Wallowa Canyonlands Weed Partnership BPA Project No. 1992-026-01 BPA Contract No. 38145

> Completion Report November 19, 2008

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#### **Abstract**

Noxious weeds threaten fish and wildlife habitat by contributing to increased sedimentation rates, diminishing riparian structure and function, and reducing forage quality and quantity. Wallowa Resources' Wallowa Canyonlands Partnership (WCP) protects the unique ecological and economic values of the Hells Canyon grasslands along lower Joseph Creek, the lower Grande Ronde and Imnaha Rivers 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 how to deal with them, and restore lands to produtive plant communities after treatment. With collaborative help from partners, WCP inventoried ~ 215,000 upland acres and 52.2 miles of riparian habitat, released bio-controls at 23 sites, and educated the public through posters, weed profiles, newspaper articles, and radio advertisements. Additionally, WCP used other sources of funding to finance the treatment of 1,802 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 Lower Joseph Creek, the Lower Grande Ronde, Imnaha, and the Snake River Canyons. This project was designed to implement early detection for high priority weed species in high risk areas.

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. This project worked to prevent detrimental effects of noxious weeds across key watersheds listed, and engaged our many partners in a coordinated effort to inventory and treat the highest priority weeds.

The objectives of the project were to inventory the highest priority weeds, based on Wallowa County "A" listed species and according to priorities elucidated in the Wallowa an Asotin Counties Weed

Management Plans, the Wallowa County Nez Perce Tribe Salmon Habitat Recovery Plan, and the BPA's sub basin prioritization and planning efforts. These weeds include, but are not limited to: meadow hawkweed, yellow starthistle, rush skeletonweed, whitetop, spotted knapweed and leafy spurge.

Specific objectives were to complete:

- ➤ Upland Inventory for new infestations of high priority noxious weeds.
  - ➤ 150,000 acres aerially (Digital Aerial Sketch Mapping or DASM)
  - > 215,000 acres on foot
- ➤ Ground inventory >20 river/stream miles.
- > Update and transfer all known weed sites into ArcGIS systems and keep associated site information in a database.
- $\triangleright$  Make  $\ge 20$  bio-control agents releases for up to 4 species of noxious weeds.
- ➤ Inform 1,000 people about weed related topics and teach them to identify noxious weeds through presentations and outreach.
- ➤ Provide 400 acres of grass seed to landowners for re-vegetation after treatment.

#### **Materials and Methods**

Materials and methods addressing each objective are shown below (Table 1)

Table 1. Materials and Methods for Wallowa Canyonlands Partnership

Objective	Materials Description	Accomplished by:
Upland weed inventory	Inventoried and assessed	WCP staff, Contractors
	215,000 gross acres using aerial	
	and ground inventory	
Riparian inventory	Ground inventory of 64.8 miles	WCP staff, Contractors
	of riparian areas	
Map Making/Updating	Transferred data from Terrain	WCP staff
	Navigator to GIS	
Bio-control Releases	Released and/or collected bio-	WCP staff, USFS, Asotin
	control agents for 6 weed	County, OYCC
	species	
Education	Printed 2,800 copies of weed	WCP staff
	profiles, ran 4 weeks of	
	newspaper articles, spoke at	
	numerous educational events	
Re-vegetation	Non-native and native seed	WCP staff, contractors,
	were purchased for this project.	
Weed Treatment using other	Treated 1802 net acres of	WCP staff, contractors, ODA,
funding sources	weeds with herbicides across	USFS, Tri County CWMA
	Imnaha, Grande Ronde, and	
	Snake watersheds	

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

Table 2. Tasks completed for Wallowa Canyonlands Weed Removal Project

Task	Location	Date	Original Goal	Accomplished	Difference
Upland Weed Inventory	Lower GRR*, Lower Joseph Cr, Imnaha, Snake	5/08-9/08	150,000 acres aerially, 24,000 acres ground	200,000 ac. Aerial and 15,000 ac ground	+50,000 acres aerially and -9,000 acres ground
Riparian Weed Inventory	Lower GRR, Lower Joseph Cr, Imnaha, Snake	5/08-9/08	20 river miles	64.8 river miles	+44.8 miles
WCP weed map and database	WCP project area	5/08-9/08	Weed locations mapped and database updated	Weed locations mapped and database updated	N/A
Biological Control Releases	Lower GRR, Lower Joseph Cr, Imnaha, Snake	5/08-9/08	20 releases	23 releases in program area	+3 releases
Outreach and Education	N/A	5/08-9/08	Reach 1,000	2,800 weed brochure copies, 4 wks newspaper ads, 1 poster, reached ~1,500 at educational events	+
Re-vegetation	Lower GRR, Lower Joseph Cr, Imnaha, Snake	5/08-9/08	400 acres of grass seed given out	0	- 400 acres
High Priority treatment	Lower GRR, Lower Joseph Cr, Imnaha, Snake	5/08-9/08	None estimated	1,802	N/A

<sup>\*</sup>GRR = Grande Ronde River Corridor

# **Project Participants**

Table 3. Partners involved and funds/work contributed.

Partner	Responsibility	Grant	In Kind	Cash In	Total
		Contributions	Labor	Kind	
GRMWS BPA	Fiscal Contributor	\$42,400.00			\$42,400.00
OSWB	Fiscal Contributor	\$29,337.36			\$29,337.36
BLM	Fiscal Contributor	\$14,014.46			\$14,014.46
ODFW	Fiscal Contributor	\$ 21,851.89			\$ 21,851.89
TNC	Fiscal Contributor	\$ 9,977.97			\$ 9,977.97
WDFW	Fiscal Contributor	\$ 9,390.84			\$ 9,390.84
RMEF	Fiscal Contributor	\$ 16,932.88			\$ 16,932.88
OWEB	Fiscal Contributor	\$ 11,864.00			\$ 11,864.00
Asotin County	Fiscal Contributor	\$ 2,251.72			\$ 2,251.72
Private	Implementation of		\$2,000	\$53,334.78	\$57,334.78
Landowners	inventory,				
	treatment and				
	restoration.				
	Programmatic				
	cooperation and				
	support.				
	Totals	\$158,021.12	\$2,000	\$53,334.78	\$213,355.90
USFS Wallowa	Leadership in the	In Kind work –			
Whitman NF	Snake River and on	values not tracked			
	other forest lands,				
	coordination,				
	mapping,				
	implementation on				
Wallowa	Cooperation in	In Kind work –			
County Veg.	prioritization,	values not tracked			
Management	funding and cost				
Department	share,				
	implementation				
	assistance.				
Tri –County	Regional	In Kind work –			
CWMA	coordination,	values not tracked			
	prioritization,				
	mapping, and				
	implementation				
	assistance.				

# **Description of Project Area**

The project area includes lower Joseph Creek, the lower Grande Ronde, lower Imnaha, and the Snake River between Kirkwood and the confluence with the Grande Ronde are focus areas.

#### **Results and Discussion**

# Upland Weed Inventory-

# Aerial:

Medusahead Rye surveys in:

- > Minam
- > Zumwalt
- ➤ Little and Big Sheep Creek
- > Leap
- > Grande Ronde (Courtney to Schumacher Cr)

WCP staff mapped ~200,000 acres of medusahead rye in this project. This was primarily accomplished using DASM surveys, which are effective at detecting small populations and covering large areas in a short amount of time. We spent 6 days aerially surveying medusahead in the Minam, Leap, Grande Ronde, Zumwalt and Imnaha areas (see attached map 1)

# Ground:

- > Rush Skeletonweed
  - Willow Springs (Imnaha)

Rush skeletonweed was found at Willow Springs by Dan Sharrat of the Oregon Department of Agriculture. After treatment, a contractor used GPS coordinates to re-locate the sites and found four new sites of rush skeletonweed (see attached map 2).

- ➤ Medusahead Rye
  - o Johnson Canyon (Imnaha)

To assess the accuracy of our aerial survey, contractors and staff mapped medusahead from the ground in the Imnaha area. As expected, the precision of the aerial maps in heavily infested areas was fairly low and some very low density infestations of medusahead rye were missed. However, the perimeters of heavily infested areas were recorded accurately and many small patches of medusahead outside of heavy infestations were found and accurately recorded. Information collected as a part of this grant has already been presented to the Wallowa County Weed Board and area weed managers. Certainly, this information will help us manage medusahead effectively across the canyon and prairie grasslands of Wallowa County.

- Meadow Hawkweed
  - o Salt Creek Summit (9,500 acres)
  - Wallowa River Rock Creek to Minam
  - o Wallowa Lake East Moraine

Intensive inventories were implemented around the known infestation in the Salt Creek Summit area (see attached map 3). This is our largest contiguous infestation area (~2,000 Acres in total) and we can now identify the perimeter of the infestation with confidence.

**Riparian Inventory and Assessment** – Riparian areas of streams and rivers in this region are particularly susceptible to weed invasion due to annual disturbance by flooding and are ready resources for plant growth during most of the year. Once a weed is introduced to a stream system the stream itself acts as the primary vector for spread during high water events. In one large flood event a stream can transport weed seeds and propagates down many miles of river corridor. WCP staff and contractors walked riparian areas and marked noxious weed sites with GPS units. Sites were mapped in the Terrain Navigator and then converted to shape files for future treatment.

#### Rush Skeletonweed:

➤ Ground inventories were completed in Big Sheep and Little Sheep canyons and covered 2,830 acres. Only one new site of rush skeletonweed was found (see attached map 4).

# Meadow hawkweed:

- ➤ WCP & ODA staff, contractors and ranchers conducted intensive inventories of 10.6 miles in Joseph Creek (Crow Creek to Cliff Creek) below the known infestations and found 2 new sites. Both were well out the riparian area and may have been introductions unrelated to the riparian population upstream.
- A careful inventory of 28.5 miles of the river shores and islands on the Grande Ronde River found three small new sites, which were treated. These plants had just entered riparian areas and would have spread quickly via the wind and water had they not been discovered and treated. In total, 6 sites (all <10 ft2) have been discovered on the Grande Ronde over the last two years.
- ➤ Contractors and staff inventoried 15.7 miles along Big Sheep Creek after meadow hawkweed was reported there. Without this discovery and resulting treatment hawkweed would have certainly infected Big Sheep Creek and the Lower Imnaha within several years and caused huge problems for landowners and managers.
- ➤ WCP staff and a contractor floated and walked 8 miles of the Wallowa River between Rock Creek and Minam looking for meadow hawkweed. New hawkweed was found but surveyors mapped other A-list species.

# Weed map

The initial WCP noxious weed map in Arc Map is finished and has been distributed to partners. We continue to update the map with new information as it is collected. This is the first time a comprehensive map for the WCP has been available in an Arcview format which is easily communicated to weed management partners. This Information will help all landowners/managers and treat and monitor weed populations more effectively. (See attached map 5).

#### **Bio-control Releases**

Twenty biological control agent releases were planned and Twenty-three releases were actually made for 6 species of noxious weeds by WCP staff and their partners. The Oregon Youth Conservation Crew (OYCC) helped collect approximately 8,000 yellow starthistle weed head weevils (See attached image 1) and were exported to Washington State for release in problem areas.

WCP staff and partners made the following biological control agent releases in the program area:

- > 5 releases of yellow starthistle seed head weevils in Asotin County by Nelle Murray of Asotin County
- ➤ 4 releases of the diffuse knapweed root boring weevil in Asotin County by Nelle Murray of Asotin County
- ➤ 4 releases of Leafy Spurge bio-control agents on the Grande Ronde River (Stem boring beetles and Flea beetles) by WCP and Tri-County CWMA staff.
- > 5 releases of poison hemlock moths in the Imnaha Corridor by WCP staff and U.S. Forest Service.
- ➤ 2 releases of Dalmatian toadflax beetles by WCP staff near Boggan's.
- > 3 releases of field bindweed mites in the Lower Grande Ronde Corridor by WCP staff and a landowner.

Monitoring of agents show hopeful results. The Day Ridge release site of Dalmatian toadflax bugs is showing excellent control after 6 years. These agents have also continued to spread on their own and have made their own way to toadflax population on the island near Boggan's Oasis (15 air miles). Leafy Spurge flea beetles are having intense impacts on their target at Minam Island and other sites, but they are not be surviving some spring high water events (they over winter in the roots of their host) at sites that have a high water table. Yellow star thistle agents appear to be limiting the distribution of yellow starthistle to areas dominated by annual grasses but do not seem to reduce the populations on those sites nor do they stop the spread of the plant. Though there are occasional outbreaks of diffuse knapweed, the seed head weevil bio control agents are soon on the job and the population literally disappears after a year or two!

### Re-vegetation

400 acres were targeted for restoration in the application for this grant on sites requiring re-vegetation after treatment and/or sites that were dominated by annual or weedy species. No re-vegetation was completed during the time frame of this grant because the best timing for seeding rangelands is either late fall or early spring. WCP used BPA and other funds to purchase two seed mixes that are now available for landowners and managers to use on their lands: one native seed mix for lower elevation grassland sites and the other is a non native forage mix that can be used at a variety of sites. These seed mixes should cover 90- 150 acres of rangeland depending on the methods used for planting. Restoration in western rangelands is extremely challenging but WCP and many other weed managers in the region are investing resources on a demonstration basis trying to find the best methods and materials to employ in this effort. WCP will work to distribute and plant all grass seed purchased this fall over the 2008/9 winter and early spring.

#### **Education and Outreach**

WCP printed 2,800 copies of high priority weed profiles and will pass them out to landowners, community members, partners and hunters. These profiles are also available on line (<a href="www.wallowaresources.org">www.wallowaresources.org</a>). We ran 3 weed bounty add in the Chieftain and 1 bounty ad in the annual hunter's guide. We also put a sulfur cinquefoil poster at Minam to alert people and to encourage them to help by pulling the weed anywhere they find it.

Our noxious weed bounty program rewards people for turning in new sites of high priority weeds (\$200 per site). This year 5 bounties were awarded for new sites of meadow hawkweed and rush skeletonweed being discovered, verified and treated. The \$1,000 investment has a huge payback when considering the potential losses due to the impact of the weeds or the treatment costs if discovery was delayed even 2-3 years.

This spring WCP teamed up with SOLV and the Grande Ronde Model Watershed to organize a Down By the Riverside event at Minam State Park. This event was part of a state wide effort to educate the community about the dangers of noxious weed and to familiarize them with invasives in their own backyard. The event brought in ~50 volunteers who spent the day pulling sulfur cinquefoil and other weeds and picking up trash along the Grande Ronde. Participants were told how to identify meadow hawkweed and to especially look for it along the river.

WCP has worked with The Oregon Youth Conservation Crew (OYCC) for the past few years to instill the value of natural resources in the minds of young people in our community. This year OYCC helped inventory for meadow hawkweed on private land near Wallowa Lake. This experience helped the youth understand the threat posed by noxious weeds and their role in learning to identify and report invasive plants.

In addition, WCP also met one on one with over 21 landowners to help implement treatment and to offer expertise regarding weed identification, locations and appropriate treatment methods and timings. WCP again participated in the Wallowa/Asotin County Weed tour (~30 people) and manned a booth at Wallowa Resource's Annual Watershed Festival (~300 people) and Cycle Oregon (~2500 people), which reached many individuals and addressed meadow hawkweed identification and treatment.

# High Priority Treatment

WCP chemically treated 17 noxious weed species across the Project area using other funds. Multiple prescriptions were used based on the species, site, and timing of the chemical applications.

# **Summary and Conclusions**

Noxious weeds are extremely difficult to find and treat within the project area. In many places elevation ranges from 1200' in the creek to the ridge top in less than ½ mile of horizontal distance. Slopes are very rocky and access is limited in the best of conditions. Ground based weed inventories in these rugged canyons are time consuming and very expensive. Despite the difficulty, these are high risk areas where dispersal via wind, water, wildlife or people can and does transport seed throughout the entire watershed.

The use of helicopters to discover and treat weeds gives a unique advantage in finding weeds in difficult to reach places. This tool is an integral component of our program and allows us to coordinate weed management across this vast landscape quickly and efficinetly. Recent Digital Aerial Sketch Mapping (DASM) surveys have proven effective at detecting small weed sites at their prime visibility, can cover up to 64,000 acres per day and they are also cost effective (average of 2008 costs is \$0.18/acre). An aerial vantage provides us with an opportunity to find a patch that would not have been possible otherwise and digital mapping technology allows us to map precisely. These inventories have revealed hundreds of new high priority noxious weed sites.

For example, DASM survey GPS and GIS locations collected in the Lower Grande Ronde river corridor during the fall of 2007 were used to guide ground and aerial applicators back to the sites for treatment in 2008. Average aerial treatment costs for the whole project were just over \$29 per acre. These small sites of yellow starthistle and rush skeletonweed were scattered over tens of thousands of acres and multiple land ownerships. Their discovery, mapping, and treatment illustrate landscape scale coordination and seamless treatment as well as early detection and rapid response in action.

Our ability to use GPS and GIS tools to map weeds and track their populations on a site basis over time is unique amongst weed management entities and it is beginning to pay dividends. Though this adds time and expense both for our contractors and staff but it adds efficiency over years as we can access historic survey and site specific information. We can now begin to show results of our treatment efforts over time and learn from this data. In the future we should be able to track populations of weeds as they increase or decrease. These techniques certainly need further revision and improvement but are becoming more functional each year.

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 but also 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**

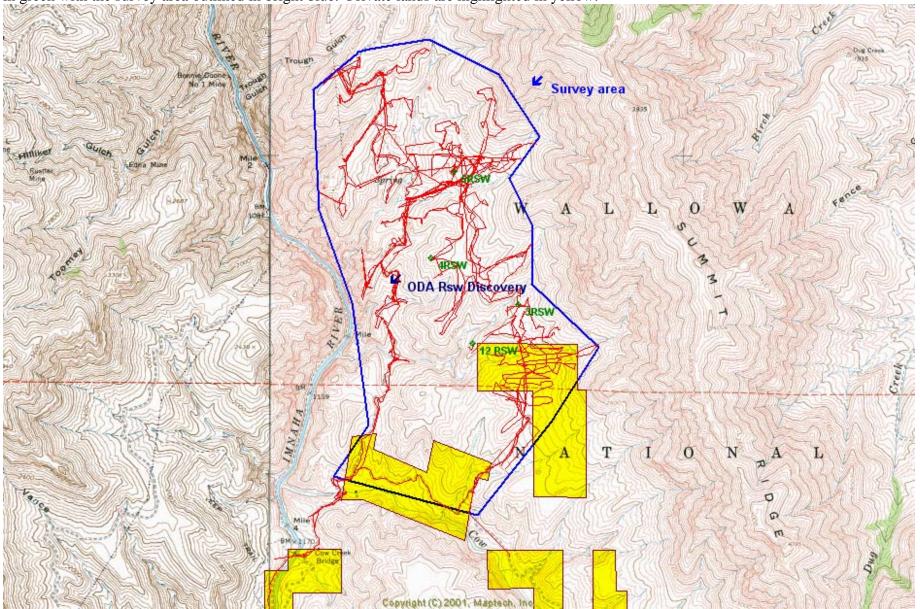
Table 4. Summary of expenditures of BPA Funds for the Wallowa Canyonlands Weed Partnership Project.

Budget Item	Expenditures BPA	% of Total Expenditures
Contractors	\$19,961.68	47
Staff	\$9,986.01	24
Supplies	\$8,036.68	19
Travel	\$1,453.45	3
Indirect	\$2,962.18	7
Totals	\$42,400.00	100

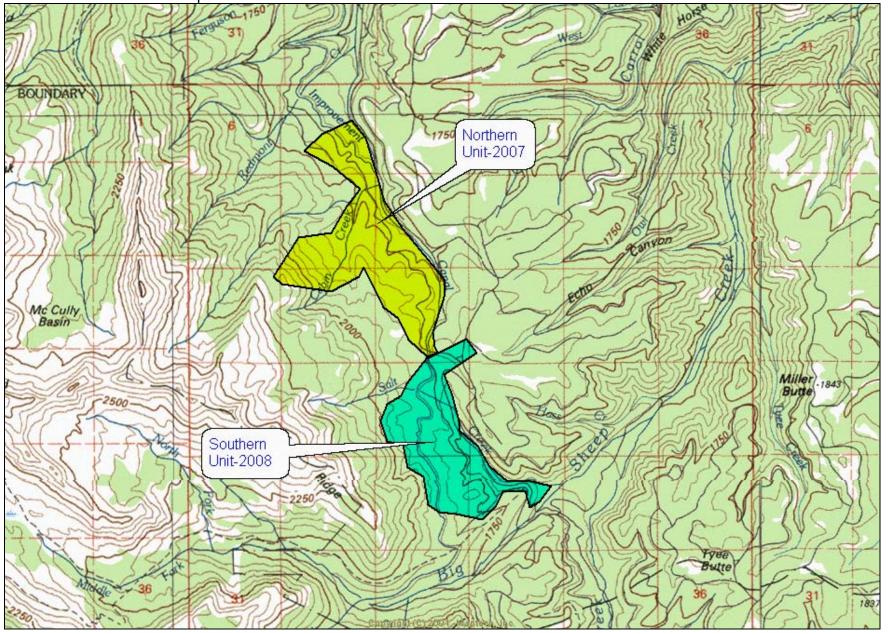
See attachments for maps and images

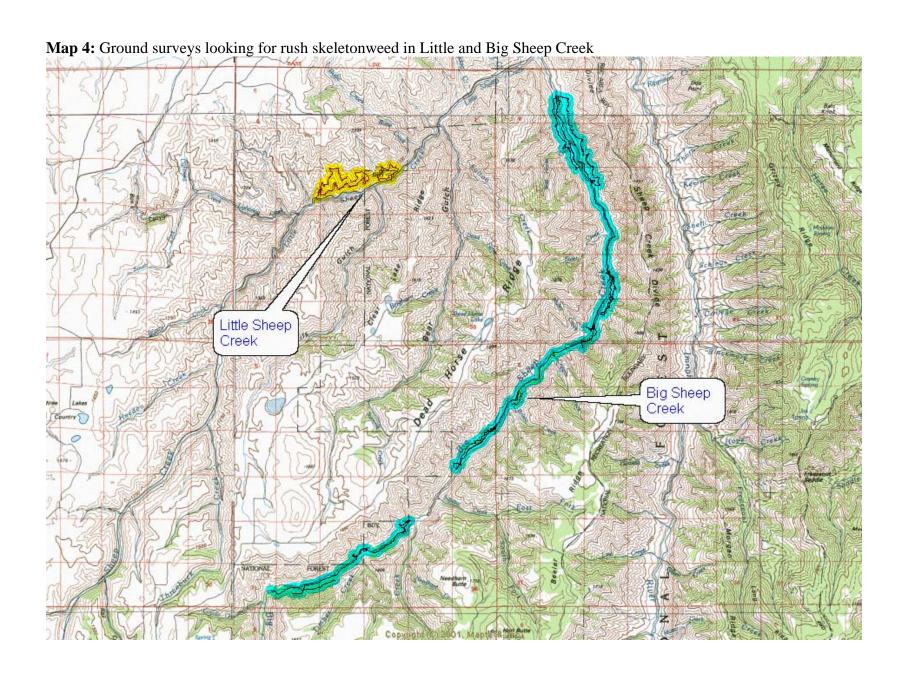
Map 1. Yellow polygons show areas targeted for aerial medusahead surveying. Grande Ronde Lower Imnaha Zumwalt Minam Leap Upper Imnaha

Map 2 - Willow Spring's area of the Lower Imnaha showing Rush Skeletonweed survey area that was searched in response to ODA staff report of a new site on the roadside. Initial site is marked with a dark blue arrow. New sites found during the survey are marked in green with the survey area outlined in bright blue. Private lands are highlighted in yellow.



**Map 3.** The northern and southern units of the Salt Creek Summit area. The perimeter of the northern unit was delineated in 2007 and the perimeter of the southern unit was delineated in 2008.





**Map 5: WCP rush skeletonweed all known sites.** Points in Blue indicate where known or historical rush skeletonweed sites are in Wallowa County and to the north in Asotin County, WA. This layer along with ~30 different weed species layers, are part of the new WCP map

