, five graduate and undergraduate students were working towards degrees through research conducted at the nursery and/or its associated field sites, and many other students are using the facilities at the Pitkin Forest Nursery as a component of their graduate research on forest nutrition and soil management, fire modeling, and post-fire regeneration. Private donors, working with the University of Idaho and Idaho's forest industry, have partnered to construct a new, state of the art classroom featuring Idaho forest products. This will serve as the epicenter for teaching students and community members about reforestation, nurseries, and natural resources in general, and should be completed in early FY15.

Through actively seeking to be a recognized leader in seedling research and technology transfer, we partnered extensively to have our facility serve as the base of training for American and International Students. Activities for children, land management professionals, and laypersons have helped increase understanding of the importance of forestry and natural resource management in Idaho. For example, in March our organization again planned the Inland Empire Reforestation Council (~200 attendees, Coeur d'Alene). In October, we co-organized a session at the World Congress on Ecological Restoration that brought together speakers to highlight important gains in seedling production and reforestation practices. On the teaching side, several University of Idaho courses used the nursery facilities for hands-on education, where students are exposed to the intricacies associated with seed germination, fertilizing, and irrigation. Forest tree seedling nurseries throughout the United States are seeking graduates with experience such as that gained at the Pitkin Forest Nursery, with a high demand expected to continue as we are best suited to replace a retiring workforce. This demand will further be met by a newly-developed course in Nursery Irrigation and Fertilization.

Rangeland Center:

Highlights:

Research – 15 research projects can be specifically tied to the collaborative efforts of the Rangeland Center. Researchers in the Rangeland Center were also involved in about 75 related research projects that contribute to our understanding of rangelands and the communities that rely on them.

Teaching – 9 university courses taught by 7 faculty members are directly related to rangeland ecology and management and support the work of the Rangeland Center.

Service – 13 service and outreach projects were conducted by the Rangeland Center in FY2014. Two projects provided service to conduct rangeland monitoring by student teams for ranchers and land management agencies. In addition, 7 workshops, symposia, or field tours were

conducted by Rangeland Center members to provide educational opportunities for teachers, ranchers, and rangeland professionals.

Rangelands are vast natural landscapes that cover nearly half of Idaho. Rangelands account for over 26 million acres in Idaho (48%). Our ability to serve current and future generations of Idaho citizens will be influenced by our understanding of rangelands because these lands are vital to the ecological and economic health of Idaho. The innovative design of the Rangeland Center promotes active partnerships with individuals, organizations and communities who work and live on the vast landscapes known as rangelands. The Rangeland Center is a group of 23 researchers and outreach specialists in the College of Natural Resources and the College of Agriculture and Life Sciences. Our expertise covers several disciplines that affect rangeland management and conservation including grazing, rangeland ecology, entomology, soil science, economics, rural sociology, fish and wildlife resources, invasive plants, forage production, animal science, wildland fire, restoration, and the use of spatial technologies to understand rangelands. Our research and outreach efforts are aimed at creating science and addressing rangeland problems.

In FY2014, members of the Rangeland Center initiated a project with the Natural Resources Conservation Service, Idaho Rangeland Resource Commission, Owyhee Rural Fire Protection Association, and the Owyhee Sage-grouse Local Working Group to assess the potential value of grazing to reduce fuels and wildfire. The Rangeland Center continued work a long-term research project in collaboration with the Idaho Dept. of Fish and Game, the Bureau of Land Management (BLM), and others to examine the effects of spring grazing on sage-grouse habitat and nesting success. Several research and outreach projects focused on the effects of grazing on wildland fuels and sagebrush community characteristics. We continue collaborative efforts to assess the effects of livestock impacts on slickspot peppergrass (a species of concern) and the relationship between livestock grazing and the abundance and diversity of insects that provide food for sage-grouse chicks. Four field teams of students worked on a monitoring project for ranchers on BLM allotments and a state-wide project to assess rangelands as part of the National Resource Inventory program directed by the U.S. Dept. of Agriculture's Natural Resources Conservation Service. The Rangeland Center also worked collaboratively with the Owyhee Initiative Science Center and the University of Idaho Library to create a new on-line open-access journal (The Journal of Rangeland Applications) that will provide scientific synthesis articles aimed at supporting well-informed land management decisions.

Several members of the Rangeland Center are involved in teaching university courses that focus on rangeland ecology and management. Five of 9 rangeland courses include extensive field trips where students engage in rangeland examinations and interact with land managers. Four rangeland courses are offered in an on-line format and are accessible to students and professionals who are unable to attend courses delivered only on campus. The Rangeland Principles course (REM 151) was also offered in cooperation with 6 Idaho high school teachers as a dual credit course in which high school student simultaneously gain high school and college credit. Rangeland Center members also created and participated in continuing education venues including the Owyhee Research and Restoration Roundup and several other local workshops and field tours.

Service and outreach projects in the Rangeland Center this year include initiating development of a rangeland monitoring certification program with state and federal land management agencies. This certification program would allow ranchers and landowners to conduct rangeland monitoring and have their information collected in a way that it can be considered by agency land managers. In FY14, we also coordinated and partnered with several organizations to create the online workshop series called Targeted Grazing – Grazing with a Goal. The Rangeland Center also continues to contribute to the Range Science Information System (www.rangescience.info) which provides ready access to scientific research papers for ranchers and land managers. We also worked with high school Future Farmers of America (FFA) programs to conduct the Idaho FFA Rangeland Assessment Career Development Event for high school students in Idaho and the Western National Rangeland Assessment event for high school students in Idaho, Nevada, Wyoming, and Utah. A summer workshop was also conducted on rangeland principles to provide continuing education for Idaho teachers.

Part II – Performance Measures

Performance Measure	FY 2011	FY2012	FY2013	FY 2014	Bench- mark
Number of New Research Projects Per Year:					
Experimental Forest	5	10	11	11	4
Policy Analysis Group	1	2	4	4	2
Pitkin Forest Nursery	8	5	5	5	5
Rangeland Center	2	3	3	3	2
Goal 2, Objective A, Strategy 1, 2, 3 Goal 3, Objective A, Strategy 2					
Number of Research Studies Completed/Published Per Year:					
Experimental Forest	3	3	4	4	4
Policy Analysis Group	1	3	2	2	2
Pitkin Forest Nursery	8	5	5	5	5
Rangeland Center	0	1	2	3	2
Goal 3, Objective A, Strategy 1					
Number of Publications:					
Experimental Forest	3	3	4	5	3
Policy Analysis Group	14	15	16	14	10
Pitkin Forest Nursery	10	12	12	10	10
Rangeland Center	2	8	5	17	8
Goal 1, Objective B, Strategy 1					
Number of Workshops Conducted:					
Experimental Forest	9	6	10	11	12
Goal 3, Objective A, Strategy 1					
Policy Analysis Group	20	24	8	13	12
Goal 1, Objective B, Strategy 2					
Pitkin Forest Nursery	20	20	22	20	20
Goal 1, Objective A, Strategy 2					
Goal 3, Objective A, Strategy 2					
Rangeland Center	2	2	5	7	2
Goal 1, Objective A, Strategy 2					

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