

Special Technology Development Program Final Report and Project Profile

Complete a copy of the following for each project that was completed by September 30, 2001. Add lines within the form as necessary. Delete all that does not apply.

PROJECT NUMBER (from original application): R5-1999-01

PROJECT TITLE (from original application): Effect of thinning, subsoiling, and prescribed burning on black stain root disease impact in eastside ponderosa pine.

PROJECT STATUS (select one by deleting inapplicable options):
Completed (work/funding ended this fiscal year; monitor over next 10 years)

EXPECTED PROJECT DURATION (total years for project): three years (for funding); monitor over 10 years (2010)

EXPECTED COMPLETION DATE OF THE PROJECT (fiscal year): September 30, 2001 (for funding)

ACTUAL COMPLETION (FISCAL) YEAR (if completed project): FY 2001 (for funding); (monitor over next 10 years, FY 2010)

SUBJECT (from original application form): Forest Disease Management Technical Committee; prescribed burning, root pathogens, disturbance, insect vector (*Hylastes*), ponderosa pine, black stain root disease (*Leptographium wageneri*)

STATUS OF SUBJECT SPECIES (select one by deleting inapplicable option): native

PROJECT OBJECTIVE(S) (from original application):

- 1) Quantify amount of damage to trees, fine roots, and woody roots incurred by prescribed fire, thinning, and subsoiling.
- 2) Evaluate prescribed fire, thinning, and subsoiling effects on stem attacking and root attacking bark beetle populations.
- 3) Evaluate effects of stand treatments on the incidence of root infecting fungi (*Leptographium wageneri*) and other root pathogens.

BRIEF DESCRIPTION OF PROJECT (from original application form): This project will develop guidelines for evaluation of black stain root disease risk due to prescribed fire, thinning, and subsoiling. Treatment combinations of prescribed burning, subsoiling skid trails, and thinning will be evaluated on the basis of damage assessments to roots, populations of putative bark beetle vectors, and isolations of root infecting fungi. The degree to which disease is intensified or diminished by individual treatments or treatment interactions will serve to provide silvicultural guidelines focused to minimize root disease impact.

BRIEF DESCRIPTION OF ACCOMPLISHMENTS AND RESULTS: Establishment of the 16, 2.5 hectare, plots and pretreatment surveys (100%) cruise to determine levels of black stain were completed before STDP funding of the project. Thinning and treatments (burning, no subsoiling; burning, subsoiling; no burning, no subsoiling; no burning, subsoiling) were originally planned to occur in the spring of 1999. However, because of discovery of a bald eagle nesting near one of the four reps (blocks) and resulting limited operating period, thinning could not occur until after the nest was vacated in August. The nest also necessitated relocation of one of the original blocks (4 plots).

The following occurred in FY 1999:

- 1) Four new replacement plots were established in the spring.

- 2) Pretreatment soil measurements (bulk density, soil compaction) were taken.
- 3) Trapping to determine pretreatment levels of putative insect vectors was conducted.
- 4) Long-term subplots were established for permanent monitoring of growth effects of treatments; plot trees were marked and data on species, age, diameter growth, height, dbh, crown class, and crown condition were recorded.
- 5) Thinning (to a residual basal area of 100 to 140 ft² per acre) was begun in September, 1999 and completed October 8, 1999.
- 6) All plots were photographed before and after thinning.

The following occurred in FY 2000:

- 1) Subsoiling of the appropriate plots occurred in June 2000.
- 2) Post treatment soil measurements (bulk density, soil compaction) were taken.
- 3) Trapping for insect vectors occurred throughout the year. Trap catches were collected weekly, counted, identified, and representative samples plated on selective medium to determine if *Leptographium* was present.

The following occurred in FY 2001:

- 1) Burning of appropriate plots occurred October 2000.
- 2) Trapping for insect vectors continued, with trap catches collected weekly.

CHANGES TO PROJECT SCOPE OR OBJECTIVES (Changes from the original proposal and reasons for the changes.): NONE

ADDITIONS TO PROJECT SCOPE OR OBJECTIVES (Describe additional accomplishments expected from the project.): NONE

FHP LEAD CONTACT (FHP person submitting proposal):

<u>Name</u>	<u>Affiliation (Office or Dept.)</u>	<u>Phone, E-mail, Fax</u>
John Kliejunas	FHP, R5, Vallejo	707-562-8914 jkliejunas@fs.fed.us 707-562-9054

FHP LEAD INVOLVEMENT:

<u>Name</u>	<u>Role</u>	<u>Time Commitment</u>
John Kliejunas	coordinate field work	4 weeks

PRINCIPAL INVESTIGATOR(S) (add lines as necessary):

<u>Name</u>	<u>Affiliation (Office or Dept.)</u>	<u>Phone, E-mail, Fax</u>
William Otrrosina	Tree Root Biology, SRS, Athens	706-559-4295 wotrosina@fs.fed.us 706-559-4291

PRINCIPAL INVESTIGATOR(S) INVOLVEMENT (add lines as necessary):

<u>Name</u>	<u>Role</u>	<u>Time Commitment</u>
William Otrrosina	data analysis	6 weeks

COOPERATORS (contributing to, but not leading, the project) (add lines as necessary):

<u>Name</u>	<u>Affiliation (Office or Dept.)</u>	<u>Phone, E-mail, Fax</u>
Sheri Smith	FHP, Lassen National Forest, R5	530-252-6667 ssmith@fs.fed.us 530-252-6428

William Woodruff	FHP, Lassen National Forest, R5	530-252-6680 wwoodruff@fs.fed.us
Al Vasquez	Lassen National Forest, R5	530-252-6428 530-257-4188 avazquez@fs.fed.us 530-252-5803

COOPERATOR INVOLVEMENT (add lines as necessary):

<u>Name</u>	<u>Role</u>	<u>Time Commitment</u>
Sheri Smith	insect trapping/collection	6 weeks
William Woodruff	sample collection/isolation	4 weeks
Al Vasquez	plot treatment/maintenance	8 weeks

Enclosure 4 continued

A. FUNDING

- 1) First fiscal year funded:
- 2) Funds obligated from beginning of project through final fiscal year (extend table as needed):

Fiscal Year	STDP Funding	Other-Source funding	Source
1999	\$21,500	\$49,500	TRB, R5 FHP, Lassen
200	\$12,500	\$13,500	TRB, R5 FHP, Lassen
2001	\$12,500	\$34,000	TRB, R5 FHP, Lassen

- 3) Funds not used from previous fiscal year: NONE
If there are unused funds, what is the reason for not using them?

B. PROPOSED OUTPUT(S):

- 1) List proposed outputs:
 - a) Seminars/informal meetings for users; b) 3420 evaluation with recommendations; c) publications in referred journals, station technical reports
- 2) Were the proposed outputs delivered?
 - a) **Y N Partial**, Explain: Presentations at silviculturist workshops and pest council meetings were made; 3420 evaluation in draft; publication of 5 year results planned for 2005.
 - b)
- 3) Were the outputs delivered on time?
 - a) **Y N Partial**, Explain: delivered as expected

C. TECHNOLOGY / METHOD USE

- 1) Were the proposed or actual outputs used? **Y N**: complete outputs not expected until after 5 and 10 years of monitoring
 - a) Describe briefly how outputs were used
 - i) List user groups
 - ii) Time period output used
 - iii) Geographic extent of use
 - iv) Pest organisms
 - v) Resources affected/protected (e.g. wildlife habitat protected, risk reduction for insect disease, etc.)
 - b) If outputs were not used provide the reasons the project may not have provided a usable product. Product dependent on results of 5 and 10 year monitoring
 - i) Negative results

- (a) Y N Explain
- ii) Guidance for future development projects
 - (a) Y N Explain
- iii) Did we learn anything from this project?
 - (a) Y N Explain:

D. DISTRIBUTION OF OUTPUTS

- 1) University and/or Research Involvement
 - a) List the Universities and/or Research Units involved: Tree Root Biology, Southern Research Station
 - b) Number of graduate theses written: NONE
- 2) Dissemination of Results
 - a) Number of peer-reviewed journal articles accepted for publication: NONE
 - i) List journal(s) and targeted audience
 - b) Number of reports written: NONE
 - i) List report(s) and targeted audience
 - c) Number of presentations made: TWO
 - i) List meeting/conference(s) & professional society-sponsor(s): 1) annual meeting of silviculturists; 2) California Forest Pest Council meeting
- 3) Technology Transfer Activities
 - a) Number of sessions: NONE
 - b) Number of participants
 - c) List participating agencies and organizations

E. REFINEMENT OF T&M

- 1) Does the project investigate use with or use of other forest health management tools?
 - a) Y N Explain
- 2) Do the results of the project improve on existing technologies?
 - a) Y N Explain
- 3) Did the project identify new research or technology needs?

- a) Y N
- 1) Did the project result in new technologies?
 - a) Y N Explain: Monitoring needs to be completed.
- 2) Product leveraging
 - a) Was the project part of a development sequence?
 - i) Y N Describe sequence: Previous studies indicated soil disturbance increased levels of black stain root disease; this study added effects of prescribed burning as disturbance agent and insect trapping to determine association among vector population/site disturbance/black stain root disease
 - ii) Does the project build-on or is it the result of past Research and/or STDP project results?
 - (a) Y N
 - b) Identify past STDP project(s) by the project identifier number: R5-93-01
 - c) Identify past Research project(s) by title: NONE