Salmon River Cooperative Noxious Weed Program

Community Participation

Drivers That Care

SRRC Volunteers & USFS Botanist Marla Knight Working Together to Control Knapweed at Site 8

The Salmon River community is committed to protect, restore and maintain the Salmon River's ecosystem and watershed health. Through the direction of the Restoration Council local **residents participate in Workshops, Training, and Workdays** specifying actions needed in effective noxious weed management. Community members also participate in the **ADOPT-A-SITE AND DRIVER'S THAT CARE** noxious weed control activities. **Over 300 different people have participated**. Other SRRC activities the community participates in are; fishery habitat and population surveys, river cleanup, fuels reduction, watershed education and many more. **The local community embraces a strong land stewardship ethic** .

Diggin' it at **Kelly Bar 12 miles up the North Fork Referred to as "The Mother Site"**

Since 1997, over 2,000 volunteer person days have been contributed by the community to make this noxious weed demonstration project possible.

Step #2 – Planning

Management Strategy

Annual updates include and respond to new information, adapt management actions through observations,and summarize results. This plan is tied to the Salmon River Restoration Strategy. The 13 steps are used to guide the annual action plan.

Annual Action Plan

Each year we develop an action plan with the USFS and others to prioritize and schedule monthly noxious weeds management actions, both to control existing weeds and prevent new ones from establishing themselves.

Noxious Weed Ecosystem Prioritization Matrix

A species prioritization protocol has been established to prescribe management actions in response to the risk each species poses. The species evaluation includes looking at the species affect on ecosystem values, limiting factors and key influences, such as: fire, wildlife, vector potential, aggressiveness, etc.

A No Seed Threshold is a Key Goal for the Eradication of Class "A" Knapweed Species.

Environmental Assessment -USFS

In 2000 the Forest Service completed the first Environmental Assessment for controlling spotted knapweed in Region 5. **The 2001 ,"Preferred Alternative" chose the use of Salmon River Community's Manual Methods as the primary approach for eradicating knapweed in the Salmon River District , provided the evaluation criteria for successfully eradicating the Class "A" Knapweed species are met.**

Annual Calendar of Knapweed Activities

Salmon River Restoration Council
2001 Knapweed Calendar of Activities

2001	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
1st Pass		X	x	End 6/1						
2nd Pass				X	End 7/1					
3rd Pass					X	End 8/1				
4th Pass					X	X	End 9/30			
Inventory of new sites			**start**	X	X	X	X	X	**end**	
Adopt a site		X	X	X	X	X	X			
Progress Report	X			X			X		X FINAL	
Newsletter				X						X
Workshops, Community Education	Attend Knapweed Symposium in Idaho	Put up Nox Weed bulletin board info	Community Knap week	Com-unity Knap week/ work shop	Community Knap week	Com-unityKn ap week/ Symposi um	Community Knap Day Inventory	Attend Caleppc Symposium		
Workdays	X	X	X	X	X	X	X			
Special Rx	plant seed-lings	flame & dig Juveniles /plant seedlings	flame & dig Juveniles/ plant seedlings	Apply Mulch Water sites	Collect grass & Forbes seed/ knapweed seed bank mgt Water sites	Collect grass+ Forbes seed	Collect & distribute grass & Forbes seed	Collect and distribute grass & Forbes seed		
Effectivenes Test Plots			collect data at Davis sites		monitor sites for flowering	monitor sites for seed				
Monitor	Develop protocol progress & effectiveness	Final 2001 Plan	Cooperative Management On-site	Disper se & review Davis data results	Cooperative Management		Cooperative Management INFIELD			Final Report cooperative Meeting

CNWP Noxious Weed Species Prioritization Matrix

SRRC NOXIOUS WEED ECOSYSTEM RISK RATING MATRIX

Key- Y=YES; N=NO; 1=highest; 2=med.; 3=lowest; +=1,000 people days needed; M=manual; Mu=Mulch; B=Burn; Bio= Bio Control

Species	Pre-sent	Ag class rating	Eco Rating	Eco-Chokes out	Eco-Poison	Eco-Fire	Mgt to Date	Best Treat ment	Work Force Need	Vector Of spread	Overall Rating & Comments
Spotted Knapweed	**Y**	A	1	1	1	2	Y + 97 98 99 2000	M Mu B Bio	++++	River, Cows, Sand cars, Road Work Waterfill vehicles firefighting logging	Perennial Found on bars on North Fork, Mainstem &Specimen Fire area
Diffuse Knapweed	Y	A	1	1	1	2	Y	M	100	River, Cows, Sand Road Work Waterfill vehicles firefighting logging straw	perennial Found at Callahan Summit/ask Gouleys Cherry Creek Sawyers Bar Whites G.
Scotch Broom	Y		1	1	2	1	Y	M	+	River, animals Ornamental	Evergreen Coming from coast
Yellow Starthistle	Y	C	1	1	1	1	Y	M Bio B Mu	+++	River, Cows, Sand Road Work Waterfill vehicles firefighting, logging Straw	Annual Painful Must wear gloves Need to expand Bio treatment
Marlahan Mustard	Y	B	2	2	3	2	Y	M Bio	++	River Hay	Bi-annual Comes from Scott V.
Meditterane an Starthistle	Y		1	1	1	2	Y	M Bio Mu	+		Annual Painful Must wear gloves
Bull Thistle	Y		2	2	2	2	Y	M	800	Wind Road Hay	Annual Painful Must wear gloves - seems to be bugs webbing seedheads

Step #4 – Prevention

PREVENTATIVE MEASURES TO MINIMIZE THE SPREAD OF NOXIOUS WEEDS

- Learn to Identify noxious weed species
- Be aware of noxious weeds in your surroundings
- Communicate with weed managers and report findings
- Avoid transport of noxious weeds
- Eradicate noxious weed populations in your area
- Use weed free materials (hay,water, rock, feed, sand and gravel, etc.)
- Help recover disturbed sites with native vegetation.

Vectors Analysis and Management

Preventing the spread

Tire Tracks thru Cow Pie at Knapweed site

Identify the potential ways weeds were introduced to each managed site and assess the populations risk and avenue of spread.

Events and Activities that influence the spread of noxious weeds:

•**Fire Suppression:** training fire crews, **water hole drafting** assessment and mitigations, ensure that **fire camps, water sources, equipment** and gear are weed free.

•**Road maintenance, improvements and restoration:** Avoid moving infested fill and gravel, mow or grade prior to weeds seeding.

•**Flooding:** keep the waterways clean of weeds

•**Resource users:** Avoid infested areas: campsites, trailheads, river access, log landings, etc. If unavoidable keep clear of weeds. Some resource uses with high potential locally include:

-Mining **-Recreation**

-Forestry **-Grazing**

-Research **-Residential**

To help prevent the spread of noxious weeds it is important to: increase awareness amongst stakeholders and enlist cooperation; inventory all target species populations; **clean equipment or gear when entering or exiting the watershed;** use weed free materials such as: feed/hay, mulch, rocks, sand and gravel and water; and i**nventory and remove priority invasives from proposed sites prior to ground disturbance related to prescribed management.**

Vectors

3 key vectors for the Salmon River are:

•Roads

•Waterways, rivers, creeks

•Trails, trailheads

An area that is high priority for eliminating weeds is where the vectors overlap such as: river access, trailheads, etc.

High spread potential:

•Resource use

•Resource Management

•Natural Processes and Events

• **Ways weeds move thru watersheds**: 1) New introductions from outside the area; 2) movement of weeds within the watershed; 3) Species escaping to neighboring watersheds.

Preventing the Spread

Several populations have turned up at River Access areas

Adult Knapweed found at stream access

Motorized access open to Kelly's Bar (Mother Knapweed Site) for tanker fill, miners, sand and gravel source, range permittees, boating access & logging camps.

Kelly Bar access was closed by the US Forest Service in 2000

Knapweed population found at obscure tanker fill site in Shadow creek.

Knapweed population found at river access at the 21 mile marker on the North Fork

Area on Knapweed Site # 9 on Kelly Bar in winter of 1998/1999 where Garbage Bags full of all dug plants were burned. Bagging of plants has since been discontinued

Orange noxious weed flagging locates Knapweed Site

Step #3 – Education/Outreach

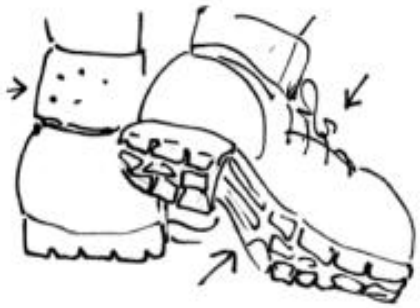
Education

Knapweed education site stationed on the side of the road in the town of Sawyers Bar. Pointing to a few spotted knapweed plants at various stages for the public to see.

A prevention and identification presentation on knapweed infestations along the river where kayakers can report sightings.

Forks of Salmon Elementary School students on a knapweed control and identification field trip.

Volunteer's and their prized knapweed



ACTIVITIES

- Workshops
- Workdays;
- Distributing information

(posters, newsletters, handouts, web page and brochures);

- Field trips
- Presentations

PARTICIPANTS :

Forks & Junction Schools
- Karuk Tribe
- Forest Service – Fire & Road Crews
- CA Fish & Game
- County Road Crew
- Americorps
- Fishermen and Guides Association
- Whitewater River Guides
- Inter-Tribal Salmon Camp
- Klamath River Outdoor School
- Otter Bar Lodge
- Yreka Homeless Shelter
- Environmental Groups
- Horse Packing Outfitters

* Resource Users-

loggers, miners, grazers

Noxious Weed Meetings, Presentations, Field Trips, Training Conferences

Students Pull Mustard

Salmon River Watershed Center

Discussing CNWP at the SRRC Staff Meeting

SRRC has attended and provided posters at the International Knapweed Conference in Idaho and also at the CalEPPC Conferences in 2000. In 2001 the SRRC provided a Noxious Weed Control presentation to the Klamath Basin Fish and Water Symposium. Also in 2001 we trained and enlisted help from the 20 person USFS fire crew.

In 2002, over 50 Americorp Stewards received training and lent a hand Noxious weed prevention info was distributed at Forks Fire camp, where all vehicles were washed.

SRRC & USFS Poster Board at the 2001 International Knapweed Conference in Idaho

Talking about Salmon and how noxious weeds can affect them

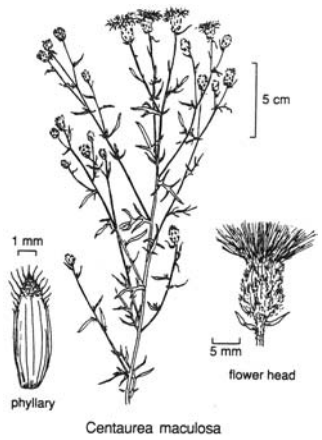
Here at Blue Ridge Look Out Discussing Watershed Restoration during Klamath Basin Task Force Field Trip at

Presentation at Watershed Education Fair

Students CNWP involvement

Posters and Bulletin Boards

Noxious Weed Float at 4th of July Parade



CNWP Bulletin Board at Kelly Bar

Salmon River CNWP Poster Board Display

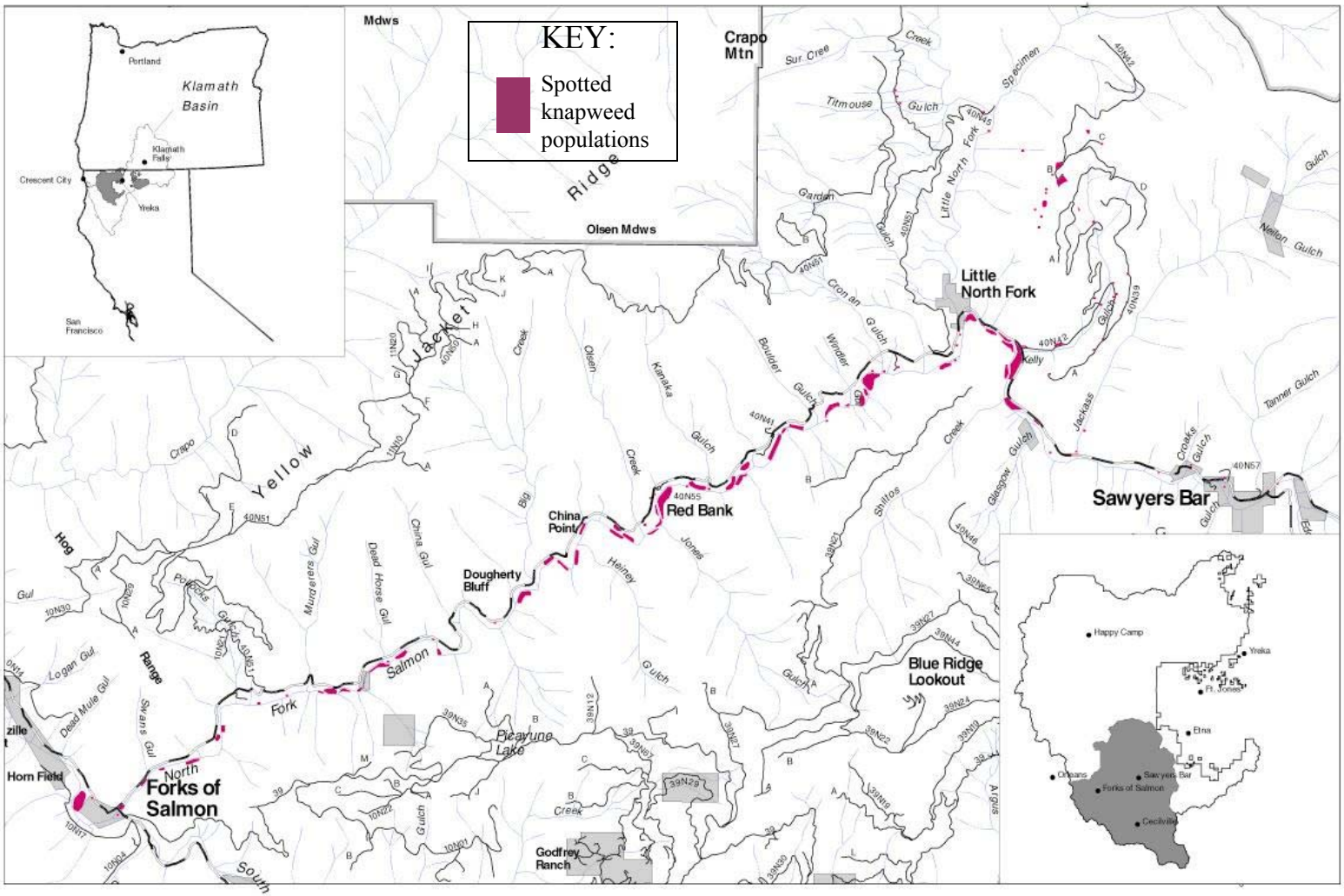
Tourist stops to read about CNWP info on interpretive sign by Blue Hole on the lower Salmon River

Watershed Welcome Poster highlighting CNWP

Various Life Stages of Spotted Knapweed

Step #5 – Mapping/Assessment

North Fork Spotted Knapweed Infestations



Mapping/Assessment

•Once a site is located it is placed on the map. All known location are numbered on a Subbasin Map. Each site is associated with a file in the Inventory data base. These files provide site details.

•Maps and assessment areas are broken up into reach or area files

• Ground workers use the reach/area maps to locate sites.

•Each year high risk areas are surveyed and assessed for presence or absence. New areas assessed are typically either adjacent to known existing sites or in new suspected areas

Since 1997, a total of 185 knapweed sites have been located, mapped and inventoried.

Over 1,500 acres have been surveyed in high risk wild land areas with over 70 miles of river and stream corridor and 300 miles of roads and trails managed.

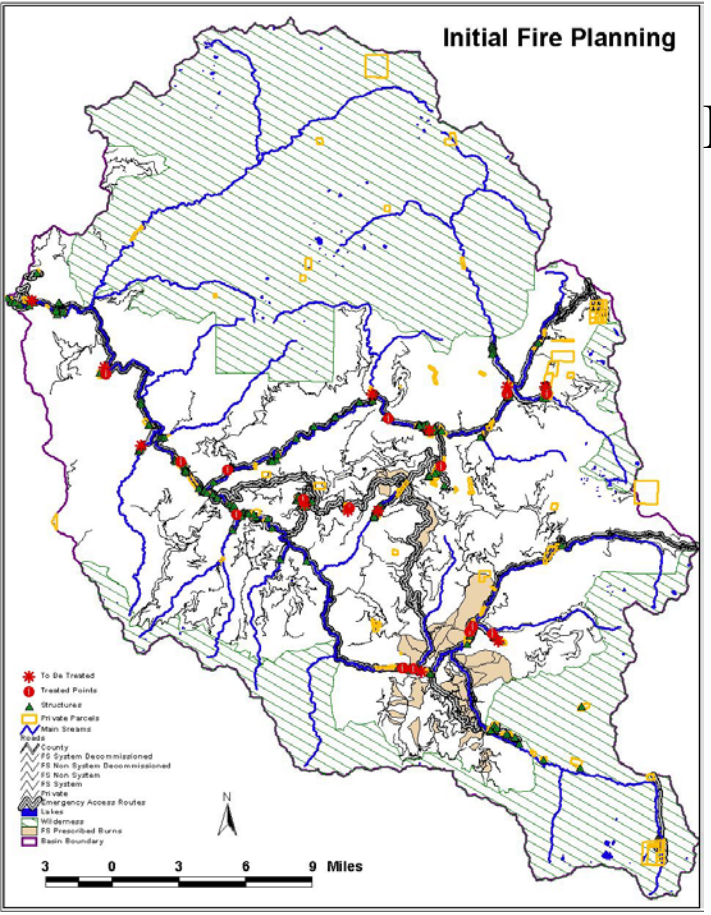
•All location are compiled onto one map at the end of each field year.

• Maps are shared between the cooperators and other interested parties.

• In 2000, the SRRC Roads Inventory Crew were trained to identify knapweed. The crew surveyed all known roads in the North Fork and Main Stem of he Salmon River. Two new sites were located by the Road Survey crew. One was an adjunct population was in the wilderness. Most of the existing sites were located with GPS by this year.

•In 2001 and 2002, the **SRRC has been developing GIS/GPS map layers for specific noxious weed species, including: spotted and diffuse knapweed, scotch broom, yellow and Malta star thistle, and Marlahan Mustard. Other species of concern are also mapped when located such as: teasel, leafy spurge, and dalmation toadflax. High risk areas such as trailheads, tanker fill areas, river access, rock sources, and sensitive areas** will be given extra attention..

Integrating Noxious Weed Inventory into Resource Restoration, Management and Use



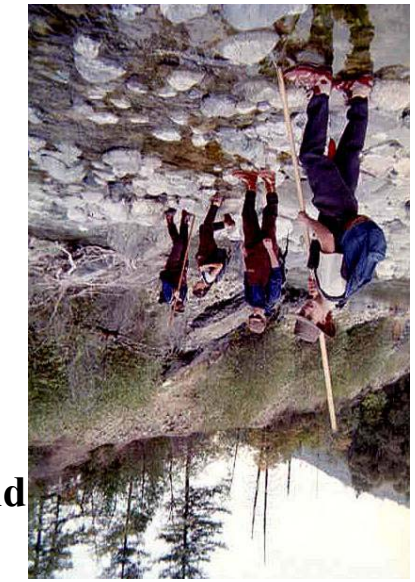
FIRE -Through the Salmon River Fire Safe Council, noxious weed control measures are being utilized in Fire Suppression, Planning and Fuels Reduction Work

FISH - Cooperative Fish surveyors and fishermen help find new populations of knapweed and other species.

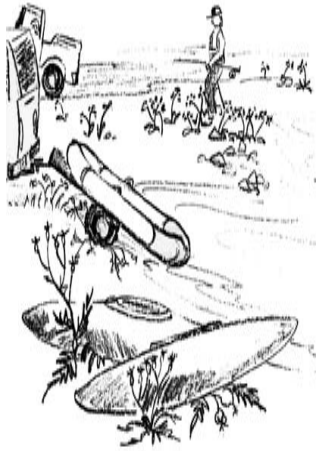
ROADS – **Noxious weed awareness and response is creeping into all aspects of road use and management. Road Assessment Crews have located and used GPS to track adjunct populations of knapweed and other target species**

Road managers compare notes at workshops and field trips

Checking for weeds on decommissioned roads



Boaters, Packers and Wilderness Ranger are helping to find plants



Step #6 - Adaptive Management
for Manual Removal

Finding the right tool for the job- Preferred Tool : Alignment Bar.

- **Burning - 1997**
- **Digging Techniques - 1998**
- **Plant Disposal/ Ducks – 1998**
- **Mulch - 1999**
- **Improved Inventory - 1999**
- **Monitoring Protocol - 2000**
- **GPS Sites - 2000**
- **Collect seed and flowering heads in zip lock bags 2001**
- **Watering seed beds - 2002**

Clipping seed heads

Rock duck marks population

Displaying the long tap root of a dug up knapweed

DIG THE WHOLE ROOT

Adaptive techniques derived from Observations and Recommendations recorded annually

Applying a mulch test plot

Mulch Treatments

Mulch Site #8P – 6/17/99

BEFORE

Mulch Treatments

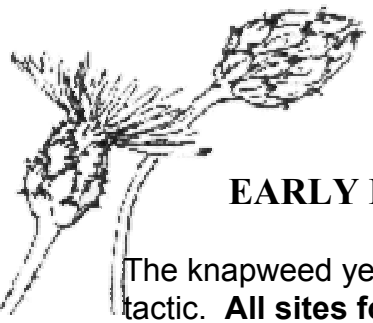
Mulch Site #8P – 6/17/99

DURING

Mulch Treatments

Mulch Site #8P – 6/17/00

AFTER



Step #7 – Groundwork

EARLY DETECTION-RAPID RESPONSE – THOROUGH & PERSISTENT TREATMENT

The knapweed year is broken into halves, flowering and non-flowering, and each half will require a specific eradication tactic. **All sites found previously receive at least 3 passes** in which all plants are targeted for removal. We use previous inventory and site maps to develop weekly strategy for each pass. The **first pass will eradicate all knapweed from all known sites**. When needed, mulching is used in areas of high population density. During the **second pass all known sites are cleaned of all weeds, if possible, and all areas in between and surrounding the sites are surveyed**. The **third pass** covers the same area as the second pass, except the priority is to **remove adult plants before they seed**. During the fourth pass in late fall and winter crews visit and treat unsurveyed suspected areas, late bloomers, persistent juveniles, and plants hiding in deciduous vegetation are located and treated, There are over **160 population sites found on over 70 miles** of the streams and river bars that are surveyed and managed. All areas within and adjacent to the high water level are covered. There are approximately **400 acres of upslope habitat managed**. Knapweed control is coordinated on **over 300 miles of roads and trails are managed**. An estimated **1,500 acres are surveyed and managed annually**. The SRRC tracks all information at each site during each visit. To prevent re-sprout the whole root is removed. Les's homemade cookies are often a key reward for diggers.

CONTAIN – REDUCE – ELIMINATE - REVEGETATE

Groundwork- continued

Bar Hoppin' down the river

Tools of the Trade

Pittsburgh Mike's biggest plant in 2002

Bagging flowers and/or Seeds

Another roadside attraction

Step #8 – Inventory/Tracking

Daily Noxious weed data is complied into an inventory. Since 1997, USFS and SRRC have cooperatively kept inventory of spotted knapweed populations. The sample inventory shown below from the year 2000, shows the site number, location description, treatment date, organization applying treatment, the number of participants, the type of method applied, **the number of juvenile and adult plants manually removed**, the **total number of juveniles and adults** from 1999. **Each day workers identify if they cleared sites of all plants or if site need to be revisited during the pass.**

Salmon River Restoration Council

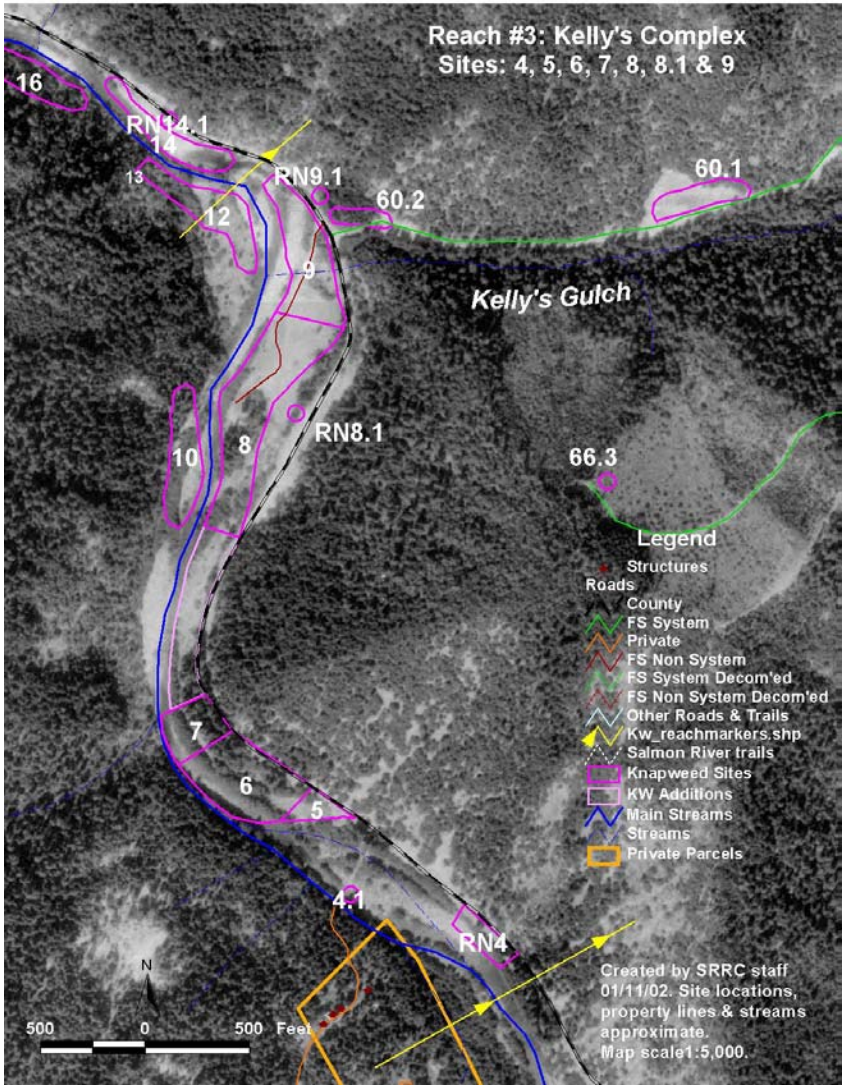
2000 Cooperative Spotted and Diffuse Knapweed

Inventory of Sites, Plant Populations and Ground Activities

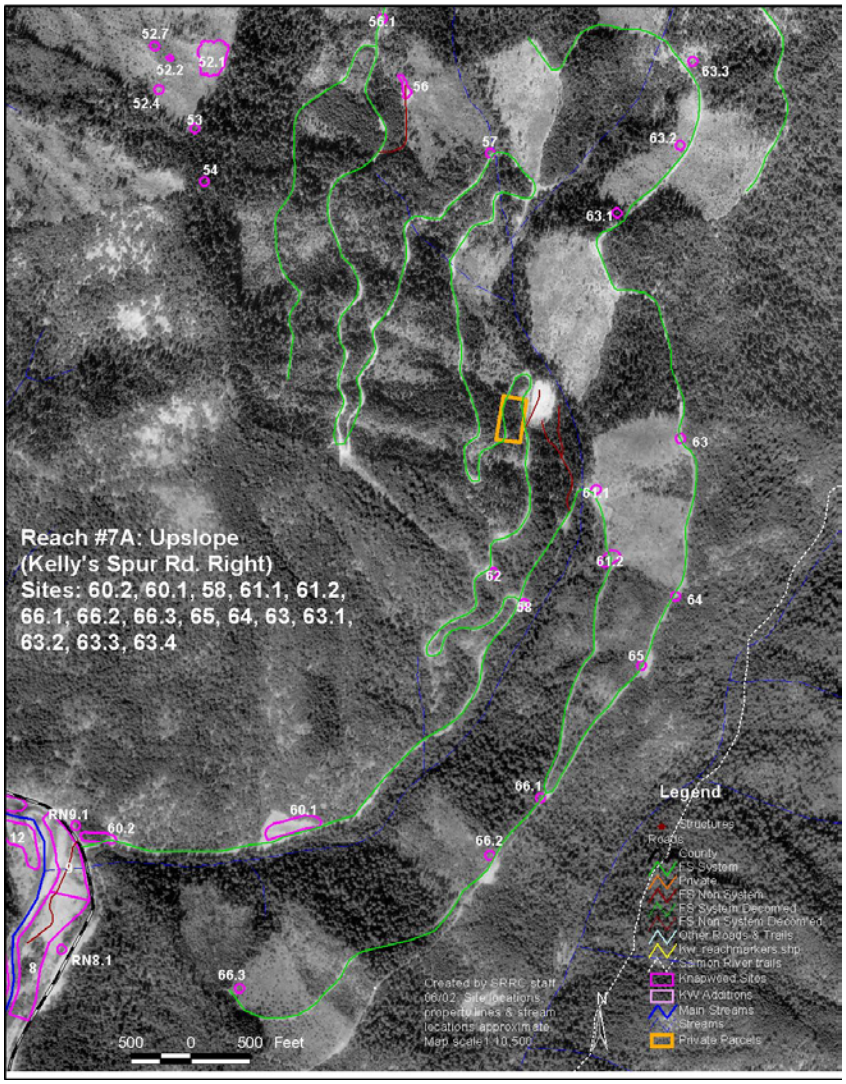
Site #	Location	TX Date	Organization	# pec	Method	Juveniles	Adults	99-J	99-A
5	Grass flat RS below jim bridge	5/10/00*M	NORCET			*	*		
	Monitoring site	5/18/00	SRRC	1	HP/SC	300	350		
		6/24/00	SRRC	4	HP/SC	60	50		
		6/27/00	SRRC	1	HP/SC	45	5		
		7/13/00	SRRC	3	HP/SC	4	6		
		7/20/00	SRRC/Americorps	17	HP/SC	8	4		
		8/14/00	SRRC	3	HP/SC	12	3		
		8/29/00	SRRC/FS	7	Field Trip				
		9/22/00	SRRC	4	HP/SC	167	3		
						596	**421**	**5795**	**5276**

SRRC Daily Reach File Maps

Example of River Reach # 3



Upslope Reach # 7A



These maps are used by field crews to locate existing and new sites and track daily work

REACH FILES

SRRC Reach/Site History Used by Field Crews to determine Site Information

Spotted Knapweed Reach #6B - Kelly's Complex									
Site	Location	Pos.	1998	1999	2000	2001	Vector	Potential	Comments
5	First open grass flat	RR		5795-J	596-J	319-J	High	HIGH	99-est >100
	downriver JV bridge	RS		5276-A	421-A	644-A	Water		1 seeded in 01 - FS
						(1s)	Animals		
	monitor site		**>11K**	**11071**	**1017**	**963**			
6	follow trail from #5	RR		1610-J	2155-J	276-J	High	HIGH	99-mulching on densest areas, '00-
	to next stake	RS		1731-A	533-A	330-A	Water		00-pulled up mulch, photo points a mulch
	downriver						Animals		unit #6A
	monitor site		**>200**	**3341**	**2688**	**606**			
7	follow trail from #6	RR		6124-J	2464-J	228-J	High	HIGH	99-est >100
	to next stake	RS		561-A	964-A	390-A	Water		
	downriver			(2s)	(4s)		Animals		
	monitor site		**>200**	**6685**	**3428**	**618**			
8	follow trail from #7	RR		67174-J	14081-J	2499-J	High	HIGH	3 seeded in 01 - SRRC
	to next stake	RS		12359-A	5868-A	1209-A	Water		
	mother patch			(6s)	(3s)	(3s)	Animals		
	monitor site		**>1200**	**79533**	**19949**	**3708**			
9	from top of pond down	RR		8752	3800-J	715-J	High	HIGH	99-est >500, '00-high estimates
	downriver from #8 to end of	RS		10331-A	993-A	1095-A	Water		1 seeded in 00, 5 seeded in 01 - SRRC
	bar extending to curve in river			(1s)	(1s)	(5s)	Animals		
	through blackberries		**>100**	**19083**	**4793**	**1810**			

Site History depicts annual population reduction at each site

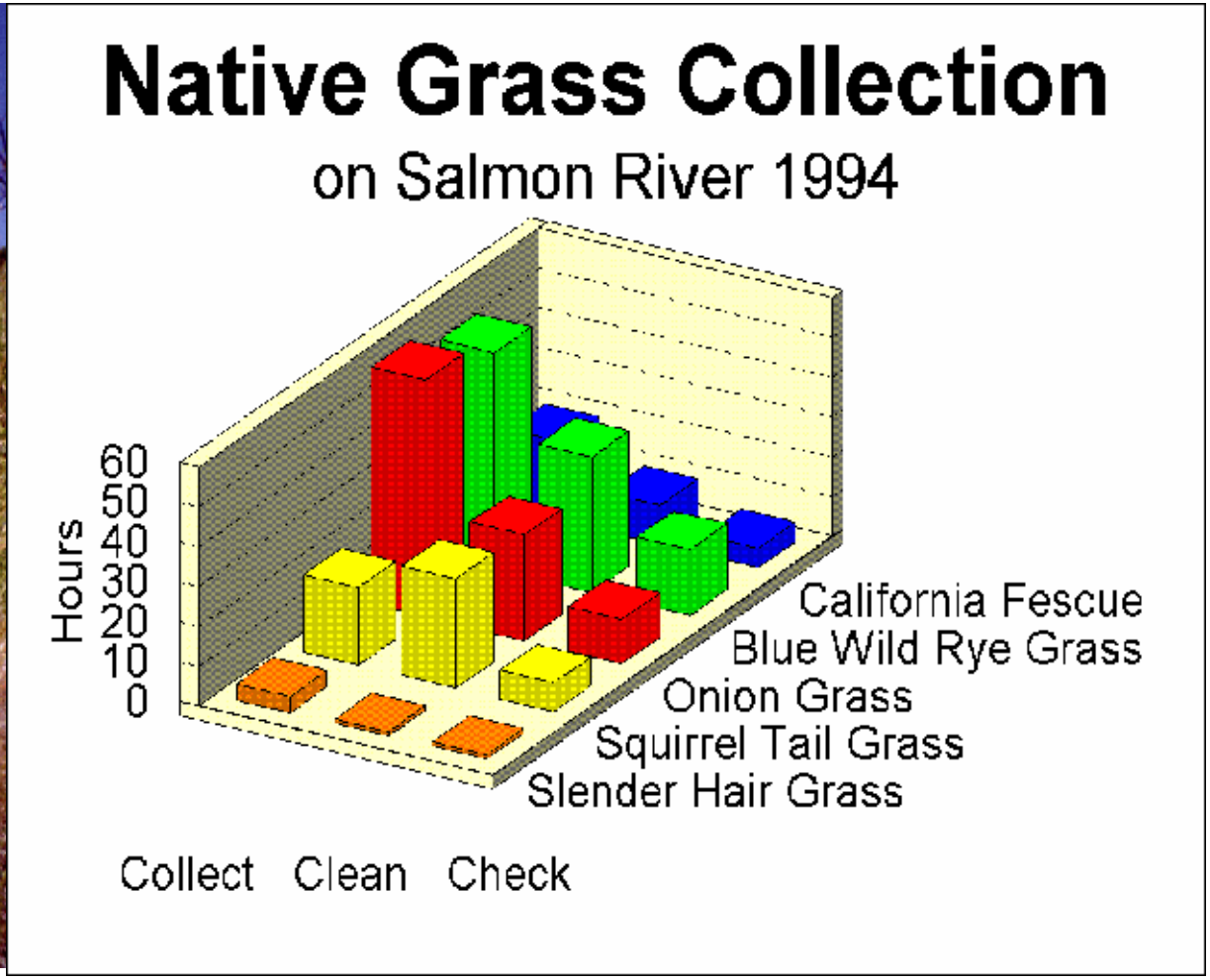
Step #9 – Revegetation

Willow planting at knapweed site at Kelly's Bar

One of the final steps to noxious weed management is establishing healthy native plant community on disturbed sites where weeds are present. Planting native plants provides competition for noxious weeds as well as helping to recover disturbed areas. In 2001, the SRRC grew and planted over 1,000 plugs of native grasses, willows, and conifers on noxious weed sites.

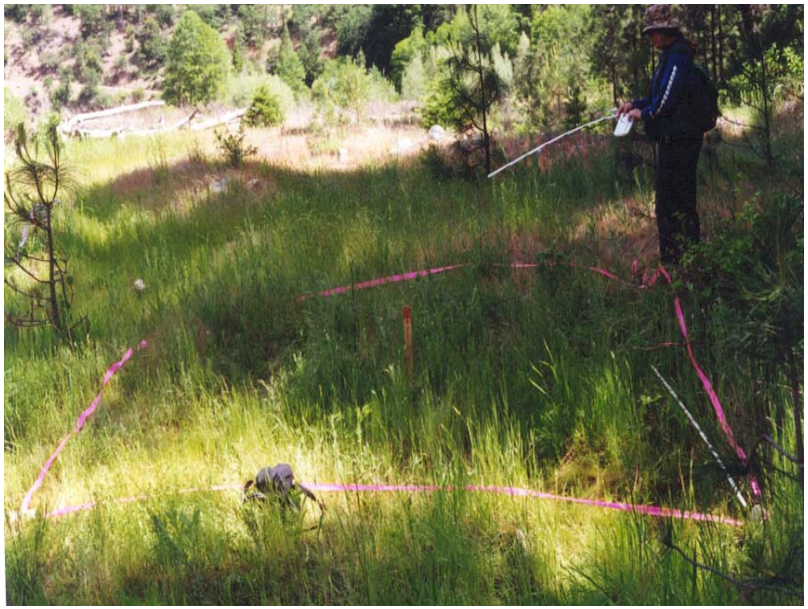
Students planting native grasses at Adopt-A-Site

Revegetation as Restoration



Cost Share Agreement between SRRC & USFS -
Seed is being used on Restoration Sites on the Salmon River

Step #10 – Monitoring



Establishing a monitoring plot in 1999

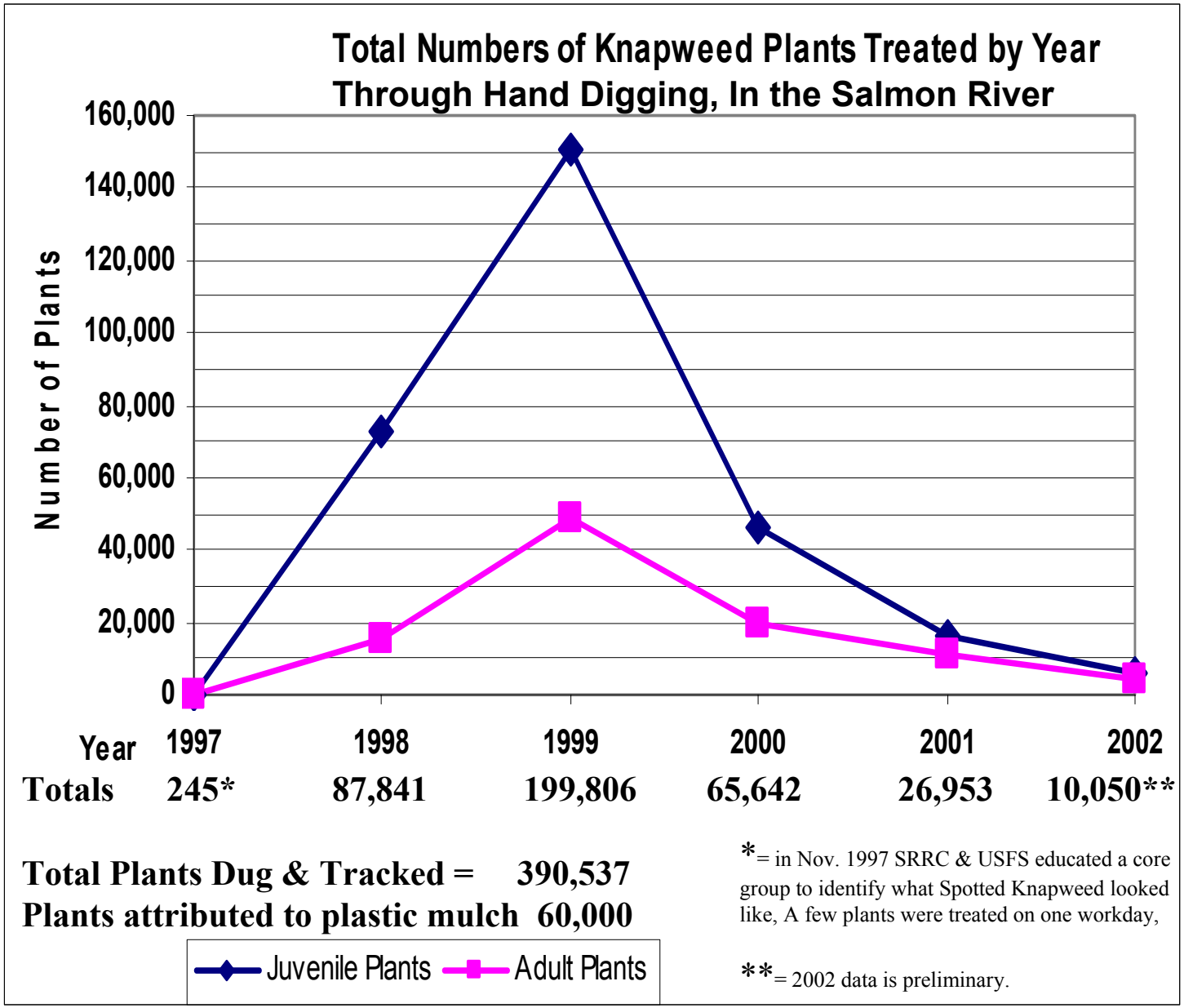
Inspection of site for seeded plants.

UC Davis Extension Monitoring Protocol
The monitoring provides new scientific information about manual control methods for noxious weeds. **In May 2000, a third party U.C. Davis Extension, the USFS, and SRRC developed a protocol for the evaluation of spotted knapweed control measures.** This protocol was applied by a third party monitor – NORCET. **The protocol evaluates annual changes in spotted knapweed infestations, and efficacy of manual control practices. Eight distinct monitoring sites representing the largest knapweed infestation levels were selected.**Two evaluation methods are used: Random Sampling with a Ring Toss, and Presence Absence Sampling along Predetermined Transects. In May of 2001 & 2002, the protocol was applied to the monitoring sites. **This scientific based monitoring criteria is being perfected and will provide a model for managers to determine effectiveness of eradication actions at the management unit level.**

Monitoring Plots
The SRRC and USFS established monitoring plots to determine:
•effectiveness of manual applications at various scales
• specific life history information

SRRC Inventory
Daily inventory data is useful in comparing actual population levels and treatment results over a period of years. This method relies on meticulous tracking of all treatment and actions.

Salmon River Cooperative Noxious Weed Program



Grand Total of 450,537 Spotted Knapweed Plants Managed Through CNWP

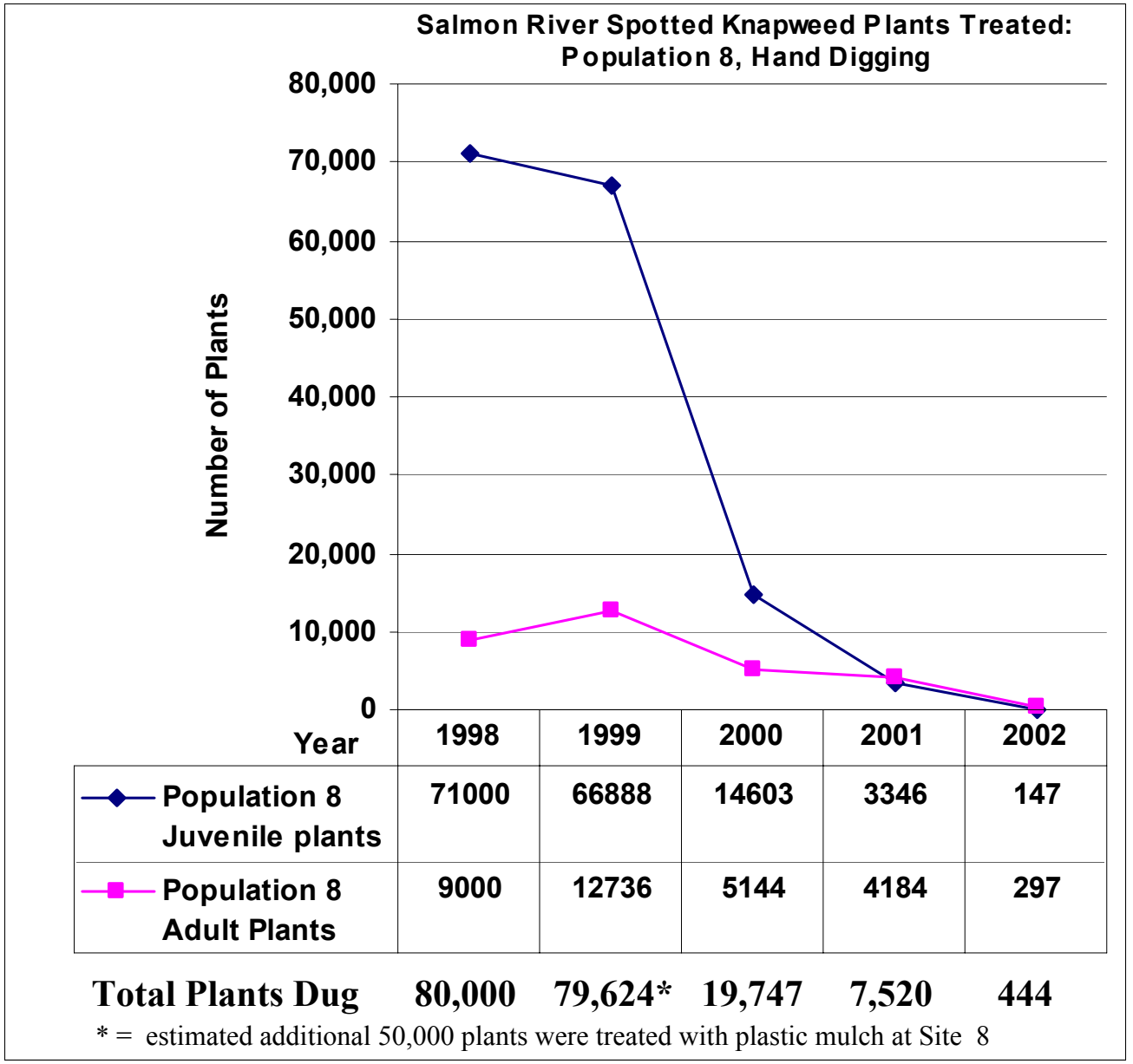
Salmon River Cooperative Noxious Weed Program

Site 8 in early 1999

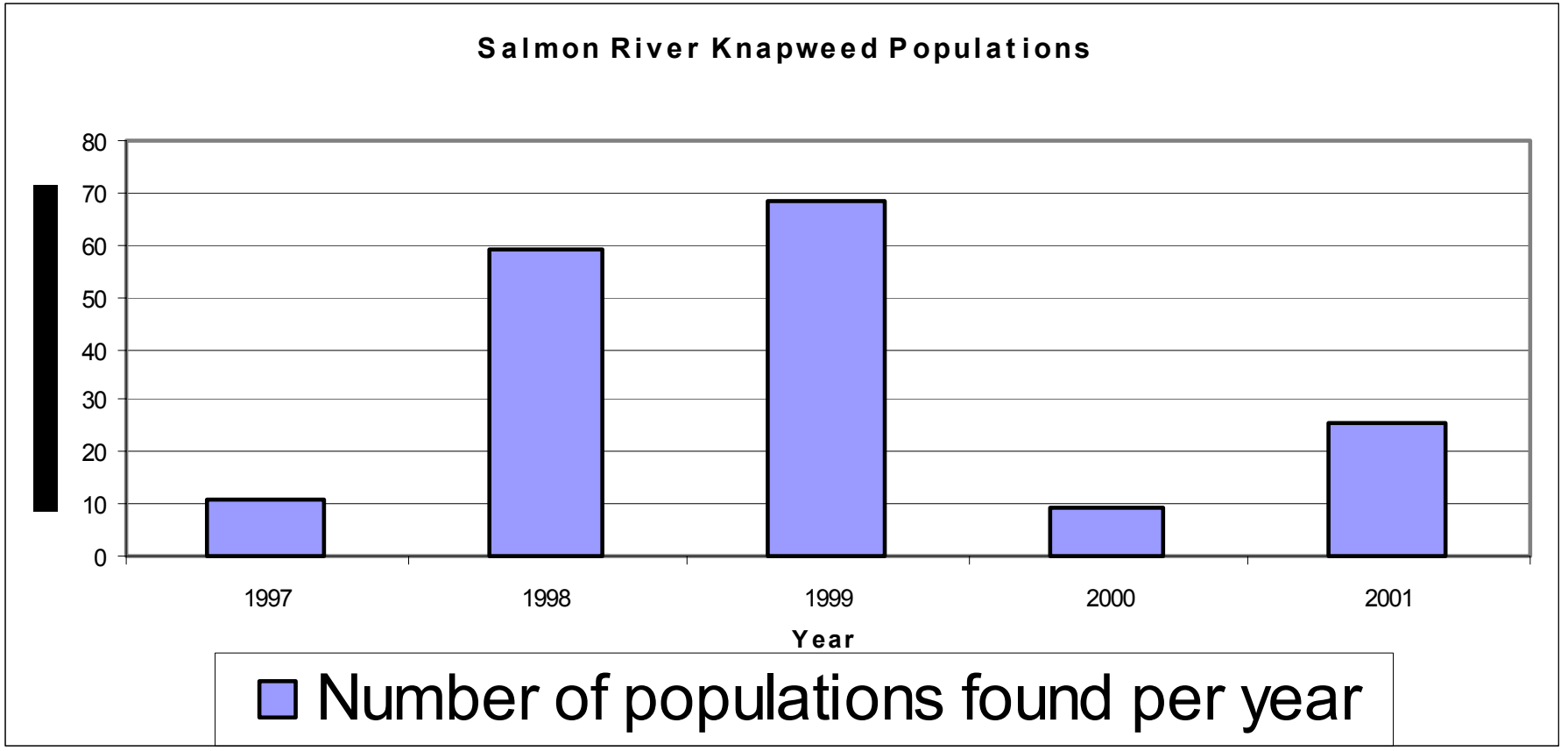
BEFORE

DIG IT

AFTER



Salmon River Cooperative Noxious Weed Program



The CNWP is starting a new group downriver in the Somes/Orleans area to locate and control new populations of spotted knapweed surrounding the Salmon River Watershed

Monitoring - continued

1999 USFS Monitoring Plot in Site # 9
1,100 plants counted in 15 sq. Ft. area

Observations

- **180 sites were managed by the SRRC in 2002**
- **A total of 147 plants were known to have seeded in 2002**
- **No plants were found on 37 known sites in 2002**

In 1999 SRRC Volunteers dig and count 1,100 plants in 4 hours

Juvenile Test Plot at Site # 8 in 2001 & 2002

USFS Monitoring Plot in Site# 9
SRRC dug & counted 4 plants in 2001
SRRC dug &counted 1 plant in 2002

BEFORE & AFTER

Some first year plants bolted

Step #12 – Support

Total SRRC Financial Support:

1998 – USFS $1,900

1999 – NFWF $10,000

2000 – 2001 – CA F&G $21,000

2002 & 2003 Sisk. RAC - $50,000 (unspent)

TOTAL FUNDING = $ 82,900

Coordination support has also been provided by the Klamath River Fisheries Task Force annually through the SRRC- Community Restoration Program.

SRRC Volunteer Support:

	Person Days	$ value
1997 -	50	$5,000
1998 -	250	$25,000
1999 -	700	$70,000
2000 -	400	$40,000
2001 -	300	$30,000
2002 -	350	$35,000
Total -	2050	$205,000

Cost for equipment, technical services, office space, and travel are not reflected in these totals.

This project has resulted in participation from landowners, resource users and others who perform independent noxious weed control. Many populations of noxious weeds have been controlled through our Adopt-A-Site and Drivers That Care Programs.

Step #11 – Evaluation/Recommendations

SRRC Spotted Knapweed Evaluation

An evaluation process has been set up to determine the effectiveness of this Program, the criteria developed in the Forest Service's Environmental Assessment include:

1. Reducing knapweed populations at monitoring sites by at least an average of 60%
2. No more than an average of one seeded plant per site is allowed
3. Known sites will not increase in area.

Since 1998 the SRRC has prevented more than 99.9 % of the knapweed plants from seeding. According to the SRRC Inventory there has been 60% reduction of all knapweed plants at all sites annually since 1999. **Cooperators agreed that the number of knapweed plants have been significantly reduced throughout the subbasin and that CNWP is clearly progressing towards eradication .** This was observed during the September 2000, 2001, and 2002 knapweed project review field trips involving various cooperators. Verification has occurred through the third party monitoring. Results from the 2001 and 2002 are available from SRRC and USFS.

Observations and Recommendations - Example

1. Many of the remaining plants are being found in hard to access and hidden places. Ground workers need to look in these areas (such as: blackberries, bushes, under rocks, and around site perimeters) year round.
2. Flowering Knapweed should be clipped into a sealable bag. It should be double bagged and destroyed.
3. Because the Salmon River subbasin is managed by two different National Forests, it is recommended that all parties involved in watershed management and use participate in a unified Noxious Weed Management Plan for the entire Salmon River.
4. **Review the effectiveness criteria to identify areas to revise to better reflect application. Use as template for monitoring other efforts in the region and nation.**

Step #13 – Reporting

The SRRC generates regular progress reports to inform various parties of recent activities, accomplishments, and problems. We also develop a comprehensive Final Report at the end of each year. These Reports are used in writing newsletters, brochures, publishing articles and for securing funding.

The SRRC has made several CNWP reports to the Klamath Basin Fisheries Task Force, including to Congressional Reps

Reports are provided to :

- Funders
- Salmon River Weed Management Sub Area Cooperators
- Siskiyou County WMA
- Klamath Basin Fisheries Task Force
- Conferences – CalEPPC, Klamath Fish & Water Symposium Western Weed Society Conference
- Local Community & Schools
- Web Site
- Others

Salmon River Restoration Council
P.O. Box 1089~Sawyers Bar, CA
(530)462-4665 fax: (530)462-4664
e-mail: info@srrc.org

Check out our web site at www.srrc.org