



**Ecological Restoration Institute**  
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**ECOLOGICAL RESTORATION INSTITUTE  
PROP 301 FY'2006  
Quarter Four: June 30, 2006**

**I. Introduction**

The ecological goods and services produced by the pine forests of Arizona are economically valuable and critical to the quality of life and well being of Arizona citizens. These forests provide a permanent home to many people and a cool summer respite from the unrelenting desert heat to urban dwellers. The pine forests are the source of surface water for Phoenix and other communities. Recreation and tourist dollars are the single largest contribution to the rural economies of northern Arizona. In addition, these forests provide critical wildlife habitat and sequester carbon—two ecosystem services that are difficult to quantify yet are unique and valued by the citizenry.

Unfortunately, Arizona's forests are threatened by unnatural catastrophic fire, drought, bark beetles and disease. These threats exist because the carrying capacity of the forest is compromised by a century of man induced changes. The single largest problem is the over-stocking of the forest by small trees. These trees are the fuel for unnatural fire and create harmful competition for the water and nutrients required to maintain healthy trees. This competition weakens old, large trees and compromises their ability to resist diseases and insects.

Restoring forests is essential to re-establishing the health and productive capacity of these systems. It also represents an investment in the socioeconomic well-being of Arizona communities. Fortunately, a science-based solution exists to solve this problem—comprehensive forest restoration. This is the business of the Ecological Restoration Institute.

The ERI strives to provide assistance and the best available biophysical and social science to the land managers, practitioners and stakeholders who influence the design and implementation of forest restoration and hazardous fuel reduction treatments. The ERI is nationally recognized for this applied, service oriented model. Since 1999, Congress has invested over \$15 million in the ERI to help solve the forest health and wildfire problem. Recently, Coconino County Supervisor Deb Hill acknowledged the importance of the work of the ERI for one important group of stakeholders—elected officials.

“The Coconino County Board of Supervisors supports the work of the ERI. Through their research and public outreach we are making improvements in the way our communities and forest resources are managed. Their work is very important for those of us charged with the welfare of citizens that live in this region, in the largest contiguous ponderosa forest in the world.”

The credibility of the ERI is built on the applied research and education that informs our service and outreach. Through these activities the ERI develops the best available knowledge on emerging land management challenges while incorporating students in unique experiences that broaden and enlighten their education in unexpected ways.

"When I first got the job at ERI, I figured it would be no big deal -- another summer job. What I realized after assisting with a field trip attended by the Secretary of Agriculture Mike Johanns and Senator Jon Kyl are the widespread possibilities of my job. I realized that what I am working on has great implications that extend to the national level. What I am working on affects not only my environment but influences policy." -Kamran Mousavi, Sophomore, NAU Parks and Recreation Management.

The accomplishments enumerated in this report represent leveraged federal, state and Prop 301 2005-2006 dollars. Proposition 301 funds contributed to the completion of these projects by funding the faculty and staff who conducted research, developed and taught classes and continuing education programs, mentored undergraduates, supervised graduate student training, and worked with communities and other collaborators.

The ERI is grateful to the University and taxpayers for the funding provided by Prop 301.

## II. Report on Deliverables

	<b>ERI Commitment FY 06</b>	<b>Accomplished as of 6/30/06</b>
<b>1. Return on Investment</b>		
Leveraged Federal and State Funds	\$2 Million	\$1.72 Million
Leveraged Industrial Dollars		
Leveraged Other Dollars	\$50,000	\$30,000
Other Qualitative Returns (including Presentations and publications)	20 publications 30 presentations	23 publications 50 presentations
Losses to AZ Economy Averted		\$5,180,726
<b>2. Tech. Transfer</b>		
Patent Applications		
Spin-Off Companies Generated		
Products Generated that are in Marketplace		
Sponsored conferences and workshops	4 workshops	6 workshops
Business Expansions		
Note: The Ecological Restoration Institute is actively involved with an effort by the Greater Flagstaff Economic Council and the Greater Flagstaff Forests Partnership to establish a private, integrated wood utilization campus at Camp Navajo. The ERI is key to marketing the opportunities presented by small wood utilization to the private sector		
<b>3. Companies Identifying the University as reason for relocating to Arizona</b>		
<b>4. Work Force Contributions</b>		
Graduate Students in Pipeline or Graduated	4 students	9 students
Post-Doctoral Students in Pipeline or Graduated	N/A	N/A
High-end Baccalaureates or Graduate Degrees produced in specific disciplines	10 students	12 students
Transition to Professional Employment	6 students	6 students

Transition to Graduate Degree Programs	1 student	4 students
Undergraduate Internships	3 student	7 students
Certificates granted	N/A	N/A
New K-12 teachers in science and mathematics	N/A	N/A
Undergraduate students in the pipeline	30 students	41 students
Continuing Education Professionals	55 students	195 students

#### 5. Specific Curriculum Innovations for Access and Workforce

New programs – full time students

New courses - full time students

Revised programs and courses	1	2
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New programs – practicing professionals

#### 6. Specific Collaborations

Community College	1	1
Tri-University		
Industry/Private Sector - University	10	7
Community-Based (including tribal)	15	38
Regional, national, international	5	39

### III. DETAILED DOCUMENTATION<sup>1</sup>

#### 1. Return on Investment

##### Leveraged Federal and State Funds

- *1.6 million dollars from Congress in FY'06 through the USDA Forest Service*
- *\$87,000 grant from the USDA Forest Service Rocky Mountain Research Station to monitor post-wildfire revegetation in southwestern ponderosa pine forest.*
- *\$25,000 additional funding for Technical Assistance to Wahoo Watershed Workgroup (WWW), Sierra Soil & Water Conservation District & the Black Range Ranger District of the Gila National Forest.*
- *\$1,970 Public Service project with Maricopa County Parks & Recreation Department.*

##### Leveraged Other Dollars

- *\$30,000 grant from the National Commission on Science to engage leading scientists, land managers, and old growth advocates in a workshop designed to develop practical and rigorous approaches to old growth management in the American Southwest.*

##### Losses Averted

- The work of the ERI contributes to the reduction of hazardous fuels and the avoidance of catastrophic fire. A study funded through the ERI demonstrated that the value of treating acres to avoid fire is worth a minimum of \$530 dollars per acre. This figure assumes that no wood is marketable. Should the wood have economic value it increases the economic benefit of restoration. Based on a study by Yale University, the full cost of the Cerro Grande fire was \$26,000/acre. The figure represented in this report is an extremely conservative estimate of the value of restoration to the state of Arizona.

#### Publications

- Abrams, J.B., E.Kelly, B.Shindler, and J.Wilton. 2005. Value orientation and forest management: The forest health debate. *Environmental Management* 36 (4) 495-505.
- Bakker, J.D. 2006. A new, proportional method for reconstructing historical tree diameters. *Canadian Journal of Forest Research*. 35:2515-2520.
- Derr, T. and A. Moote. 2005. Collaborative Forest Restoration Program: Monitoring Curriculum, Background and Activities for Ecological Monitoring. Ecological Restoration Institute, Flagstaff, AZ. 118p.
- Fulé, P.Z., D.C. Laughlin, W.W. Covington. 2005. Pine-oak forest dynamics five years after ecological restoration treatments, Arizona, USA. *Forest Ecology and Management* 218:129-145.

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More information on each activity can be obtained from the principal ERI contact person listed.

- Fulé, P.Z., T.A. Heinlein, and W.W. Covington. In review. Critique of Grand Canyon fire histories not supported. (Reply to letter by W.L. Baker). *International Journal of Wildland Fire*.
- Fulé, P.Z. 2006. Arizona, Europe can learn from common fire threats. Op-ed essay, *Arizona Daily Sun*, April 14, 2006.
- Heinlein, T.A., M.M. Moore, P.Z. Fulé, and W.W. Covington. 2005. Fire history of two ponderosa pine—mixed conifer sites: San Francisco Peaks, Arizona, USA. *International Journal of Wildland Fire* 14:307-320.
- Huisinga, K.D., D.C. Laughlin, P.Z. Fulé, J.D. Springer, and C.M. McGlone. 2005. Effects of an intense prescribed fire on ground-flora in a mixed conifer forest. *Journal of the Torrey Botanical Society* 132(4):590-601.
- Kooistra, C.M., and J.D. Bakker. 2005. Frozen-stored container stock can be planted without prior thawing. *Native Plants Journal* 6:267-278.
- Korb, J.E., P.Z. Fulé, and B. Gideon. In press. Soil disturbance and herbaceous response associated with different harvest systems and intensities. *Ecological Restoration*.
- Korb, J.E., Daniels, M.D., Laughlin, D., and P.Z. Fulé. In review. Warm, dry mixed conifer plant community diversity in Southwest Colorado. *Southwestern Naturalist*.
- Laughlin, D.C., M.M. Moore, J.D. Bakker, C.A. Casey, J.D. Springer, P.Z. Fulé, and W.W. Covington. In review. Assessing targets for the restoration of herbaceous vegetation in ponderosa pine forests. *Restoration Ecology*.
- Laughlin, D.C., S.R. Abella, W.W. Covington and J.B. Grace. In review. Plant species richness and soil properties in a ponderosa pine forest: a structural equation modeling analysis. *Journal of Vegetation Science*.
- Laughlin, D.C., J.B. Grace. In press. A multivariate model of plant species richness in forested systems: old-growth montane forests with a long history of fire. *Oikos*.
- Laughlin, D.C., M.M. Moore, J.D. Bakker, C.A. Casey, J.D. Springer, P.Z. Fulé. In press. Assessing targets for restoration of herbaceous vegetation in ponderosa pine forests. *Restoration Ecology*.
- Laughlin, D.C., J.D. Bakker, P.Z. Fulé. 2005. Understory plant community structure in lower montane and subalpine forests, Grand Canyon Park, USA. *Journal of Biogeography* 32:2083-2102.
- Laughlin, D.C., S. Abella. In review. A general multivariate model of plant community composition and its application to Ponderosa Pine forests. *Ecological Modelling*.
- Moore, M.M., C.A. Casey, J.D. Bakker, J.D. Springer, P.Z. Fulé, W.W. Covington, and D.C. Laughlin. 2006. Herbaceous response to restoration treatments in a ponderosa pine forest, 1992-2004. *Rangeland Ecology and Management*, 59:135-144.
- Moote, Ann, 2004. Multiple party monitoring in New Mexico. *Communities and Forests* 8(3):3,7.
- Ostergren, D., K. Lowe, and J. Abrams. In review. Public perceptions of forest management in North-Central Arizona: The paradox of demanding more involvement but allowing limits to legal action. *Journal of Forestry*.

- Strom, B. 2005. Pre-fire treatment effects and post-fire forest dynamics on the Rodeo-Chediski burn area, Arizona. M.S. Thesis, School of Forestry, Northern Arizona University, Flagstaff, AZ.
- Van Horne, M.L., and P.Z. Fulé. In review. Comparing methods of reconstructing fire history using fire scars in a southwestern USA ponderosa pine forest. *Canadian Journal of Forest Research* 36 (4):855-867.
- Waskiewicz, J.D., P.Z. Fulé, and P. Beier. In review. Quantifying the deterioration of ponderosa pine snags in northern Arizona. *Western Journal of Applied Forestry*.

*Note: The ERI CFRP multiparty monitoring handbooks are referenced in the Healthy Forests Initiative/Healthy Forests Restoration Act Interim Field Guide. This is one example of how the ERI is "setting the standard" for multiparty monitoring of fuel reduction / restoration projects."*

### **Presentations and Service**

- Abrams, Jesse. "Collaborating for Results." CFRP. First of Two training sessions on collaboration. Prescott, AZ. March 21, 2006. 18 participants.
- Abrams, Jesse. "Collaborating for Results." CFRP. Second of Two training sessions on collaboration. Prescott, AZ. March 21, 2006. 18 participants.
- Abrams, J. "White Mountains landscape assessment: Update to the Natural Resources Working Group." Showlow, AZ. February 14, 2006. 38 participants.
- Abrams, Jesse. 2006. White Mountains Landscape Assessment. Presentation to the Little Colorado River Watershed Coordinating Council, Flagstaff, AZ. January 13, 2006. 11 attendees.
- Bakker, J.D., M.M. Moore, A.J. Sánchez-Meador. "Historical studies on the Colorado Plateau: An overview." 8th Biennial Conference of Research on the Colorado Plateau, Flagstaff, AZ. November 10, 2005. 50 participants.
- Bullington, C. Informational booth for the Coconino County Fair, Flagstaff, AZ, 1,000+ participants
- Bullington, C. Wildfire Community Open House, City of Flagstaff Firewise, 4-9 PM at Flagstaff City Hall, Hosted booth with Dennis Lund. 04/13/06. 30 participants.
- Covington, W.W., D. Vosick, K. Mitchell, H.B. Smith, S. Abella, V. Yazzie. Arizona State Legislature Tour. An overview of Forest Restoration. September 26-27. Flagstaff, AZ. Multiple contributors to this 2-day event which was attended by 3 members of the Arizona State Joint Legislature
- Covington, W.W. Prepared powerpoint presentation for Senator (State) Jake Flake. This presentation was given to the State Legislature Association meeting in Seattle, WA. October, 2005.
- Covington, W.W. "Restoration Thinning Prescriptions: Tree Age, Tree Size and Tree Pattern." Presented to the Joint Legislative Healthy Forest Task Force. Phoenix, AZ. September, 2005. 48 participants.
- Covington, W.W. "Practicing Ecosystem Medicine: Restoration of Ponderosa Pine Ecosystems". Festival of Science Twilight Talk at the Museum of Northern Arizona. September 27, 2005. 74 participants.

- Covington, W.W. *Field trip presentations to attendees of Southwest Ecological/SWERI Strategic Planning Meeting. Flagstaff, AZ. July 21, 2005. 10 participants*
- Covington, W.W. "Greater Ecosystem Landscape Scale." *Southwest Ecological Restoration Institutes/SWERI Strategic Planning Meeting. Flagstaff, AZ. July 20, 2005. 14 participants.*
- Covington, W.W. "A statewide forest health restoration strategy will save billions." *Presentation at the Arizona Economic Forum Annual Conference. Flagstaff, AZ. May 23, 2006. 70 participants.*
- Covington, W.W. "Cooperating to Restore Greater Ecosystems of Arizona. Presented to the Arizona Senate Natural Resources and Rural Affairs Committee. Phoenix, AZ. March 8, 2006. 17 participants.
- Covington, W.W. "Purpose and Mission of the Ecological Restoration and Potential Tribal Collaboration". *Presented at the Knowledge Service Needs for Restoration and Conservation Management of Tribal Lands Workshop. Flagstaff, AZ. February 14, 2006. 40 participants.*
- Covington, W.W. "Greater Ecosystem Landscape Scale." *Southwest Ecological Restoration Institutes/SWERI Strategic Planning Meeting. Flagstaff, AZ. July 20, 2005. 14 participants*
- Daniels, M. *Flagstaff Festival of Science: field trip for members of the public to the Fisher Unit, Centennial Forest, Flagstaff, AZ. September 24, 2005. 7 participants.*
- Fulé, P.Z. *Restoration of fire-adapted forests in the American Southwest. May 29, 2006, Swiss Federale Institute WSL [Forest, Snow, Landscape], Birmensdorf, Switzerland. 19 attendees.*
- Fulé, P.Z. *Historia de incendios forestales en bosques mediterraneos: un ejemplo del Pinus nigra. Seminar, departament d'ecologia, Universitat de Barcelona. May 3, 2006, Barcelona, Spain. 18 attendees.*
- Fulé, P.Z. *Restauración de bosques adaptados a incendios frecuentes. Seminar presentation, CREAM (Centre de Recerca Ecologica i Aplicacions Forestals), Universitat Autònoma de Barcelona, Bellaterra (Barcelona). March 8, 2006, Catalunya, Spain. 25 attendees.*
- Huffman, D. *Consulted with Donald Povatah and Carl Seweyestewa of the Hopi Tribe, Department of Natural Resources to help them formulate methods to inventory their pinyon-juniper woodlands. 2 visits in Fall, 2005.*
- Laughlin, D.C., M.M. Moore. "Plant productivity and diversity in a pine-bunchgrass community: the importance of inter-annual climatic variation." *The 8th annual Biennial Conference on Research on the Colorado Plateau. Flagstaff, AZ. November 7-10, 2005*
- Laughlin, D., J. Springer. *Fieldtrip to Gus Pearson Natural Area given to Jim Grace and Mike Anderson of the USGS in Lafayette, Louisiana. Flagstaff, AZ. October 19, 2005. 5 participants. November 9, 2005. 50 participants.*
- Laughlin, D. *Northern Arizona University and the University of Arizona, a trip to Gus Pearson Natural Area given to visiting Chinese Ecologists, Flagstaff, AZ. October 9, 2005. 15 participants.*

- Lund, D. Review Prescott National Forest Mexican Spotted Owl rapid assessment areas with Prescott College graduate student who will finish the work for the Prescott National Forest. February 6, 2006. 1 participant.
- McGlone, C. "Non-native plant species and ecological restoration: threats to restoring land health." Southwest Vegetation Management Association Annual Meeting, Phoenix, AZ. November 2, 2005. 80 attendees.
- McGlone, C. Invasive Plant Ecology Special Session, 8th Biennial Conference of Research on the Colorado Plateau, November 7-10, 2005. Flagstaff, AZ. 50 participants.
- Moote, M.A. "Turning Expectations into Actions." Greater Flagstaff Forests Partnership Annual Retreat. March 29, 2006. 20 participants.
- Moote, M.A. Greater Flagstaff Forest Partnership Highest Priority Immediate Goal #2 Planning Meeting. February 13, 2006. 6 participants.
- Moote, M.A. Greater Flagstaff Forest Partnership Highest Priority Immediate Goal #2 Planning Meeting. January 6, 2006. 8 participants.
- Roccaforte, J.P. "Landscape-scale restoration in canopy fuels and potential fire behavior following Ponderosa Pine restoration treatments." Biennial Conference of Research, CO Plateau. Flagstaff, AZ. November 8, 2005. 60 attendees.
- Sánchez-Meador, A.J., M.M. Moore, J.D. Bakker. "Historical studies on the Colorado Plateau: Results from two long-term data sets." 8th Biennial Conference of Research on the Colorado Plateau, Flagstaff, AZ. November 10, 2005. 50 participants
- Springer, Judy. 2006. "Emerging from the ashes: soil seed banks, seeding and natural regeneration following fire in Arizona." Arizona State Botanists Conference, Desert Botanical Gardens, Phoenix, AZ. February 11, 2006. 100 participants.
- Trudeau, J. "Restoring roads with fungi: Evaluating the use of fungal inoculum and wood mulch amendments in Arizona ponderosa pine forest." Arizona Native Plant Society, November 18, 2005, Flagstaff, AZ. 3 participants.
- Tuten, Matthew C., Chancellor, William W., Smith, H. B. and Lund, D. Ecological Restoration Demonstration Treatments: A starting point for local ecological monitoring and adaptive management. Poster presented at the The 8th Biennial Conference of Research on the Colorado Plateau. duBois Conference Center, Northern Arizona University, Flagstaff, Arizona. November 7-10, 2005.
- Vosick, D. Pork, Policy, Politics and Practice: How Federal Goals Do and Don't Influence Forest Management in the Southwest. Speech for the Santa Fe Watershed Association. October 14, 2005. Santa Fe, New Mexico. 60 people.
- Vosick, D. Governor Janet Napolitano's Forest Health Oversight Council, co-chair. Presentation on the Needs Assessment required by the Institute Charter. October 13, 2005. Phoenix, Arizona. 12 people.
- Vosick, D. Field Tour for Lucy Murfitt, Brenda Burman and Andy Jacobs. Senator Kyl's Staff. Joanne Keene, Congressman Renzi. Forest Restoration Tour including: Visit to Lake Mary Watershed, Visit to Camp Navajo to discuss small wood utilization campus, Kaibab National Forest to discuss Pinyon Juniper Restoration. August 29-30, 2005. Flagstaff, AZ.

- Vosick, D. "Creating a 20-year strategy and vision for restoring forest health". GFFP Community Forest Forum. Flagstaff, AZ. May 2, 2006. 20 attendees.
- Vosick, D. 2006. Co-chair of the Governor's Forest Health Oversight Council. Phoenix, AZ. January 12, 2006. 20 participants.
- Vosick, D. "Why the Strategic Vision is Important." Presented at the Governor's Forest Health Summit. Prescott, AZ. March 21, 2006. 175 participants.
- Vosick, D. "Forest Planning and Strategic Vision." Presented at the Governor's Forest Health Summit. Prescott, AZ. March 21, 2006. 25 participants in the first session and 6 participants in the second.
- Vosick, D. "Using the Best Available Science to Restore Forests." Presented at the annual meeting of the Coalition of Arizona and New Mexico Counties. Las Cruces, New Mexico. March 18, 2006. 35 participants.
- Vosick, D. Co-convened with Wayne Robbie of Region 3/USFS workshop to discuss coordination of information and management tools in the Southwest. August 31-September 2, 2005. Albuquerque, New Mexico. 25 people.
- Vosick, D., Viers, J. Forest Restoration and the Issue of Small Wood Utilization. Army Corps of Engineers. Presentation to encourage the Department of Defense to make land available for a small wood utilization campus at Camp Navajo. Flagstaff, Arizona, August 17, 2005. 3 consultants.
- Yazzie, V. "Knowledge Service Needs for Restoration and Conservation Management of Tribal Lands Workshop Overview." Intertribal Timber Council Board Meeting. Globe, AZ. February 22, 2006. 12 participants.
- Yazzie, V., K. Mitchell. "Intertribal Timber Council Meeting". Presented the overall findings of the Knowledge Service Needs, discussed collaboration opportunities with tribes, agencies, and universities in managing tribal forests and natural resources, and discussed the future of the Native American Forestry Program in the School of Forestry at NAU and the role of ITC. Globe, AZ. February 22, 2006. 40 participants.
- Yazzie, V. "The Right to Change Tribal Forest Management". Continuing Education in Ecosystem Management (CEEM) XII Workshop. NAU, Flagstaff, AZ. February 7, 2006. 28 participants.
- Yazzie, V. "Integrating a Native American Perspective in Natural Resource Science, Law and Policy." Continuing Education in Ecosystem Management (CEEM) XII Workshop. NAU, Flagstaff, AZ. February 10, 2006. 28 participants

## 2. Tech. Transfer

Patent Applications

Spin-Off Companies Generated

Products Generated that are in Marketplace

Sponsored Conferences and Workshops

- *Bakker, J. Interior West Forest Inventory and Analysis User's Forum and Mapmaker Workshop, Co-sponsored with Merriam-Powell and NAU School of Forestry. March 17, 2006. 35 attendees.*
- *Covington, W.W. "Managing old growth in frequent-fire forests of the West: A writing workshop for practitioners, researchers, and co-operators". Flagstaff, AZ. April 19, 2006. 25 attendees.*
- *Fulé, P.Z., J. Villanueva-Díaz, and M. Ramos-Gómez. Fire regime in a conservation reserve, Chihuahua, México. The World Conference on Ecological Restoration, Society for Ecological Restoration International, September 12-18, Zaragoza, Spain. 35 attendees.*
- *Moote, M.A., M. Savage, E. Krasilovsky. "Introduction to Monitoring". Collaborative Forest Restoration Program Annual Meeting, January 24, 2006. 65 participants*
- *Moote, M.A., M. Savage, K. Lowe. "Reporting and Using Monitoring Results". Collaborative Forest Restoration Program Annual Meeting, January 24, 2006. 5 participants.*
- *Yazzie, V. "Knowledge Service Needs for Restoration and Conservation Management of Tribal Lands Workshop." Lead Co-coordinator. Flagstaff, AZ. February 14-15, 2006. 30 participants.*

Business Expansions- N/A

## 3. Companies identifying the University as reason for relocating

## 4. Work Force Contributions

Graduate Students in Pipeline or Graduated

These students are supervised by faculty supported, in part, by 301 funds:

- Jon Bakker (Moore)
- David Bell (Fulé)
- Liz Kailies (Covington)
- Amanda Kuenzi (Fulé)
- Cory Miller (Covington)
- David Passovoy (Fulé)
- Andrew Sanchez Meador (Moore)
- Mike Stoddard (Fulé)

- Ethan Barnes (Fulè)

#### High-end Baccalaureates or Graduate Degrees awarded in specific disciplines

- *Boone, C. Graduated with a B.S. in Biology with an emphasis in Fish and Wildlife Management.*
- *Brandy, L. Graduated with a B.S. in Forestry with a focus in ecological restoration.*
- *De Blois, B. Graduated with a B.S. in Forestry with a focus in ecological restoration and a minor in Environmental Planning.*
- *Dodge, R. Graduated with a M.S. in Forestry.*
- *Dyer, J. Graduated with a B.S. in Forestry with a focus in ecological restoration.*
- *Fields, A. Graduated with a B.S. in Forestry with a focus in ecological restoration.*
- *Fuller, C. Graduated with a B.S. in Geology.*
- *Greenway, S. Graduated with a B.S. in Biology with an emphasis in Ecology.*
- *Rainey, J. Graduated with a B.S. in Forestry with a focus in ecological restoration.*
- *Rudebusch, F. Graduated with a B.S. in Environmental Science with a minor in Spanish.*
- *Rudeen, A. Graduated with a B.A. in International Affairs.*
- *Stoddard, M. Graduated with a M.S. in Forestry.*

#### Transition to Professional Employment

- *Boone, C. Graduated with a B.S. in Biology with an emphasis in Fish and Wildlife Management. Hired as a North Pacific Fish Observer with Alaskan Observers, Inc in Seattle, WA. May 12, 2006.*
- *Brandy, L. Graduated with a B.S. in Forestry with a focus in ecological restoration. Hired as a Forester with the Plumas National Forest Feather Ranger District, Oroville, CA. May 12, 2006.*
- *De Blois, B. Graduated with a B.S. in Forestry with a focus in ecological restoration and a minor in Environmental Planning. Hired as a SCEP Forester with the Lassen National Forest, CA and accepted as a Master of Science student at NAU's School of Forestry, Flagstaff, AZ. May 12, 2006.*
- *Greenway, S. Graduated with a B.S. in Biology with an emphasis in Ecology. Hired as a seasonal Research Technician with NAU's Silviculture Lab, Flagstaff, AZ. May 12, 2006.*
- *Fields, A. Graduated with a B.S. in Forestry with a focus in ecological restoration. Hired as a seasonal Field Ecologist with the Grand Canyon Trust, Flagstaff, AZ. May 12, 2006.*
- *Rainey, J. Graduated with a B.S. in Forestry with a focus in ecological restoration. Hired as a seasonal horticulture staff at Flagstaff Native Plant and Seed, Flagstaff, AZ. May 12, 2006.*

### Transition to Graduate Degree Programs

- *De Blois, B. Graduated with a B.S. in Forestry with a focus in ecological restoration and a minor in Environmental Planning. Accepted as a Master of Science student at NAU's School of Forestry, Flagstaff, AZ. May 12, 2006.*
- *Dyer, J. Graduated with a B.S. in Forestry with a focus in ecological restoration. Accepted to the University of Wisconsin Master of Science in Forestry program. Awarded a graduate assistantship.*
- *Fuller, C. Graduated with a B.S. in Geology. Accepted to law school at the University of Wyoming, Laramie, Wyoming. May 12, 2006.*
- *Rudebusch, F. Graduated with a B.S. in Environmental Science with a minor in Spanish. Accepted as Master of Science student in Botany at Idaho State University, Pocatello, Idaho. May 12, 2006.*

### Undergraduate Internships

- *Gift, D. Hired as a summer intern with the Institute of Ecosystem Studies, Millbrook, New York. April 14, 2006.*
- *Lamb, J. Hired as a SCEP Fire Ecologist with the Plumas National Forest, Mt. Hough Ranger District, Quincy, CA. April 28, 2006.*
- *Lofgren, S. 2006. Hired as a summer counselor for the Centennial Forest's Junior Forestry Academy. February 15, 2006.*
- *Nosek, R. Hired as a summer Forestry Aid on the Fire Crew of the Tusayan Ranger District with the Kaibab National Forest, Williams, AZ. April 11, 2006.*
- *Peterson, C. 2006. Selected for a Physics student teaching position with the US Department of Defense High School in Naples, Italy for the fall 2006 semester. March 10, 2006.*
- *Smalley, T. 2006. Awarded a Student Career Experience Program Forester position with the Allegheny National Forest in northwestern Pennsylvania. March 13, 2006.*
- *Suby, L. Conducted 16 week student teaching at Sechrist Elementary School kindergarten class under the supervision of Kathy Floyd, Flagstaff, AZ. August – December 2005.*

Certificates Granted – N/A

New K-12 Teachers in Science and Mathematics – N/A

## Undergraduate students in the pipeline

### *Funded Undergraduate Research Experience During Undergraduate Enrollment*

<b>Students</b>	<b>Major</b>
Bedford, Ashton	UND
Bennett, Lydia	UND
Boone, Caley	BIO
Brandy, Luke	FOR
de la Faye, Marie	UND
DeBlois, Ben	FOR
Dyer, Jacob	FOR
Eaton, Francis	FOR
Fields, Amber	FOR
Fuller, Claire	GLG
Gift, Danielle	FOR
Gonzales, Christopher	FOR
Greenway, Shawnté	BIO
Hartman, Jenny	IAFF - Honors
Hyp, Ian	UND
Johnson, Ian	UND
Lamb, Jon	FOR
Leppert, Justy	UND
Lofgren, Skyler	FOR
Lyons, Austin	BIO - Honors
Mackinnon, Kat	UND
Motichek, James	UND
Mousavi, Kamran	UND
Muehlbauer, Jeffrey	BIO/CHM - Honors
Nosek, Ryan	CU ANT
Peterson, Chance	PHYS SCI - ED
Peterson, Pamela	UND
Pregitzer, Clara	FOR
Rainey, Jeffrey	FOR
Robertson, Megan	UND
Robinson, Gina	ENV SCI
Rudebusch, Faith	ENV SCI-Honors
Rudeen, Aleta	INTL AFF
Smalley, Theresa	FOR
Sorensen, Chris	FOR
Steffen, Niki	FOR
Suby, Lang	ED - Elementary
Trudeau, Joseph	BAILS/PRM
Tsonis, Jennifer	FOR
Tymrak, Kaitlin	ENV ENG - Honors
Wilson, Sonja	UND

Notes: The students supported by the ERI are very accomplished as demonstrated by the following:

- *De Blois, B. Awarded \$3,300 in scholarships for academic excellence and leadership qualities from the School of Forestry. Honors Convocation, Flagstaff, AZ. April 7, 2006.*
- *Eaton, F. Awarded a \$3,000 Robert Nauman Memorial Scholarship from NAU. May 11, 2006.*
- *Eaton, F. Awarded a \$2,000 scholarship for academic excellence from the School of Forestry. Honors Convocation, Flagstaff, AZ. April 7, 2006.*
- *Eaton, F. Awarded a \$400 ERI Student Scholarship in Memory of Kirk Smith for academic excellence and commitment to ecological restoration and to the mission of ERI. Honors Convocation, Flagstaff, AZ. April 7, 2006.*
- *Fuller, C. Awarded best poster at NAU's 2nd Annual Celebration of Undergraduate Research and Design, Flagstaff, AZ and given a \$700 travel grant to present next academic year at the Conference on Undergraduate Research in Washington, DC. May 8, 2006.*
- *Gift, D. Awarded a \$2,200 scholarship for compiling the highest academic average for the first two professional semesters from the School of Forestry. Honors Convocation, Flagstaff, AZ. April 7, 2006.*
- *Gonzales, C. Awarded a \$254 scholarship for academic excellence and demonstrated leadership from the School of Forestry. Honors Convocation, Flagstaff, AZ. April 7, 2006.*
- *Greenway, S. Awarded an all expense paid trip to the Ecological Society of America's Sevilleta Long Term Ecological Research Project in the Sevilleta National Wildlife Refuge, as an awardee under the SEEDS program (Strategies for Ecology, Education, Development and Sustainability).*
- *Hartman, J. Awarded Distinguished Delegate representing Japan in the National Security Council, Model United Nations Conference, Los Angeles, CA. April 2, 2006.*
- *Lamb, J. Awarded \$846 in scholarships for academic excellence from the School of Forestry. Honors Convocation, Flagstaff, AZ. April 7, 2006.*
- *Mackinnon, K. Awarded a \$200 scholarship for being the most outgoing freshman from the School of Forestry. Honors Convocation, Flagstaff, AZ. April 7, 2006.*
- *Peterson, C. Awarded a \$400 ERI Student Scholarship in Memory of Kirk Smith for academic excellence and commitment to ecological restoration and to the mission of ERI. Honors Convocation, Flagstaff, AZ. April 7, 2006.*
- *Peterson, C. 2006. Awarded a \$500 Physics Education scholarship from NAU for academic excellence. January 30, 2006.*
- *Pregitzer, C. Awarded a \$500 scholarship for academic excellence from the School of Forestry. Honors Convocation, Flagstaff, AZ. April 7, 2006.*
- *Pregitzer, C. Awarded a \$2,660 Hooper Undergraduate Research grant for her research project with Dr. Steve Hart: "Soils as agents of selection: Can feedbacks from plants alter their own performance." April 25, 2006.*

- *Rudebusch, F. Awarded best poster at NAU's 2nd Annual Celebration of Undergraduate Research and Design, Flagstaff, AZ and will be a runner-up attendee to present her poster next academic year at the Conference on Undergraduate Research in Washington, DC. May 18, 2006.*
- *Rudeen, A. "Communications between Forest Managers and property owners in Pine Flats: a case study of a high risk fire area." Oral presentation to Forest Service and Sedona Fire Department Officials, Coconino NF Supervisor's Office, Flagstaff, AZ. May 11, 2006. 9 attendees.*
- *Sorensen, C. Awarded \$1,607 in scholarships for academic excellence and leadership qualities from the School of Forestry. Honors Convocation, Flagstaff, AZ. April 7, 2006.*
- *Sorensen, C. Demonstration of electronic media visual aide featuring forest and range plants of Northern Arizona, Undergraduate Showcase, NAU Family Weekend, Flagstaff, AZ. October 8, 2005.*
- *Steffen, N. Awarded a \$400 ERI Student Scholarship in Memory of Kirk Smith for academic excellence and commitment to ecological restoration and to the mission of ERI. Honors Convocation, Flagstaff, AZ. April 7, 2006.*
- *Trudeau, J. 2006. Graduated Magna Cum Laude with a Bachelor of Arts in Liberal Studies with an emphasis in Parks and Recreation Management. December 16, 2005.*
- *Tsonis, J. Awarded \$1,000 in scholarships for her academic excellence from the School of Forestry. Flagstaff, AZ. October 2005.*
- *Tsonis, J. Awarded \$1,625 in scholarships for academic excellence from the School of Forestry. Honors Convocation, Flagstaff, AZ. April 7, 2006.*
- *Tymrak, K. 2006. Awarded a \$3000 Helen Dyar King scholarship for academic excellence. January 18, 2006.*
- *Tymrak, K. Inducted as a member of Tau Beta Pi, the only national engineering honor society.*

## 5. Specific Curriculum Innovations for Access and Workforce

New programs – full time students

- *None in this reporting period*

New courses - full time students

- *None in this reporting period*

Revised programs and courses

- *Smith, H.B. Present new course proposal to University Curriculum Committee with Wally Covington. Flagstaff, AZ. 12 attendees. September 29, 2005.*
- *Viers, J. Northland Pioneer College on work force development*

New programs – practicing professionals

- *None in this reporting period*

## 6. Specific Collaborations/Ongoing Partnerships

**Community College**

- *Bullington, C. Payson Discovery Forum Series - Environmental Topics Spring 2006, Gila Community College, Payson, AZ. April 5, 2006. 15 participants.*

**Tri-University**

- *None in this reporting period*

**Industry/Private Sector – University**

- *The Ecological Restoration Institute is actively involved with an effort by the Greater Flagstaff Economic Council and the Greater Flagstaff Forests Partnership to establish a private, integrated wood utilization campus at Camp Navajo. The ERI is key to marketing the opportunities presented by small wood utilization to the private sector*
- *Alternative Forestry Unlimited, Silver City, NM (Abrams)*
- *De La Sierra Lumber Recovery, Albuquerque, NM (Abrams)*
- *Gila Woodnet, Silver City, NM (Abrams)*
- *University of Arizona Cooperative Extension for Navajo County (Abrams)*
- *Flagstaff Native Plant and Seed, Flagstaff, AZ (Long)*
- *Edward E. Hills Fund, California (Fulè, Springer, Long)*

**Community-Based (including tribal)**

New in FY06

*Aldo Leopoldo Environmental High School, Silver City, NM (Abrams)*  
*Arizona-New Mexico Coalition of Counties (Vosick)*  
*Gila Tree Thinners (Abrams)*  
*Jemez Mountain Schools, Gallina, NM. (CFRP monitoring assistance)(Abrams)*  
*La Lama Neighborhood, Questa, NM (Abrams)*  
*Natural Resources Working Group, White Mountains, AZ (Abrams, Denton)*  
*Navajo Nation (multiple collaborations) (Yazzie)*  
*Pueblo of Acoma, New Mexico. (CFRP monitoring assistance) (Abrams)*  
*Pueblo of Jemez, NM (Moote, Abrams)*  
*Pueblo of Sandia, NM (Abrams)*  
*Ramah Band of Navajos, Ramah, NM (Abrams)*  
*Santa Ana Pueblo (Moote, Abrams)*  
*Santa Fe Watershed Association (Vosick)*  
*Santo Domingo Pueblo, New Mexico. (CFRP monitoring assistance) (Abrams)*  
*Southern Pueblos Agency (BIA) in Albuquerque, NM (Abrams)*  
*Tierra Y Montes Soil & Water Conservation District (Abrams)*  
*Tree New Mexico, Albuquerque, NM (Abrams)*

**Current but Established in Previous FY Funding**

*Applegate Partnership (Covington)*  
*Arizona State Lands Department (Smith)*  
*Arizona Sustainable Forests Partnership (Moote, Abrams)*  
*Coconino Board of County Supervisors, (Smith)*  
*Colorado State University, Colorado Forest Restoration Institute (Covington)*  
*Ft. Lewis College, Durango, CO (Fulé)*  
*Governor's Forest Health Advisory Committee (Covington)*  
*Governor's Forest Health Oversight Committee (Vosick)*  
*Greater Flagstaff Forest Partnership (Smith, Denton, Moote, Viers)*  
*Greater Ruidoso Area Wildland Urban Interface Working Group (Denton et al)*  
*Healthy Forests-Happy Potters, Taos, NM (Abrams)*  
*Mescalero Apache (Denton)*  
*Navajo Tribe (Covington)*  
*Otero County Natural Resources Working Group (Denton et al)*  
*Ponderosa Fire Advisory Council (Smith)*  
*Prescott Area Wildland/Urban Interface Commission (Smith)*  
*Rural Community Fuels Management (Smith)*  
*Wahoo Work Group of Sierra County, New Mexico (Smith)*  
*White Mountain Stewardship Contract Monitoring Board (Denton et al)*  
*White Mountain Apache, (Fulé)*  
*Willowbend Environmental Educational Center (Long/Friederici)*

**Regional, national, international**

**New in FY06**

*Bureau of Land Management, Arizona Strip (Huffman, Springer, McGlone)*  
*Ecological Society of America, SEEDS program for minority student involvement (Long)*

*Forest Guild, Santa Fe, NM (Moote)*  
*Four Corners Institute, Santa Fe, NM (Moote, Abrams)*  
*Institute for Ecosystem Studies, New York (Long)*  
*Jornada LTER (McGlone)*  
*Maricopa County Parks and Recreation Department (Abella)*  
*National Park Service: Bandelier National Monument, New Mexico (Bakker)*  
*Nature Conservancy, New Mexico Valles Project (Smith)*  
*Sustainable Northwest, Portland, OR (Moote, Abrams)*  
*USFS Allegheny National Forest, Pennsylvania (Long)*  
*USFS Cibola National Forest (Smith, Denton, Bedell, Bakker)*  
*USFS Coronado National Forest (Moote, Abrams)*  
*USFS Gila National Forest, New Mexico (Bakker)*  
*USFS Rocky Mountain Research Station (Pearson/Senior Projects)*  
*USFS Santa Fe National Forest, New Mexico (Bakker)*  
*USFS Coconino National Forest Herbarium (Covington)*  
*USFS Rocky Mountain Research Station Herbarium (Covington)*

Current but Established in Previous FY Funding

*Arboretum at Flagstaff (Friederici)*  
*Arizona Game and Fish Department (Covington, Smith, Huffman, McGlone, Pearson/Senior projects)*  
*Arizona State Land Department (Smith, Denton, Bakker)*  
*Centennial Forest (Bakker)*  
*City of Flagstaff Fuels Management Department (Smith, Denton, Long)*  
*Joint Legislative Healthy Forest Task Force (Covington)*  
*Governor's Forest Health Advisory Council (Covington)*  
*Governor's Forest Health Oversight Council (Vosick)*  
*Kaibab National Forest: Pinyon-Juniper Project (Smith)*  
*Montezuma County, CO (Moote)*  
*Museum of Northern Arizona (Friederici)*  
*National Advanced Resource Training Center (Smith)*  
*Plumas National Forest, Quincy, California (Long)*  
*Prescott National Forest (Smith, Denton, Bedell, Bakker)*  
*Southwest Sustainable Forests Partnership (Viers)*  
*USFS Forest Service Peaks Ranger District (Smith, Denton, Long)*  
*USFS Region 3- Regional Leadership Team (Smith, Covington)*  
*USFS Region 3 – Collaborative Forest Restoration Program (Moote, Abrams)*  
*USFS Tusayan Ranger District (Smith, Huffman)*  
*USFS, Pacific Northwest Research Station (Viers, Moote)*  
*Western Governors' Association (Covington, Vosick)*