

**2008 - 2011 Secure Rural Schools
Public Law 110-343
Title II Project Submission Form
USDA Forest Service**

San Juan National Forest Resource Advisory Committee

Project Number (Assigned by Designated Federal Official):
Funding Fiscal Year(s):

2. Project Name: Junction Creek Mowing Project:
Debris Decomposition and Reseeding Pilot Project

4. Project Submitted By: Katherine Holgate

6. Contact Phone Number: 970-769-8682

3a. State: Colorado

3b. County(s): La Plata

5. Date: 7/14/11

7. Contact E-mail:
mycologicdesign@gmail.com

8. Project Location: Junction Creek Mowing Area

a. National Forest(s): San Juan

b. Forest Service District: Columbine

c. Location (Township-Range-Section) T36N R10 W

9. Project Goals and Objectives:

Increase rate of wood debris decomposition and encourage native seed germination.

10. Project Description:

a. Brief: (*in one sentence*) Inoculating wood debris from Junction Creek Mowing project with wood decomposing mushroom mycelium and applying seed with mycorrhizae fungi associations to increase wood decomposition and grass colonization for habitat rehabilitation.

b. Detailed:

Mycologic Design with the help of Mountain Studies Institute will design, implement and monitor a pilot project focused on excess woody debris from a past fuels reduction project located on the Log Chutes trail ~3 miles up Junction Creek FS Road 171 . The goals and objectives of this project are to test, through the use of 2 locally collected wood decomposing mushroom species (*Flammulina velutipes* and *Pleurotus pulmonarius*), the success of mushroom colonization of the woody debris. In addition, the project will include reseeded, utilizing a mycorrhizae fungi-plant inoculum, to encourage seed germination and plant establishment. Mountain Studies Institute will help with study design and the monitoring plan to test the effectiveness of utilizing mushroom mycelium for habitat rehabilitation. Implementation methods will focus on testing the colonization and growth success of each saprophytic species, and reseeded with and without the mycorrhizae spores, and a control site with no mushroom inoculations, just the application of seed. Monitoring will commence for one year after project implementation to gather data and generate results.

Both *Flammulina velutipes* and *Pleurotus pulmonarius* are edible primary decomposers (saprophytic) mushroom species, and produce enzymes that break down brown fiber in wood, leaving the cellulose

mostly intact and leaving a white appearance. By recycling woody debris fungi make available carbon, hydrogen, nitrogen, phosphorus, and minerals into nutrients for plants, insects, and other organisms sharing the habitat.

Mycorrhizae fungi live within the roots of plants, forming a mutually beneficial relationship with the plant. The fungi form networks of filaments that envelop the root structure of the plant. There are two types of mycorrhizal fungi: endo- (within the root structure) and ecto- (outside of but surrounding). From this association, the plant benefits from increased uptake of nutrients and water absorption, and increased resistance to pathogens and other root diseases. In exchange, the fungi receive a constant supply of carbohydrates from the plant.

Benefits of Mycorrhizal Fungi:

- Improved uptake of soil phosphorus
- Greater resistance of drought/dry conditions
- Helps build soil structure
- Increases survival of seedlings (with greater water absorption)
- Increases plant diversity
- Reduces weed invasion (if applied with other methods)

Methods:

Delineating 5 plots (10'x10')

- 1) *F. velutipes* + seed and mycorrhizae spores
- 2) *F. velutipes* + seed
- 3) *P. pulmonarius* + seed and mycorrhizae spores
- 4) *P. pulmonarius* + seed
- 5) Control, just seed application

Inoculation rate = 10 lbs. spawn/100ft²

Seed application rate = 1 lb./1000ft²

- Wood decomposing species will be cultivated utilizing substrate located onsite, to give the species a chance to compete with native fungi.
- The mycorrhizae spore inoculums consist of 9 Endomycorrhizae species, 11 Ectomycorrhizae species, 2 *Trichoderma* spp., and 19 species of beneficial bacteria to increase successful plant-fungi associations and defense.
- Seeds will be sprouted with mycorrhizae spores prior to application onsite.

11. Types of Lands Involved?

State/Private/Other lands involved? Yes × No

Land Status:

If Yes, specify:

12. How does the proposed project meet purposes of the Legislation? (Check at least 1)

Improves maintenance of existing infrastructure.

× Implements stewardship objectives that enhance forest ecosystems.

× Restores and improves land health.

Restores water quality

13. Project Type

a. Check all that apply: (check at least 1)

Road Maintenance

Trail Maintenance

Road Decommission/Obliteration

Trail Obliteration

Other Infrastructure Maintenance (specify):

× Soil Productivity Improvement

× Forest Health Improvement

Watershed Restoration & Maintenance

Wildlife Habitat Restoration

Fish Habitat Restoration

Control of Noxious Weeds

× Reestablish Native Species

Fuels Management/Fire Prevention

Implement CWPP Project

Other Project Type (specify):

b. Primary Purpose (select only 1): Soil Productivity

14. Identify What the Project Will Accomplish

Miles of road maintained:

Miles of road decommissioned/obliterated:

Number of structures maintained/improved:

Acres of soil productivity improved: 0.137

Miles of stream/river restored/improved:

Miles of fish habitat restored/improved:

Acres of native species reestablished: 0.137

Acres of hazardous fuel treatment

Miles of trail maintained:

Miles of trail obliterated:

Acres of forest health improved (including fuels reduction): 0.137

Acres of rangeland improved:

Acres of wildlife habitat restored/improved:

Acres of noxious weeds controlled:

Timber volume generated (mbf):

Jobs generated in full time equivalents (FTE) to nearest tenth. 0.1 FTE

People reached (for environmental education projects/fire prevention): Mountain Studies Institute will help with the study design and monitoring plan and MycoLogic Design will perform the project implementation and the data collection. The data will be analyzed jointly and reported back to the Forest Service.

Direct economic activity benefit: Hunting (Improved wildlife habitat)

Other: A pilot project utilizing a new low-tech and low-cost forest management tool

15. Estimated Project Start Date: Sept 2011

16. Estimated Project Completion Date: Sept 2012

17. List known partnerships or collaborative opportunities.

Mountain Studies Institute, MycoLogic Design, Fort Lewis College

18. Identify benefits to communities.

Utilizing mushroom mycelium is an environmentally safe and relatively low cost method for forest restoration, revegetation, and habitat creation, and if proven effective, can be applied on a greater scale in the future. On larger projects, more organizations and volunteers can be utilized for implementation.

19. How does the project benefit federal lands/resources?

Through the experimentation of forest debris recycling and re-vegetation, this method can be used concurrent to other fuel reduction projects, offering a faster rehabilitation period. Mushroom mycelium can also reduce erosion and filter out bacteria and silt in runoff, offering greater protection in sloped areas that are more vulnerable to erosion and impairments to water quality.

20. What is the Proposed Method(s) of Accomplishment? (check at least 1)

- | | |
|--|---|
| <input type="checkbox"/> Contract | <input type="checkbox"/> Federal Workforce |
| <input type="checkbox"/> County Workforce | <input type="checkbox"/> Volunteers |
| <input checked="" type="checkbox"/> Grant | <input type="checkbox"/> Agreement |
| <input type="checkbox"/> Americorps | <input type="checkbox"/> YCC/CCC Crews |
| <input type="checkbox"/> Job Corps | <input type="checkbox"/> Stewardship Contract |
| <input type="checkbox"/> Merchantable Timber Pilot | <input type="checkbox"/> Other (specify): |

21. Will the Project Generate Merchantable Timber? Yes No

22. Anticipated Project Costs \$10,250

a. Title II Funds Requested: \$10,000

b. Is this a multi-year funding request? Yes No

23. Identify Source(s) of Other Funding:

MycoLogic Design will provide in kind funds

24. Monitoring Plan (provide as attachment)

- Provide a plan that describes your process for tracking and explaining the effects of this project on your environmental and community goals outlined above.
- Identify who will conduct the monitoring: MycoLogic Design
- Identify total funding needed to carry out specified monitoring tasks (Worksheet 1, Item k): \$1000

25. Identify remedies for failure to comply with the terms of the agreement.

If project cannot be completed under the terms of this agreement:

Unused funds will be returned to the RAC account.

Other, please explain:

Project Recommended By:

/s/ (INSERT Signature)

Chairperson

Resource Advisory Committee

Project Approved By:

/s/ (INSERT Signature)

Forest Supervisor

National Forest

Project Cost Analysis Worksheet

Worksheet 1

Please submit this worksheet with your proposal in consultation with Forest Service staff

Item	Column A Fed. Agency Appropriated Contribution	Column B Requested Title II Contribution	Column C Other Contributions	Column D Total Available Funds
a. Field Work & Site Surveys				
b. NEPA				
c. ESA Consultation				
d. Permit Acquisition				
e. Project Design & Engineering		\$500		
f. Contract/Grant Preparation		\$500		
g. Contract/Grant Administration		\$500		
h. Contract/Grant Cost		\$1000		
i. Salaries		\$2000	\$250	
j. Materials & Supplies		\$1500		
k. Monitoring		\$1000		
l. Other		\$700		
1.				
2, Partner Indirect Cost		\$2300		
m. Project Sub-Total				
n. FS Indirect Costs				
Total Cost Estimate		\$10,000	\$250	

NOTES:

- a. Pre-NEPA Costs
- g. Includes Contracting/Grant Officer Representative (COR) costs. Excludes Contracting/Grant Officer costs.
- i. Cost of implementing project
- l. Examples include overhead charges from other partners, vehicles, equipment rentals, travel, etc.
- n. Forest Service indirect costs, including contracting/grant officer costs if needed.



To:
Bill Dunkelberger
San Juan Public Lands Deputy Forest Supervisor
15 Burnett Court
Durango, CO 81301

From:
Christopher Peltz
Research Coordinator
Mountain Studies Institute
1315 Snowden St, #305
Silverton CO, 81433
www.mountainstudies.org
cdpeltz@mountainstudies.org

Regarding:
Letter of support for the Title II project proposal: Junction Creek Mowing Project: Debris Decomposition and Reseeding Pilot Project

Dear Mr. Dunkelberger,

This letter is to express our support of the reseeded pilot project at the Junction Creek Campground D Loop. This project is consistent with the Mountain Studies Institute (MSI) core mission of conducting practical, applied science that supports decision making. Additionally, we support this project because there is a critical need for novel restoration techniques on forested lands and landscapes that have been disturbed by fire, forest management, natural gas exploration/extraction and this technique is a promising avenue of applied research. We will support this effort by working closely with Ms. Holgate to develop a robust sampling design and monitoring regime, and will assist with the data analysis and reporting effort.

The Mountain Studies Institute (MSI) is an independent, non-advocacy, not-for-profit 501(c)3 center for research, education, and outreach. MSI operates its headquarters and a high-altitude field station in Silverton, CO. MSI also has an office on campus at Fort Lewis College in nearby Durango, CO. MSI's mission is to enhance understanding and sustainable use of the San Juan Mountains through research and education. While the Institute focuses on a distinct mountain region, its activities have broader application to the study of mountain systems across the globe, including mountain environments, mountain people and their interactions. MSI serves students, educators, researchers, land and environmental managers, elected officials and the public within the region and beyond. MSI uses research and education as a sustainable economic development model for mountain communities. The Institute initiates partnerships, such as the San Juan Collaboratory, which brings MSI together with the University of Colorado at Boulder, Fort Lewis College, and San Juan Public Lands Center (USFS/BLM).

MSI is looking forward to working with Ms. Holgate and providing the necessary support to make this project a widely applicable and successful one.

Kind Regards,

Christopher Peltz

Chris Peltz