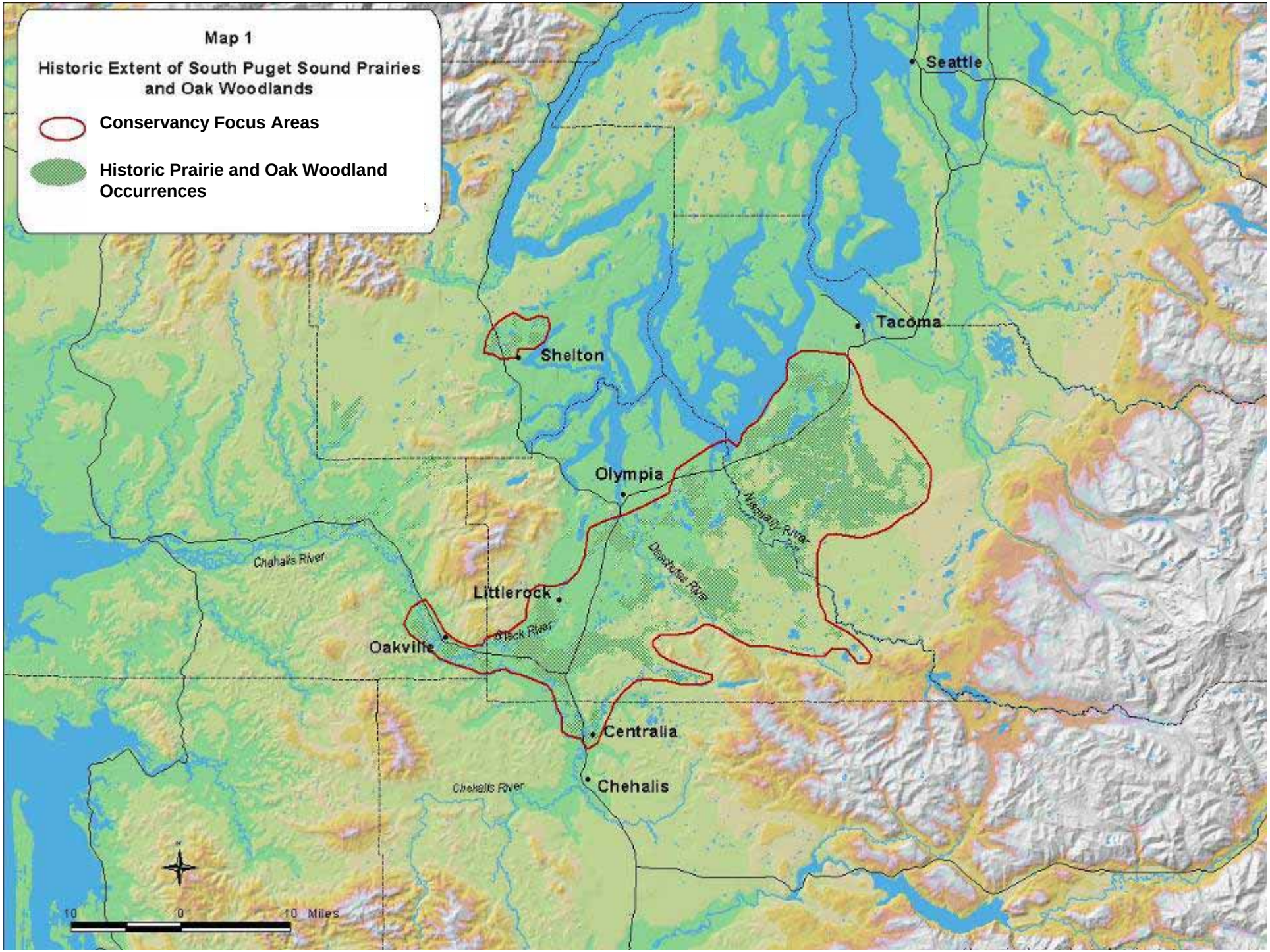
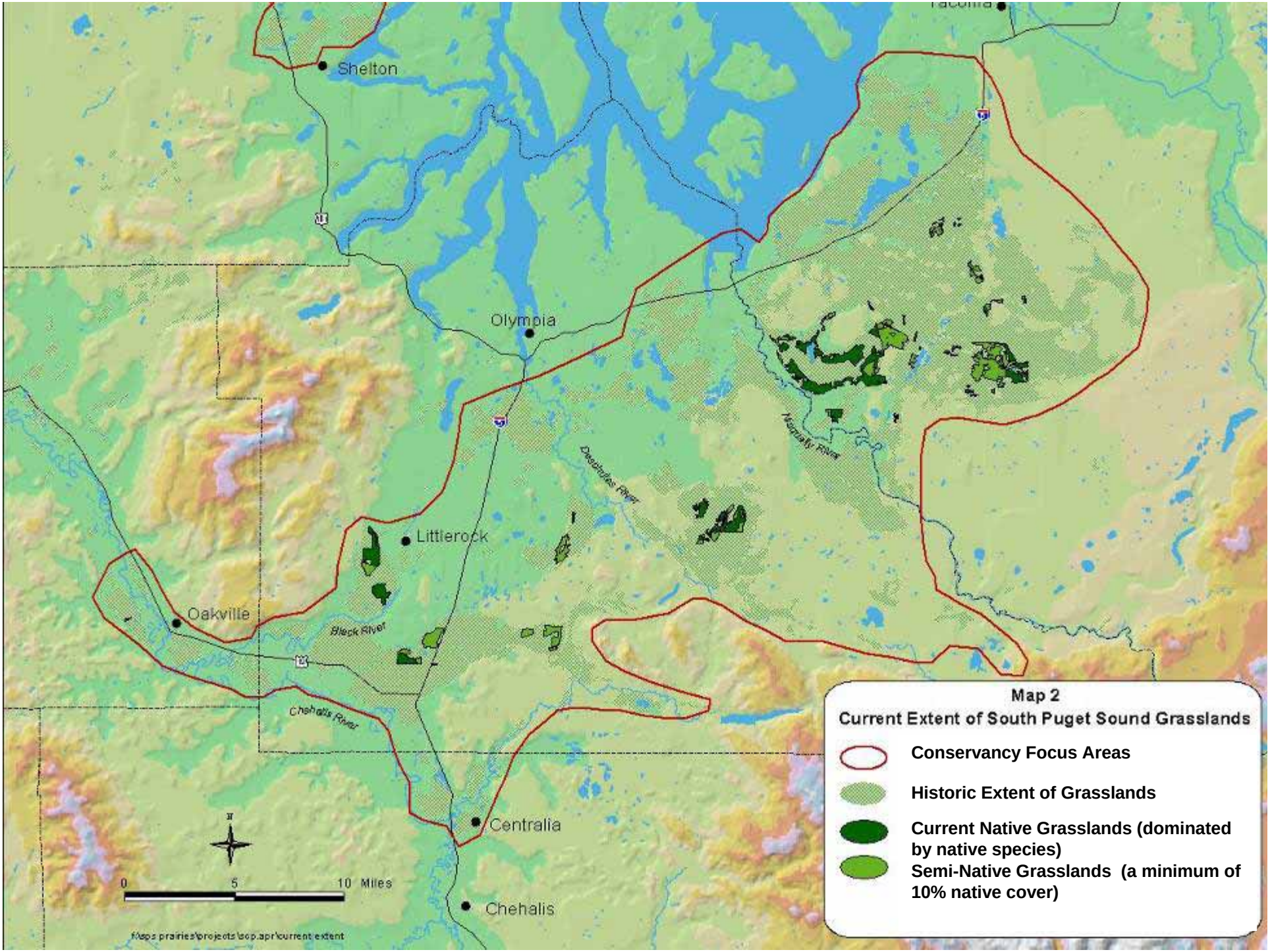
Control of *Potentilla recta* in an Undisturbed South Puget Sound Prairie

Cliff Chapman
The Nature Conservancy
120 E. Union Ave suite 215
Olympia, WA 98501


Map 1
Historic Extent of South Puget Sound Prairies and Oak Woodlands
Conservancy Focus Areas
Historic Prairie and Oak Woodland Occurrences
Seattle
Tacoma
Shelton
Olympia
Littlerock
Oakville
Centralia
Chehalis
Chehalis River
Chehalis River
Deschutes River
Black River
10 0 10 Miles


Shelton
Olympia
Littlerock
Oakville
Centralia
Chehalis
Black River
Chehalis River
Deschutes River
Nisqually River
0
5
10 Miles
Map 2
Current Extent of South Puget Sound Grasslands
Conservancy Focus Areas
Historic Extent of Grasslands
Current Native Grasslands (dominated by native species)
Semi-Native Grasslands (a minimum of 10% native cover)

Quick notes on *Potentilla recta*

- Common name Sulfur cinquefoil
- Perennial, tap-rooted herb of the Rose family
- Reproduces by seed production only, seeds are dark brown achenes
- Native habitat grass/shrublands and forest borders in Southern Europe, North Africa and western and central Asia
- Range is most of continental U.S. and southern Canada
- Highly invasive in the West, but roadside/disturbed site obligate in East
- MI plants found to produce 1650 seeds/plant, OR 5350-5600 seeds/plant
- Being so cosmopolitan indicates little soil preference but seems to prefer coarse gravelly soils
- For an excellent review of this and other invasive species, visit the TNC Weeds website at http://tncweeds.ucdavis.edu

Undisturbed Prairie?

155 mm shell like those fired on AIA

Background of the Artillery Impact Area

- Due to thousands of unexploded ordinance, not many people or vehicles enter
- Makes up most of the 7,000 acre 91st Division Prairie
- Burns frequently, some areas annually
- Sections with very few invasive species
- Sections with very high native percent cover, very high forb diversity
- Other sections cratered from years of shelling with low biodiversity
- Harbors large populations of many TNC South Sound Prairie targets
- Virtually free of Scotch Broom
- Can be very difficult to obtain access to survey/inventory for new threats

The Problem

- In May of 2006, a very large new population (estimated at over 100,000 plants) of *Potentilla recta* was found in high quality section of the Artillery Impact Area, north of Muck Creek
- We had very limited access into the infested area
- The population follows the Muck Creek riparian corridor, and up through mesic depressions dominated by pasture grasses, but expanded out into high quality prairie
- Research recommended using Piclorum with 2-4-d ester as an alternative for control
- Piclorum is known to have greater than one year soil activity, greatest in coarse or sandy soils, and can leach into ground water systems, especially in coarse soils
- This is a high quality area with well-drained, coarse soils near a stream

Methodology

- Triclopyr amine (Garlon 3A) was chosen to compare with 2-4-d ester
- Foliar application was used with backpack sprayers
- Plants were sprayed in rosette and bud stage
- Large area treated in short amount of time due to access, as many as 12 sprayers on some days
- Both chemicals started at a 3% spray solution, but triclopyr was quickly changed to 2.5% as burn down was faster than expected
- Both chemicals were mixed with 0.25% NuFilm IR surfactant which allowed for spraying within 30 minutes of rain
- Transects were determined by standing within an infestation, throwing a flag in the air, and using that point as a center for two 10 meter transects running N-S and E-W
- Plants were counted that touched the measuring tape, noting if they were dead or alive

Results

- 2-4-d ester at 3%, after two weeks, showed stress but plants were beginning to flower. Roots were dug and appeared healthy (white, moist, and flexible). This assessment suggested ineffective control, so triclopyr amine was promptly applied due to access issues.
- Triclopyr amine at 2.5% showed excellent control after two weeks. Roots were dug and found to be brown, dry, and lightweight.
- Transects for triclopyr amine found 97% control

Discussion and Conclusions

- *Potentilla recta* can be invasive in grassland systems with high fire frequency, diverse floras and little human disturbance
- 2-4-d ester at 3% with NuFilm IR at 0.25% did not control this species, although higher rates could be effective
- Triclopyr amine at 2.5% with NuFilm IR at 0.25% offers good control with little soil activity; both are labeled for aquatic use
- Using NuFilm IR adjuvant greatly helped in this project as it allowed spraying on days with forecasted rain
- Lower rates of triclopyr amine for *P. recta* control should be studied

Acknowledgements

- Funding for this project was provided by Fort Lewis Public Works, ENRD, Fish and Wildlife Program
- A special thanks for all who helped control the “Potentilla Monster” this May: Rod Gilbert, Nick Miller, John Robinson, Jim Lynch, Mary McCallum, Mason McKinley, Van Purdue, Samantha Fleischner, Roger Reed, Shawn Zaniewski Tyler Longmire, Jamy Potts, John Scarcelly, Justin Williams, Sarah Clarke, Casey Dennehy, Racheal Kemps, and Kyle Pinjuv
- An extra special thanks to Rod Gilbert with Fort Lewis Fish and Wildlife Program who even worked Memorial Day because we had access