

Special Technology Development Program Final Report

Complete a copy of the following for each project that was completed by September 30, of the previous fiscal year. Add lines within the form as necessary.

PROJECT NUMBER (from original application): R4-1999-01

PROJECT TITLE (from original application): Integrating Aggressive Biological Control Efforts into a Leafy Spurge Management Program, Fairfield Ranger District, Sawtooth National Forest.

PROJECT STATUS (select one by deleting inapplicable options):

Continuing (work continues but no STDP finds are requested for the next fiscal year)

EXPECTED PROJECT DURATION (total years for project): Two (FY99-00)

EXPECTED COMPLETION DATE OF THE PROJECT (fiscal year): FY00

ACTUAL COMPLETION (FISCAL) YEAR (explain if the expected and actual completion dates differ): FY01 (December). All field work has been completed. Data analysis is underway and a final report will be issued by December 31, 2000.

SUBJECT (from original application form): Biological Controls, Noxious Weeds

STATUS OF SUBJECT SPECIES (select one by deleting inapplicable option): non-native noxious plant

PROJECT OBJECTIVE(S) (from original application): : Overall Objective to demonstrate the feasibility and effectiveness of integrating aggressive biological control efforts into an existing spurge management program. Specific Objectives - 1) to continue to determine the site characteristics which best describe areas where *Aphthona* spp. flea beetles will be most effective, 2) to evaluate helicopter releases of *Aphthona* spp. flea beetles as an effective method to distribute these agents to inaccessible areas, 3) to evaluate the feasibility of using digital imagery to monitor the impacts *Aphthona* spp. beetles have upon the density of spurge in inaccessible areas, and 4) to assess the effectiveness of *Oberea erythrocephala* releases in or near riparian areas.

BRIEF DESCRIPTION OF PROJECT (from original application form): Leafy Spurge was first detected in the South Fork of the Boise River Drainage on private land in the 1950's. From this epicenter it began spreading to adjacent public lands. The current infestation is scattered in approximately 200 sites ranging in size from less than 1 acre to more than 50 acres. These pockets of spurge are located within an 23,000-acre area on a variety of sites including riparian areas, valley benches and steep hillsides. The District's spurge management program which

began in 1968 has not kept up with the expanding spurge infestation. We are proposing to integrate aggressive and innovative biological control efforts into the existing spurge management program to improve the effectiveness of the management program and to demonstrate that biological control can be an important tool to be included in integrated management programs.

CHANGES TO PROJECT SCOPE OR OBJECTIVES (Changes that need to be made to 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> |
|---------------|--------------------------------------|--|
| Dayle Bennett | FHP, R4, Boise Field Office | 208-373-4227, ddbennett@fs.fed.us, fax: 208-373-4111 |

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

| <u>Name</u> | <u>Affiliation (Office or Dept.)</u> | <u>Phone, E-mail, Fax</u> |
|------------------|--------------------------------------|--------------------------------------|
| Andrew Deutscher | Rocky Mountain Research Station | 406-994-1784 adeutscher@fs.fed.us |

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> |
|-----------------|--------------------------------------|---------------------------|
| Phil Mocettini | FHP, Boise Field Office | 208-373-4223 |
| Tom Barbouletos | FHP, Boise Field Office (Kalispell) | 406-758-5219 |
| John Shelly | Fairfield RD, Sawtooth NF | 208-764-3217 |
| Nadine Cook | Mountain Home RD, Boise NF | 208-587-7867 |
| George Markin | Rocky Mountain Research Station | 406-994-4892 |

COOPERATOR INVOLVEMENT (add lines as necessary):

| <u>Name</u> | <u>Role</u> | <u>Time Commitment</u> |
|-----------------|---|------------------------|
| Phil Mocettini | Coordinated field work, procured supplies | 7 weeks |
| Tom Barbouletos | Coordinated acquisition of insect | 2 weeks |
| John Shelly | Supervised field crews | 24 weeks |
| Nadine Cook | Coordinated field surveys/supplies | 3 weeks |
| George Markin | Project direction/over site | 6weeks |

PRODUCTS AND DUE DATES (from original application form): The final report will be published as a Forest Health Protection Field Office Report. If the results merit inclusion in a refereed professional journal we will submit a report for publication. Oral presentations of the results will be made upon request. Hopefully the project area within the South Fork of the Boise River drainage will become a demonstration area where the successes of an integrated management program can be demonstrated to interested parties.

STATUS OF PRODUCTS/PRESENTATIONS: (If products or presentations are not completed by the due date, explain why and indicate when the products will be completed.)

Indicate whether the Region/Area considers current progress on the project to be acceptable; if not, what corrective measures are planned?): Data analysis and report writing will be completed by December 31, 2000.

Progress on this project is satisfactory. The field data was collected in a timely manner. Phase 3 included testing the feasibility of using true color digital imagery to monitor isolated leafy spurge infestations. Due to changes in contracting regulations and equipment availability we were unable to acquire the true color digital imagery as scheduled. However, that imagery was obtained in July 2000 and is currently being analyzed.

ACCOMPLISHMENTS TO DATE: All field work has been completed.

Phase 1. Vegetation, soil sample, and *Aphthona* spp. population data collection was completed for the twenty-five 1995 release sites. The data is being analyzed to determine site characteristics

of successful *Aphthona* spp. releases.

Phase 2. Vegetation, soil samples, and *Aphthona* spp. population data was collected for the 1998 and 1999 helicopter release sites. That data is currently being analyzed.

Phase 4. *Oberea erythrocephala* release sites were monitored for presence of beetle life stages. That information is currently being analyzed.

Products: Several GIS layers have been developed to display physical characteristics of the project area, the spread of leafy spurge, areas of chemical control, biological control agent release sites, sites where agents have become established, and sites where agents are effectively reducing the density of leafy spurge.

Publications: Forthcoming (FY01).

Technology Transfer: Field trips have been conducted for WO-FHP staff and for Idaho Congressional staffers to see the feasibility and effectiveness of integrating GIS tools with aggressive biological control efforts to manage leafy spurge.

BRIEF DESCRIPTION OF ACCOMPLISHMENTS AND RESULTS:

Describe primary activities for each year, summarizing key and objectives. This may be a clearly worded bulleted list or graphic of milestone activities. Candidly describe what worked and what didn't work 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.

Summary of FYI 1999

- ◆ Floated South Fork Boise River mapping leafy spurge
- ◆ Visited 1998 helicopter releases to determine establishment of flea beetles
- ◆ GPS'd 1998 helicopter insect releases
- ◆ Visited 1996 insect releases to monitor establishment
- ◆ Collected and redistributed 10,000 flea beetles
- ◆ Conducted aerial flight to determine spread of leafy spurge

- ◆ Collected leafy spurge root depth data to determine relationship to insect establishment
- ◆ Collected soil samples from 1996 insect releases for use in relationship to insect establishment
- ◆ Collected 100,000 *Apthona* flea beetles in Arco, Idaho for distribution on leafy spurge
- ◆ Used helicopter to drop 100 bug bombs (containers of flea beetles) on inaccessible patches of leafy spurge
- ◆ Conducted an educational tour for local student cooperators to view the biological control quarantine lab in Bozeman, MT. And to view an insect mass rearing lab in Corvallis, MT.

Summary of FYI 2000

- ◆ Floated South Fork Boise River spraying leafy spurge previously mapped in 1999
- ◆ Released 600 *Oberea erythrocephala* on leafy spurge
- ◆ Collected 1,000,000 *Apthona* flea beetles in Valley City, North Dakota for distribution on leafy spurge
- ◆ Used helicopter to drop 170 bug bombs on inaccessible patches of leafy spurge
- ◆ Conducted an educational tour for local student cooperators to interact with other high school students who are working on a biological control project of leafy spurge in Columbus, Mt.
- ◆ GPS'd 1999 helicopter releases
- ◆ Obtained, via contract, aerial digital imagery of the Fairfield and Mountain Home Ranger Districts leafy spurge infestation

All field work, including sampling procedures and survey design worked well. Development of the GIS layers worked well and maps of those various layers have proved very useful. The helicopter "bug bomb" drops were a success and a video tape of that methodology is being developed for release to cooperators and agencies who might be interested in using this technique.

Aerial digital imagery of the leafy spurge infestation was a key component of GIS analysis part of this project. We planned, contracted for and expected that imagery during the summer of 1999. However, new federal policy regarding flight following of private contractors resulted in our not being able to obtain the imagery until the summer of 2000. That has delayed our GIS analysis portion of this project, thus delaying our overall project analysis and final report.

DOCUMENTATION: Citations; parties. availability of, and means of obtaining, publications or reports documenting project accomplishments and results.

The final report will be published as a Forest Health Protection Field Office Report. If the results merit inclusion in a refereed professional journal we will submit a report for publication. Oral presentations of the results will be made upon request. Hopefully the project area within the South Fork of the Boise River drainage will become a demonstration area where the successes of an integrated management program can be demonstrated to interested

FIRST FISCAL YEAR FUNDED: 1999

FUNDS OBLIGATED FROM BEGINNING OF PROJECT THROUGH FINAL FISCAL YEAR (extend table as needed):

| Fiscal Year | STDP Funding | Other-Source funding | Source |
|--------------------|---------------------|-----------------------------|----------------------------------|
| 1999 | \$31,400 | \$5,000 | RMRS, Sawtooth NF, FHP |
| 2000 | \$36,300 | \$5,000 + | RMRS, Sawtooth NF, Boise NF, FHP |
| | | | |

FUNDS NOT USED FROM PREVIOUS FISCAL YEAR: \$0

If there are unused funds, what is the reason for not using them?

POST-PROJECT TECHNOLOGY SUPPORT:

Some projects result in products or information that do not inherently require sustained investment for continued support after the conclusion of a project. However, other projects may result in products that are not usable without a continuing commitment to sustained investment for support (sustained access, user support, training, or through continued funding from a source committed to the use of the product). Frequently, project leaders develop a deeper understanding and appreciation for this type of sustained support as the project progresses: in this case, please provide your best estimates based on current understanding of the products being developed. If either item 1 or 2 are irrelevant to this project, explain why.

1. ___ Estimated annual funding needed to support the product(s) or continued use of technology after the completion of the project when FHP STDP funding is no longer available: \$0
2. Indicate what sponsor/decision-maker (by name and/or by title) or what organization has committed to being responsible for future support and/or to provide this funding for continued support. If no commitment has been made, describe what steps are being taken to secure this commitment.

LOOK TO THE FUTURE:

Venture your professional recommendations for future related work (including areas of basic research that need to be addressed; potential adaptations of methods or technologies that future project proposals or other organizations may need to consider. If appropriate, describe techniques or methods that seem to be unsuccessful at this time and explain why. This is an opportunity to describe work that may be valuable to pursue but is outside the scope of this project to fully address. Be succinct and meaningful; to the extent reasonable, consider specifics of who, what, why, how, and when in your recommendations.

The technology and methodology developed through this project will likely lead to similar projects aimed at the development/refinement of similar techniques and methods for integrated management of other non-native invasive plants.