

Special Technology Development Program Progress Report

PROJECT NUMBER: R3-2001-02

PROJECT TITLE: Biological Control of Nantucket Pine Tip Moth in Shelterbelt and Landscape Pines in New Mexico

PROJECT STATUS: Continuing but without additional funds in 2002. We would like to move the 2002 allocation of funds to 2003 and use unspent 2001 funds in 2002.

EXPECTED PROJECT DURATION (total years for project): 3

ORIGINAL EXPECTED COMPLETION DATE OF THE PROJECT (fiscal year): FY2002

EXPECTED COMPLETION DATE OF THE PROJECT (fiscal year): FY2003

SUBJECT: Biological Control 1; Invasive Species 2; Monitoring 2; Organism Biology_1; Semiochemicals 2

STATUS OF SUBJECT SPECIES: Non-native

PROJECT OBJECTIVES: To introduce a potentially effective biological control organism of the Nantucket pine tip moth, *Rhyaciona frustrana* (Comstock), an introduced pest in New Mexico. Successful biological control will reduce the impact of this insect pest in landscape, nursery and shelterbelt pine plantings, slow its spread to other parts of the Southwest and reduce the use of pesticides currently used to control this pest. The parasite is also an effective biological control of the closely related *Rhyaciona bushnelli* (Busck) which also contributes to tree damage in shelterbelt and landscape plantings (Furniss and Carolin, 1977). Damage from pine tip moths is severe in many areas and the insects are currently expanding their range with no effective natural controls in lower elevation tree plantings. Trees under fifteen feet tall are most susceptible to severe injury (Baker, 1972).

BRIEF DESCRIPTION OF THE PROJECT: Infested host trees were selected in a pine plantation at the New Mexico State University Agricultural Science Center in Los Lunas. Trees were selected based on size and infestation level. Eight 512 cubic ft. mesh tree cages were purchased and metal support structures were built on site around the trees selected for parasite release. Nectar feeders were purchased for adult parasite food source.

Dr. Wayne Berisford from the University of Georgia visited the site and reaffirmed his commitment to help us obtain the parasitic wasp, *Campoplex frustranae*. The plantation was monitored for moth emergence using pheromone traps. Traps were sent to University of Minnesota Emeritus Professor and pine tip moth specialist Dr. William Miller for confirmation of pine tip moth species. Dr. Miller determined that 100% of the tip moths trapped were *Rhyaciona frustrana*, the Nantucket pine tip moth.

Dr. Berisford began field collection of pine tips in April and May in the Southeastern U.S. and parasite emergence began shortly thereafter at his rearing facility. Although numerous other parasites emerged, no *Campoplex* was collected from over fourteen thousand shoots. Because this project is designed specifically for *Campoplex frustranae*, which has proven to be an excellent biocontrol agent where introduced in California, we were unable to move forward this year. Oddly, this is the first year that Dr. Berisford's group in Georgia has not reared *Campoplex* from infested pine tip moth shoots. We do not have an explanation for the apparent population collapse in that area.

Our plan is to broaden our sampling area and number of cooperators in the East. Dr. Berisford has talked to Dr. Fred Stephen in Arkansas who has agreed to provide additional wasp collection sites. Dr. Berisford has also lined up collection sites in eastern Virginia and North Carolina where he has had good results in the past. We are all still committed to the success of the project.

We will hope that there is some flexibility in the wasp to adapt its emergence to seasonal and climatic differences. Collecting from more northern locations may actually improve our life stage synchronization. We do not anticipate problems with shipping the wasps as they are apparently rather robust parasites.

CHANGES TO ORIGINAL PROJECT SCOPE OR OBJECTIVES: Due to 2001 unavailability of parasite stock, we would like to extend by one year the period in which we can expend 2001 funds. By allowing us to continue to spend the 2001 allocation during FY 2002, we can forego any new 2002 funds. The funds earmarked for 2002 can be released for another project, however, we wish to have our 2002 funding amount budgeted for FY2003 allocation.

ADDITIONS TO ORIGINAL 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>
Debra Allen-Reid	FFH, R3, NM Zone	(505) 842-3286 dallenreid@fs.fed.us fax: (505) 842-3150

FHP LEAD INVOLVEMENT

	<u>Role</u>	<u>Time Commitment</u>
Debra Allen-Reid	Technical Advisor	1 week

PRINCIPAL INVESTIGATOR(S):

<u>Name</u>	<u>Affiliation (Office or Dept.)</u>	<u>Phone, E-mail, Fax</u>
Robert Cain	Forest Entomologist, New Mexico State University Cooperative Extension Service	(505) 476-3351, sacrops@nmsu.edu fax 505 476-3330
L.M. English	Extension Entomologist and Superintendent of the Los Lunas Ag. Science Center	(505) 865-7340 menglish@nmsu.edu

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

<u>Name</u>	<u>Role</u>	<u>Time Commitment</u>
Robert Cain	Project coordinator	6-8 weeks or as needed
L.M. English	On site support and supervision	3 weeks total or as needed

COOPERATORS (contributing to, but not leading, the project):

<u>Name</u>	<u>Affiliation (Office or Dept.)</u>	<u>Phone, E-mail, Fax</u>
Wayne Berisford	University of Georgia berisford@bugs.ent.uga.edu	(706) 542-7888

COOPERATOR INVOLVEMENT:

<u>Name</u>	<u>Role</u>	<u>Time Commitment</u>
Wayne Berisford	Collect, identify and send parasitoids	4 weeks or as needed

PRODUCTS AND DUE DATES: PUBLICATIONS: A New Mexico State University publication will be produced detailing the success of this project. (expected completion, 2004)

TECHNOLOGY TRANSFER: New Mexico State University Agricultural Communications Department will be used to develop radio, press and print materials detailing the project. Current integrated pest management strategies involve pheromone trap monitoring and timely insecticide sprays. Mass media will be needed make sure insecticides are not applied in release areas.

STATUS OF PRODUCTS/PRESENTATIONS: Television, newspapers, a newsletter and workshops have been utilized to educate the public about managing pine tip moths. There has been media interest in this project specifically but because there has been no parasite release made yet, no evaluation results can be presented. The Region recognizes the impossibility of advancing the project without parasite stock and has witnessed the efforts of the investigators in preparing the site and enclosures. Progress thus far is acceptable, considering the biological limitations that were no fault of the investigators. The expansion of wasp collection sites slated for next year seems to be an appropriate response to the difficulties experienced this past year.

ACCOMPLISHMENTS TO DATE:**Products:** None**Publications:** None

Technology Transfer: Newspaper articles have discussed the project and addressed current management strategies to deal with pine tip moth infestations. Numerous workshops have been conducted to discuss current pine tip moth strategies and the need for successful biological control of this insect.

FIRST FISCAL YEAR FUNDED: 2001

FUNDS OBLIGATED FROM BEGINNING OF PROJECT THROUGH CURRENT FISCAL YEAR: (include both monetary and in-kind, excluding FHP base funding and salaries) (extend table as needed):

	Item	Requested Funding	Received Funding	Expended Funding
PREVIOUS YEAR				
FY 2001				
Administration	Salary	5,000		
	Overhead	4,018		
	Travel	5,000		
Procurements	Contracting			
	Equipment	3,000		2,637
	Supplies	1,000		150
YEAR TOTALS		18,018	18,018	2,787

CURRENT YEAR				
FY 2002^a				
Administration	Salary	5,000 (0 new)		
	Overhead	4,018 (0 new)		
	Travel	5,000 (0 new)		
Procurements	Contracting			
	Equipment	363 (0 new)		
	Supplies	850 (0 new)		
YEAR TOTALS		15,231 (0 new)		

^a Note that 2002 budget is derived from carryover left from unexpended 2001 funds. The budget originally proposed for 2002 has been moved to 2003 table.

FY 2003		Requested FHP STDP Funding	Other Source Funding	Source
Administration	Salary	3,000		
	Overhead	2,726		
	Travel	5,000		
Procurements	Contracting			
	Equipment			
	Supplies	1,500		
YEAR TOTALS		12,226	14,000	NMSU
PROJECT TOTALS		30,244	29,000	NMSU

Enclosure 3 continued

FUNDS NOT USED FROM PREVIOUS FISCAL YEAR (If there are unused funds, what is the reason for not using them? How will the project continue without these funds?) Supply of parasitic insects necessary for the project were not available in 2001. We are requesting permission to use unexpended funds in 2002 and to defer our 2002 budget to 2003.

Fiscal Year	STDP Funding Allocated	Funds Obligated	Funds Unused
2001	18,018	2,787	15,231

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

FY 2002	Item	Requested FHP STDP Funding	Other-Source Funding	Source
Administration	Salary	5,000 (0 new)	13,000	NMSU
	Overhead	4,018 (0 new)		
	Travel	5,000 (0 new)	500	NMSU
Procurements	Contracting			
	Equipment	363 (0 new)	1,000	NMSU
	Supplies	850 (0 new)	500	NMSU
Totals		15,231 (0 new)	15,000	NMSU

DIFFERENCE BETWEEN ORIGINAL AND AMENDED REQUESTS AND JUSTIFICATION: We stopped expenditures on the project when it was learned the parasitoids were unavailable. We would like to resume the project in 2002 as planned but using unspent FY 2001 funds. We would like to continue the project into FY 2003 using funds originally budgeted for FY 2002. Under this scenario, no additional 2002 funds would be needed, however, the funds originally budgeted for 2002 will now be needed in 2003.

STDP FUNDING NEEDED:

Total estimated additional future funding needed beyond the current fiscal year: \$12,226 (in FY2003)

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
2002	No new funds	15,000	NMSU
2003	12,226	14,000	NMSU