

Special Technology Development Program Progress Report

Complete a copy of this form for: 1) each multi-year project active in the current fiscal year and not requesting funds, and 2) each project requesting funds to extend into the following fiscal year. Add lines within the form as necessary. Delete all that does not apply.

PROJECT NUMBER: R5-2000-01

PROJECT TITLE: Improved Spread and Intensification of the Dwarf Mistletoe Impact Model, an Extension of the Forest Vegetation Simulator (FVS)

PROJECT STATUS:

Continuing but without additional funds (funds are not being requested for the next fiscal year to continue the project)

EXPECTED PROJECT DURATION: 4 years

ORIGINAL EXPECTED COMPLETION DATE OF THE PROJECT: End of FY2001

EXPECTED COMPLETION DATE OF THE PROJECT: FY 2003

SUBJECT: Planning and Public Information, Disease Management, Modeling, dwarf mistletoe

STATUS OF SUBJECT SPECIES: native, noxious

PROJECT OBJECTIVES: Improve the capability of, even-aged and understory components, of the non-spatial spread and intensification module of the Dwarf Mistletoe Impact Model (DMIM) of the Forest Vegetation Simulator to accurately predict the spread and intensification of dwarf mistletoe for a variety of species.

BRIEF DESCRIPTION OF THE PROJECT: Describe primary activities for each year, summarizing key accomplishments from prior year(s), this year's activities, and objectives for future years. This may be a clearly worded bulleted list or graphic of milestone activities. Each year's progress report should stand on its own without requiring the reader to wade through multiple previous reports to gain an understanding of the project's progress and accomplishments.

Candidly describe what has worked and what hasn't worked in the project, and within reason provide explanations that might help others to understand the limitations of techniques, approaches, technologies, and practices used or tried in the project.

CHANGES TO ORIGINAL PROJECT SCOPE OR OBJECTIVES:

Although we intend to keep the original scope (regions, tree-mistletoe combinations, FVS variants, etc.) and original objectives (improved DMIM), the continued addition of other new, but related, tasks outside this work (validation of even-aged model output) means that the time-frame for this project has been extended.

ADDITIONS TO ORIGINAL PROJECT SCOPE OR OBJECTIVES:

The following are two important additions to the project:

- 1) **Populate FSveg with historic, long-term, repeat-measured mistletoe data.** When we prepared the original proposal, we did not know when FSveg would be available for use and other important details about its structure and use. As a result, the time and difficulty of completing Stage 1 was severely underestimated. In addition, the task of populating FSVEG, required designing a flexible database and retrieval system not only for long term mistletoe plots but also other PTIPS plots as well. . For example, the user can now ask for, and receive from PTIPS plot data (provided it is entered into this database) in either FVS format or the original data format. This flexibility will ultimately provide easy access and retrieval for those desiring to use PTIPS/FSVEG data for validation and calibration of the pest models. It will greatly reduce the

pre-data preparation and formatting cost since the data is already formatted in the most common ways it will be used for analysis. I recommend that FHTET pursue the population of this database with all PTIPS plots.

- 2) **Revise the even-aged spread model.** Our pre-analysis indicated that the current even-aged spread model needs revision. We came to this conclusion because of the following: a) *There is poor overall correlation with our even aged permanent plot dataset.* . We think this poor correlation is due to the limited scope of the data set used to initially model spread and intensification. This dataset was primarily comprised of lightly infected stands and trees. Adding the complexity of a wide variety of infected stands and trees may require additional response capability to be built into the coefficients. b) *Second, the even-aged S&I sub-model ALSO needs to be modified to allow for more than a +1,0 or -1 increase in DMR/decade.* Again, this increased capability to describe DM increase or decrease becomes more necessary when trees are lightly infected in moderately or heavily infected stands. These situations were not part of the original dataset but they are part of the real world. This additional task is not expected to take up too extra time; possibility a week or so. We believe the predictor variables in the original logistic equation will remain the same; coefficient revision will be needed.

FHP LEAD CONTACT:

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Helen Maffei	541-383-4712.. hmaffei@fs.fed.us

FHP LEAD INVOLVEMENT

<u>Role</u>	<u>Time Commitment</u>
Schedule coordination	10 percent

PRINCIPAL INVESTIGATOR(S) :

<u>Name</u>	<u>Affiliation (Office or Dept.)</u>	<u>Phone, E-mail, Fax</u>
Brian Geils	Rocky Mountain Research Station Flagstaff, AZ	520-556-2076 bgeils@fs.fed.us
Helen Maffei	R-6, Bend, OR	541-383-5591

PRINCIPAL INVESTIGATOR(S) INVOLVEMENT:

<u>Name</u>	<u>Role</u>	<u>Time Commitment</u>
Brian Geils	Data management & analysis	15 percent
Helen Maffei	Project direction	30 percent

COOPERATORS:

<u>Name</u>	<u>Affiliation (Office or Dept.)</u>	<u>Phone, E-mail, Fax</u>
Ellen Goheen	R-6, Central Point, OR	541-858-6126 egoheen@fs.fed.us
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Dave Johnson	R-2, vacant	
Jane Taylor	R-1, vacant	

COOPERATOR INVOLVEMENT:

<u>Name</u>	<u>Role</u>	<u>Time Commitment</u>
Ellen Goheen	Provide data, review model changes	10 percent
Mary Lou Fairweather	“	“
John Pronos	“	“
Katie Marshall	“	“
Jim Hoffman	“	“
John Guyon	“	“
Tom Gregg	Statistical analysis assistance	10 percent
Lance David	Programming, testing	25 percent
Judy Adams	Project management assistance	10 percent

PRODUCTS AND DUE DATES:

A revised Dwarf Mistletoe Model Extension provided to FHTET and the FVS Forest Management Service Center for distribution with FVS variants over the world wide web.

An amendment to the Dwarf Mistletoe Model User’s Guide to document model changes and their rationale. The changes would be included in the basic FVS training provided annually in each Western region.

The model validation results will be published as a scientific paper in the Western Journal of Applied Forestry.

STATUS OF PRODUCTS/PRESENTATIONS:

Data for all existing DM permanent plots was put into the data base, was retrieved and prepared for analysis and preliminary analysis was performed.

Data was from all permanent plots. Preliminary analysis was performed separately on the under story trees in the uneven aged plots, the over story trees in uneven aged plots and the trees in the evenaged plots. Potential predictor variables were identified. The predictive ability of the original FVS non-spatial S& I equation (for evenaged stands) was tested for fit against: 1) The overall dataset 2)

From this preliminary analysis several things are clear. First, the even-aged S&I sub-model ALSO needs to be modified to allow for more than a +1,0 or-1 increase in DMR/decade. Second, different variables are important predictors at different stand DMR’s and at different individual tree DMRS. Formal curve fitting, by species, will take place when we receive a logistic regression stat package (SPSS). This package is on order and anticipated delivery is late October. We are also missing the western hemlock DM data set from Alaska. After talking with Paul Hennon, the anticipated ETA of this data set is the end of October.

ACCOMPLISHMENTS TO DATE:

Products: Data resides in FSVeg, MS Excel and in MS Access. Pre-analysis a

Publications: N/A at this time

Technology Transfer: N/A at this time

FIRST FISCAL YEAR FUNDED: FY2000

FUNDS OBLIGATED FROM BEGINNING OF PROJECT THROUGH CURRENT FISCAL YEAR:

	Item	Requested Funding	Received Funding	Expended Funding
PREVIOUS YEAR FY 2000				
Administration	Salary	\$36,000	\$36,000	\$36,000
	Overhead	4,500	4,500	4,500
	Travel	4,500	4,500	4,500
Procurements	Contracting			
	Equipment			
	Supplies			
Year Totals		\$45,000	\$45,000	\$45,000

PREVIOUS YEAR FY 2001				
Administration	Salary	\$36,000	\$36,000	\$15,000
	Overhead	4,500	4,500	
	Travel	4,500	4,500	
Procurements	Contracting			30,000
	Equipment			
	Supplies			
Year Totals		\$45,000	\$45,000	\$45,000

FY 2002		Requested FHP STDP Funding	Other Source Funding	Source
Administration	Salary	6,000		
	Overhead	2,000		
	Travel	4,000		
Procurements	Contracting			
	Equipment			
	Supplies			
Year Totals				
PROJECT TOTALS		12,000		

FUNDS NOT USED FROM PREVIOUS FISCAL YEAR: Funds (\$30,000) have been obligated to contract hours and will be used next fiscal year in meeting programming and technical editing requirements to complete project.

Fiscal Year	STDP Funding Allocated	Funds Obligated	Funds Unused
FY2001	\$45,000	\$45,000	\$30,000

EXPECTED BUDGET FOR NEXT FISCAL YEAR: (include both monetary and in-kind, excluding FHP base funding and salaries) (extend table as needed):

	Item	Requested FHP STDP Funding	Other-Source Funding	Source
Administration	Salary			
	Overhead			
	Travel			
Procurements	Contracting			
	Equipment			
	Supplies			
Totals				

DIFFERENCE BETWEEN ORIGINAL AND AMENDED REQUESTS AND JUSTIFICATION:

No change

STDP FUNDING NEEDED:

Total estimated additional future funding needed beyond the current fiscal year: None

Estimated STDP funding needed in remaining year(s) of the project by fiscal year. Show separately the funding to be requested/provided from other sources (extend the table as necessary).

Fiscal Year	STDP Funding	Other-Source Funding	Source