

The Ponderosa Pine Forest Partnership

Forging New Relationships to Restore a Forest

A Case Study

Tim Richard and Sam Burns

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Contents

Acknowledgements	2
Community-Public Land Partnership Principles	3
Preface	4
PROJECT OVERVIEW	6
Building relationships as an essential partnership theme	6
From what social, ecological, and historical settings did the Ponderosa Pine Forest Partnership emerge?	7
THE WIDER CIRCLE	7
Roots of the Ponderosa Pine Forest Partnership	8
Who were the key players, leaders, and practitioners? From which organizational and institutional roles did they emerge?	10
RALLYING KEY LEADERSHIP	12
What approaches were taken to form the Ponderosa Pine Forest Partnership?	12
What role did scientific expertise play in developing the partnership and building collaborative action?	13
Discovering the Ties Between Science, Values, and Management	13
A “pine prescription” as a catalyst for a multi-dimensional partnership	14
GIS: Tools for learning and teaching	16
How did science merge with community-shared values?	17
What needed to change in the Forest Service’s timber sale administration procedures?	19
EMPLOYING PROBLEM-SOLVING ECOSYSTEM- AND ADAPTIVE-MANAGEMENT PRINCIPLES	19
Monitoring	21
Integrating New Economic Knowledge into the Demonstration Harvest.....	22
What have the Ponderosa Pine Forest Partners learned about restoration ecology and economics? ..	22
What will provide more sustainable, long-term results?	29
PRODUCT DEVELOPMENT AND MARKETING RESEARCH	29
EMERGING LINKAGES: BROADER APPLICATION OF COMMUNITY-ECOSYSTEM STEWARDSHIP ..	31
San Juan National Forest plan revision	32
The larger learning circle	36
What are the lessons learned from the various linkages established by the PFP? ..	37
What can be surmised from the developmental patterns of the PFP and ensuing linkages?	38
SUMMARY	39
Works Cited	40

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Partnership: Forging New
Relationships to Restore a Forest***

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Community-Public Land Partnership Principles

Transformational Leadership

Addressing complex issues through community members and public land managers sharing power and accepting mutual responsibility for community and ecological stewardship and sustainability.

Building Relationships

Increasing partnership capacities between communities and public land agencies, enabling both to collaboratively share resources in order to facilitate an appropriate integration of desired community and ecological futures.

Sharing Knowledge

Integrating scientific information with the knowledge of community members and leaders in order to improve resource management and planning, research and monitoring.

Sharing Values

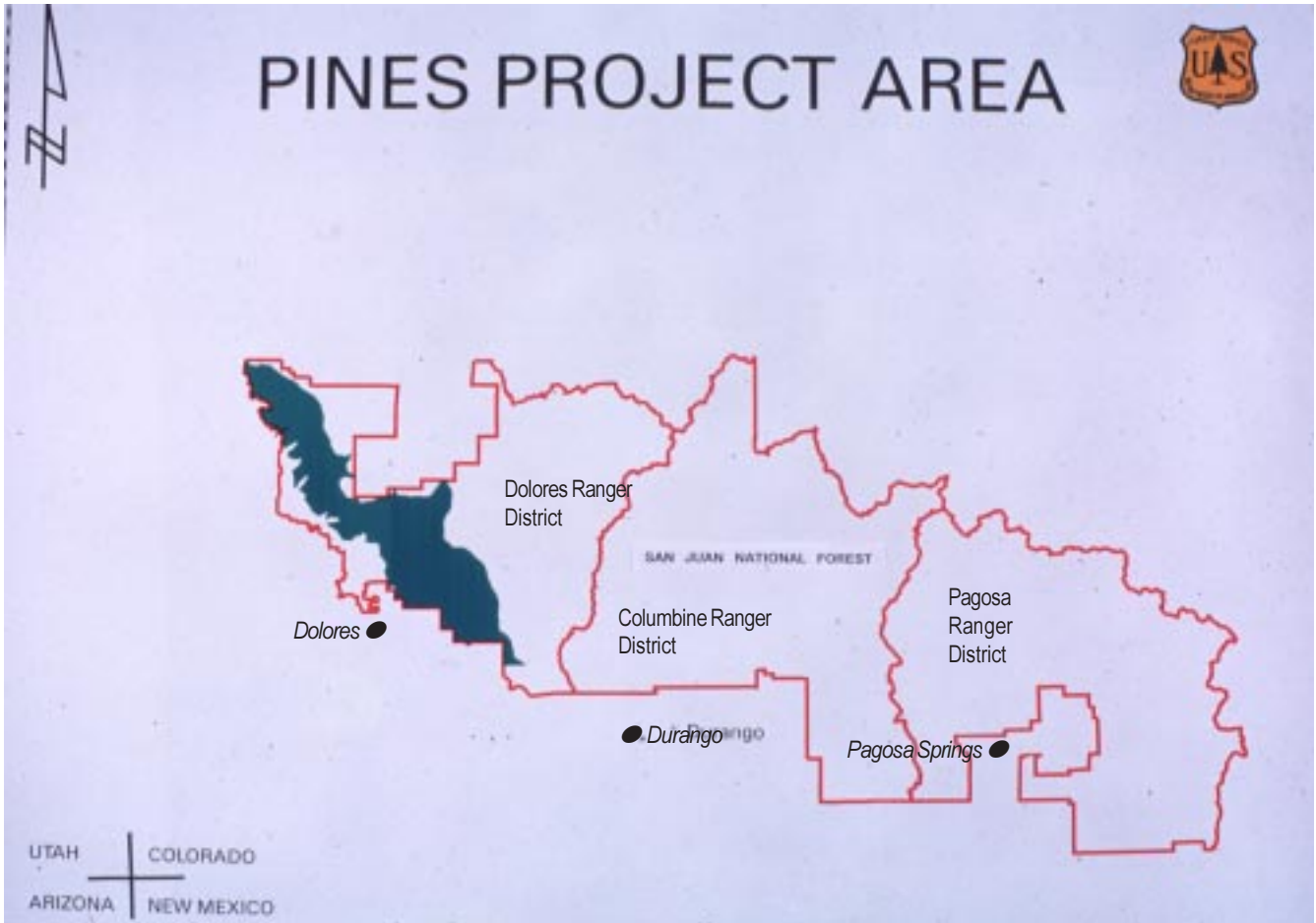
Encouraging citizens, communities and public land managers to work together to sustain long-term interdependencies of communities, economies, public lands and cultures.

Constructive Action

Achieving real progress on the land by transcending ideological polarization and procedural gridlock through face-to-face problem solving and local community development processes.

Adaptive Management

Monitoring, evaluating, and sharing results of actions in order to openly and systematically refine the integrity and effectiveness of future actions.



Preface

In the late 1980s and early 90s, rural communities in the Rocky Mountain West were beginning to experience significant impacts from changes in public land management. Federal laws passed to protect the environment, such as the National Environmental Protection Act of 1970 (NEPA), and wildlife species and habitat (Threatened and Endangered Species Act of 1973), along with increased awareness about systemic ecological functions moved the USDA Forest Service towards ecosystem management.

Among other changes, many communities began to lose their timber production industries. As moderate to large-scale mills were closed, and jobs were lost, the sense of economic threat increased. Threats led to fear and anger, followed by social conflicts between public land agencies, communities and various interest groups.

Within this setting the Ponderosa Pine Forest Partnership (PPFP) emerged as a different way of doing business between public lands and their adjoining communities. Since 1993, the PPFP has sought to create a new model for improving the condition of ecosystems, and sustaining valuable, small, rural, timber industries necessary for forest restoration. After about five years of operation, it is timely to prepare a reflective, evaluative description of the efforts of the Ponderosa Pine Forest Partnership.

The partnership's work will continue for some time. This inquiry is intended as a step in not only documenting the partnership's vision, but also in improving its outcomes. A companion version of this case study is also available. *The Ponderosa Pine Forest Partnership: Community Stewardship in Southwest Colorado* tells aspects of the partnering story and, as a guidebook, provides a recipe for collaborative stewardship.

This case study examines the role and contribution made by the Forest Service's Rural Community Assistance Program (RCA). Since the RCA program has been a primary provider of resources for the establishment of the PPFPP and numerous planning, research, and implementation activities, it is important that its contributions be examined in light of how similar projects might evolve in other settings.

In this case study, we reflect upon and evaluate a series of questions:

- What was the “larger circle,” the social and ecological landscape, within which the Ponderosa Pine Forest Partnership emerged?
- What approaches were utilized to form the partnership?
- What role did community knowledge and scientific expertise play in forming a collaborative approach that enabled diverse interests to build bridges based on common values?
- What has been learned about community stewardship processes and principles that could be transferred, albeit in an appropriately modified way, into other community-public land partnership settings?
- What changes, results, or impacts has the PPFPP created within the US Forest Service, particularly the San Juan National Forest?
- What have community members and others learned about forest restoration, economics, and stewardship?
- What does the PPFPP have to teach us about the role of the Rural Community Assistance program, which has played a significant resource role in this case, in establishing a framework for community stewardship of public lands?
- What linkages have been established through the PPFPP with forest planning, Forest Service organizational and administrative development, and allied project initiatives in the movement towards community stewardship of public-land resources?

It is still early for determining whether the Ponderosa Pine Forest Partnership has been a complete success. However, enough has been accomplished to examine its essential structure, developmental processes, merits, and future challenges. We undertake this case study of how the PPFPP was built with a sense of discovery to see what has occurred. That same sense of discovery applies as well to the learning that has been taking place among the participants of the PPFPP. Indeed, discovery and learning will continue to be the central theme for some time, since most agree, practitioners and observers alike, that there are many challenges ahead for collaborative, community ecosystem stewardship projects.

As this inquiry raises and addresses a series of questions, we hope that it can also teach. What it allows us to learn about the PPFPP will, we hope, provide insight into the relationships between ecology, economy, and community. This inquiry will help us to recognize again that these are not separate concepts, that they are inseparable in many respects, and that successful outcomes in the fields of community sustainability and ecosystem stewardship will revolve around how well we can understand and address the interdependencies between ecology, economy and community.

Project Overview

Building relationships as an essential partnership theme

In 1992, representatives from Montezuma County, Colorado, the San Juan National Forest, Fort Lewis College and the Colorado Timber Industry Association met among the ponderosa pines near Dolores, Colorado to discuss ecosystem health and the local timber industry. From that gathering grew a network committed to fulfilling common needs.

Known as the Ponderosa Pine Forest Partnership (PPFP), its members have tested adaptive-management techniques in a restoration harvest demonstration from a multi-disciplinary approach. Each partner has mutually shared responsibility for community and forest sustainability, as their partnership restructured traditional relationships into new arrangements in which, as Dr. Dennis Lynch emphasizes, ecology drives the economics of forest restoration.

This case study chronicles how federal and state land managers, local loggers, and college researchers and facilitators pooled institutional resources and authorities to conceive and realize the demonstration. To do so, they conducted ecological research and monitoring, tested new harvesting utilization techniques, reintroduced fire in its historical ecological role, and researched development of small-diameter pine products and markets.

The pine partnership goal has been to restore natural characteris-

tics and processes of ponderosa pine on six sites totaling 493 acres of national forest and adjacent private land. Starting towards this goal during the summers of 1995, 1996 and 1997, partners thinned even-aged, small-diameter pine stands in order to reintroduce fire to its once natural ecosystem role. The results were intended to reduce insect, disease, and wildfire risks; reestablish an uneven-aged stand structure, improve and increase wildlife habitat, and increase plant diversity; as well as help reestablish steady wood supplies.

The story of the Ponderosa Pine Forest Partnership reveals ties between ecology and economy. Field activity was guided by knowledge gained from a study of the ecological history of southwest Colorado forests, and from product and market research. In addition to this integration of ecology and economic research with Forest Service administration, management and timber harvesting, the pine partnership explores ties between science and human values.

The new relationships that evolved as partners cooperated informally and face-to-face are perhaps their greatest accomplishment. These form a basis for future successes. Over time, we identified the building of relationships as a basic principle active in developing the partnership. We identified four others — transformational leader-

ship, sharing values, sharing knowledge, and constructive action. It later became obvious while preparing this case study that adaptive management itself was a sixth principle. Pine partners showed in practice and in word a continual adaptation to new information resulting from restoration actions.

We examine these principles embedded in the PPFP story as a means of encouraging and guiding future partnerships, and for envisioning stewardship of sustainable communities and ecosystems.

Over time, these new relationships in the PPFP outlined a broader partnership for working towards ecosystem management and sustainable community ecosystem stewardship. Known as the “Community-Public Land Partnership” (CPLP), this cooperative network based its work on the five stewardship principles that were identified in the PPFP.

We also discuss other related initiatives, such as the San Juan National Forest Plan revision Community Study Groups and more recent Stewardship Contracting Pilot Projects.

We hope the extensive challenges the West faces can be discerned more fruitfully through examining these processes of discoveries occurring in southwest Colorado.

The Wider Circle

From what social, ecological, and historical settings did the Ponderosa Pine Forest Partnership emerge?

As elsewhere in the rural West, a gold rush during the 1870s sparked Euro-American settlement in southwest Colorado, as farms, ranches and timber mills were built to support mining. When mining crashed at the turn of the century, agriculture and timber production became major contributors to family subsistence and local trade. Exports of agricultural and wood products provided the primary source of outside income, but were constrained by poor transportation and price fluctuations. Oil, gas, and to a degree, uranium, fed an export boom, which fueled population growth from the 1950s to the early 1960s, then again from the late 1970s to early 1980s.

In the western tradition, people preferred informal social arrangements, even when the federal government presided over granting homesteads, financing irrigation projects, and managing public lands, which were often half the land base. Because federal land management agents and local residents usually shared common backgrounds and values and interacted informally, they have gotten along pretty well over the decades.

However, beginning in the late 1960s, a new form of in-migration began. People relocated in search of “quality of life,” not natural resource industry jobs. Newcomers, often (sub)urbanites, valued rural and forest landscapes for their natural character and for outdoor recreation. Economic shifts towards tourism occurred, often maturing into resort and real estate development of agricultural lands. Simultaneously, federal land management processes became more formalized during the late 1960s and 1970s with the passage of the National Environmental Policy Act (NEPA), the National Forest Management Act (NFMA) and the Federal Land Policy and Management Act (FLPMA). These demographic and legal changes have affected social relationships of everyday life, raising public lands issues to national levels, becoming perhaps as contentious as when the West was settled.

By 1992, when the Ponderosa Pine Forest Partnership was emerging, the national forest timber program had become stalled by appeals and litigation. Major mill closings had occurred in southwest Colorado. Timber production on the San Juan National Forest declined gradually from 76-million board-feet in 1972 to 12 million in 1993.

Elsewhere in the West, rural residents and local governments, dependent upon commodities from public lands and increasingly concerned about declining outputs and changing land-management policies, reacted by organizing wise use and county supremacy movements that created

“As the Ponderosa Pine Forest Partnership emerged, Traditional West and New West constituencies, embroiled in land use conflicts, were increasing efforts to influence federal land policy.”

adversarial relationships with federal land-management agencies and other citizens and groups of differing worldviews.

Regardless of their backgrounds and views, many southwest Coloradans were distressed by social and economic upheavals in their towns. While some argued for county supremacy actions, many others recognized that parallel developments taking place made such tactics less promising and unrealistic. They recognized that reality that community demographics were changing as new residents, possessing diverse values towards public lands, relocated, settled and began expressing their desires. At the same time, rural forest product businesses were dying from lack of wood supply, jeopardizing scarce sources of blue collar jobs. Also at the same time, a reexamination of the effects of a century of human habitation and exploitation upon the landscape raised new perceptions that the future relationships with the landscape would need to change, as well. The land itself was suffering from crisis.

Also in 1992, the USDA Forest Service was formulating a policy of ecosystem management in which commodities such as forage and timber were being viewed as by-products of maintaining and restoring ecological health. Ecosystem management thinking stemmed from a greater systemic ecological awareness that includes members of all communities—human and nonhuman. All parties interested in national forest lands are partners in making the decisions about how those lands would be used and cared for (Robertson 1992; Sexton 1995; More 1996). This view provided a rationale not only for more comprehensive ecosystem management, but for linking the ecological nonhuman and human dimensions into a unified practice of community ecosystem stewardship, such as the Ponderosa Pine Forest Partnership has been attempting to demonstrate.

As the Ponderosa Pine Forest Partnership emerged, Traditional West and New West constituencies, embroiled in land use conflicts, had been increasing efforts to influence federal land policy. Rather than taking adversarial relationships with federal land management agencies, Montezuma County, Colorado, county commissioners considered instead to try and integrate New West and Traditional West values, interests and knowledge, and to guide their actions with pragmatic partnership principles.

Roots of the Ponderosa Pine Forest Partnership

Mike Preston, a community developer and then-associate director of the Office of Community Services at Fort Lewis College in nearby Durango, helped the commissioners to establish the Montezuma County Federal Lands Program in 1992. The program’s goal was “to maximize meaningful community input into federal land planning, policy and decision making.”

In February 1992, Preston and Montezuma County Commission Chair, Tom Colbert, attended a federal lands conference in Steamboat Springs, Colorado to learn the legal basis for county standing and participation. The



Mike Preston (left), from the Office of Community Services at Fort Lewis College explains his thoughts to Montezuma County Commissioner Tom Colbert (center) and San Juan National Forest Associate Supervisor Cal Joyner.

Code of Federal Regulations, 36 CFR 219.7, requires the Forest Service to:

- review plans and policies of local governments;
- consider local objectives and assess the impact of forest planning on them;
- determine how forest plans will deal with local impacts; and
- consider alternatives to resolve conflicts with local objectives (Preston 1993).

Preston (1993) reasoned afterwards that:

If local communities are going to affect the federal lands process, local governments need to define the values and interests of the communities they represent, using a combination of factual analysis and open community input. This analysis and input is the basis for formulating policies and plans for protecting and enhancing community values and interests, giving the federal agencies something tangible to respond to (p. 2).

Soon after, Montezuma County commissioners, Mike Znerold, Dolores District Ranger on the San Juan National Forest (SJNF), and Dudley Millard, president of the Colorado Timber Industry Association (CTIA) met in the ponderosa pine forest near Dolores to talk about their various concerns. Znerold expressed his willingness to share responsibility within the limits of his authority to do so. He later referred to this as a willingness to “share power” with the county, thereby helping the timber industry in exchange for its assistance in addressing forest health concerns related to overly dense, diseased and wildfire-prone ponderosa pine stands. His openness surprised, but pleased, the commissioners.

Upon hearing Znerold’s concerns, Dudley Millard, CTIA’s founding president, replied that the local timber industry could help with the problem

“Everyone’s energy and resources went into problem solving and relationship building, not formulating high-maintenance and costly systems and structures.”



Doug Ragland (front), Bob Dettmann (right), and Tom Thompson (rear) discuss the economics of restoration forestry at Ragland’s mill in 1995.

— if pricing for raw wood fiber were acceptable and a way could be found to make commercial products out of the materials that needed to be thinned.

Having decided to take a broad-based, collaborative, problem-solving approach to addressing public land issues, Montezuma County commissioners soon after submitted a proposal to the USDA Forest Service’s Rural Community Assistance Program and received a \$25,000 Economic Diversification grant to apply some of the ideas that emerged from that initial conversation and subsequent talks. The Ponderosa Pine Forest Partnership grew out of the grant agreement. Montezuma County, the San Juan National Forest, and the Colorado Timber Industry Association committed to sharing time and data gathering, seeking markets for small-diameter timber, and employing Geographical Information Systems mapmakers into a research effort.

Who were the key players, leaders, and practitioners? From which organizational and institutional roles did they emerge?

The leadership demonstrated by Tom Colbert, Mike Znerold and Dudley Millard inspired a unique coalition to improve forest conditions by using the local timber industry as a tool.

Early on, the vital connection between ecological restoration and economic viability was evident. This meant that the approach needed to be economically self-sustaining, with the industry being an equal economic partner by developing products and markets that generated demand for

small-diameter raw wood fiber. This would be in contrast to the less desirable situation in which the Forest Service merely paid loggers to remove small diameter materials — a thinning contract.

The partners focused first on developing a forest restoration project, from which a new system of interaction amongst themselves would emerge. Each partner contributed to achieving visible results in the health of the pine stands, the availability of wood for local mills, and so on. Relatively little energy was used to organize into an entity called the Ponderosa Pine Forest Partnership. The name became a matter of convenience for talking about the interactions that created cohesion among partners.

In what became a characteristically informal, face-to-face manner, Ponderosa Pine Forest Partners dedicated energy and skills to overcoming barriers to accomplishing the demonstration project. Each recognized and took those opportunities that gave momentum to their visions and commitments. Their cooperation set a tone for building stronger, more trusting relationships based on sharing responsibility for resolving mutually shared problems.

In this partnership approach to public land management and community development, each partner also used the authority and credibility of the positions they held within their respective institutional structures to take risks needed for creating opportunities. This built avenues for new key players to enter and participate in constructive actions that would lead to visible results on the ground.

Eventually, initial partners from the San Juan National Forest, Montezuma County, and local timber industry were accompanied in the effort by many more local, regional and national staff members of the Forest Service, members of the Office of Community Services at Fort Lewis College in Durango, biologist Dr. William Romme from Fort Lewis College (assisted by FLC students and colleagues from Prescott College, Arizona), Dan Wand of the Colorado State Forest Service, Dr. Dennis Lynch, Colorado State University College of Natural Resources, members of local and regional community activism groups who took both observatory and participatory roles, Dick Lee, a private land owner adjacent to Forest Service land, plus many others not specifically named in this case study.

The partners progressed by focusing on values, needs and actions, rather than building a formal organization. Everyone's energy and resources went into problem solving and relationship building, not in formulating high-maintenance and costly systems and structures.

Forest Service Rural Community Assistance Program Economic Diversification Grant

goals and objectives

- Set the stage for collaboration between the Forest Service and community partners to link sustainable communities to healthy, sustainable ecosystems.
- Demonstrate that a healthy ecosystem and healthy economy are compatible goals.
- Reduce hazards of insect and disease infestation and catastrophic fire.
- Create the opportunity for the reemergence of mature and old-growth pine along with enhanced variety of sizes, ages and stand structures in what is currently a monoculture of stagnated second growth.
- Increase the diversity of grasses and forbs by opening the stand's canopy.
- Increase livestock and wildlife habitat and wildlife species in the pine zone.
- Provide a commercial approach to thinning second-growth pine.
- Assist industry in transitioning to small-diameter logs and create the prospect of sustainable commercial pine harvests.
- Demonstrate a process of scientific analysis coupled with broad-based public input.

Rallying Key Leadership

“Powers and Dettmann sought local strategies to move towards ecosystem management and adaptive management in the social and economic realms . . .”

What approaches were taken to form the Ponderosa Pine Forest Partnership?

Mike Preston and Sam Burns of the Office of Community Services director, were asked to frame a process for expanding relationships. Both had assisted towns, counties and non-government groups with institutional and citizen participation issues for 12 years. Along with networking and facilitation, OCS and Fort Lewis College provided institutional neutrality and higher-education resources.

Preston and Burns based efforts to coordinated relationship building on “collaborative development of problem-solving strategies and increasing partnership capacities among communities and public land agencies” (Burns, personal communication, summer 1998). A main objective was to enable potential participants to share resources in order to help integrate desired community and ecological futures to some appropriate, agreed-upon degree.

“The need for a process change” led San Juan National Forest Planner, Jim Powers, to seek local partnership and resource-sharing experience, such as Preston and Burn had, to integrate community and Forest Service needs. Aware of the pine overstocking problem and obstacles to the Forest Service mission of “caring for people and the land,” Powers and Bob Dettmann, Region 2 RCA program coordinator, sought local strategies to move towards ecosystem management and adaptive management in the social and economic realms, as well the biophysical.

This partnering resulted in an expanded search for resources. Along with Preston, Burns and Paul Peck, San Juan National Forest RCA coordinator, they identified and contacted other local and state representatives of community based organizations, including Colorado Region 9 Economic Development District, the San Juan Forum at Fort Lewis College, the Colorado State Forest Service, and AmeriCorps.

Powers, who along with Dettmann became central to the PPF vision, recognized two key opportunities in Montezuma County’s partnership approach. First, relationships between the SJNF and the county stemmed from mutually recognized needs. The Forest Service required an economic development action plan to identify priorities for the RCA Diversification Grants and the Southwest Colorado Economic Development District needed an overall economic development plan. These goals were integrated by mid-1994 through partnership work that combined community economic development and community action planning.

The second opportunity, Powers said, was the positive tone Montezuma County set by approaching the Forest Service to see what they could mutually agree to do together.

Discovering the Ties Between Science, Values, and Management

What role did scientific expertise play in developing the partnership and building collaborative action?

Ecological research stimulated and guided the Ponderosa Pine Forest Partnership. Empirical evidence of forest conditions and problems provided by research efforts was critical for defining a common objective. Data suggested a direction for forest stewardship that a broad cross-section of the community could accept.

At the same time, interest was forming on how a beneficial linkage might be found in an ecological and an economic interaction between the forest and community. This linkage has been described often by partners as one in which “ecology drives economy.” Early on, the PPFPP was viewed as a means of sustaining local timber industry jobs and small businesses — an economic focus, essentially. However, utilizing local timber businesses as tools to manage towards ecological objectives could complement the ecological emphasis of restoration harvesting.

The San Juan National Forest had begun researching the “Range of Natural Variability” of ponderosa pine forests with the leadership of Fort Lewis College professor and fire ecologist William Romme. Range of natural variability refers to the kinds, duration, and number of disturbances occurring in a landscape and the range of landscape conditions that result in time.

One goal of the range of natural variability research was to establish a baseline of scientific knowledge that would guide future management decisions on the forest, by correlating “desired future conditions” to more closely align with ecosystem management principles.

The pine variability study began in 1993, followed by mixed conifer (1994) and spruce-fir (1995) studies, all of which contributed to a capstone ecological condition analysis of the south-central highlands of southwest Colorado and northern New Mexico (initiated in 1995). Comprehensive findings of this assessment are detailed in Romme et al. (1998), entitled “Landscape Condition Analysis for the South Central Highlands Section, Southwestern Colorado and Northwestern New Mexico.”

Romme’s studies stem from the desire of Powers and others of the San Juan National Forest management team to employ ecosystem management in the forest plan revision, which was due to begin shortly. The planning approach emphasized innovative forms of public involvement and the employment of local stewardship knowledge, and the need for “good objective science to apply to serious questions we had about forest conditions” Powers has explained (personal conversation, July 23, 1998).

“The planning approach emphasized innovative forms of public involvement and the employment of local stewardship knowledge, and the need for “good objective science to apply to serious questions we had about forest conditions”

—Jim Powers, SJNF Planner
1998

A “pine prescription” as a catalyst for a multi-dimensional partnership

Dr. Romme’s research provided the basis for designing a “pine prescription” out of pre-1870 reference conditions upon which a new timber management strategy could be based. The new knowledge contained in the prescription can’t be underestimated in its value in motivating the collaboration that drives the Ponderosa Pine Forest Partnership.

Dr. Romme described the period of a few hundred years before 1870 when Euro-Americans began arriving and settling in southwest Colorado as marked by relatively constant climate, vegetation and human activity. These features formed a “reference condition” against which current conditions, which resulted mostly from human activity, could be compared and used to help determine how ponderosa pine conditions might be improved in the future.

Dr. Romme and fellow biologists, David and Lisa Floyd-Hanna from Arizona’s Prescott College, assessed the fire history of pine forests during three or so hundred years before 1870. They gained a sense of what a forest minimally disturbed by human activity looked like before European settlement. Their year-long analysis of fire scars, age-dating and sizing of the oldest remaining stumps showed a historical condition much different from today.

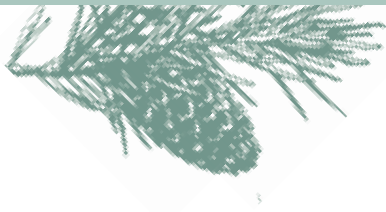
The pine zone exhibits two major forest health problems, the researchers concluded: a lack of regularly occurring, low-intensity fire and a lack of mature, seed-bearing trees. In reference conditions, within the range of natural variability, fire acted to clear the ground at the bases of trees so that seeds could sprout in bare soil. The big trees were needed because they are the most prolific, reliable sources of seeds.

The researchers further concluded that the 180,000-acre San Juan National Forest pine landscape is too dense and homogeneous. Today, gazing into the distance across many forested areas, you see a dense blanket of trees all the same age and size. These pine stands resemble a monoculture landscape lacking beneficial wildlife habitat and biological diversity, which are crucial measures of a healthy ecosystem.

The research exposed a dramatic range and depth of human disturbances that go back to the beginning of our Euro-American relationship with the landscape of southwestern Colorado. Settlement and subsequent introduction of logging, livestock grazing, concerted fire suppression and other lesser factors drastically altered the landscape. Early on, stock grazing reduced ground vegetation, inhibiting low-intensity fires from creating more diverse age classes and a less-dense forest than what exists now. Later, intense logging further reduced biologically diverse elements of the forests. In about 1910, a combination of heavy seed drop and wet weather gave a strong start to even-aged stands that today are so common in the region.

“What is called for, then, is an innovative, new approach to silviculture and ecological restoration that will better simulate the kinds of natural disturbances that shaped these forests for hundreds of years.”

— Ecologist William Romme,
1995



Also, during the first decade of this century, the Forest Service began a decades-long campaign to prevent forest fires. Many historians attribute this to the principle of protecting timber investments and preventing private property damage within the growing American economy (Hirt 1995). Plus, silvicultural methods after World War Two heavily emphasized cutting the largest trees, contributing to the less-healthy, and now less-desirable, homogeneous stand structure.

These facts show that these current non-reference conditions have mounted over the decades into what Dr. Romme and colleagues concluded could produce a disturbance event far outside the range of natural variability. Undesirable ecological changes would continue to result if something didn't happen to intervene. More than a third of the landscape was at risk for uncontrollable fire, severe mountain pine beetle, dwarf mistletoe and *Armillaria* fungus infestation, Romme reported during slide presentations in 1995-96.

These sobering facts shed a light not only on the future of ecological conditions of the San Juan National Forest, but the future of continuing traditional economic and social relationships with the forest. Recent popular uses of the forest, such as recreation and touring, could suffer, as well. This fresh look at the cumulative impacts of human exploits on the pine landscape revealed a situation serious enough for people to set aside some of



*The ponderosa pine landscape has become too dense and homogeneous, lacking crucial measures of a healthy ecosystem, such as beneficial wildlife habitat and biological diversity. More than a third of the landscape has been at risk of uncontrollable fire, severe mountain pine beetle, dwarf mistletoe and *Armillaria* fungus infestation.*

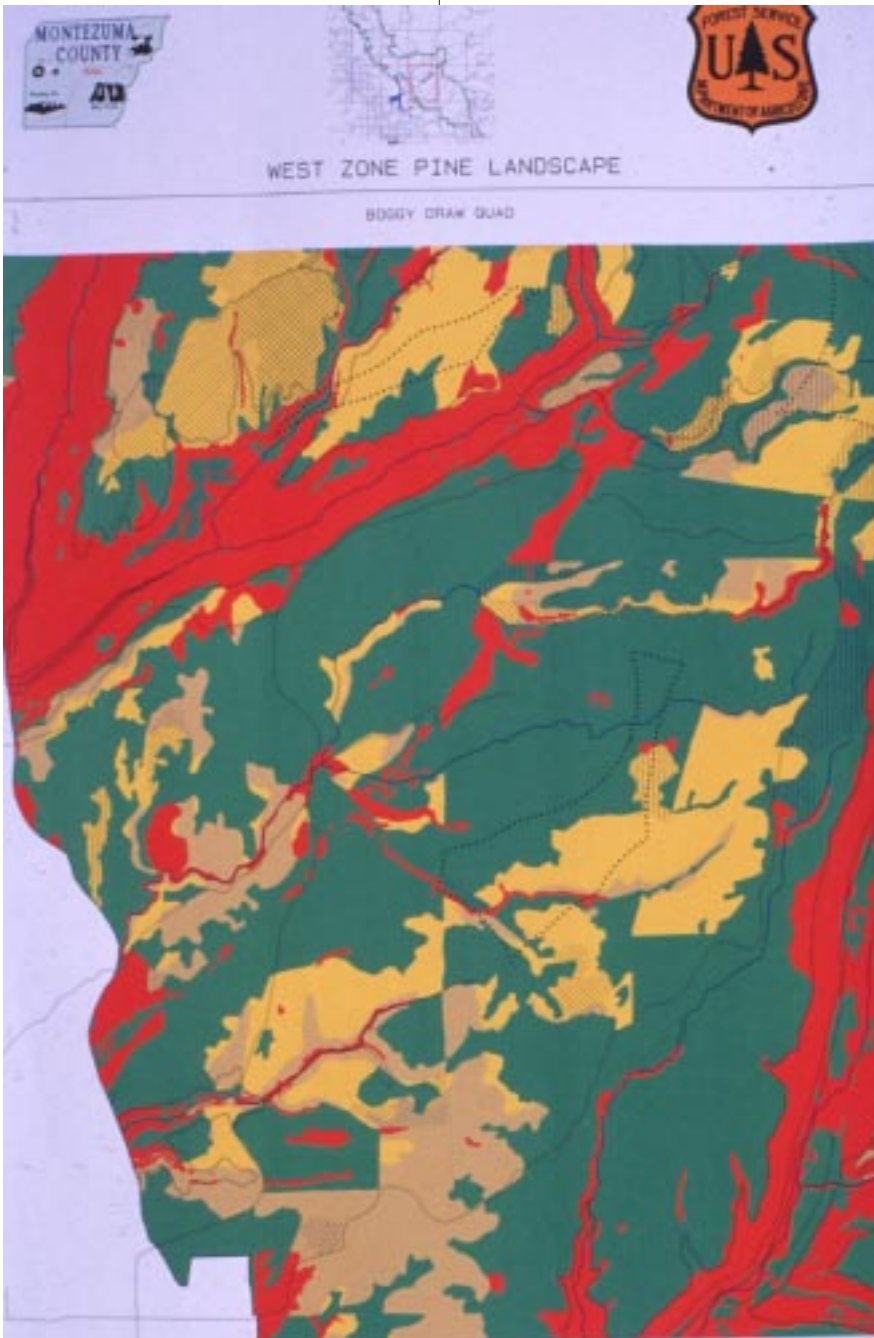
their differences over ecological and resource management.

After sharing his findings, Dr. Romme recommended developing harvest methods that would achieve a condition closer to a natural reference condition. It entailed mechanically thinning overstocked small-diameter pine in selected test areas, followed by a program of prescribed fire which would encourage desirable vegetative regeneration and improved wildlife habitat. It would also hinder Gambel oak, a fire hazard and tenacious competitor of pine regeneration.

Support for the proposed pine prescription varied initially, depending upon whom you talked to at the time. Many seemed intuitively supportive about the findings and the possibility of improving forest health. But support of the new prescription seemed limited without some on-the-ground application of it. Romme and fellow researchers had posed a forest condition for the imagination, as it were. In addition, the new knowledge represented by the pine prescription and the fire history research had not spread among enough of the local community. Communication with community and regional interests then became a goal, along with the idea of applying the prescription in the field.

GIS: Tools for learning and teaching

Geographical Information Systems (GIS) computer-generated maps marked a crucial step in turning the prescription into practice as they served to inform and educate the community. Dr. Romme used nine maps to show how the pine prescription could work. They displayed his research findings, Forest Service vegetation data, regional insect and disease assessment data, and Colorado Division of Wildlife habitat data.



A Geographical Information Systems (GIS) map codeveloped by Dr. William Romme, Fort Lewis College, Dan Green, San Juan National Forest, and others, shows the best places to conduct a pine demonstration restoration harvest.

Developed by the SJNF's GIS team led by Dan Greene, the maps used pertinent criteria to designate areas as high, medium or low priority for a harvest demonstration. They showed that best places in the forest for a restoration prescription were also areas of highest health risk.

How did science merge with community-shared values?

The scientific understandings gained from the fire ecology studies conducted by Dr. Romme and his colleagues did not spur instant implementation of the restoration demonstration harvests that the Ponderosa Pine Forest Partnership has revolved around. A way was needed to merge scientific knowledge with a community sharing of social and economic values. It was necessary to share Dr. Romme's scientific analysis and to inform and educate specific segments of the community about the work being done to date.

The emerging knowledge and relationships presented partners an opportunity to open up a conversation through which citizens and organizations could learn about the PFPF, the research results, and express their perspectives on applying the pine prescription, using local timber operators to do the work, while seeking new products and markets for small-diameter pine. By talking together, an array of different interests could determine if they adequately shared values in common to move towards an actual demonstration project.

A forest health workshop serves as a catalyst

The PFPF needed an avenue of communication for communities of place and communities of interest to learn together in informal dialogue about the partnership's accomplishments and intentions. One such avenue occurred during the spring of 1995 in Durango just as the ponderosa pine restoration prescription was taking shape. The "Vital Links in Community: A Forest Health Workshop," helped to reinforce the partnership concept and attract more members. Workshop organizers from the San Juan National Forest Association (now San Juan Mountains Association), a local non-profit conservation organization, felt that the partnership had reached a point of being able to expand community awareness of its developments and the issue of forest restoration. Powers and Preston saw the workshop as a chance to help translate what they had learned into an agreement on values and for building new relationships that would expand progress on the ground.

Dr. Romme presented his research to a public audience for the first time at the workshop. The research findings appealed to the values of various interests and diverse perspectives. The knowledge of forest ecology that he



The Pine Prescription in Brief

The goal is to remove enough trees in order to safely reintroduce fire as a natural, therapeutic component of the ecosystem. The largest trees, which are naturally fire resistant as long as the fire is low enough to the ground, would not be harvested.

Initially, a restoration harvest, which focuses on ecosystem health, rather than intensive lumber production, requires removal of more small trees per acre overall, as opposed to removing just the marketable saw timber. In the long-term, less fiber would be produced; however, larger trees and diverse age and size classes eventually would result.

Monitoring would reveal changes, but it would be perhaps 50-100 years before large, old trees are once again common in the stands.

shared seemed to complement the values many participants held. They seemed to find incentive for building closer relationships based on mutual acceptance of his findings.

Questions posed during facilitated small-group discussion probed participants' desires for the future of ponderosa pine forests, the timber industry, how the Forest Service "does business," and how more people could increasingly participate in caring for the forest, while also sustaining community economic capacity. They were asked for their views of what opportunities existed for a stewardship approach to improving forest health and for what commitments they were willing to make to the overall effort.

Their responses suggested that in order to develop new relationships, it would be necessary to overcome the conflicts to which everyone had become accustomed. The pine prescription marginally represented a possibility of a renewed supply of timber that could help to restructure the local timber industry and its relationship with the Forest Service. A few loggers were willing to gamble on it if other participants would make commitments. Loggers and mill owners were "willing to provide labor in restoration activities, their working knowledge of the woods, and the financial risk involved in developing new markets," a follow-up proceedings said (Office of Community Services 1995). If they could not stay alive economically, the means of getting the restoration work accomplished would be lost.

The fire ecology research results provided opportunities to enhance biological diversity — something environmentalists valued. Opportunities for monitoring that the San Juan's Land and Resource Management Plan included, but had not carried out, also seemed more possible in a demonstration project, such as the one formulating for the pine zone.

Before the workshop, members of the San Juan Citizens Alliance, a coalition of local environmental and community organizations, had expressed support for local, sustainable logging. While not wanting to take a formal organizational stand, they were cautiously receptive to the pine restoration initiative. One Alliance member, Dan Randolph, described his role as a "skeptical observer," fearful of a lack of tangible, long-term results upon which to base trust. Still, the community activists expressed desires to build new, more equitable, face-to-face relationships with both the agency and the industry.

The workshop and the ecological research results had solidified a new set of encouraging opportunities that would allow the spectrum of interests to participate in some way as partners themselves. The next step in their newly found momentum, as it turned out, would depend upon the Forest Service's flexibility in adapting its operating procedures and internal relationships to accommodate the new prescription.

Employing Problem-Solving Ecosystem- and Adaptive-Management Principles

What needed to change in the Forest Service's timber sale administration procedures?

District Ranger Mike Znerold, making the new silvicultural prescription a priority, encouraged Forester Phil Kemp to apply the research results in a timber sale. The timber sales Kemp had been preparing were not receiving bids — a lot of work for nothing. He took the challenge and has since become an advocate of restoration forestry.

Kemp based his application of the new prescription in the field on adaptive management principles. Nonetheless, implementing a restoration project by the usual methods uncovered obstacles in Forest Service administrative procedures, pricing, cruising, marking, utilization techniques, and scaling. For example, laying out the demonstration units took extra time as markers learned to visualize and mark a stand after it had been harvested. The new look would initially appear more open than usual. Kemp designed a guide to help markers clump trees of different ages and sizes.

Also, problems in measuring volume during cruising and marking operations raised questions of how to price small-diameter trees in contrast to saw timber. No existing pricing structure dealt adequately with the previously unmarketable wood coming from demonstration sites. Sale prices for mostly unmarketable wood fiber would not attract loggers interested only in saw timber.

Until the 1970s, sales were marked by a written design, or sale units were simply marked off, then the buyer paid by volume for timber brought into the lumber yard. This practice of buying by post-harvest scaling ensured quality and profitability for timber buyers. However, at one point, the Forest Service, in order to increase its own profitability and efficiency, began marking trees individually and requiring buyers to pay by *estimated* volume. Buyers risked loss if estimated volumes were inaccurate (CPLP 1995, p. 11). In order to determine the volume of wood, the partners wanted instead to weigh the wood on trucks and establish weight to volume relationships.

Attempts to overcome internal Forest Service administrative barriers to conducting the demonstration project came to little avail, until Tom Thompson, Region 2 Deputy Regional Forester in Denver, discovered in the Code of Federal Regulations #10 an “Administrative Use Study” that allows a waiver of some regulations for research and administrative purposes if the total value of a sale was under \$10,000. This broke the bottle neck and made way for harvesting to begin in August of 1995.

“Tom Thompson, Region 2 Deputy Regional Forester in Denver, discovered in the Code of Federal Regulations #10 an Administrative Use Study that allows a waiver of some regulations for research and administrative purposes if the total value of a sale was under \$10,000.”

“*I’m keenly aware that we’re doing some new things, and I know we may not get the results we want, but that’s okay. We can go in and revise our approach. It’s absolutely essential that we go about it that way. The good thing is that we have a mechanism to make it a success. We should act with an absence of dogma and not be afraid of showing our failures as well as our successes.*”

Ecologist William Romme
(Richard 1995, p. 17)

In an innovative arrangement, Montezuma County became the contractor named in the proposed Administrative Use Study. This is probably the first time that a local government bought a timber sale from the Forest Service. The county then subcontracted the sale of 1.2 million board feet to three local, family-owned logging businesses.

The Administrative Use Study allowed the San Juan National Forest to experiment with costs and methods for managing the sale. Most importantly, it required a three-part study:

- An ecological report examining the effects of harvesting on the ecosystem (monitoring), which was key to the prescription that was followed in the demonstration project. This part of the project was led by Dr. William Romme of Fort Lewis College.
- A biomass study and subsequent report, conducted by the NEOS Corporation of Denver, to determine the feasibility of mixing wood from the projects with coal to fire power plants in nearby northern New Mexico. The completed report shows negligible returns on investment. Power plant operators declined to participate further.
- A restoration production report, in which CSU professor Dennis Lynch and research associate Kathy Jones conducted a cost efficiency analysis of the harvesting methods used by the loggers at the sites, along with researching market and product development.

That fall, three years after Colbert, Znerold, Preston and Millard met near Dolores, activity picked up at pilot demonstration sites, including one on private land already begun in June. Unencumbered by federal regulations, rancher Dick Lee, aided by Colorado State Forest Service forester, Dan Wand, collaborated with other partners to include 180 acres of his land adjacent to the national forest in the restoration harvest demonstration.

By fall, researchers were collecting data and loggers were harvesting small-diameter pine at three of the six sites selected. Interested onlookers were touring the projects frequently on educational field trips hosted by Mike Preston, Phil Kemp, and newly assigned field coordinator, Carla Garrison. Among the visitors were local Forest Service Interdisciplinary Team members, leaders from Washington, and local community members.

Monitoring

Much remains to be learned about the ecological impacts of restoration forestry on vegetation and wildlife, but work has begun to monitor the effects on plant and animals species. In 1995, before harvesting began, Dr. William Romme, Prescott College colleagues, and several Fort Lewis College biology students established transects in four demonstration harvest sites, sampling the percentage of cover of trees, shrubs, forbs, litter and bare soil. They also measured the amount of fuel, or combustible debris.

Romme et al. continue to inspect demonstration sites. They recently reported that their summer transect analysis revealed differences between sites that were thinned only (three remain to be burned) and one that was thinned and burned (Romme et al. 1998). The thinned and burned stand contained more species of trees, shrubs, forbs, grasses, and sedges in 1998 than in 1995 (p. 7).

The obvious conclusion was that burning is necessary to achieve the six major objectives of the new pine silvicultural prescription upon which monitoring and evaluation could be based:

- to reduce tree density and basal area similar to pre-1900 conditions;
- to increase average tree diameter;
- to increase crown-base height (distance from ground to base of living crown);
- to increase cover and diversity of herbaceous plants and extent of bare mineral soil; and
- to reduce cover of woody plants and detritus (litter and coarse woody debris) to reduce the mass of downed wood fuels.

While thinning alone probably reduced the chance of crown fires, it “did not stimulate growth of suppressed herbaceous plants,” the report says (p. 9). However, “the combination of thinning and burning accomplished some of the desirable changes,” it says (p. 10). The report details several other findings, including the comparison of effects of a single burn to thinning alone on Gambel oak growth.

Romme et al. recommended a second prescribed fire for the single thinned and burned site. They also recommended a first burn for the others sites as soon as possible, followed by a second burn a few years later. They further recommended regular assessments of treatment effects on canopy structure, fuel loads, and ground layer plant diversity and cover (p. 12-13). The implication is that monitoring was absolutely necessary to ensure progress.

“In adaptive management, learning what doesn’t work often reveals more than knowing what does work.”

Integrating New Economic Knowledge into the Demonstration Harvest

“The loggers held on to every stick of wood they could make a penny on.”

Dr. Dennis Lynch

What have the Ponderosa Pine Forest Partners learned about restoration ecology and economics?

Dr. Dennis Lynch, Department of Forest Sciences at Colorado State University's College of Natural Resources in Fort Collins, conducted economic research component of the demonstration project to produce the restoration production report. He has often explained that the ecological monitoring component measures *what remains after* the harvest. In contrast, the economic analysis measures *what was removed during* the harvest to achieve ecological objectives of the new pine prescription.

Dr. Lynch and his support team counted every tree and weighed every log, following them from the cut to the mill and beyond, in order to measure the cost of the harvest to the income made by loggers.

Detailed daily records were kept and analyzed. Dr. Lynch tallied costs and revenues associated with the harvest and handling of the small-diameter pine. He found that extra costs were incurred from such things as handling the smaller materials and shipping to processors set up to handle small-diameter timber, which usually were some distance away. Despite this, Dr. Lynch said in a preliminary report (1996) that learning these things would help improve efficiency. This report recommended steps to improve future harvesting, study design, data collection and laying out new sales. It reported that ecological conditions were being met, new tree-marking techniques were being explored in order to reduce costs and improve efficiency, and that much had been learned about timber harvesting costs that was little known before.

The latest and most complete details are chronicled in a published 19-page summary (July 1998), *Ecology and Economics of Ponderosa Pine Forest Restoration on the Mancos-Dolores District of the San Juan National Forest*. Lynch summarizes:

In summary, this forest restoration project incorporated five sale units covering a total of 492.6 acres and the removal of 31,163 trees (63.3 per acre) for 6,075.8 tons of sawlogs, 7,254.71 tons of waferwood, and 1,047.15 tons of other products such as posts and poles, pulpwood and pine excelsior. This resulted in a total profit to the logger of \$3,533.67. That is a profit of 0.81% (less than one percent) on gross revenues of \$434,645.54. This approximates a break-even situation and while this is better than

suffering a loss, it is hardly a model for a sustainable business venture. Usually, it is appropriate to see profit and risk allowances of 10 to 15% for this type of work. Break-even projects will never result in the investments necessary to improve efficiencies and develop new products (p. 14).

Dr. Lynch also concluded that, for the loggers to make a profit from which they could consider reinvesting under current market conditions, about a third of the wood fiber removed in a restoration sale should be saw timber. He emphasized, though, that the “ecological prescription must control” the harvest preparation and implementation (p. 18). Restoration of the forest is, after all, the basic purpose of such projects.

Other recommendations focus on the need for new Forest Service actions and policies:

- The Forest Service should assign a specialist to plan, organize and monitor an ongoing, consistent forest restoration and forest products program.
- Payments for material removed should relate to weight, not cruise, data.
- Stumpage pricing should relate to harvest costs and transactions associated with restoration.
- Time and expense of sale administration should relate to the value of products removed and the resource values established by restoration.
- To ensure profit, break-even criteria should guide removal of small-diameter wood fiber to balance it with removal of saw timber (1/3 saw-timber removal per site for profit).
- Support new techniques, products and market development with studies, loans, grants and technical assistance.
- Create widespread recognition of forest restoration.

Dr. Lynch’s report didn’t paint a pretty picture of success, but the data does show incremental changes since the beginning of the harvesting demonstration. In adaptive management, learning what doesn’t work often reveals more than knowing what does work. This thinking fits with that the Ponderosa Pine Forest Partnership and its key members, such as forester Phil Kemp, who has reasoned that restoration forestry is not based on the same values as those that have driven the traditional timber industry. In regard to the future long-term goals of the national forest system, those values are ecosystem stewardship, where ecology drives economy, rather than the other way around (personal communication, summer 1995, summer 1998).

Ponderosa Pine Partnership Pilot Production & Economic Research

- Detailed records kept on harvest and handling time and costs.
- Harvest materials sorted and measured.
- Materials traced to market and income evaluated.
- Net profit and loss evaluated.
- Sale preparation and pricing policies evaluated.
- Future pine restoration sales developed to test and compare alternatives for sale preparation, pricing, and administration.
- Work initiated by Dr. Lynch on developing small-diameter products and markets.
- Efforts to expand restoration forestry on private land.
- Extension of pilot approach to mixed-conifer restoration.

How are communities and agencies learning about adaptive management and stewardship?

Now that four years have passed since the first demonstration harvests, partners and others are beginning to examine and discuss results being gathered from the demonstration harvests. While commitments made since 1992 continue to develop, new questions and understandings applicable to adaptive management and stewardship are brought to light. Underlying the question of *what* those involved are learning as they give shape to the meaning of adaptive management, stewardship and partnership is the notion of *how* they learn and give new meaning to these concepts. Essentially, they are learning simply through talking about the results of the harvests.

The communicative features of the Ponderosa Pine Forest Partnership included in the original economic diversification grant proposed to the Forest Service's Rural Community Assistance program went through a significant evolution as the PPFPP developed through time. Two items listed in the "Opportunities" section of the grant first articulated this feature:

- Demonstrate a process of scientific analysis coupled with broad-based public input.
- Set the stage for collaboration between the Forest Service and community partners to link sustainable communities to healthy sustainable ecosystems.

Up to now, this case study has focused on the role of science in public education and support. However, the communication process that developed along with the PPFPP crystallized around these expressed opportunities for public deliberation over the PPFPP's significance to community and forest sustainability. Initially, the communication aspect of the PPFPP could be described as information dissemination, through which partnership coordinator Preston and others began outlining the new relationships and actions that they were formulating. But this grew into what could be characterized as actual deliberative dialogue that increasingly occurred among diverse participants and observers.

Information dissemination took place during the early stages of PPFPP's development in the form of newspaper, magazine, and journal articles, and presentations by partners to various conferences across the country. Opportunities for dialogue increasingly were created during field trips and "technical transfer seminars" sponsored by PPFPP partners and hosted by the partnership's field coordinator. Varied and numerous interested and involved individuals and pine forest partners participated in these trips and seminars.

This evolution from information to deliberative dialogue could be characterized as a process of discovery. In other words, information dissemination led to learning and familiarity with diverse issues and developments associated with the PPFPP that allowed a widening circle of interests to

“There is a huge danger of building a whole program on an idea ‘without thinking about why we want it and how fast we want to proceed.’ ”

Dan Randolph
San Juan Citizens Alliance
1998

measure their values and desires against the facts and findings of the harvests. The result to a large degree was a growing dialogue that served to further build relationships.

People increasingly began to link their knowledge with their values as they spoke about the PFP's work. This process took place in two significant ways. On one hand, interested observers indirectly involved in the demonstration project at the partnership level increasingly commented in such media as journals and newsletters of organizations involved in community-ecosystem stewardship (for an example, see Rhea and Harrington 1997). Secondly, face-to-face opportunities for discussion were created by the many field trips and technical transfer seminars combined with on-the-ground inspections of the demonstration harvest sites. During these trips, participants were able to learn the up-to-date issues and facts. They could discuss, even debate, such questions as the appropriate scope of application for the new prescription recommended by ecologist William Romme, or marking and cruising methods to achieve optimum wildlife habitat enhancement, or perhaps the appropriate frequency of follow-up prescribed fire treatments.

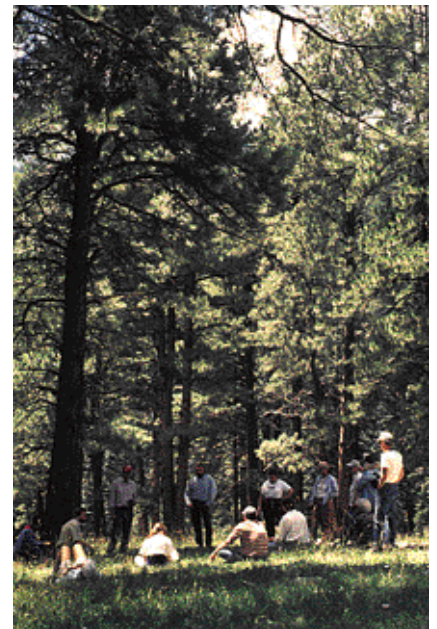
Such dialogue seems to contribute to building trust and new understandings. This raises questions over which methods of communication provide the most benefit to adaptive management and partnership and stewardship development. As an ever-widening debate or a deliberative dialogue occurs, learning occurs on the spot, so to speak. Individuals are exposed to facts they previously didn't know, which in turn stimulate them to reevaluate earlier conclusions and criticisms that accompanied them to the discussion. Freedom to express even one's ignorance, as well as one's criticism, is a prerequisite for open communication to occur. Explanations and clarifications can be made, new insights can occur not only into the facts, but into how people interpret them and what they say about them.

The following anecdote of a field trip and transfer seminar during July 1998 demonstrated such interrelationships. It illustrates the depth of dialogue that appears to be emerging. Two questions brought up by activist-oriented participants generated much conversation that day.

- Are reference conditions the most reliable guide to treat up to 180,000 acres of ponderosa pine forests?
- Fire is an essential restoration component. Can the Forest Service introduce fire at the scale necessary to properly treat the thinned out lands?

Dan Randolph, a botanist who contracted with the PFP to monitor restoration sites, and who is also a leading member of the local community activist organization, the San Juan Citizens Alliance, proposed that the question the group should be asking is what pine forest partners and the community-at-large want for the forest. He agreed that desirable biological diversity and diversification of the pine forest structure are made possible by restoration

“This evolution from information to deliberative dialogue could be characterized as a process of discovery.”



Field trip participants learn about and discuss restoration forestry approach of the Ponderosa Pine Forest Partnership at a demonstration harvest site.



Ecologist and Professor William Romme (wearing hat) trains students during a monitoring field trip to a Ponderosa Pine Forest Partnership demonstration site in preparation to begin transect data gathering.

forestry. But he warned of a danger of building a whole program on an idea “without thinking about why we want it and how fast we want to proceed.”

Randolph stressed the experimental nature of the project. “More questions and broader perspectives are being brought to bear” on the issues of forest health and community economic sustainability, but the answers have not begun to replace the questions sufficiently enough to strike out on large-scale, long-term practices.

Colorado Division of Wildlife terrestrial biologist, Scott Wait, told field trip participants that when he first heard about the pine forest partnership, too many people appeared to jump on a bandwagon rolling towards inevitable thinning and burning of 180,000 acres of ponderosa pine. But the benefits restoration forestry to wildlife of drastically reducing, even eradicating, Gambel oak and creating open park-like stand structures were not yet clear. We won’t know the true benefits of restoration forestry for perhaps another 100 years, he claimed. In his opinion, elk, deer and turkey needed denser hiding structure than that created by the pilot restoration harvests.

As he recalled his past observations, Wait expressed optimism for closer relations the CDOW and the Forest Service that were cultivated in order to

adapt the fourth and fifth restoration harvests from what was learned from the first three. Different patch openings were created with wildlife habitat in mind. Also, a wildlife and habitat monitoring program was organized, funded by the National Forest Foundation and the Ford Foundation and begun.

Although from the outset the PFPF partners never expressed an intent to apply the new silvicultural prescription on a large scale across the San Juan National Forest's 180,000 of pine, a perception of such intent had evolved among some non-partners. It is important to note that by the time the Ponderosa Pine Forest Partnership emerged, the relationship between most local timber operators and the Forest Service had gone sour. In addition, a credible, well-known ecologist (Romme) and a respected community assistance organization (Office of Community Services) were involved in organizing the PFPF, indicating an authentic move towards community-based stewardship.

It might be accurate to say that the new harvest prescription was received with fervor because it appeared to be a viable option for emerging from a long history of polarization and stalemate over timber harvesting and forest health issues throughout the American West. Still, fears of a contemporary form of industrial forestry sprouted and were expressed, as they were during July 1998.

Todd Schulke, with the Southwest Center for Biological Diversity in Tucson, questioned whether presettlement conditions made a reliable argument to treat 180,000 acres. It is not clear whether he, Wait, or Randolph, were aware of the PFPF's original intentions, or merely chose a skeptical perspective despite expressed or presumed intentions. The PFPF could be disguising a massive, long-range strategy for the same old logging habits of the past.

Perhaps, the original intentions for the pine prescription were either not clearly understood, or adequately explained, thus Schulke and others were hindered by lack of information. The significant point to make about the July 1998 field trip and technical transfer is that they were able to participate in a venue through which they could express their reservations.

Dr. Romme replied to Schulke that thinning 180,000 acres was not part of his original recommendation. In fact, he agreed that it would be unreasonable to attempt such a massive effort. However, the pine zone had been drastically altered since presettlement times, creating untenable conditions. "The forest is little like anything it was," Dr. Romme said. He stressed that it is important to understand that the pre-1870 reference condition was a "benchmark" and his prescription was "not meant to return the pine zone to what we perceive the forest once was.

"The goal is to return at least a portion of it to reference conditions for the purpose of returning missing components and confer the benefits by reducing insect, disease and fire risks," Dr. Romme said. "If we decide we

"... terrestrial biologist, Scott Wait, told field trip participants that when he first heard about the pine forest partnership, too many people appeared to jump on a bandwagon rolling towards inevitable thinning and burning of 180,000 acres of ponderosa pine."

“The goal is to return at least a portion of it to reference conditions for the purpose of returning missing components and confer the benefits by reducing insect, disease and fire risks,” Dr. Romme said. “If we decide we are successful, we need to sit down and talk about what we want the area to look like and where.”

are successful, we need to sit down and talk about what we want the area to look like and where.”

In retrospect, Dr. Romme, Dan Randolph, and Scott Wait were all expressing the value of “sitting down and talking about” where we have been, where we are and where we want to go in the stewardship of forests and communities. This suggests a strong value for dialogue itself and the manner in which it is conducted.

Given the ecological, economic, and social variables involved, it is difficult, to say the least, to provide necessary information continually to keep all interested parties up to speed in terms of the facts, despite whether or not in the end they arrive at different conclusions and argue for different values. But, the process of discovery through dialogue of these various features is adaptive management in a social sense. This social characteristic complements more conventional connections in adaptive management in which management directions are indicated by empirical results. In this social aspect, directions are also discerned and made more acceptable by continual, long-lasting, open communication of visions and values held by diverse partners and the community as a whole.

The discussion that occurred in the field during July 1998, three years after the pine prescription was applied in the forest, serves as an example in which open dialogue can enhance not only understanding, but trust, among diverse representatives as they engage each other in building a stewardship based on mutually shared responsibility and accountability. Without open dialogue, the critics would have little choice but to remain skeptical observers, rather than being participants in a process of discovery.



Product Development and Marketing Research

What will provide more sustainable, long-term results?

Small-diameter timber product and market development are key to restoration forestry. By late 1998, Dr. Lynch and Tim Reader, a CSU graduate student, had tested a number of new products with small-business owners, who Lynch credits for having entrepreneurial spirit and ideas for testing products, such as finger jointing, edge-glued planks and caskets, that he says “is working.”

A new job description through the Colorado State Forest Service was created for Reader to conduct his grant-funded research. As “Forest Products Extension Specialist,” he has worked closely with local businesses conducting basic research and testing new products.

In *A Survey of Montezuma County Forest Products Related Businesses and Mill Residue Assessment*, Reader (1998) gives a basic inventory of businesses and products. This exemplifies the partnership’s effort to gather baseline information needed to discover the future capacity of the local industry. The information complements product and market development efforts.

Reader estimated that Montezuma County timber mills generate about 350,000 cubic feet of coarse mill residue annually. The residue includes slabs, edgings, and trimmings. In a follow up report (1998, Sept.), he discusses his findings on the efficient recovery of slabs. He conducted the research in partnership with Kennedy Custom Cabinets and Stonertop Lumber Mill owners. The study was funded by the USDA Forest Service Rocky Mountain Region Rural Community Assistance program. Such cooperative research has not only provided incentive to local business owners, but it has actually turned out new products for which markets are emerging.

In the slab study, trucking, handling, sorting, and processing costs were looked at. Twelve size classes of lumber were recovered from test bundles of slabs. They found the costs prohibitive, but suggested that they would be greatly reduced if millers processed slabs at the same time they processed raw materials for regular products, rather than salvaging slabs afterwards.

Lynch and Reader have begun testing a borate additive for treating pine posts and poles with some promising results.

A Louisiana-Pacific waferwood plant in Olathe, Colorado, 100 miles north of Cortez, was purchasing small-diameter pine in quantities that gave incentive for local loggers to stay involved. However, pricing has not always been good enough to even break even. Hauling costs are the main obstacle.

“Garrison praises efforts that are gradually shifting the focus to entrepreneurship in product and market development.”

Small-diameter pine products being explored

- Compost combining two mill-waste materials with sludge
- Excelsior
- Posts and poles
- Vigas and latillas
- 3/8-inch paneling and wainscoting
- Caskets
- Borate additive for treating posts and poles
- Finger jointed, edge-glued wood
- Efficient slab recovery for making 1"x4" door jambs
- Pallets

Forest Service pricing of raw materials has continued to be a challenge for developing small-diameter pine products. As a result, the local timber industry as a whole has reinvested little in retooling for new product development. The cost and benefits of shipping raw materials long distances is a major challenge. Lynch advocates local processing support, saying that future research and application will determine value-added production and manufacturing potential in the region.

Along with affordable pricing, loggers and millers need assurance of reliable, steady, long-term supply of wood fiber from the national forest.

Many are concerned that there is little timber industry left in southwest Colorado and that most of it is made of aging operators who are trying to hold on until retirement. They have no one to pass their businesses on to and they are not in the position to invest in long-term plans. Pine forest partnership coordinator Carla Garrison describes the local timber industry as “waiting” for some break.

Garrison praises efforts that are gradually shifting the focus to entrepreneurship in product and market development. The idea is to nurture the view of restoration harvesting as “money on the side,” she says. She also emphasizes the Forest Service’s stake in the effort, because “if the industry is not here, the Forest Service is wasting its time” in trying to develop a timber program modeled on restoration when there is no one to do the work (personal communication, Sept. 1998).

Despite obstacles, progress and interest in restoration forestry continue. For example, the Forest Service in 1997 shifted its policy of estimating volume to allow weight scaling of wood fiber harvested from restoration projects.

Efforts are underway in the San Juan National Forest to transfer the essential elements of the Ponderosa Pine Forest Partnership into another setting. In this case, it’s not only a different vegetation type, mixed conifer, but in another Ranger District, the Pagosa, and another county, Archuleta.

As in the pine forest demonstration project, the mixed conifer project is based on an ecological prescription developed by Dr. William Romme, along with Dr. Wayne Sheppard with the Forest Service in Fort Collins. The Colorado Timber Industry Association, a primary PFP partner, purchased a 75-acre sale, then subcontracted it to a local logger. A small profit resulted, but a profit is not expected for every future sale unless pricing and markets are addressed. University of Idaho and Colorado State University researchers are testing potential white fir products now, such as 2 x 4 lumber.



Emerging Linkages: Broader Application of Community-Ecosystem Stewardship

Ponderosa Pine Forest partners have consistently focused a significant amount of available resources on improving forest health in a specific ecosystem by utilizing an adaptable and science-based methodology. By focusing most of their energy at the project level, an even greater potential for cumulative benefits for local and regional community and ecosystem sustainability has emerged. The primary lesson in this regard is that by emphasizing successful collaborative and sustainable outcomes locally with various allied community stewardship efforts on a regional and national basis, linkages have occurred naturally and purposively.

What began as an idea in 1992 among representatives of Montezuma County, Colorado, the San Juan National Forest, Fort Lewis College, and local, family owned timber producers has evolved into linkages and relationships with a wider set of stewardship issues and organizations. The Ponderosa Pine Forest Partnership was well-grounded in local leadership, a participatory approach to solving problems, and a strategic vision of economic and community sustainability. It has emphasized specific ecosystem improvements and active community participation in resource stewardship.

Underlying all of the evolving linkages is the notion that by concentrating stewardship in a local setting, a series of other opportunities for collaborative action arise naturally. Linkages with a network of similar community stewardship projects, and with several public-land agency adaptations have in turn strengthened the PFP.

While it is typical for sharing to occur between individual community forestry and stewardship projects (for example, Quincy Library, Flathead, Catron County) one can also observe a higher level of institutional change and organizational cooperation occurring through the linkages between the PFP, the forest planning process on the San Juan National Forest, administrative policies and collaborative capacities of the Forest Service, and regional forest restoration initiatives (see following pages).

These emerging linkages, which are essentially steps towards a more systemic implementation of community stewardship of public lands, present a new vision for forest restoration projects. The key message is that greater potential for success in community and ecosystem sustainability exists when a more strategic process of stewardship development occurs. While local initiatives can be successful by concentrating on a particular piece of land, building a collaborative partnership, etc., they ultimately need to become part of a regional or national process of change, directed at stewardship-oriented planning, scientific, policy, and monitoring outcomes.

“The intention was for everyone involved to have a greater understanding of issues, to learn something about working collaboratively, and to come closer to solving common problems.”

Community study group members and Forest Service staff talk about restoration forestry at a Ponderosa Pine Forest Partnership demonstration site shortly after it was harvested during the summer of 1996, using a “pine prescription” developed from research of pre-settlement “reference conditions” and range of natural variability studies.



San Juan National Forest plan revision

The San Juan National Forest plan revision (SJNFPR) began about 18 months after the PPFPP was initiated. It was conceived as a collaborative learning process between Forest Service staff, community members, and neutral facilitation staff from the Office of Community Service at Fort Lewis College. Three “community study groups” were formed and made up of 20-30 community members and the San Juan National Forest’s three district rangers, who participated as equal members.

The goal of bringing community-oriented economic, cultural and ecological values together with knowledge gained from research and implementation was broadened in the San Juan National Forest plan revision process to include more diverse community members and interests. Through the study groups, citizens and Forest Service staff worked together to identify issues and to share diverse perspectives on forest plan revision issues (sharing knowledge and values). These activities, as manifestations of ecosystem management, were intended to help reduce barriers to industry, citizen, and agency relationships created by conflicts over land use in the West.

SJNF planner Jim Powers has said that the incentive to seek a much higher quality of public involvement in the SJNFPR was “to more concretely link forest planning, resource management, and community sustainability.” Through this linkage, he intended that the new forest plan would not be merely a formal, abstract report, unrelated to the specific needs of managing the forest, nor would it overlook the visions, energies and desired participation of community members.

As the community study groups wound their way over the San Juan National Forest’s nearly two million acres, addressing ecological, cultural, travel, recreation, wildlife, vegetation management and other concerns, the

possibility and importance of connecting community stewardship and knowledge to forest planning became increasingly apparent. The forest plan revision was enriched and strengthened by in-depth study and problem solving already underway within the Ponderosa Pine Forest Partnership. The hands-on field study, Dr. Romme's research and the sense of trust and ownership previously engendered in the PPFPP became not only a study model for the other vegetation types discussed by the San Juan National Forest plan revision study groups, but set a basic pattern for stewardship-oriented problem solving throughout the forest plan revision. Trail and road users, recreationists, and wildlife supporters were able to more openly search for common ground alternatives, utilizing the face-to-face problem-solving stewardship methods of the PPFPP. The sharing of power by the Forest Service and the idea of integrating community and scientific knowledge, so vital in the PPFPP, were also critical components in the forest plan revision process.

Community knowledge and commitment to stewardship was integrated into a formal planning process, making possible the formation of a "Forest Stewardship Plan," a resource management plan enhanced and enlivened by the stewardship values and initiatives of community members.

On January 22, 1998, Thurman Wilson, Team Leader for the San Juan National Forest plan revision, and Sam Burns, Director of the Office of Community Services, made a presentation to the Committee of Scientists appointed by Mike Dombeck, Chief of the US Forest Service, to prepare a revised set of forest planning regulations. Among the points made on that occasion were the following:

"... an increasing need has arisen for diverse citizen involvement that will link community ecosystem stewardship to land and resource management planning."

"The planning regulations . . . should provide for a means of linking scientific analysis to the on-going development of community-ecosystem stewardship."

(Burns and Wilson 1998, Jan.)

Wilson and Burns went on to describe the current San Juan National Forest plan revision in these terms:

"Community members, public interests, scientists and managers are committed to an on-going process of community and ecosystem sustainability based on sharing common values about ecosystem stewardship."

(Burns and Wilson 1998, Jan.)

"The most important news to arrive since summer of 1998 is that the Forest Service's Washington Office gave the San Juan National Forest a special allowance to reduce its appraised prices for small-diameter to \$20 - \$40 per thousand-board-feet."

The desired outcomes of a forest plan are:

“Increased relationship building, community responsibility, and Forest Service capacity to engage in constructive action on the ground (i.e., community-ecosystem stewardship).”

(Burns 1998, Jan.)

“... future successes may depend more and more on external linkages, which are more capable of addressing broader market, institutional capacity of public-land agencies, and national-level policies and mandates.”

As the PPFPP evolved a collaborative-learning and problem-solving approach, the outcomes of it could be applied to revising the resource management plan for the host national forest, thereby creating a specific, concrete link between community ecosystem stewardship and forest planning.

Regional economics of forest restoration

As had been noted, the economics of restoration in the ponderosa pine ecosystem are a major determinant of success. Even with excellent collaboration, good ecological science, consistent ecological monitoring and adaptive management, there needs to be a reasonable, positive economic outcome as well. Whether the outcome must in all cases be a profit is not clear; nevertheless, there needs to be a cumulative break-even result or a strategic commitment to ecosystem reinvestment, with resources being transferred from other resource management areas such as fire fighting costs (see Gray and Kusel 1998).

The most important news to arrive since summer of 1998 is that the Forest Service’s Washington Office gave the San Juan National Forest a special allowance to reduce its appraised prices for small-diameter to \$20 - \$40 per thousand-board-feet. “We’ve finally gotten over the hurdle of pricing, since the Washington office appraisal specialist came out and gave us the go ahead to do what we’ve been trying to do for years,” Phil Kemp said (personal communication Sept. 4, 1998).

Another step has been to link the PPFPP with other community stewardship initiatives on a regional basis. During the fall of 1998, Montezuma County hosted a “Four Corners Initiative” conference in which 50 representatives of business, government and academia organized to utilize a \$500,000 grant from the *Economic Action Program* created by the 1990 Farm Bill. The money will be shared by participants in New Mexico, Colorado, Utah and Arizona to conduct an assessment of the supply of small-diameter pine on private, state, and federal lands. A survey of wood fiber availability and an assessment of infrastructure needed to harvest, process and move materials will be conducted.

In addition to the assessment, the group decided to focus on supporting actual projects in each state. Participants began organizing a support network immediately after the November 1998 conference. The Four Corners

Initiative, comprised of the state forest services of New Mexico, Arizona, Colorado, and Utah and numerous local community stewardship projects, holds implications for a long-term rejuvenation of timber economies through the region, addressing a consistent supply of timber available at efficient costs and with fair pricing.

Planning, developing, and operationalizing the Four Corners Initiative links the PPFPP with an important collaborative, regional network. Such a framework underscores the need for individual community stewardship projects to work together to achieve an adequate and consistent timber supply, facilitate timber industry adaptations to new production strategies, to support new product development and marketing, and to share a wide range of silvicultural, monitoring, and economic information. Cooperating regionally through the Four Corners Initiative holds the possibility of creating a critical mass of knowledge and entrepreneurship inherently required by the economics, resource management, and monitoring challenges of forest ecosystem restoration and sustainability.

Coupled with the broadening regional economic context is a related breakthrough in stewardship contracting (see report on stewardship contracting, Paul Ringgold, Pinchot Institute for Conservation). In December 1998, news arrived that of 28 stewardship contracting pilot projects approved by Congress, the Ponderosa Pine Forest Partnership would sponsor one of them. This pilot will occur in two landscapes on the San Juan National Forest, one in a ponderosa vegetation type and the other in mixed conifer. This will link the PPFPP with a nationwide set of pilot projects exploring options for achieving community-ecosystem stewardship through innovative contracting arrangements.

These economic- and demonstration-project linkages, as with the SJNF plan revision, create a reciprocal benefit to both the PPFPP and the regional and national initiatives. The framework and outcomes of the PPFPP have provided a model and implementation strategy that is being effectively utilized in the Four Corners Initiative and the national stewardship contracting pilots. In turn, the progress to be made at regional and national levels in timber supply analysis, new restoration and production methods, expanded markets and types of products, and new stewardship contracting capacities, will reciprocally enhance the PPFPP's chances of being successful in the longer term. Having been successful in creating the collaborative partnership and silvicultural restoration breakthroughs (Romme, Kemp), the challenge remains to strengthen the economics of pine restoration. Regional and national linkages are important next steps in achieving that goal. In many respects, having been successful on a local level in the pine zone, future successes may depend more and more on external linkages, which are more capable of addressing broader market, institutional capacity of public-land agencies, and national-level policies and mandates.

CPLP Principles

Transformational Leadership

Addressing complex issues through community members and public land managers sharing power and accepting mutual responsibility for community and ecological stewardship and sustainability.

Building Relationships

Increasing partnership capacities between communities and public land agencies, enabling both to collaboratively share resources in order to facilitate an appropriate integration of desired community and ecological futures.

Sharing Knowledge

Integrating scientific information with the knowledge of community members and leaders in order to improve resource management and planning, research and monitoring.

Sharing Values

Encouraging citizens, communities and public land managers to work together to sustain long-term interdependencies of communities, economies, public lands and cultures.

Constructive Action

Achieving real progress on the land by transcending ideological polarization and procedural gridlock through face-to-face problem solving and local community development processes.

Adaptive Management

Monitoring, evaluating, and sharing results of actions in order to openly and systematically refine the integrity and effectiveness of future actions.

The larger learning circle

As the Ponderosa Pine Forest Partnership developed from an idea in 1992 to a series of scientifically selected demonstration sites, its story began to be told. Requests came in to staff and partners to explain the collaborative efforts, the ecological science, and economics of the forest restoration and community sustainability process. These requests led the staff to formulate the Community Public Land Partnership principles discussed in this case study. They also created many opportunities to build networks among allied efforts in community stewardship. In most cases, the benefit was mutual.

Benefit was realized by the PPFPP through jointly learning with others, in creating action groups to address stewardship contracting, and in lobbying for needed project development resources. Simultaneously, many other stewardship projects and Forest Service leaders in the West gained from the PPFPP's achievements. As the learning circle expanded, so did the opportunities for collaborative social action.

The following examples illustrate the reciprocal nature of this collaborative learning circle:

- PPFPP staff and partners presented a case study about the project in October 1996 at the Rural Community Assistance Program's Annual Conference in Knoxville, Tennessee. This presentation led to the formation of the Community Public Land Partnership principles.
- The community public land partnership principles were continually used in later presentations, notably in Catron County, New Mexico and as a framework in giving input to the Collaborative Stewardship Team, US Forest Service, in March 1997. These principles have served as a basic foundation for local groups who were seeking a workable road map for improving their stewardship capacity.
- The linkage between the PPFPP and the San Juan National Forest plan revision, which addresses the relationship between a stewardship project and forest planning, led to a two-year action research and dissemination grant from the Ford Foundation. This grant provided resources for continued learning, ecological and product research, and additional dissemination throughout the western United States.
- The PPFPP story, referred to as a "partnering story," is utilized in the BLM National Training Center course entitled "Community-Based Partnerships and Ecosystems for a Healthy Environment" as an illustration of community collaboration and stewardship. Through this process, the PPFPP has influenced numerous community-public land collaboration processes, gaining additional support for this approach.

- The PPFP and its linkages with the San Juan National Forest plan revision have been utilized as a model in presentation to many individual national forest staffs, and in one workshop sponsored by the Forest Service's Collaborative Stewardship Team to gather data for its policy analysis and recommendations.

What are the lessons learned from the various linkages established by the PPFP?

Linkages with issues and projects outside the local stewardship initiative are not of critical importance at the beginning. It is much more important initially to achieve common ground, build trust, and establish internal stability. These attributes, along with adherence to the Community Public Land Partnership principles are of vital strategic importance in order to bring about real progress on the land. Real progress to restore the land is the essential first step towards achieving ecosystem and community sustainability.

It is important, during the early months and years, to seek advice and support from other restoration and stewardship projects about building a collaborative process, conducting ecosystem and community assessments, and initiating restoration activities.

Once the community stewardship or restoration project has constructed a body of scientific, ecological, and community knowledge, it then has something worthwhile to offer to the resource management and planning staff of the local national forest. When the new stewardship approach has been reviewed and tested through administrative and public involvement processes of a forest plan, the forest plan can then sanction and support them officially. In this collaborative way, stewardship informs forest planning, and planning confirms and establishes mandates for sound restoration. This linkage provides an opportunity for restoration and stewardship objectives to be adopted at the forest plan level, and for on-going resource management resources to be devoted to them.

Similarly, after achieving initial local success, stewardship projects often find that they are limited by administrative procedures of the federal land agencies. Linkages with other agencies and coalitions with other stewardship projects then can often be helpful to bring about the needed policy and resource allocation changes. Without the positive track record based on good ecological science, integrated knowledge, cooperation and leadership, even those agencies that want to take a new or adaptive management approach, do not have solid, empirical evidence or a rationale to do so.

Once a local community stewardship process, or a series of them, is in place, the issue often become much more focused on system change. The systems changes can be administrative, policy, legal authority, or how resources are made available to sustain land restoration and sustainability. They include how public resources are marketed, whether procedures can be

“It comes down to the people who do the work and take the risks. The results of small-diameter removal led to goodwill [between everyone involved]. You don’t do these things by yourself. That is key. You have to work with people as a group, people who have expertise.”
—Dr. Dennis Lynch

established, such as stewardship contracts, which integrate community stewardship objectives with improved ecosystem management, and whether public participation and involvement can be encouraged, all of which will produce community stewardship actions.

Once linkages are made to the local forest resource management plan and to system change, the broadening learning circles take on a much more significant role. They no longer function merely as information exchanges, as they might appropriately at the beginning. They become much more important as action networks, where projects learn together and work collaboratively to achieve the system or institutional changes that they all need to become sustainable.

What can be surmised from the developmental patterns of the PFP and ensuing linkages?

On one level, community ecosystem stewardship needs to become successful at the local or project level. Efforts which cannot achieve collaboration among key partners, build new relationships, and integrate critical scientific knowledge and local values and commitments can neither improve local ecosystems, nor contribute to the broader community stewardship movement.



Summary

This case study has aimed to help determine the value of a unique partnership in which autonomous organizations contributed to two experiments: one in restoration forestry and the other in cross-boundary collaboration. The authors offer it for reflecting upon the complexities and challenges associated with addressing issues of community and national forest sustainability.

The Ponderosa Pine Forest Partnership continues to be a pivotal demonstration in which diverse individuals and institutions meet in creative tension with the complexities and challenges in transforming an idea into reality. Amassing scientific understanding of the behavior and structure of forests and in building relationships to see a demonstration project through were important motivating elements in the PFP. Noteworthy accomplishments for future study and application have led to new questions, such as which steps lead toward community stewardship, or how much should and can the Forest Service incorporate restoration forestry into its timber program.

The PFP's uniqueness lay in how multiple interests engaged each other and the process. Their union was not a coalition, but an opportunistic networking, a search for openings and process changes in order to meet shared goals. They didn't enter the effort with demands and expectations that, if they were not met, jeopardized the partnership process. They simply sought opportunities and resources to produce visible results.

Participation was defined by an evolution of community and scientific knowledge, of informing, and being informed by, values and interests towards the community and the forest. Participants were exposed to an increasingly complex ecological and social picture, challenged to shift between perspectives and encompass a whole range and complexity of the issues and values. The common experience allowed diverse participants to share responsibility and ownership for both problems and solutions.

Much of PFP unfolded as it did because no road map existed to show answers to demands for forest health and community support of the local timber industry. The industry didn't see itself as a management tool for enhancing forest health. The Forest Service had no clear conception of restructuring its relationship with the whole community. Yet, relationships emerged where they had not existed, giving birth to possibilities that fed new knowledge and new ideas. Trust and confidence were fostered. Authority and expertise were not undermined. Instead, they were used as avenues to share responsibility for both community and ecosystem sustainability. Once the restoration harvesting work and local partnerships were established, links between forest planning, regional economic analysis and cooperation, and a wider learning circle became a priority. Such linking will continue to be a challenge in the future.

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