

FINAL REPORT

PROJECT TITLE: West Willamette Wildlife Corridor Invasive Research and Removal

COOP AGREEMENT #: 134204PUZ4

DATE: April 30, 2007

PROJECT PERIOD: October 2004 – April 2007

INTRODUCTION

This report summarizes work on the 40 acre Keller Woodlands and adjacent forested acres, conducted from October 2004 through March 2007.

Primary project goals were the control of English ivy (*Hedera helix*) and other noxious weeds – reducing ivy cover to less than 5% in target areas – while involving the community in monthly work parties and other opportunities to learn about and improve ecological conditions on the site.

Number of volunteer hours totaled more than 400 per year, resulting in removal of ivy from trees, shrubs and ground on four acres. Volunteers came from local groups (Friends of Marquam and Friends of Terwilliger) and Oregon Health Science University (OHSU), as well as through Hands on Portland and from the community at large. Americorps volunteers and others also cleared ivy from trees on 40 acres of Keller and adjacent property during the 3-year project.

During the grant period, herbicide was applied, according to USFWS specifications, both by the City of Portland and under a contract paid for by funds from this grant. Results were generally good but inconsistent: In most areas ivy cover was reduced to target levels but some patchiness occurred, where ivy still formed dominant cover.

Benefits accrued to the site include recovery of ecological function and scenic value. Where ivy is removed, more than 20 species of native shrubs, wildflowers and fern have recovered and re-colonized the site. Native trees and shrubs are released from the weight and competition from ivy vines. Wildlife habitat and water quality are improved by restoration of diverse, native plant cover. For the visiting public, natural scenery and opportunity for environmental education are enhanced and restored.

PROJECT AREA

The Keller Woodlands property encompasses 40 acres of mature, native forest on steep ground crossed by several unnamed creeks that flow to the Willamette River. The site is embedded in a larger landscape of more than 300 acres of protected forest, and together Keller Woodlands and surrounding forests are called the West Willamette Wildlife Corridor. Forestlands in the corridor are owned/managed by the City of Portland, OHSU and Metro, as well as Three Rivers.

Keller Woodlands was first protected through donation to The Nature Conservancy of Oregon in 1983. At that time, staff ecologist Jimmy Kagan noted only a few, small occurrences of English ivy on the site. When Three Rivers Land Conservancy accepted donation of the property and began evaluation of noxious weed cover in 2000, English ivy could be found on more than 60% of the site, ranging from small patches among native plants (*low infestation*) to large patches forming the dominant cover to the exclusion of native plants (*high infestation*).

In response Three Rivers developed a management plan and evaluated ivy occurrence on Keller and 120 additional acres of forestland in the West Willamette Corridor, where infestations were recorded and mapped. Organizing volunteers to manually control ivy began shortly after acquisition, and successful grant writing made funds like those reported here available for evaluating, controlling and measuring efficacy of control methods.

IMPLEMENTATION

During the period covered by this USFWS/Greenspaces grant, approximately 25 acres of forest with moderate to heavy ivy infestation were treated up to three times with herbicide; volunteers cleared 4 acres during project timeline; ivy was removed from trees on 40 acres across the project area.

Garlon3A (triclopyr amine formulation) or Roundup (glyphosate with Monsanto trademark surfactant) was mixed at 2% with surfactant, usually LI-700, and dye. Herbicide was applied in dry, calm conditions with backpack sprayers that pinpoint target plant species. Applications were conducted on 17 acres in June 2005, on 21 acres in May 2006 and on 25 acres in February 2007.

Manual removal of ivy by volunteers was focused both where infestation was low to moderate and following herbicide treatment on highly infested areas. Volunteers met monthly to work for three hours on areas in the northeast portion of Keller and adjacent OHSU property, cutting and pulling ivy from trees and the ground. More than 400 hours of volunteer service per year were logged for 2.5 years with more than 200 individuals participating, clearing treated areas to less than 1% cover. (See, Table 2, below).

All conservation measures specified in the letter from the Service, dated April 19, 2005, including 'Implementation Methods and Best Management Practices' were followed.

RESULTS

Overall affects have been good, with significant reduction in ivy cover and occurrence in most successful areas – from 80%-100% cover to 1%-5% cover. These results were found on most treatment areas where three herbicide applications were applied and on all treatment areas where volunteers manually removed ivy (See Keller Woodlands Photographs, attached).

Herbicide treatment alone appears to reduce ivy cover to target levels, but several applications are required on most areas to reach significant impacts, and native plant cover appears to be reduced or stressed in some areas. Several herbicide treatment areas show little or no change from baseline, with only some burn or curl on ivy leaves to indicate treatment had occurred; explanations range from operator error to shading or aspect of site affecting plant metabolism. Variable results have been noted in other sites, according to cooperators and experts; fortunately, these poor results occur on less than 20% of 25 acres treated with herbicide in this project.

In areas where moderate and high infestations of ivy were treated, trees and large shrub species were released from smothering and competition: Western red cedar, Douglas fir, grand fir, big leaf maple, alder and cottonwood were freed of the weight and shade from ivy vines; Indian plum, sword fern, salal and Oregon grape appeared to benefit from removal, showing new growth in seasons after treatment.

Opportunistic plants, both native and invasive, quickly colonized areas where manual removal of high infestation results in bare soil. (See Table 1, below, for partial list of species).

Table 1. *Plants observed to naturally colonize areas where dense ivy infestations were removed*

NATIVE SHRUBS & HERBACEOUS PLANTS	NOXIOUS WEEDS
Trailing Blackberry	Herb Robert
Elderberry	Shining geranium (on Terwilliger Blvd only)
Red huckleberry	Garlic mustard (on Terwilliger Blvd – manually controlled in 2006)
Thimbleberry	
Wild rose	
Water leaf	
Duck’s foot / Inside out flower	
Spring Beauty	
Miner’s lettuce	
Trillium	
Fringe cup	
False strawberry	
Wood violet	
Bed straw	
Bracken fern	
Maiden hair fern	
Indian Pipe	

ONGOING TASKS

The work accomplished by staff and volunteers in this project is to be maintained and continued. Three Rivers and others recognize the importance of maintaining areas cleared of noxious weeds, and well as continuing to restore surrounding areas where noxious weed infestation still occur. With local community groups and businesses, OHSU and the City of Portland, Three Rivers is mounting a larger campaign to treat the 300 acres of forest – the West Willamette Corridor – surrounding the Keller Woodlands. In three years, ivy is to be removed from trees and popular natural areas are to be cleared of damaging noxious weeds.

PROJECT STAFF & PARTNERS

Table 2.

Project Staff & Partners		Roles	# Participants	# Hours
Staff	Jayne Cronlund, Executive Director	Project oversight, public speaking	1	100
	Sandy Wright, Development Dir.	Fundraising, photography	1	20
	Melissa Rowe Soll, Stewardship Dir.	Project management, monitoring, reporting	1	400
	Sam Roderick and Megan Barckert, Americorps	Volunteer coordination, hand treatment	2	300
Partners	City of Portland	Herbicide treatment	12	350
	Oregon Health Sciences University	Volunteer recruitment, project coordination	15	100
	Hands On Portland	Volunteer recruitment, hand treatment	120	450
	Coop Weed Management Area	Technical advice	12	60
	Friends of Terwilliger & Marquam Natural Area	Volunteer recruitment, project coordination	8	60
	Other volunteers	Hand treatment	120	490
TOTAL			292	2330

EXPENDITURES & COSTS

Table 3.

Item	USFWS/ Greenspace	Matching Contributions				Total
		Funds	In-Kind value	Contributors	Pending/ Received	
Staff		\$3,600 Exec & Dev Dir; \$10,000 Stewardship Dir; \$4,000 Americorps		National Fish & Wildlife Foundation; Spirit Mtn Community Foundation; TRLC unrestricted funds.	Received	\$17,600
Volunteers			\$ 9,400		Received	\$ 9,400
Profession. Services	\$ 9,300	\$2,800 (06/05 application); \$500 (sign design).	\$ 4,500	City of Portland; Friends of Terwilliger; OHSU; CWMA.	Received	\$17,100
Materials & Supplies	\$ 700		\$ 100	Portland Nursery, Georgie's Clay	Received	\$ 800
Indirect/Overhead		\$7,500		TRLC unrestricted funds.	Received	\$ 7,500
TOTAL	\$10,000	\$28,400	\$14,000			\$52,400.00

SUPPLEMENTAL INFORMATION

Real costs of controlling English ivy and other noxious weeds on native forest woodlands are difficult to estimate, because site conditions, plant response and other factors vary. In Table 3, above, \$52,400 is shown as total expenditures for this project. These numbers include in-kind contributions totaling \$14,000 for volunteer labor (at \$10 per hour), the donation of other professionals' time (at \$50 per hour), plus donations. Our cash outlay for treating 25 acres of ground ivy and 40 acres of tree ivy totals \$38,400 – or under \$1,500 per acre – and includes administrative overhead, project planning and management, organizing and collaborating with partners and landowners, monitoring, analysis and reporting.

In Table 4, below, costs of various methods of treatment methods. These numbers are for treatment, estimated per acre, only (and do not include overhead, etc, as in Table 3, above).

Table 4. *Treatment Regimens and Estimated Costs, 2007.*

Treat ment # 1	# 2	# 3	Outcome	Cost Factors	Total Cost	Notes
Spray	Spray	Spray	0 – 10% cover of ivy remaining in most areas after treatment, though some patches of dense cover remain; possible reduction in native plant cover where more than 1 treatment.	\$200 - \$300/acre per herbicide treatment.	\$600 - \$900/acre	Herbicide treatment is recommended only for heavy infestations, where native plant cover is absent or low relative to invasive cover.
Spray	Hand pull – volunteers	Ivy can be reduced to less than 1% cover, by weakening weed with herbicide treatment, then following with hand pulling and tree-ivy removal.		\$200 - \$300/acre for herbicide treatment; plus \$1000/acre for volunteer coordination (For 5 work parties of 6 volunteers each, Volunteer Coordinator at \$25/hour for 40 hours).	\$1200 - \$1600/ac	Where infestation is heavy, a second spray treatment can be applied prior to hand treatment, adding \$200 - \$300/acre to total cost of treatment.
Spray	Hand pull - paid crews			\$200 - \$300/acre for herbicide treatment; plus \$1250/acre for work crew for 50 hours/acre. (Crew hourly rate of \$25/hour/person)	\$1450 - \$1850/ac	Where low infestation and high native plant cover, skip to treatment #2; and subtract herbicide treatment cost.

Considerations for using the numbers in Table 4, above:

Lower infestation rates (5 – 25% cover, where native vegetation is still present) can best be controlled with manual treatment by volunteers and paid crews. Highest infestation rates (75 – 100% cover, where native vegetation is mostly absent) can be treated with herbicide alone. Best results for moderate to high infestations, however, appear to include a combination of careful herbicide treatment on medium to high densities (50 – 100%) followed by hand pulling, as outlined in Table 4, below.

Riparian areas should be treated only by manual removal; herbicide should not be applied within 15 feet of waterways. To minimize damage to native vegetation, herbicide is sprayed when most plants are dormant – Fall through Winter are optimal – though careful application can occur anytime that herbaceous species are not in bloom.

Revegetation with seed, bare root or container native plants should be considered after herbicide-only treatments, where pre-treatment noxious weed cover was greater than 75% and where noxious weed sources grow near newly treated areas.

Submitted to:
Three Rivers Land Conservancy
Lake Oswego, OR 97035
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By:
Melissa Rowe Soll, MFR
Environmental Consultant
Portland, OR 97202
503.704.3661