Wallowa Canyonlands Weed Partnership
BPA Contract #: 43519
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Abstract
Noxious weeds threaten fish habitat by contributing to increased sedimentation rates, diminishing riparian structure and function, and reducing habitat. Wallowa Resources' Wallowa Canyonlands Partnership (WCP) protects steelhead spawning habitat along lower Joseph Creek, the lower Grande Ronde and Imnaha Rivers and their tributaries from invasion and degradation by noxious weeds using Integrated Weed Management techniques. Objectives of this grant were to inventory and map high priority weeds, coordinate treatment of those weeds, release and monitor bio-control agents, educate the public as to the dangers of noxious weeds and, and restore lands to produtive plant communities after treatment. With collaborative help from partners, WCP inventoried 66,660+ upland acres and 147 river miles of fish habitat, released bio-controls at 2 sites, re-vegetated 353 acres, and educated the public through posters, weed profiles and newspaper articles. Additionally, WCP used other sources of funding to finance the treatment of 2,558 gross acres during the course of this grant.

Introduction
The purpose of the WCP is to maintain and protect plant communities within Wallowa County's northern and eastern canyon lands (and the Asotin County portion of the Grande Ronde) from noxious weed invasion, completing the regional network of weed control. The Project area encompasses the lower Grande Ronde, Joseph Creek and the Imnaha River and their tributaries.

Noxious weeds degrade water quality by contributing to increased sedimentation rates and diminished riparian structure and function. Additionally, noxious weeds often out-compete native plants, lowering the quality and quantity of forage available for wildlife and domestic livestock. Without locating and rapidly treating noxious weeds, especially aggressive new invaders to the area, critical habitat may be lost. The most cost effective way to protect watershed health from weeds is to inventory and aggressively treat these infestations while they are small.

Specific objectives of this project were to:

1. Inventory and map 104 miles of river corridor and tributary streams that are considered critical habitat for pacific steelhead and/or salmon in the Imnaha and the Lower Grande Ronde watersheds for noxious weeds.
2. Treat 600 acres of noxious weeds to prevent spread of weeds into riparian areas of (using non Grande Ronde Model Watershed (GRMWS) funds).
3. Release bio-control agents at ~ 8 sites.
4. Monitor sites to measure treatment efficacy.
5. Assess, prescribe, and begin restoration seeding work (~ 105 acres).
6. Educate the public as to the dangers of noxious weeds and how to manage them.
7. Summarize results and learning and share with project partners, public and grantors.

Materials and Methods

Table 1. Materials and Methods for Wallowa Canyonlands Partnership

Objective	Materials Description	Accomplished by:
Inventory and Mapping	Used aerial survey crews equipped with GPS units and Digital Aerial Sketch Pads. GPS data was downloaded into ArcGIS.	WCP staff, contractors, ODA, USFS, Tri County CWMA
Weed Treatment *using other funding sources*	Used safe and effective herbicides to treat high priority noxious weeds in the project area.	WCP staff, contractors, ODA, USFS, Tri County CWMA
Bio-control Releases	Released bio-control agents given by ODA	WCP staff
Monitor Sites	Used GPS data to monitor vegetation at known weed sites. Established and updated photopoints to measure vegetation trends.	WCP staff
Restoration	Methods of planting seed included hand broadcast, helicopter, ATV, and rangeland drill.	WCP staff, contractors
Education	Ran 3 weeks of weed newspaper ads, spoke at numerous educational events.	WCP staff
Share Results	Held meetings with partners to discuss upcoming work and share results. Project Accomplishments were written up and reported to grant funders, Wallowa Resources Board and Tri-State CWMA.	WCP staff

Project Description
Original goals outlined in contract as compared to final project accomplishments are listed below.

Table 2. Tasks completed for Wallowa Canyonlands Weed Partnership

Task	Location	Date	Original Goal	Accomplished	Difference
Critical habitat inventories	Lower GRR*, Imnaha	8/09-10/10	104 miles	147	+ 43 miles
Additional Upland Inventories	Lower GRR, Joseph Cr, Imnaha, Snake	8/09-10/10	None estimated	66,600	N/A
Weed Treatment	Lower GRR, Joseph Cr, Imnaha, Snake	8/09-10/10	600 acres	2,558 acres	+ 1,958 acres
Biological Control Releases	Imnaha	8/09-10/10	8 releases	2 releases in program area	-6 releases
Monitor Sites	Lower GRR, Joseph Cr, Imnaha, Snake	8/09-10/10	None estimated	Too many to count	N/A
Re-vegetation	Lower GRR, Imnaha,	8/09-10/10	105 acres	353	+ 248 acres
Outreach and Education	N/A	8/09-10/10	None estimated	3 wks newspaper ads, reached ~2,000 at educational events	N/A
Summarize Results	N/A	8/09-10/10	2 weed meetings/ conferences	6	+4

*GRR = Grande Ronde River Corridor

Project Participants

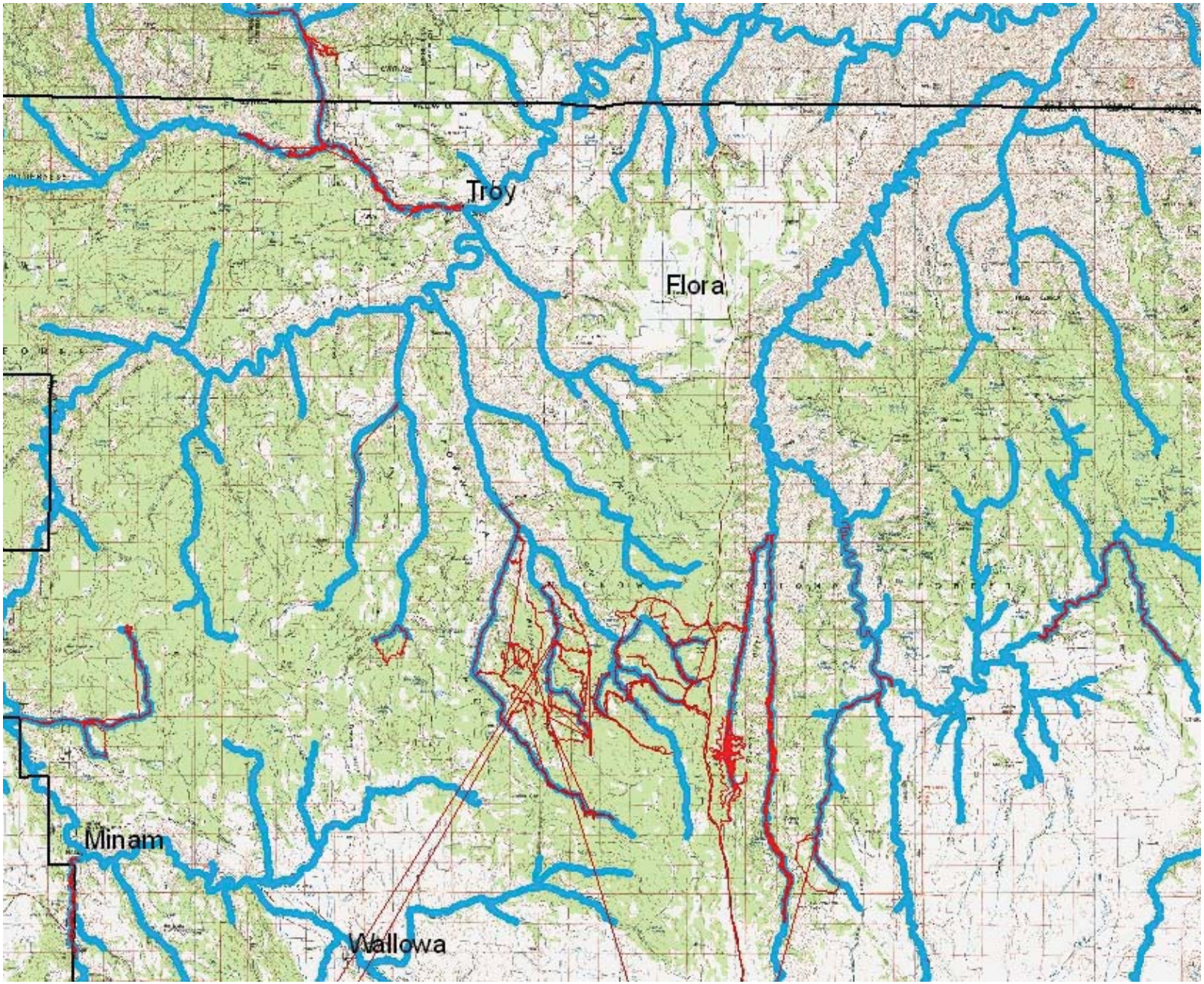
Table 3. Partners involved and funds/work contributed.

Partner	Responsibility	Contributions
GRMWS BPA	Fiscal Contributor	$30,000
OSWB	Fiscal Contributor	$86,204
BLM	Fiscal Contributor	$48,654
ODFW	Fiscal Contributor	$ 40,016
TNC	Fiscal Contributor	$ 46,066
NFF	Fiscal Contributor	$ 52,056
RMEF	Fiscal Contributor	$ 20,382
OWEB	Fiscal Contributor	$ 35,674
Asotin County	Fiscal Contributor	$ 1,694
	Totals	**$360,746**
USFS Wallowa Whitman NF	Leadership in the Snake River and on other forest lands, coordination, mapping, and implementation.	In Kind work – values not tracked
Wallowa County Veg. Management Department	Cooperation in prioritization, funding and cost share, implementation, and assistance.	In Kind work – values not tracked
Tri –County CWMA	Regional coordination, prioritization, mapping, and implementation assistance.	In Kind work – values not tracked
Oregon Department of Agriculture	Regional coordination, prioritization, and implementation.	In Kind work – values not tracked

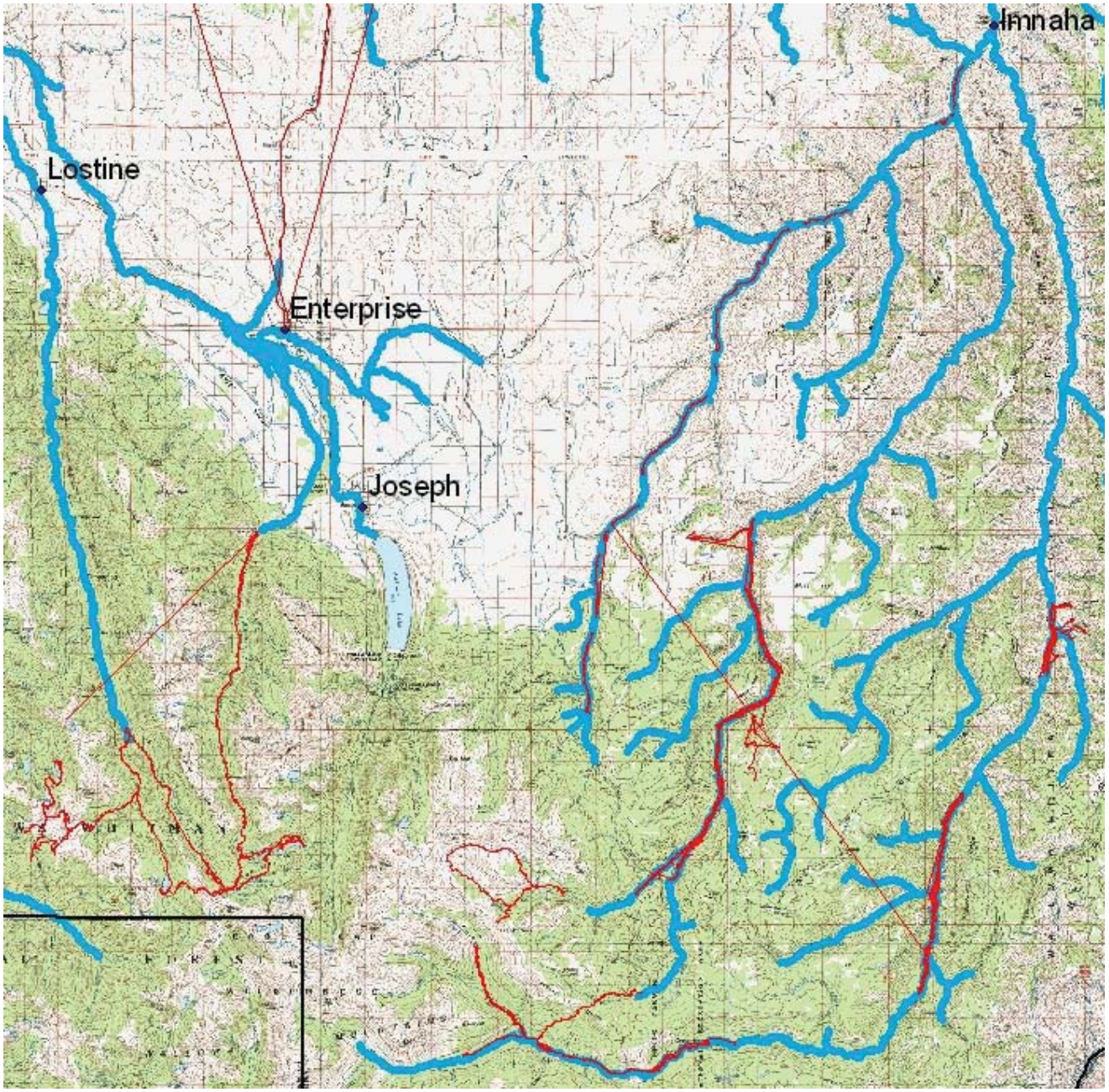
Description of Project Area

This project focused on tributaries to the lower Grande Ronde and Imnaha Rivers. See attached maps.

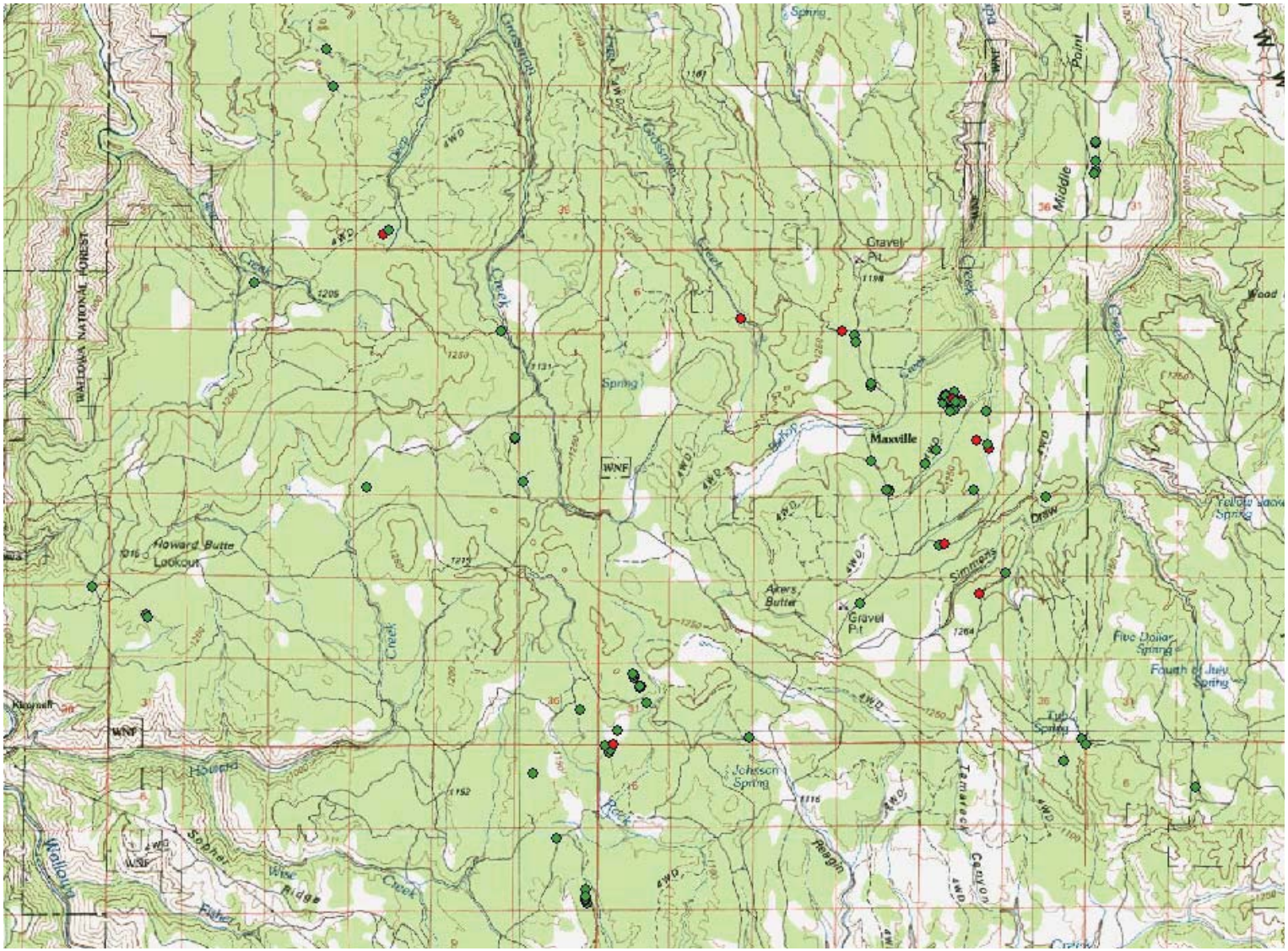
Map 1. The Grossman and Chesnimnus surveyed areas. The black line is the Wallowa County border, blue lines are pacific steelhead and/or salmon spawning areas, red lines are tracks where contractors surveyed for weeds.



Map 2. The Imnaha surveyed areas. The black line is the Wallowa County border, blue lines are pacific steelhead and/or salmon habitats, red lines are tracks where contractors surveyed for weeds.



Map 3 Meadow Hawkweed site trends in the Grossman Area 2007-2010.
Data was compared for 86 meadow hawkweed sites in the Grossman Area between 2007 and 2010 to determine whether the weeds at sites were increasing, stable or decreasing in size. 30 % of the sites had no plants in either year, 15% of the sites have decreased in size, 21% stayed in the same size category and 34% have increased in size. However, of the sites that increased in size only two sites were larger than 2500 square feet and most were much smaller. In other words, Mhw shows a reduction and/or extripation at 66% of the sites (green markers) and an increase at 34% of the sites (red markers).



Results and Discussion

Critical Steelhead and/or Salmon Habitat Inventories:
WCP inventoried 147 river miles for noxious weeds on streams considered critical habitat for pacific steelhead and/or salmon in the Imnaha and the Lower Grande Ronde watersheds. Noxious weeds are adept at moving into and dominating riparian areas, and have significant potential to degrade riparian areas and increase sedimentation. WCP targeted these streams because of their prime steelhead spawning habitat and because of their proximity to known weed infestations. Inventories took place in the following areas:

- The Upper Imnaha (See attached Map 1)
    - Upper Imnaha River: WCP staff joined US Fish and Wildlife as they were doing fish surveys in the upper Imnaha River. While USFW were counting redds, WCP was looking for weeds, but none were found. The second portion of this survey was completed by contractors in July, 2010 (~20 river miles).
    - Upper Big Sheep: Contractors surveyed from Coyote Creek (3 miles further downstream than we had orginally planned) to Salt Creek looking primarilly for meadow hawkweed. Only 2 small sites were found. (~16 river miles).
    - Little Sheep Creek: This creek was considered to be at high risk for meadow hawkweed because the creek and its tributaries flow through the large infestations upstream in the Salt Creek area. Contractors surveyed all properties for which we had permission to enter and found 4 small sites on the end closest to the infestation. All of these sites were treated shortly after they were found (~20 river miles).

- The Grossman and Chesnimnus Areas (See attached Map 2)
    - Swamp (~14 river miles) and Elk Creek (~20 miles): These creeks were known to have meadow hawkweed, but we hadn't known the extent of the infestation. Contractors walked large portions of the creek and continued to find meadow hawkweed.
    - Davis Creek: In this creek we had known of 2 small orange hawkweed sites, an Oregon class A and T listed noxious weed. Intensive inventories of the entire area were conducted and found several new meadow hawkweed sites and no more orange hawkweed sites. Dan Sharrat (ODA) followed up on the inventory and treated the invasive hawkweeds. These surveys are crucial for detecting new invaders (~9.5 river miles)
    - Wildcat Creek: No new meadow hawkweed plants were discovered (~ 2 river miles).
    - Bishop and Wallupa Creek: No new meadow hawkweed plants were discovered (~5.5 river miles)
    - Howard Creek: No new meadow hawkweed plants were discovered (~ 10 river miles):
    - Mud Creek tributaries including Tope, McCalister, McCubbin, upper Mud: We have done intensive inventory of the road systems in the Grossman area for many years, but many of the streams had not been surveyed for hawkweed. WCP thoroughly inventoried the Forest Service land by driving roads and walking the streams. We were pleased to find only a few new small meadow hawkweed sites over 43,000 gross acres (~ 14 river miles).

- Minam River between Mead Flat and Minam: No new meadow hawkweed plants were discovered (~ 4 river miles)
- Chesnimnus Creek: Contractors surveyed along Chesnimnus Creek covering 320 acres looking for noxious weeds. They found 8 species: 3 of these, spotted knapweed, meadow hawkweed and orange hawkweed, are on Wallowa County's A List. Orange hawkweed is an especially important early detection because it is the second known site in Wallowa County. These sites were small and were immediately treated following discovery (~11.5 river miles).

- In additioned to the above planned surveys, the following inventories took place in steelhead spawning habitats:
  - Wenaha Wilderness (~5 river miles)
  - Imnaha Divide area (~10 river miles)
  - Lostine River (~5 river miles)

Upland Inventories

During the course of this grant WCP used other funds to survey 66,660 + upland gross acres for invasive plants. The following are some highlights:

- Eagle Cap Wilderness: National Forest Foundation funds were used to fund inventories in the Eagle Cap Wilderness.
  - Minam Lake Area: Found only a few Himalayan blackberry patches, which is not a high priority weed (~ 4,500 gross acres).
  - Lakes Basin: Didn't find any high priority noxious weeds in this heavily used alpine area (~ 9,000 gross acres).

- Hells Canyon: This area was at a high risk for a rush skeletonweed invasion as it is close to a known infestation in Baker County. It had not been inventoried previously.
  - Temperance Creek and Rough Creek: Surveyors found numerous rush skeletonweed, 1 whitetop and a few sulfur cinquefoil and Scotch thistle sites along the mid-level benches on the Oregon side of the wilderness (~6,000 gross acres).
  - McGraw: Contractors inventoried in the north end of the Wilderness and found new rush skeletonweed, Dalmatian toadflax and Scotch thistle sites (~560 gross acres).

- Hells Canyon: An aerial inventory targeting whitetop was completed June 2010 documenting spread of existing weed sites and locating new ones. The USFS is sending contractors to treat weed sites found by these inventories (~ 45,000 gross acres).

- Salt Creek: This is where WCP's largest infestation of meadow hawkweed is found. Inventory crews were dispatched to look in areas that were previously thought to be free of hawkweed and discovered that hawkweed had made inroads into much of the burned over slopes. The new inventories of this area increased the gross acreage of the Salt Creek Summit infestation from 2400 ac (3.7 Square miles) to almost 4,000 acres or 6.7 Square miles. Most of the sites were small but this presents a large problem for managers (~1,600 gross acres)

Bio-control Releases
WCP staff made the following biological control agent releases in the program area:

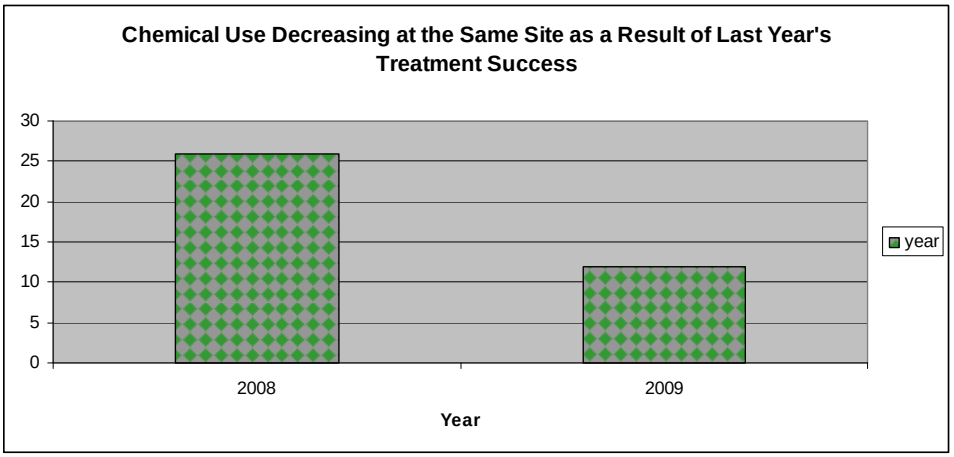
- For the second year in a row *Apthona* flea beetles were unavailable for release at leafy spurge sites along the Grande Ronde River. However, staff from WCP and Tri-County CWMA were able to acquire and make one release of *Oberea* stem boring beetles in July, 2010. Bios are having intense impacts on their target at Minam Island, the Trestle Pond and other sites.
- Diffuse knapweed agents are present throughout the program area and are having a significant impact on plant seed production and populations of this plant. At Grouse Creek in the Imnaha River Corridor, staff noticed knapweed bio-controls were absent. Bugs were released in July, 2010 and will be monitored to ensure they establish (See photos 1&2).

Monitor

- Photo Points: Monitoring data is largely collected in the form of photo points but is also captured as treatment data in maps and in our database. Before and after pictures show changes in the vegetation in places that have been treated and/or re-vegetated (See photos 3&4).

- Mapping: WCP tracked all inventory and treatment results at known meadow hawkweed sites in the Grossman area (largely private timberlands north of Wallowa and Enterprise). Many sites in this area have been inventoried and/or treated since 2004. See attached map 3 and the explanation there for trends. We will continue to monitor meadow hawkweed trends in the Grossman area and other sites in the future.

- Chemical Comparisons: In 2008 a new site of meadow hawkweed was found by a rancher in Big Sheep Creek where no other hawkweed was known to occur. In total, 3.7 net acres of meadow hawkweed were treated. In 2009 contractors returned to the area to treat only 1.55 net acres. Chemical use records show a 54% reduction in herbicide use this year (25.9 oz) compared to 2008 (12 oz). These results are normal for large scattered sites for the second year of treatment, especially on years of good seed germination. This particular site is crucial in preventing hawkweed from spreading into the lower Imnaha River.



Photos 1 & 2. WCP staff releases diffuse knapweed bio-control agents at Grouse Creek where bugs had not been previously detected.

Revegetation

- Rippleton Creek, Imnaha Watershed (5 acres)
  WCP and Dow Chemical Company set up monitoring plots on TNC ground in an old feed ground at the mouth of Rippleton Creek. In July, 2009 WCP set up 7 plots and used the Line-Point Intercept method (Elzinga et al. 2001) to estimate baseline vegetation cover. Milestone at 7 oz/acre was applied to the treatment plots prior to annual grass germination in October. WCP used Wallowa County's rangeland drill to deliver native seed at 15 lbs/acre over the entire pasture in December, 2009. Data was taken again in July, 2010 to determine short-term vegetation response. Data will continue to be taken for at least 5 years to measure the long-term response to this restoration project.

- 3 Feedlots, Imnaha Watershed (15 acres)
  Three old feedlots dominated by annual grasses and other weeds were targeted for restoration. The goal of the project is to restore these sites to a more desirable, weed resistant and native plant community. To begin restoration efforts soil samples were taken and aggressive noxious species were spot treated multiple times. Kochia and newly greening hare barley were treated just prior to burning so that they would dry out enough to be consumed. TNC and USFS staff then burned all three plots to destroy this year's seed crop, allow for direct herbicide soil contact, and to create a hospitable seed bed. Native seed has been purchased for these sites. Due to other agencies needing to use these areas to install pit tag sensors, seeding will not take place until after November 8, 2010.

- Zumwalt Prairie, Imnaha Watershed (280 acres)
  280 acres of private land dominated by medusahead rye and other annual grasses were burned to remove thatch, destroy viable seed, kill germinated medusahead, and prepare a suitable seedbed. Within days of the burn the largest areas were aerially sprayed and small outlying patches were sprayed by hand. Both treatments used Plateau (4oz/ac) to provide control for newly germinating annual grasses and Tordon (1p/ac) to provide general broadleaf control. Almost immediately after spraying, a helicopter was used to deliver a mixture of perennial grass seed (Great Basin wild rye, Sandberg's blue grass, sheep fescue, pubescent wheatgrass, Sherman big bluegrass and intermediate wheatgrass) at 16 lbs/ acre.

- McNeil Bar, Lower Grande Ronde River Watershed (50 acres)
  Previously, contractors and WCP staff sprayed ~50 acres of Scotch thistle, medusahead and other annual grasses as site prep for a restoration seeding. Surprisingly, few of the annual grasses germinated between sprayings. However the site did come up in prickly lettuce, Scotch thistle, and morning glory. The site as seeded in early 2010 with native grasses.

- Big Sheep, Imnaha Watershed (3 acres)
  A contractor was sent to the area to re-seed meadow hawkweed infested sites greater than >1000 ft^2. A native mix of high elevation species including stream bank wheat grass, Great Basin wild rye and Idaho fescue was broadcast by hand. This site has been monitored by photos since 2008, and we will continue this to see how well the grasses re-establish (See attached photos 3&4).

Photos 3 & 4 Big Sheep Monitoring Photo Point. Before (July 23, 2008) and after (August 9, 2010) treatment respectively. Note the texture of the meadow hawkweed carpet in 2008 and the grass response in 2010. This site was seeded this fall to help increase ground cover of desirable native plants.

Education and Outreach

- WCP continued the Noxious Weed Bounty Program which pays $200 to people who find and report new weed sites in the Lower Grande Ronde and Imnaha Corridors of the program area. Eligible species include: common bugloss, meadow hawkweed, rush skeletonweed, spotted knapweed, orange hawkweed, leafy spurge and whitetop.
    - An ad for this Bounty Program appeared in the Wallowa County Chieftain annual hunting guide (Fall, 2009).
    - Meadow hawkweed bounty brochures complete with identification, instructions and contact information were posted at the Minam Boat Launch and given to BLM staff to hand out in packets to rafters and fishermen.
    - In 2009, one Weed Bounty was awarded to a young cowboy for discovering a site in Big Sheep Creek. This bounty was found well below the initial bounty awarded in that area last year. Staff from Wallowa Resources and ODA visited the site to confirm, delineate the site and treat it.
    - In 2010, WCP awarded two bounties to landowners who found new sites of meadow hawkweed.
- WCP presented information on identification, threat and management of noxious weeds at the 2010 Wallowa and Asotin County weed tour for applicators and the public (~ 50 people)
- On April 17 Wallowa Resources teamed up with SOLV to organize a clean-up event on The Nature Conservancy's property at Devil's Gulch in Imnaha. This event was part of a state-wide effort to celebrate Earth Day and to beautify Oregon communities. Thirty volunteers spent the day pulling weeds, picking up trash and participating in educational talks.
- WCP set up a weed both at the 7th annual Watershed Festival in Enterprise. While talking to the public we emphasized the importance of recognizing and reporting noxious weeds. Displays included a variety of invasive plants. A United States Forest Service staff member and the Wallowa County weed Manager also helped operate the booth. Over 600 people were in attendance.

Sharing Results

WCP shared all information with Forest Service and Tri-County Cooperative Weed Management Area staff and worked closely with these partners to prioritize new survey areas and to set up treatment projects. As always, WCP shares work accomplished, information gained and lessons learned with partners, the public and grantors to build on collective knowledge and to work toward improving management strategies. During the course of this grant WCP and weed management partners met 2 times with Wallowa County Commissioners to share the previous year's project results and to discuss upcoming plans.

Summary and Conclusions

Data capture and management are the primary efficiency issues for WCP. Though we steadily improved our work over time, we need to make the leap to automated systems that feed directly into our databases. Private landowner buy-in and involvement with the program is critical, as is agency cooperation, when implementing a landscape scale program such as this. Diligence over time at specific sites is essential to control or eradication and shows successful results

Through generous support from the BPA and superb partner cooperation we have made great strides in noxious weed management. WCP is committed to maintaining:

- Closely coordinated efficient inventory and treatment activities across jurisdictional boundaries.
- Funding to match the scale of the problem.
- Data management systems that can easily capture geographic information including GPS locations, road layers, treatment and monitoring data.
- A large enough workforce with skills to conduct the operations effectively.
- Educational efforts that succeed in training the public (but particularly landowners and managers) in the identification, reporting, and treatment of meadow hawkweed.

The funding provided by Grande Ronde Model Watershed has been essential to WCP locating new weed sites. We continue to improve our ability to provide the outreach, coordination, education, restoration, and monitoring efforts that make this a truly integrated program. With continued support of this nature we have a much greater chance at protecting the ecological and economic resources of our canyon prairie grasslands than if we only provided treatment services.

Summary of Expenditures

Table 4. Summary of expenditures of BPA Funds for the Wallowa Canyonlands Weed Partnership Project.

Budget Item	Expenditures BPA	% of Total Expenditures
Contractors	$10,291.97	34
Staff	$9,322	31
Supplies	$6,910.35	23
Travel	$748.68	3
Indirect	$2,727	9
Totals	$30,000.00	100

See attachments for maps and images