

Opening Remarks for the Fort Valley Centennial Celebration

G. Sam Foster, *Station Director, USFS Rocky Mountain Research Station,
Fort Collins, CO*

Abstract—*The Rocky Mountain Research Station recognizes and values the contributions of our scientists and collaborators for their work over the past century at Fort Valley Experimental Forest. With the help of our partners and collaborators, Rocky Mountain Research Station is working to improve coordination across its research Program Areas and Experimental Forests and Ranges to better support an integrated landscape research platform for the Interior West region. Given the rich historic context of Fort Valley, and the long-term studies and data it entails, together we can adapt and innovate our future research strategy to meet the challenges of the twenty-first century.*

Welcome!

Forest science has come a long way in only 100 years. We've learned much from our investigations at Fort Valley. Just one century ago, the horse and steam-powered timber industry was harvesting giant old-growth yellow pine and milling them as fast as the chugging locomotives could pull the log-laden cars down the tracks. As far as people could see at the time, new forests were not growing to replace the big yellow pines that fell to axes and misery whips. This was not an insignificant problem to the fledgling Forest Service charged with conservation of the nation's forest resources. The beautiful open park-like stands of giant yellow pine extended from Canada to Mexico, and comprised the most extensive coniferous forest in the West. Failing to conserve the yellow pine forests would be a conservation tragedy comparable to the worst nightmares early foresters could imagine. So, here we are 100 years later and, so far, we declare the mission accomplished. Lessons learned from Fort Valley about our nation's ponderosa pine ecosystems give us reason to celebrate.

The Fort Valley Experimental Forest was established less than 100 years after British horticulturist David Douglas discovered and identified the species called western yellow pine and blackjack or bull pine by pioneers, differentiating between slow-growing and rapidly growing trees, respectively. Settlers started building permanent homes under yellow pine only around 50 years before Fort Valley. About all we knew at the birth of Fort Valley was that yellow pine made wonderful lumber and the old trees were being felled at an alarming rate.

Just stop and think: since a team of mules pulled the first wagon load of supplies to Fort Valley, we've landed exploration vehicles on Mars and data about Mars is streaming back to earth. It's been an exciting century for scientists, and the

next 100 years promise to deliver even greater discoveries. To determine the direction of future scientific research, it helps to examine where we have been. Today we are here to recognize the past—so that we can prepare better for an uncertain future.

The Fort Valley Experimental Forest Centennial Celebration provides a perfect setting for commemorating past successes in natural resource research in the twentieth century and rising to the new challenges of the twenty-first. Forest Service Research and Development has a unique strength in the ability to conduct long-term land-based research studies over multiple decades and scientists' careers. The long-term data and research studies from Fort Valley and other Research Station Experimental Forests and Ranges, and the hard work of our dedicated research scientists and their collaborators will be invaluable in meeting new research challenges.

I would like to welcome and express thanks to the scientists, partners, and collaborators participating in the Fort Valley Experimental Forest Centennial Celebration. I want to extend my sincere appreciation to the host for our Fort Valley Experimental Forest lands, the Coconino National Forest, and congratulations on their centennial celebration this year. Since the very beginning, the Coconino National Forest has been a vital and important partner for forest research.

We also deeply appreciate the long-term collaboration of the Northern Arizona University, the Ecological Restoration Institute, United States Geological Survey, Agricultural Research Service, University of Arizona, Soil Conservation Service, U.S. Biological Survey, Kaibab National Forest, Grand Canyon National Park, the National Forest System Southwestern Region and other collaborators at Fort Valley. Northern Arizona University also hosts our Flagstaff Laboratory, home to 28 of our full-time employees. Northern Arizona University is also a very old and valued partner in research at Fort Valley.

Our Celebration's Historic Context

Arizona has given “multiple births” to Forest Service place-based long-term research. The story is well known of Raphael Zon, Willard Drake, and Gus Pearson’s horseback ride on a hot August afternoon in 1908 to examine the site proposed for what was to become the Coconino Experiment Station. After waiting out a heavy thundershower and fording a rain-swollen and silt-choked stream, they arrived at a “beautiful stand of ponderosa pine,” as Gus Pearson put it. “Here,” Zon said, “we shall plant the tree of research” (Gaines and Shaw 1958). Arizona was also the birthplace of two other important Forest Service firsts for long-term research: the first Research Natural Area, the Santa Catalina RNA in 1927 on the Coronado National Forest, and the Santa Rita Range Reserve in 1903 (later the Santa Rita Experimental Range) in southern Arizona. Together, these initiatives served to establish a main strength of Forest Service Research and Development: the ability to conduct long-term land-based research studies over multiple decades and often across the careers of several scientists.

In their 50-year “Fort Valley Golden Anniversary” Station Paper, Gaines and Shaw (1958) also noted that, “Lack of funds, equipment, and personnel has always limited the Fort Valley research program.” Some things never change! Fort Valley lore also has it that during a visit to the Wing Mountain Sample Plot, Gifford Pinchot tore his pants climbing through a fence. In another first, the Fort Valley Station boasted the first indoor bathroom in Region 3 in 1918, just a decade after Gus Pearson endured his first winter in an uninsulated cabin. Gus must have felt he was living in the lap of luxury.

Fort Valley was originally established to investigate the lack of ponderosa pine regeneration in the Southwest. In their 1958 “Golden Anniversary” publication, Ed Gaines and Elmer Shaw noted that only 1 year to date, 1919, had had the requisite combination of ingredients for good reproduction. Silvicultural management systems for regenerating, growing, and harvesting ponderosa pine were developed at Fort Valley during this period, and up into the 1980s. Research was also conducted on insects and diseases affecting ponderosa pine. Research at Fort Valley, particularly that of Gus Pearson, has provided fundamentals for understanding what we now call ponderosa pine ecology. The long-term Fort Valley data sets in meteorology, ponderosa pine regeneration, range conditions, dwarf mistletoe, and western conifer stress physiology provide invaluable baselines for new research.

The long-term weather records at Fort Valley provide an invaluable baseline as we begin new investigations on how to adapt to the influences of climate change. We are fortunate that long ago Gus Pearson investigated the relationship of moisture to ponderosa pine seedling germination and survival as well as the effect of elevation on ponderosa pine. Not only do we know that moisture and temperature

are related to the conservation of old yellow pine and the regeneration of new forests, the databases from Fort Valley tell us the amount of moisture available throughout each year. At the beginning of this century, we are far better prepared to manage these pine forests in a fluctuating climate. We are also better prepared to consider potential elevation changes in future ponderosa pine forests, because long ago in 1916 Gus put weather stations at different elevations. In fact, Arizona’s recent prolonged drought has already added new climate change data at Fort Valley and on the San Francisco Peaks. Scientists are already beginning to observe climate influences on blister rust and the decline of aspen stands.

Under the previous organizational structure for the Rocky Mountain Research Station, day-to-day operations of Experimental Forests and Ranges were delegated to scientists-in-charge, who were either Project Leaders or Research Scientists within a local Research Work Unit. This contributed to a “pride of ownership” of the Experimental Forest or Range by the Research Work Unit resulting in excellent care of the facilities and substantial investment in research studies by the Research Work Unit over the years. Funds for these were initially all provided by the Research Work Unit. Decentralized management worked well when travel and communications were slow and cumbersome. However, this was not conducive to integrated, collaborative research across Rocky Mountain Research Station territory. In recent years, corporate funds were provided for limited corporate data collection and archiving of the long-term databases deemed to have corporate value.

Our Unique Research Strength

Though the term “ecosystem” had not yet been coined when most Experimental Forests and Ranges were selected, the people doing the job certainly knew one when they saw it. Our predecessor’s foresight in establishing a system of Experimental Forests and Ranges across the United States provided the unique strength of Forest Service Research and Development to conduct long-term place-based research to answer fundamental questions in natural resources. The Rocky Mountain Research Station’s Experimental Forests and Ranges have demonstrated their value many times over. Examples of important research from Experimental Forests and Ranges in Rocky Mountain Research Station territory include:

- In 1911, Wagon Wheel Gap was the first paired-watershed experiment on forested lands in the United States, established in the Rio Grande National Forest in southern Colorado.
- Gus Pearson’s 1950 monograph on management of ponderosa pine in the Southwest, based on his work at Fort Valley, and other work on ponderosa pine at the Black Hills, Long Valley, and Manitou Experimental Forests.

- Long-term work on western larch at Coram Experimental Forest, western white pine at Deception Creek and Priest River, and lodgepole pine at Fraser and Tenderfoot Creek Experimental Forests.
- Fool Creek clearcuts at Fraser Experimental Forest demonstrated streamflow augmentation at subalpine elevations through partial or complete overstory removal.
- On the Great Basin Experimental Range, early watershed work demonstrated important linkages between livestock grazing, plant cover and soil erosion.
- At the Desert Experimental Range, the development of ecologically sound domestic livestock grazing regimes for the salt-deserts of the Western United States.
- The development of long-term multi-decadal data sets on forest growth, meteorology, and stream flow across our Experimental Forests.

Research efforts such as these helped establish Forest Service Research and Development as a premiere world-class research institution. Rocky Mountain Research Station is rightfully proud of the substantial contribution from places like the Fort Valley Experimental Forest.

Again using ponderosa pine as an example, when we compare our data from Fort Valley with ponderosa pine studies at the Black Hills Experimental Forest and at the Boise Basin Experimental Forest our understanding deepens for conserving ponderosa pine ecosystems across their large range. Fort Valley is no longer isolated, but is part of a much larger learning network.

New technology adds new value to the long-term data and previous research on Experimental Forests and Ranges. Geographic information system, global positioning systems, multi-spectral remote sensing, and more powerful statistical analysis techniques have provided a spatial relevance and context previously lacking in the long-term data sets, resulting in new insights. The need to access decades of research data for a study location highlights the necessity of conscientious data archiving and continuously adapting access to changing technology.

A Challenge for the Future

The twenty-first century brings with it new capabilities and challenges for Rocky Mountain Research Station's Experimental Forests and Ranges such as Fort Valley. Personal computers and laptops, data loggers, and communications improvements such as high-speed internet access continue to accelerate the flow of information. Interstate highways and improved secondary roads provide speedy, year-around access to areas like Fort Valley that were once considered remote and inaccessible. At many duty stations, it is now possible to drive from a laboratory location to an Experimental Forest or Range, conduct field work, and be back the same or next day, if necessary. The complex research problems we

are facing today often can no longer be addressed by a single research scientist and require a multidisciplinary team approach at multiple locations.

Rocky Mountain Research Station is addressing some of these challenges through organizational restructuring. Over the past two years, reorganizing 28 Research Work Units into eight functional Program Areas administratively streamlined our decisionmaking and management processes, and brought a higher level of corporate strategic research planning. Day-to-day management on Experimental Forests and Ranges is still delegated to research scientists-in-charge across four of the Program Areas. However, we are moving the funding of day-to-day operations from what was originally the Research Work Unit level to the corporate level. All costs, other than those associated with individual research studies, will no longer be the responsibility of a Program Area. This is intended to encourage a more coordinated corporate approach to research activities across Experimental Forests and Ranges, with improved collaboration and equal access by all potential researchers, regardless of location. Establishment of a corporate-level Experimental Forest and Range Coordinator position at Rocky Mountain Research Station will facilitate interaction and coordination between Experimental Forests and Ranges, as well as the corporate budgeting process.

Today's research studies address causative factors that are external to individual study locations, such as socioeconomic and environmental change. These include the effects of climate change and human connections on terrestrial ecosystems, water quality and availability, and wildfire in the Interior West, as addressed in our draft Rocky Mountain Research Station Strategic Framework Update. These challenges require long-term, wide-scale approaches to address issues affecting geographic regions.

The predicted effects of climate change across Rocky Mountain Research Station territory may have profound effects on our terrestrial systems, which can be studied across our network Experimental Forests and Ranges. This long-term place-based network provides the opportunity for interlinked terrestrial ecosystems studies to address the interacting components of these systems and the processes that control them on a region-wide basis.

Water is an integrative factor and a precious resource in the dry Western United States and is critical to sustainable populations and ecosystems. The rapidly increasing gap between water supply and demand, and potential changes in precipitation and temperature regimes, creates management challenges and research opportunities, which we have the capability to address through coordinated research across our Experimental Forests and Ranges.

Human connections to Interior West landscapes have increased dramatically in recent decades. Growing and shifting populations have resulted in an expanding wildland-urban interface. This potentially affects many if not all of our Experimental Forests and Ranges as people are more mobile in their recreation and often live closer to their desired recreation destinations. We must also develop studies to understand and assess the role of wildland fire that will

increase ecosystem resiliency. We look forward to the opportunity to coordinate research throughout our Interior West Experimental Forest and Range network with others nationwide through such efforts as the National Experimental Forest and Range Synthesis Workshop scheduled for September, 2008.

Summary

We are moving away from the organizational decentralization that was a necessity in the early days of the Forest Service. This is necessary in order to meet the new generation of research challenges that are regional, national, and global in their context. New technologies allow state-of-the-art research studies to build on the existing long-term data available across our network of Experimental Forests and Ranges, and apply it to answer questions never dreamed of by the research scientists who initiated their studies decades ago. This is the beauty of well conceived and executed long-term research. Rocky Mountain Research Station Experimental Forests and Ranges, such as Fort Valley, will meet this challenge through

a widening net of research coordination to answer questions important to the Interior West.

Today managers stand at an intersection in time amid a growing throng of challenges. Looking in one direction we see climate change coming, in another an expanding wildland urban interface, and in still another invasive species rapidly spreading. We hope by continuing the work started at Fort Valley we can help land managers safely traverse this exciting intersection in time. Forest Service research scientists will work side-by-side with managers and policy makers to navigate these challenges. Please join me in celebrating 100 years of accomplishment at Fort Valley and looking forward to meeting new challenges in the next century.

Reference

- Gaines, Edward M.; Shaw, Elmer W. 1958. Half a century of research—Fort Valley Experimental Forest 1908-1958. Station Paper No. 38, Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 16 p.