

## **Appendix 5.0**

# **Comparison of 17 Control Methods for Japanese and Giant Knotweed, Sandy River, Oregon**

**May 2000 - June 2003**

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## Abstract

Between April 2000 and June 2003 we compared 17 treatment combinations for controlling Japanese (*Polygonum cuspidatum*, *Fallopia japonica* or *Reynoutria japonica*) on the Sandy River at river mile 13, Multnomah County, Oregon, USA. Treatments included manual control, 2 herbicides (glyphosate and triclopyr), 2 application methods (spray and wick), 3 application timings (spring, summer, fall) in various combinations. After two field seasons, herbicide based methods provided statistically significantly better control than manual ( $p < 0.1$ , power = 90%). Although triclopyr (Garlon 3a) yielded generally better control than glyphosate (Rodeo), and foliar application was generally better than cut-stem/wicking, several treatment combinations provided greater than 90% control after one, two or three growing seasons. Only foliar treatment with Garlon 3a proved full control in all cases in two seasons. Foliar treatment with Rodeo took three seasons to deliver full control. Even after three years and 17 separate cuttings, manual control failed to provide full control in two out of three sites. Based on these results we recommend foliar application of herbicide, either alone or integrated with a single spring cutting in most cases for established knotweed stands.

## Acknowledgements

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## Introduction

Japanese, giant and Himalayan knotweed (*Polygonum cuspidatum*, *P. sachalinense* and *P. polystachum*) and assorted hybrids are well known invaders of riparian systems throughout the United Kingdom (Child and Wade 2000) and the northeastern United States (Beerling et al 1994, Seiger 1997). Although these species are known from 37 states, 8 Canadian provinces and nearly every county in western Oregon and Washington (National Park Service 1999, The Nature Conservancy/Sieger 1991), it is only recently that they have become recognized as a major threat to riparian systems in the Pacific Northwest.

Knotweed's threat comes from a peculiar combination of life history features that adapts it perfectly for life in the dynamic riparian and floodplain systems of the Pacific Northwest. Knotweed can tolerate long periods of submersion and poor soils, allowing it to establish and grow on the lower banks of rivers and creeks where there is little competition. Because knotweed evolved as a primary colonizer of volcanic slopes, it can rapidly colonize fresh sediment deposits and other low nutrient, disturbed sites. It grows rapidly in the spring to 3-4 meters, effectively shading and excluding lower and slower growing native vegetation, including willows, cottonwoods, the typical riparian dominants of our area. Knotweed has an extensive, but fragile rhizome network and reproduces vegetatively via root fragments as small as 1 cm. Finally, it has proven to successfully form dense, apparently permanent monocultures in areas with similar or colder climates.

Although Japanese knotweed first appeared on a plant list of the Sandy River Gorge (River miles 6-19) in 1994 (Scofield et al 1994), it was identified by TNC staff in natural areas of the Sandy River

Gorge only following a large flood event in 1996. A second large flood event that occurred in 1999 spread the plant extensively. By the fall of 2000 more than 1500 knotweed patches had been identified in the Sandy Gorge alone.

Although some limited control methodology has been conducted and published (Childs and Wade 2000, TNC/Sieger 1991 and Scott and Mars 1984), none of the research has been conducted in the field in the Pacific Northwest and many questions remain unanswered. Regardless of location, little of the published work addressed the need for techniques that could be feasibly applied on a landscape scale. Data were inadequate on the efficacy of either manual removal methods, so-called cut-stem (wicking) methods and the window of opportunity for foliar applied herbicides. We compared 17 treatment methods including manual control, the herbicides glyphosate and triclopyr, spray vs. cut-stem, using various combinations and timings.

### **Study location**

The study took place within Oxbow Park on the Sandy River, Multnomah County, OR at river mile 13. Soils are sandy and the entire study site is subject to inundation during major flood events (i.e. 1964, 1996 and 1999). Knotweed present on the site is thought to have originated from flooding 1996.

### **Methods**

We tested 17 herbicide and/or manual treatment combinations (Table 1). Treatments included:

- Manual control only -- monthly cutting at ground level,
- 2 herbicides (glyphosate and triclopyr),
- 2 application methods -- foliar spray and wicking the freshly cut stem surface,
- 3 treatment timings -- spring and fall, summer only, fall only
- Combinations of manual treatment with herbicides -- spring cut and fall herbicide, early fall cut and herbicide treatment of resprouting stems, late fall cutting and wicking, and late fall cutting to 1.5 meters tall and foliar herbicide).

In April 2000, 45 individual knotweed patches were identified within a 0.5 square mile area. Each patch was isolated from other patches and contained between 20 and 239 stems. Patches were numbered, permanently marked and had their location recorded using a global positioning system. Each patch was randomly assigned to one of 15 treatment groups. Two sites were replaced in June, and 6 sites (summer treatments) were added in August 2000, for a total of 51 plots and 17 treatments. All sites are in full sun prior to bud break / leaf-out of deciduous trees in the spring. The degree of mid-summer shading varies between sites.

**Table 1: Knotweed Treatment Key**

<b>Treatment Code</b>	<b>Spring Treatment</b>	<b>Fall Treatment</b>	<b>Treatment Method</b>	<b>Herbicide</b>
MM	Monthly manual cutting at soil surface		Cutting	No
HHFG	Herbicide	Herbicide	Foliar	Garlon 3a
HHFR	Herbicide	Herbicide	Foliar	Rodeo
HHSG	Herbicide	Herbicide	Wick Cut Stem	Garlon 3a
HHSR	Herbicide	Herbicide	Wick Cut Stem	Rodeo
MHFG	Manual	Herbicide	Foliar	Garlon 3a
MHFR	Manual	Herbicide	Foliar	Rodeo
MHSG	Manual	Herbicide	Wick Cut Stem	Garlon 3a
MHSR	Manual	Herbicide	Wick Cut Stem	Rodeo
NHSG	None	Cut and Herbicide	Wick Cut Stem	Garlon 3a
NHSR	None	Cut and Herbicide	Wick Cut Stem	Rodeo
NHrFG	None	Cut Herbicide Resprout	Foliar	Garlon 3a
NHrFR	None	Cut Herbicide Resprout	Foliar	Rodeo
NHcFG	None	True No Cut Herbicide	Foliar	Garlon 3a
NHcFR	None	True No Cut Herbicide	Foliar	Rodeo
SFG	Summer Herbicide	No treatment	Foliar	Garlon 3a
SSG	Summer Herbicide	No treatment	Wick Cut Stem	Garlon 3a

Spring treatment: Done in April (2001), May (2000, 2002) or June (2003) when most if not all stems are presumed to be above ground, except for the manual only treatment (MM) which began in April in both 2001 and 2002.

Fall treatment: done in September, except for cut and treat resprout (XHrXX) treatment group, which was cut in August and allowed to re-grow until October.

Summer only treatment: done in July.

Manual (MM): We used loppers or pruning shears to cut each stem at the top of root crown (if visible) or at the soil surface. Cutting occurred monthly. At each treatment, a photograph was taken, the individual stems were counted, the patch size was measured and the typical stem height recorded.

Foliar application (XXFX): Upper leaf surfaces were sprayed using a low-pressure spray unit to "just wet" with a 5% solution of either glyphosate (Rodeo) or triclopyr (Garlon 3a, reduced to 3% after year 1). A non-ionic surfactant (R-11 for Glyphosate in 2000 and 2001, Li-700 in 2002), Hasten for Garlon3a) was added at a rate of 1 ounce per gallon. A small amount of herbicide dye was also added.

Cut-stem (wicking) application (XXSX): Using a weed wand (Ben Meadows) in 2000 and a hand type plant mister in 2001 and 2002, a 50% solution of triclopyr or glyphosate in water was applied to the stem surface immediately following cutting.

Late Season Cut, Spray Resprouting stems (NHrXX): plants were cut in August and the resprouting stems were treated with herbicides in October.

True No Cut herbicide application (NHcFX): Treatment was done in September. Foliar treated plants were cut to 1.5 meters in height and sprayed as above. Stem treatments were done as above.

### **Statistical Analysis**

The number of living stems on the day of first treatment for each plot was used for comparison. If no treatment was done in the spring then the stem number in June was used. Although ANOVA is relatively robust for unequal variance and provides more power, the more conservative non-parametric equivalent, Tukeys HSD was chosen because of the presence of groups with either zero standard deviation or standard deviation > 100% of the mean. N = 3 in all cases.

## Results

*Unless otherwise noted, the numbers that follow represent percent reduction in the mean stem number for the treatment group plus or minus one standard deviation. Therefore, negative numbers represent an increase in stem number, and "full control" for a treatment group = mean reduction of 100% with standard deviation = 0. Figure 1 shows mean results graphically by year, by treatment group. Table 2 shows mean results by year, by treatment group and Table 3 by year, by individual patch. Table 4 graphically shows results of Tukey's HSD test.*

### 2000 - Initial Values

Mean values for treatment groups ranged from  $31 \pm 3$  to  $111.7 \pm 112$ . The overall range by individual patches was 16 to 239 ( $70 \pm 50.6$ ).

### 2001 - First Spring Following Treatment

No treatment provided total control (Figure 2, Tables 2, 3) in a single season of treatment, although 2 patches in each of HHFR and HHFG and 1 each in MHFG and MHFR had zero stems at the time of spring treatment. Six treatment combinations, all using foliar treatment of herbicide gave control greater than 95%.

Manually treated plots actually had more stems present in 2001 than at the initiation of the experiment ( $-26.7 \pm 64.1$ ). The best performing cut-stem treatments (XXSX) were HHSG ( $96 \pm 6.9$ ) and NHSR ( $93.6 \pm 1.8$ ).

### 2002 - Second Spring Following Treatment

Control response varied widely and significantly between treatments ( $p > 0.1$ , power = 0.9) (Figure 2, Tables 2, 3, 4). Three treatment groups, all using foliar applications of Garlon 3a (HHFG, MHFG and SFG) gave full control of all patches, the 4<sup>th</sup> foliar treatment group with Garlon 3a (NHcFG) provided nearly complete control ( $97.8 \pm 1.2$ ). Two foliar treatments with Rodeo (MHFR and HHFR) gave greater than 98% control ( $98.4 \pm 2.8$  and  $98.5 \pm 2.6$ ).

The overall effectiveness of stem treatments declined from 2001, with no XXSX treatments providing greater than 95% control, although some individual patches (2 from HHSG and one from NHSR) had zero stems at the time of spring sampling. Two stem treatments with Rodeo (HHSR and NHSR) gave greater than 90% control.

Manual treatment still produced a mean value greater than the original stem counts ( $-1.8 \pm 83.1$ ). One manual control patch did show a reduction from the original value (the one with the smallest initial stem number, 25 stems reduced to 16 stems after 11 cuttings).

### 2003 - Final Data Collection, June 2003

At the final data collection date (June 30, 2003), 25 individual patches had zero stems. Sixteen were from foliar treatment groups, 8 from stem treatment groups and 1 from the manual control group. Four foliar treatment groups provided total control: HHFG, MHFG, HHFR and NHcFR (Tables 2 and 3, Figure 2). A fifth group (MHFR) had 2 zero stem values and it is likely that the one patch with stems present had stems from a nearby patch counted and actually was zero. We believe this is so because that patch had no stems present throughout 2001 and 2002 (Table 3). Three groups exhibited control greater than 95%: NHSR, HHSG, MHFR (but see above). Increases were found in two of the SFG plots after two years of near zero (1, 0 in both cases) counts, resulting in overall control levels of

only  $79 \pm 23.8$ . Again, this is possibly due to data collection error rather than actual plant survival.

There was also a great deal of variation among stem treatment groups. HHSG ( $95 \pm 8.6$ ), NHSR ( $98.5 \pm 2.6$ ), provided the best overall results. Overall HHSX patches had good control. Individual patches in HHSR, HHSG, NHSR adversely affected the overall mean result. In particular the HHSR patch was strange because after two years of 6 and 5 stems, it suddenly had 21.

Even after three years and 17 individual cuttings, the MM gave mediocre control ( $80.8\% \pm 22.3$ ). One of three patches (initial stem number = 25) was eliminated.

Within the context of our initial patch sizes response does not appear to be strongly linked to initial patch size (Figure 2), although the one manual only patch (MM) that was successfully eradicated had the lowest initial stem count.

## Discussion

As suggested by the literature, the extensive root system of established knotweed patches makes it extremely difficult to control. None of the methods we tested were able to provide total control in a single year, even with the relatively small sizes of the patches we tested. Fortunately, several methods if continued over two or sometimes three years did give full control and this gives hope to those trying to contain this threat to the integrity of North American waterways.

Unfortunately, limited time and/or money for conducting this experiment meant that some patches had to be used despite their proximity to other patches. Although we did not use both adjacent patches in the experiment, it appears that in at least two or three cases stem count data may have been collected incorrectly or at least inconsistently. This may have led to over-counting stems for some sites. We have interpreted the data conservatively and strongly believe that the overall results are solid, if not slightly overly cautious. For foliar spray at least, our results have been born out consistently from trials on more than 400 patches treated and tracked during 2001 and 2002 (see below).

The results of this experiment suggest four noteworthy conclusions:

- 1) At least for the reasonably small patches that we tested, knotweed can be effectively controlled within two field seasons of foliar spray treatment with Garlon 3a, but may require three seasons of treatment with Rodeo, because of survival of a few, badly mutated stems that would likely recover if left untreated.
- 2) Although wicking type, cut-stem treatments can give good control, they are less effective and more time consuming than foliar type applications, and do not appear to give total control, even within three field seasons in many cases.
- 3) Late summer / early fall foliar herbicide treatment can be combined with spring manual control without loss of treatment effectiveness as compared to two herbicide treatments. And at least for Rodeo herbicide, a late season cutting to 1.5 meters followed by foliar spray can deliver effective control if repeated for several seasons.
- 4) Successful control based on cutting alone will generally require more than 3 years, and/or involve cutting stems more than monthly for all but the smallest, least well established patches. It is possible that more frequent cutting or replacing cutting with uprooting stems and shallow roots could give effective control more quickly.

It is also clear from these data that herbicide treatment timing is important. The failure of the spring-fall foliar herbicide treatment to deliver benefits beyond manual - herbicide combination is not surprising since translocated herbicides generally do not give good control of deep-rooted perennial plants when applied during the early phase of rapid spring growth.

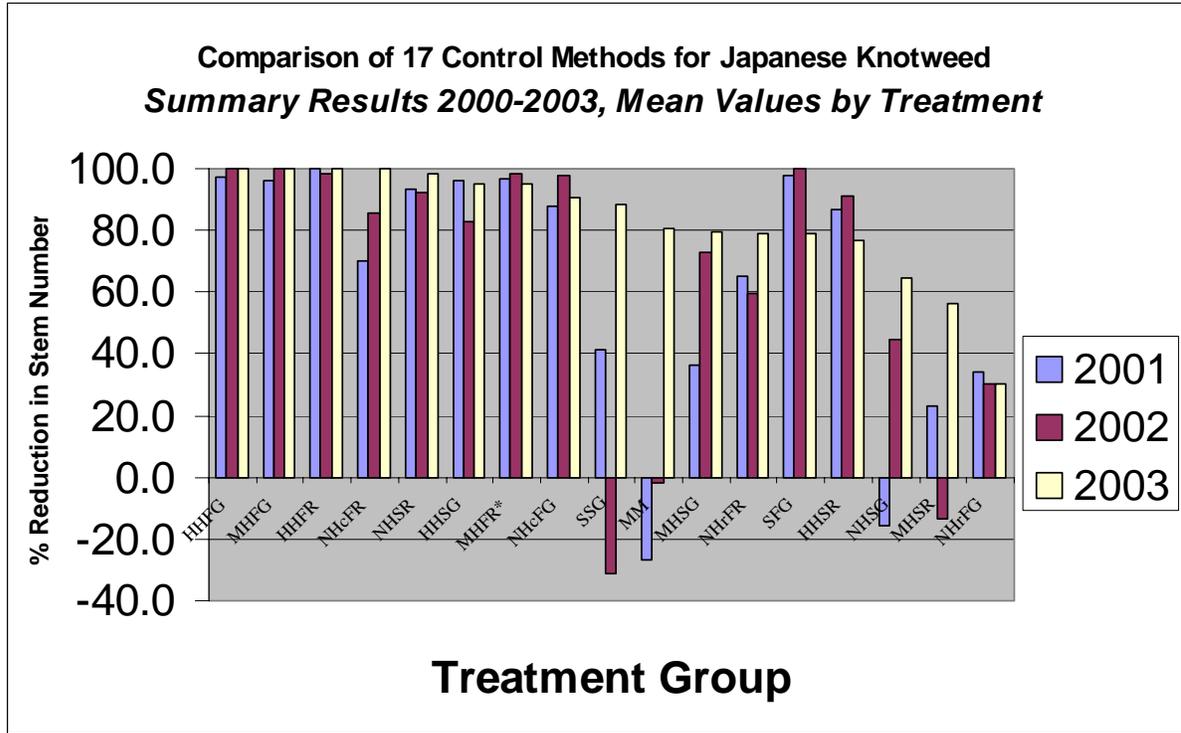
Although time consuming, the success of some of the cut-stem (wicking) treatment offers a middle ground for individuals with particularly strong objections to herbicide spraying, or for spots in which herbicide spraying is not appropriate (i.e. presence of rare or sensitive species). Care must be taken however, to treat every stem, and multiple treatments will be necessary.

The results of this admittedly limited experiment for foliar treatments have also been "tested" and largely confirmed as part of a landscape level control project managed by The Nature Conservancy in the Sandy River Watershed. After two years of mixed manual and foliar herbicide treatment (first Garlon 3a then Rodeo due to legal issues) spread out throughout the field season, we have eliminated about 2/3 of 417 patches within a 12 mile stretch of the Sandy River, and have reduced total stem number by about 80%. Large patches have been more persistent than small ones. Results from a third year of treatment will be available in fall 2004.

The great potential cost of invasive species to society has gained increased attention in recent years. As the need for effective control grows, so does the total cost to society. With the need so great and funding uncertain, and always limited, land managers have an obligation to use methods that are not only effective, but cost-effective as well. Although in some cases removal of invasive species through manual or mechanical means meets both measures, it is apparent from this research that controlling the knotweeds on a landscape scale is not one of those cases. Furthermore, a control method may work in a research setting when timing can be carefully controlled, but in a wider landscape context tools must be developed and tested that are suitable for widespread application over extended time periods.

Recent research by Clark County Weed Management and The Nature Conservancy suggests direct injection of knotweed stems may offer another alternative for effective control that avoids the potential for drift. Although it is time consuming, early results of tests of the so-called injection method suggest control of many patches with a single treatment. A labor saving device has been developed for this treatment method and more comprehensive data will be available during 2004.

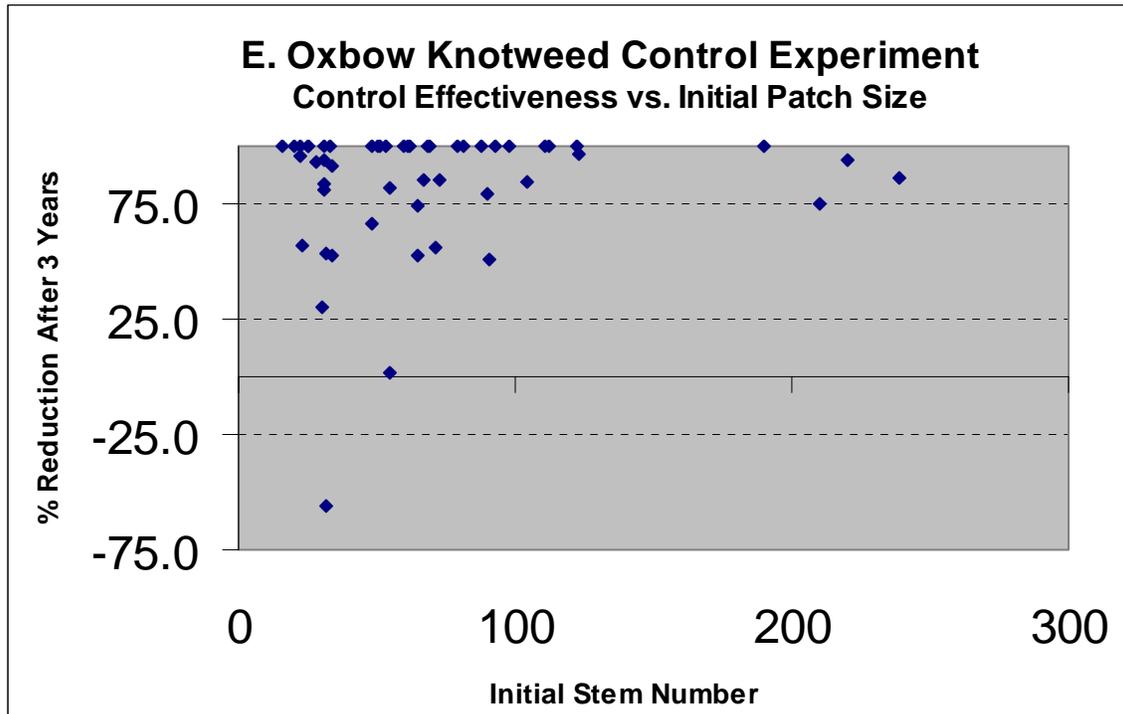
Figure 1



Seventeen control approaches were tested, each on 3 individual knotweed patches. Treatment was initiated in May 2000 and data were collected through June 2003. These data suggest that foliar spray approaches are the most effective, with little difference between patches cut in the spring and sprayed in the fall or those sprayed both times.

Treatment Code Key: The first two letters reflect spring and fall treatments. N = no treatment, M = manual (hand cutting at ground level), H = Herbicide. The third letter(s) indicate herbicide treatment method. F = Foliar Spray, S = wicking the cut stem surface, A small "c" indicates the patch was cut down to 1.5 meters before fall spraying. A small "r" indicates the patch was cut and allowed to resprout for approximately 1 month prior to treatment. The fourth letter indicates the herbicide used, either R = Rodeo or G = Garlon 3a. Thus, MM refers to manually treated plots (monthly cutting), MHFR means a plot was manually cut in spring and foliar sprayed in fall with Rodeo, NHcFG means a plot was untreated in the spring, then sprayed with Garlon in the fall after being cut to 1.5 meters, HHSG = two stem treatments with Garlon.

Figure 2



This plot of control effectiveness versus initial stem number suggests that within the size classes used here there was no over-riding effect of initial patch size on control effectiveness after three years of treatment. Field data from the larger landscape level project suggest that larger plots are more difficult to control.

Table 2

**East Oxbow Knotweed Control Experiment: 2000-2003**  
**Response to 17 control treatment variations, mean response by treatment group**

Treatment	Original Stem Count 2000	Stdev Original Stem Count	Mean Reduction 2001	Mean Reduction 2002	Mean Reduction 2003	Standard Deviation 2001	Standard Deviation 2002	Standard Deviation 2003
HHFG	50.7	29.6	97.5	100.0	100.0	4.4	0.0	0.0
MHFG	44	11.3	96.0	100.0	100.0	4.0	0.0	0.0
HHFR	90.7	27.8	99.7	98.4	100.0	0.5	2.8	0.0
NHcFR	130	53.3	69.9	85.8	100.0	13.3	12.3	0.0
NHSR	48.3	22.8	93.6	92.3	98.5	1.8	9.4	2.6
HHSR	40.7	23.5	96.0	83.1	95.0	6.9	29.3	8.6
MHFR*	66.7	47.8	96.7	98.5	95.0	3.1	2.6	8.7
NHcFG	136	72.9	87.7	97.8	90.8	14.7	1.2	10.8
SSG	31	3.0	41.3	-31.4	88.2	11.1	40.9	6.6
MM	111.7	112.6	-26.7	-1.8	80.8	64.1	83.1	22.3
MHSG	42	16.8	36.3	72.7	79.4	24.8	28.5	21.8
NHrFR	68.7	35.0	64.9	59.9	79.2	35.3	59.8	24.0
SFG	29.3	3.8	97.9	100.0	79.0	1.8	0.0	23.8
HHSR	61	31.5	86.5	91.1	76.7	7.4	7.0	40.4
NHSG	107.7	89.0	-15.4	44.4	64.6	38.4	22.9	11.4
MHSR	50.3	17.5	23.3	-13.4	56.4	26.2	164.3	48.3
NHrFG	82	46.2	34.2	30.2	30.3	53.8	67.9	78.5

\* The mediocre performance of the MHFR group is a worst case estimate due to the "reappearance" of 10 stems in one patch after two years of zero counts. It is probable that these stems were actually NOT part of the original patch but part of an adjacent one. If that is the case the actual percent reduction for this treatment group for 2003 would have been 100 + 0.

Treatment Code Key: The first two letters reflect spring and fall treatments. N = no treatment, M = manual (hand cutting at ground level), H = Herbicide. The third letter(s) indicated herbicide treatment method. F = Foliar Spray, S = wicking the cut stem surface, A small "c" indicates the patch was cut down to 1.5 meters before fall spraying. A small "r" indicates the patch was cut and allowed to resprout for approximately 1 month prior to treatment. The fourth letter indicates the herbicide used, either R = Rodeo or G = Garlon 3a. Thus, MM refers to manually treated plots (monthly cutting at ground level), MHFR means a plot was manually cut in spring and foliar sprayed in fall with Rodeo, NHcFG means a plot was untreated in the spring, then sprayed with Garlon in the fall after being cut to 1.5 meters, HHSR = two stem treatments with Garlon.

Table 3 (4 pages)

**East Oxbow Japanese Knotweed Control Experiment**  
**Stem Counts from 2000 to 2003 by Patch - Annual Spring Data**

Site#	Treatment Code	Spring Treatment	Fall Treatment	Treatment Method	Herb.	Initial Stem Number 2000	Spring Stem # 2001	Spring Stem # 2002	Spring Stem # 2003	% reduction 2000>2001	% reduction 2000>2002	% reduction 2000>2003
6	MM	Manual only	Manual only	Cutting	NO	25	18	16	0	28.0	36.0	100.0
13	MM	Manual only	Manual only	Cutting	NO	239	265	106	33	-10.9	55.6	86.2
17	MM	Manual only	Manual only	Cutting	NO	71	140	140	31	-97.2	-97.2	56.3
21	HHFG	Spring Herb	Fall Herb	Foliar	G	79	6	0	0	92.4	100.0	100.0
25	HHFG	Spring Herb	Fall Herb	Foliar	G	53	0	0	0	100.0	100.0	100.0
43	HHFG	Spring Herb	Fall Herb	Foliar	G	20	0	0	0	100.0	100.0	100.0
7	HHFR	Spring Herb	Fall Herb	Foliar	R	69	0	0	0	100.0	100.0	100.0
12	HHFR	Spring Herb	Fall Herb	Foliar	R	81	0	0	0	100.0	100.0	100.0
26	HHFR	Spring Herb	Fall Herb	Foliar	R	122	1	6	0	99.2	95.1	100.0
14	HHSG	Spring Herb	Fall Herb	Stem	G	22	0	0	0	100.0	100.0	100.0
18	HHSG	Spring Herb	Fall Herb	Stem	G	33	0	0	0	100.0	100.0	100.0
19	HHSG	Spring Herb	Fall Herb	Stem	G	67	8	34	10	88.1	49.3	85.1
4	HHSR	Spring Herb	Fall Herb	Stem	R	30	6	5	21	80.0	83.3	30.0
9	HHSR	Spring Herb	Fall Herb	Stem	R	93	5	3	0	94.6	96.8	100.0
23	HHSR	Spring	Fall Herb	Stem	R	60	9	4	0	85.0	93.3	100.0

Site#	Treatment Code	Spring Treatment	Fall Treatment	Treatment Method	Herb.	Initial Stem Number 2000	Spring Stem # 2001	Spring Stem # 2002	Spring Stem # 2003	% reduction 2000>2001	% reduction 2000>2002	% reduction 2000>2003
		Herb										
16	MHFG	Spring Man	Fall Herb	Foliar	G	50	4	0	0	92.0	100.0	100.0
22	MHFG	Spring Man	Fall Herb	Foliar	G	51	2	0	0	96.1	100.0	100.0
35	MHFG	Spring Man	Fall Herb	Foliar	G	31	0	0	0	100.0	100.0	100.0
5	MHFR	Spring Man	Fall Herb	Foliar	R	16	1	0	0	93.8	100.0	100.0
11	MHFR	Spring Man	Fall Herb	Foliar	R	111	4	5	0	96.4	95.5	100.0
38	MHFR	Spring Man	Fall Herb	Foliar	R	73	0	0	11	100.0	100.0	84.9
15	MHSG	Spring Man	Fall Herb	Stem	G	55	45	32	10	18.2	41.8	81.8
41	MHSG	Spring Man	Fall Herb	Stem	G	23	17	5	10	26.1	78.3	56.5
44	MHSG	Spring Man	Fall Herb	Stem	G	48	17	1	0	64.6	97.9	100.0
29	MHSR	Spring Man	Fall Herb	Stem	R	65	65	25	17	0.0	61.5	73.8
30	MHSR	Spring Man	Fall Herb	Stem	R	55	45	166	54	18.2	-201.8	1.8
32	MHSR	Spring Man	Fall Herb	Stem	R	31	15	0	2	51.6	100.0	93.5
31	NHSG	Spring No Cut	Fall Cut and Herb	Stem	G	48	70	27	16	-45.8	43.8	66.7
33	NHSG	Spring No Cut	Fall Cut and Herb	Stem	G	210	269	164	53	-28.1	21.9	74.8
37	NHSG	Spring No Cut	Fall Cut and Herb	Stem	G	65	47	21	31	27.7	67.7	52.3
8	NHSR	Spring No Cut	Fall Cut and Herb	Stem	R	62	4	3	0	93.5	95.2	100.0
24	NHSR	Spring No Cut	Fall Cut and Herb	Stem	R	61	5	0	0	91.8	100.0	100.0
45	NHSR	Spring No Cut	Fall Cut and Herb	Stem	R	22	1	4	1	95.5	81.8	95.5
3	NHrFG	Spring No Cut	Fall Cut Herb Resprout	Foliar	G	91	75	64	45	17.6	29.7	50.5
20	NHrFG	Spring No Cut	Fall Cut Herb Resprout	Foliar	G	32	35	44	50	-9.4	-37.5	-56.3

Site#	Treatment Code	Spring Treatment	Fall Treatment	Treatment Method	Herb.	Initial Stem Number 2000	Spring Stem # 2001	Spring Stem # 2002	Spring Stem # 2003	% reduction 2000>2001	% reduction 2000>2002	% reduction 2000>2003
27	NHrFG	Spring No Cut	Fall Cut Herb Resprout	Foliar	G	123	7	2	4	94.3	98.4	96.7
10	NHrFR	Spring No Cut	Fall Cut Herb Resprout	Foliar	R	34	24	37	16	29.4	-8.8	52.9
36	NHrFR	Spring No Cut	Fall Cut Herb Resprout	Foliar	R	104	36	12	16	65.4	88.5	84.6
42	NHrFR	Spring No Cut	Fall Cut Herb Resprout	Foliar	R	68	0	0	0	100.0	100.0	100.0
34	NHcFG	Spring No Cut	Fall True No Cut Herb	Foliar	G	98	28	1	0	71.4	99.0	100.0
39	NHcFG	Spring No Cut	Fall True No Cut Herb	Foliar	G	90	0	3	19	100.0	96.7	78.9
40	NHcFG	Spring No Cut	Fall True No Cut Herb	Foliar	G	220	18	5	14	91.8	97.7	93.6
1	NHcFR	Spring No Cut	Fall True No Cut Herb	Foliar	R	190	29	40	0	84.7	78.9	100.0
2	NHcFR	Spring No Cut	Fall True No Cut Herb	Foliar	R	112	46	24	0	58.9	78.6	100.0
28	NHcFR	Spring No Cut	Fall True No Cut Herb	Foliar	R	88	30	0	0	65.9	100.0	100.0
46	SFG	Summer Herb	No treatment	Foliar	G	25	0	0	0	100.0	100.0	100.0

Site#	Treatment Code	Spring Treatment	Fall Treatment	Treatment Method	Herb.	Initial Stem Number 2000	Spring Stem # 2001	Spring Stem # 2002	Spring Stem # 2003	% reduction 2000>2001	% reduction 2000>2002	% reduction 2000>2003
48	SFG	Summer Herb	No treatment	Foliar	G	31	1	0	5	96.8	100.0	83.9
49	SFG	Summer Herb	No treatment	Foliar	G	32	1	0	15	96.9	100.0	53.1
47	SSG	Summer Herb	No treatment	Stem	G	34	18	36	3	47.1	-5.9	91.2
50	SSG	Summer Herb	No treatment	Stem	G	31	16	34	6	48.4	-9.7	80.6
51	SSG	Summer Herb	No treatment	Stem	G	28	20	50	2	28.6	-78.6	92.9

Treatment Code Key: The first two letters reflect spring and fall treatments. N = no treatment, M = manual (hand cutting at ground level), H = Herbicide. The third letter(s) indicate herbicide treatment method. F = Foliar Spray, S = wicking the cut stem surface, A small "c" indicates the patch was cut down to 1.5 meters before fall spraying. A small "r" indicates the patch was cut and allowed to resprout for approximately 1 month prior to treatment. The fourth letter indicates the herbicide used, either R = Rodeo or G = Garlon 3a. Thus, MM refers to manually treated plots (monthly cutting), MHFR means a plot was manually cut in spring and foliar sprayed in fall with Rodeo, NHcFG means a plot was untreated in the spring, then sprayed with Garlon in the fall after being cut to 1.5 meters, HHSg = two stem treatments with Garlon.

Table 4

**Knotweed Experiment at  
the Sandy River**

**Results of Tukey's HSD tests: Means covered by the same red line  
are not different at the 0.1 level.**

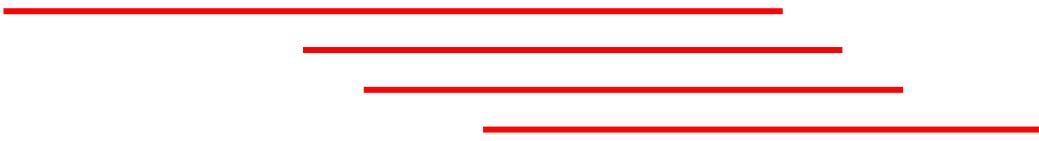
Percent Change --  
Untransformed

Trt	HH	SF	HH	MH	MH	HH	NN	HH	NH	NN	SS	NM	NM	MH	MH	NH	MM	
	FR	G	FG	FG	FR	SG	FG	SR	SR	FR	G	FG	FR	SG	SR	SG		
Mea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36.7	38.68
n	99.7	98.9	97.4	97.3	96.7	95.5	92.5	90.5	88.3	76.6	67.6	44.9	38.6	37.4	8.45	4	73	
	3	6	7	3	2	2	1	6	1	8	5		7	6				



Percent Change -- Rank  
transformed

Trt	HH	SF	HH	MH	HH	MH	NN	HH	NH	NM	NN	NM	SS	MH	MH	M	NHS	
	FR	G	FG	FG	SG	FR	FG	SR	SR	FR	FR	FG	G	SG	SR	M	G	
Mea	10	10.6	12	12.3	13.6	15.1	19.1	20.1	24.6	30.5	31.3	33	33	38.8	42.5	46.6	48.33	
n			7		3	7	7	7	7		7		3		3		7	33



**Japanese Knotweed Photomonitoring Series**  
**Plot # 1- NcHFR - page 1 of 5**



Photo 1, June 2000. 1 meter tall stems.



Photo 2, August 2000



Photo 3, September 2000. Date of foliar treatment, 190 stems.



Photo 4, October 2000: no regrowth after treatment

**Summary:** Treatment consisted of only a fall treatment of foliar spray of 5% Rodeo w/ 1% surfactant. Stems were cut to height of 1.5m on date of treatment. Note site conditions of sandy soil and no sun shade.

## Japanese Knotweed Photomonitoring Series

Plot # 1- NcHFR - page 2 of 5



Photo 5, April 2001. 31 stem sprouts, less than 0.25m tall.



Photo 6, May 2001. 29 stems, less than 0.25m tall. Multiple small leaves and stunted stems indicate heavy mutation occurring.



Photo 7, June 2001. 0 stems.



Photo 8, July 2001. 1 small, mutated stem

**Japanese Knotweed Photomonitoring Series**  
**Plot # 1- NcHFR - page 3 of 5**



Photo 9, August 2001. 3 small mutated stems.



Photo 10, September 2001. 2 small mutated stems, date of foliar treatment.



Photo 11, October 2001. 2 small mutated stems.

## Japanese Knotweed Photomonitoring Series

Plot # 1- NcHFR - page 4 of 5



Photo 12, April 2002. 35 very small mutated stem clusters growing from exposed rhizome mass.



Photo 13, May 2002. 40 small mutated stem clusters.



Photo 14, June 2002 Closeup. Note the many small mutated stems growing within each cluster. Stem count data for this plot consisted of counting each distinct cluster as a single stem.



Photo 15, September 2002. Date of treatment, 14 stem clusters.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 1- NcHFR - page 5 of 5**



Photo 16, June 31, 2003

photo x

photo x

photo x

**Japanese Knotweed Photomonitoring Series**  
**Plot # 2- NcHFR - page1 of 5**



Photo 1, June 2000



Photo 2, August 2000



Photo 3, September 2000: 112 stems, average height = 0.8m, date of treatment.

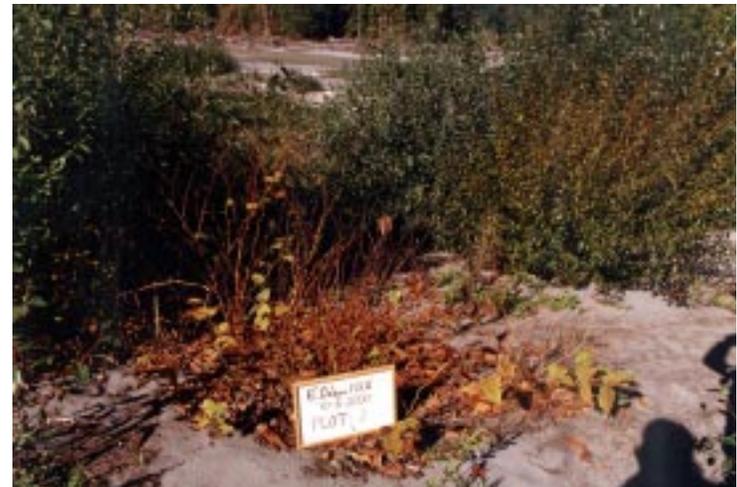


Photo 4, October 2000: no regrowth after treatment.

**Summary:** Treatment consisted of only a fall treatment of foliar spray of 5% Rodeo w/ 1% surfactant. Stems were cut to height of 1.5m on date of treatment.

## Japanese Knotweed Photomonitoring Series

Plot # 2- NcHFR - page 2 of 5



Photo 5, April 2001: 35 mutated stems.



Photo 6, May 2001: 41 mutated stems.



Photo 7, June 2001: 46 mutated stems, average height < .25m



Photo 8, July 2001: 30 stems

**Japanese Knotweed Photomonitoring Series**  
**Plot # 2- NcHFR - page 3 of 5**



Photo 9, August 2001: 26 mutated shoots.



Photo 10, September 2001: 26 mutated shoots, date of treatment.



Photo 11, October 2001: no regrowth after treatment.

**Japanese Knotweed Photomonitoring Series**  
**Plot #2- NcHFR - page 4 of 5**



Photo 12, April 2002: 25 mutated stem clusters. Many tiny stems in each clump. Stem count data consisted of counting each distinct cluster as a single stem.



Photo 13, May 2002: 25 mutated stem clusters.



Photo 14, September 2002: 20 mutated stem clusters (blue flagging designates some cluster locations), date of treatment.



Photo 15, June 2003:

# Japanese Knotweed Photomonitoring Series

Plot #2- NcHFR - page 5 of 5

Photo X

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 3- NcHrFG - page1 of 5**



Photo 1, June 2000:



Photo 2, August 2000: 91 shoots, just prior to being cut to ground.

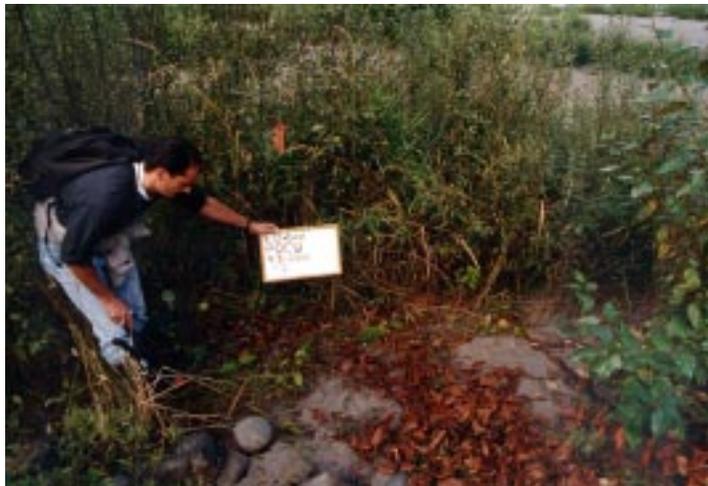


Photo 3, September 2000: 1 month after cutting.



Photo 4, October 2000: 30 resprout stems sprayed, average height = 0.3m.

**Summary:** Treatment consisted of cutting stems to ground in the fall and then foliar spraying resprouts with 5% Garlon and 1% surfactant one month later.

## Japanese Knotweed Photomonitoring Series

Plot # 3- NcHrFG - page 2 of 5



Photo 5, April 2001: 50 small stems.



Photo 6, May 2001



Photo 7, June 2001: 40 stems.

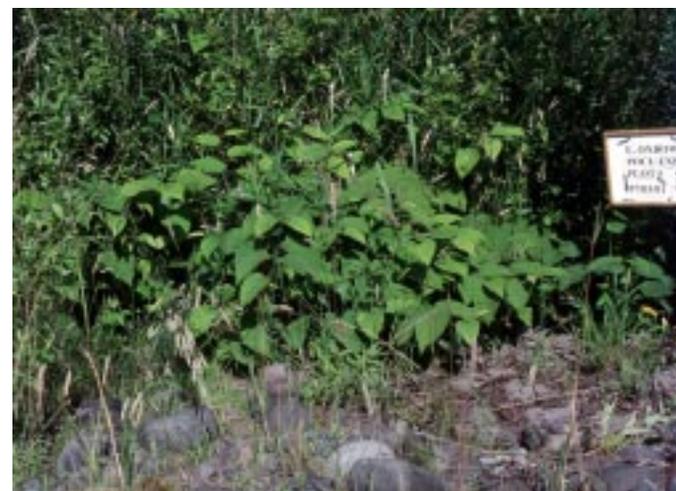


Photo 8, July 2001: 46 stems.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 3- NcHrFG - page 3 of 5**



Photo 9, August 2001: 48 stems, average height = 0.5 m.



Photo 10, September 2001: 25 stems cut to ground.



Photo 11, October 2001: 11 resprouted stems sprayed, only a few green leaves on the stems.

## Japanese Knotweed Photomonitoring Series

Plot # 3- NcHrFG - page 4 of 5



Photo 12, April 2002: 78 stems



Photo 13, May 2002: 64 stems



Photo 14, August 2002: 61 stems cut to ground, average height = 0.6m.



Photo 15, September 2002: date of treatment, only 3 resprouted stems sprayed (flagged in blue.)

# Japanese Knotweed Photomonitoring Series

Plot # 3- NcHrFG - page 5 of 5



Photo 16, June 2003:

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 4- HHSR page1 of 5**



Photo 1, June 2000. 1 month after 1st spring treatment. 30 stems were treated in mid-May.



Photo 2, August 2000



Photo 3, September 2000. Fall treatment - 8 stems treated.



Photo 4, October 2000

**Summary.** This site was treated by cutting stems to ground and applying 50% Rodeo to freshly cut stems in the spring and fall.

## Japanese Knotweed Photomonitoring Series

Plot # 4- HHSR- page 2 of 5



Photo 5, April 2001. Spring herbicide stem treatment. 4 stems cut and treated.



Photo 6, May 2001. 4 stems.



Photo 7, June 2001. 6 stems, average height = 0.5 m.



Photo 8, July 2001. 6 stems.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 4- HHSR- page 3 of 5**



Photo 9, August 2001. 8 stems.



Photo 10, September 2001. Fall treatment. 15 stems.



Photo 11, October 2001. 3 dying stems have yellow leaves.

## Japanese Knotweed Photomonitoring Series

Plot # 4- HHSR- Page 4 of 5



Photo 12, April 2002. 4 very small shoots breaking the soil surface.



Photo 13, May 2002. Spring treatment - 5 stems treated, average height = 0.2 m prior to cutting.



Photo 14, September 2002. Fall treatment - 8 small, mutated stems treated (location marked by blue flagging.)



Photo 15, June 2003.

**Japanese Knotweed Photomonitoring Series**

**Plot # 4- HHSR- Page 5 of 5**

Photo X

Photo X

Photo X

Photo X.

## Japanese Knotweed Photomonitoring Series

Plot # -05 MHFR - page1 of 5



Photo 1, June 2000. 1 month after spring cutting of 16, 1.5 meter tall stems.



Photo 2, August 2000



Photo 3, September 2000. Fall treatment- 20 stems, average height = 1 m.



Photo 4, October 2000. no living stems 1 month after treatment.

**Summary.** Treatment consisted of spring manual cut to ground and a fall foliar herbicide of 5% Rodeo and 1% surfactant.

## Japanese Knotweed Photomonitoring Series

Plot # 5 - MHFR - page 2 of 5



Photo 5, April 2001. Spring treatment. 1 stem (1 cm tall) cut to ground.



Photo 6, May 2001. 1 stem.



Photo 7, June 2001. 1 small stem regrowth.



Photo 8, July 2001. 1 stem, 0.25m tall.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 5 - MHFR - page 3 of 5**



Photo 9, August 2001. 1 living stem. Note orange flagged willow appears dead.



Photo 10, September 2001. Fall treatment. 1 stem with yellowing leaves treated.



photo 11, October 2001. no living stems.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 5 - MHFR page 4 of 5**



Photo 12, April 2002. 0 stems - no 2002 regrowth.



Photo 13, May 2002. no 2002 regrowth.



Photo 14, September 2002. no 2002 regrowth. Note encroachment of reed canary grass into area.



Photo 15, June 2003.

# Japanese Knotweed Photomonitoring Series

Plot # 5 - MHFR page 5 of 5

Photo X

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 6-MM- page1 of 5**



Photo 1, June 2000: One month after first cutting of 25, 1 meter tall stems.



Photo 2, August 2000: 26 stems.



Photo 3, September 2000: 29 stems.



Photo 4, October 2000: 31 small stems.

**Summary:** This site was manually cut every month from April to October. No herbicides were used.

## Japanese Knotweed Photomonitoring Series

Plot # 6- MM - page 2 of 5



Photo 5, April 2001: 18 stems.



Photo 6, May 2001: 27 stems.



Photo 7, June 2001: 37 stems.



Photo 8, July 2001: 20 stems.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 6- MM- page 3 of 5**



Photo 9, August 2001: 23 stems.



Photo 10, September 2001: 67 stems, average height = 0.25m.



Photo 11, October 2001: 13 living stems.

## Japanese Knotweed Photomonitoring Series

Plot # 6- MM- page 4 of 5



Photo 12, April 2002: 12 small stems.



Photo 13, May 2002: 16 stems, average height = 0.25m.



Photo 14, June 2002: 8 stems with yellowish leaves and appear nibbled by insect.



Photo 15, August 2002: 1 small stem.

## Japanese Knotweed Photomonitoring Series

Plot # 6- MM - page 5 of 5



Photo 16, September 2002: 3 small stems.



Photo 17, June 2003:

Photo X

Photo X.

## Japanese Knotweed Photomonitoring Series

Plot # 7 - HHFR - page1 of 5



Photo 1, June 2000: Spring foliar treatment of 69 stems at an average height = 1.2m.



Photo 2, August 2000



Photo 3, September 2000: No living stems.



Photo 4, October 2000: No living stems.

**Summary:** Treatment consisted of a spring and fall foliar herbicide application of 5% Rodeo and 1% surfactant. Note that the test location conditions include minimal shade in sand.

## Japanese Knotweed Photomonitoring Series

Plot # 7 - HHFR - page 2 of 5



Photo 5, April 2001: no 2001 regrowth.



Photo 6, May 2001



Photo 7, June 2001



Photo 8, July 2001

**Japanese Knotweed Photomonitoring Series**  
**Plot # 7 - HHFR - page 3 of 5**



Photo 9, August 2001



Photo 10, September 2001



photo 11, October 2001: no 2001 regrowth, plant appears dead.

## Japanese Knotweed Photomonitoring Series

Plot # 7 - HHFR - page 4 of 5



Photo 12, April 2002



Photo 13, May 2002



Photo 14, September 2002: no 2002 regrowth, plant appears dead.



Photo 15, June 2003:

# Japanese Knotweed Photomonitoring Series

Plot # 7 - HHFR - page 5 of 5

Photo X

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 8 - NHSR - page1 of 5**



Photo 1, June 2000



Photo 2, August 2000



Photo 3, September 2000. Date of treatment. 62 stems. 1 meter tall and flowering prior to treatment.



Photo 4, October 2000. 6 stems, less than 0.25m tall.

**Summary:** Treatment consisted of no spring treatment then cutting stems to the ground and then application of 50% Rodeo to cut stems in the fall.

## Japanese Knotweed Photomonitoring Series

Plot #8 - NHR - page 2 of 5



Photo 5, April 2001. 3 stems.



Photo 6, May 2001. 9 stems.



Photo 7, June 2001. 4 stems less than 0.25 meters tall.



Photo 8, July 2001. 5 stems less than 0.25 meters tall.

**Japanese Knotweed Photomonitoring Series**  
**Plot #8 - NHSR - page 3 of 5**



Photo 9, August 2001. 6 stems less than 0.25 meters tall. 1 stem is mutated.



Photo 10, September 2001. 6 stems less than 0.25 meters tall. Cut and stem treatment with 50% Rodeo.



Photo 11, October 2001. 3 new stems less than 0.25 meters tall.

## Japanese Knotweed Photomonitoring Series

Plot #8 - NHR - page 4 of 5



Photo 12, April 2002. 3 stems less than 0.25 meters tall.



Photo 13, May 2002. 3 stems less than 0.25 meters tall.



Photo 14, September 2002. No stems. No treatment.



Photo 15, June 2003:

**Japanese Knotweed Photomonitoring Series**  
**Plot #8 - NHR - page 5 of 5**

Photo X

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 9 - HHSR - page1 of 5**



Photo 1, June 2000. One month after treating 93 stems.



Photo 2, August 2000. 3 months after treatment.



Photo 3, September 2000. Date of treatment. 42 stems, 0.3 meters tall.



Photo 4, October 2000. One month after treatment, no stem regrowth.

**Summary:** This site was treated by cutting stems to ground and applying 50% Rodeo to the cut stems in the spring and fall.

## Japanese Knotweed Photomonitoring Series

Plot # 9 - HHSR - page 2 of 5



Photo 5, April 2001. No stems. Spring treatment did not occur.



Photo 6, May 2001. No stems.



Photo 7, June 2001. 5 stems less than 0.25 meters tall.



Photo 8, July 2001. 9 stems less than 0.25 meters tall.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 9 - HHSR- page 3 of 5**



Photo 9, August 2001. 12 stems less than 0.25 meters tall. Stems are mutated in small clumps.



Photo 10, September 2001. Date of treatment. 10 stems less than 0.25 meters tall.



Photo 11, October 2001. No resprouts.

## Japanese Knotweed Photomonitoring Series

Plot #9 - HHSR- page 4 of 5



Photo 12, April 2002. No stems.



Photo 13, June 2002. Date of treatment. 3 stems less than 0.25meters tall.



Photo 14, September 2002. Date of treatment. 2 stems less than 0.25 meters tall.



Photo 15, June 2003:

# Japanese Knotweed Photomonitoring Series

Plot #9 - HHSR- page 5 of 5

Photo X

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 10 - NcHrFR - page1 of 5**



Photo 1, June 2000.



Photo 2, August 2000. Date of cutting. 34 stems, 1 meter tall.



Photo 3, September 2000



Photo 4, October 2000. Date of foliar treatment of resprouts. 8 stems treated, 0.2 meters tall.

**Summary:** Treatment consisted of cutting stems to ground in the fall and then foliar spraying resprouts with 5% Rodeo and 1% surfactant one to two months later.

## Japanese Knotweed Photomonitoring Series

Plot #10 - NcHrFR - page 2 of 5



Photo 5, April 2001. 37 stems.



Photo 6, May 2001. 40 stems.



Photo 7, June 2001. 24 stems 1 to 2 meters tall.



Photo 8, July 2001. 24 stems, 0.25 to 1 meter tall.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 10 - NcHrFR- page 3 of 5**



Photo 9, August 2001. 25 stems 0.25 to 1 meter tall.



Photo 10, September 2001. Date of cutting. 16 stems 0.25 to 1 meter tall.



Photo 11, October 2001. Date of foliar application. 4 stems, less than 0.25 meters tall. Stems are mutated.

## Japanese Knotweed Photomonitoring Series

Plot #10 - NcHrFR- page 4 of 5



Photo 12, April 2002. 37 stems, 0.25 to 1 meter tall.



Photo 13, May 2002. 37 stems, 1 to 2 meters tall.



Photo 14, August 2002. Date of cutting. 17 stems, 1 to 2 meters.



Photo 15, August 2002. Close up. Note yellow leaves and flowers.

## Japanese Knotweed Photomonitoring Series

Plot # 10 - NcHrFR- page 5 of 5



Photo 16, September 2002. No resprouts. Herbicide treatment did not occur.



Photo 17, June 2003:

## Japanese Knotweed Photomonitoring Series

Plot # 11 - MHFR - page1 of 5



Photo 1, June 2000. One month after cutting 111 stems.



Photo 2, August 2000



Photo 3, September 2000. Date of fall treatment. 85 stems 0.8 meters tall.



Photo 4, October 2000

**Summary:** Treatment consisted of spring manual cut to ground and a fall foliar herbicide of 5% Rodeo and 1% surfactant.

## Japanese Knotweed Photomonitoring Series

Plot # 11 - MHFR - page 2 of 5



Photo 5, April 2001. Date of spring manual cut treatment. 1 stem (2 cm tall) treated.



Photo 6, May 2001. 4 stems.



Photo 7, June 2001. 3 stems less than 0.25 meters tall.



Photo 8, July 2001. 2 stems less than 0.25 meters tall.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 11 - MHFR - page 3 of 5**



Photo 9, August 2001. 1 stem less than 0.25 meters tall.



Photo 10, September 2001. Date of fall treatment. 5 stems less than 0.25 meters tall. 3 mutated clumps.



Photo 11, October 2001. No stems.

## Japanese Knotweed Photomonitoring Series

Plot # 11 - MHFR - page 4 of 5



Photo 12, April 2002. 0 stems.



Photo 13, May 2002. Date of spring treatment. 5 stems less than 0.25 meters tall.



Photo 14, September 2002. Date of fall treatment. 1 mutated clump with 10 stems.



Photo 15, June 2003:

# Japanese Knotweed Photomonitoring Series

Plot # 11 - MHFR - page 5 of 5

Photo X

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 12 - HHFR - page1 of 5**



Photo 1, June 2000. Date of initial foliar treatment of 81, 1 meter tall stems.



Photo 2, August 2000. Two months after spring foliar treatment. Stems were 0.5 meters tall and leaves are yellow-brown.



Photo 3, September 2000. No living stems.



Photo 4, October 2000. No living stems.

**Summary:** Treatment consisted of a spring and fall foliar herbicide application of 5% Rodeo and 1% surfactant. Note site was in sand and had no shade.

# Japanese Knotweed Photomonitoring Series

Plot # 12 - HHFR - page 2 of 5



Photo 5, April 2001. There were no resprouts all of 2001.



Photo 6, May 2001



Photo 7, June 2001



Photo 8, July 2001

**Japanese Knotweed Photomonitoring Series**  
**Plot # 12 - HHFR - page 3 of 5**



Photo 9, August 2001



Photo 10, October 2001

## Japanese Knotweed Photomonitoring Series

Plot # 12 - HHFR - page 4 of 5



Photo 12, April 2002. No resprouts in all of 2002.



Photo 13, June 2002



Photo 14, September 2002



Photo 15, June 2003

**Japanese Knotweed Photomonitoring Series**

**Plot # 12 - HHFR - page 5 of 5**

Photo X

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
Plot # 13 - MM - page1 of 5



Photo 1, June 2000. 286, 1 meter tall stems one month after the first cutting. This site had also been cut one or more times in 1999.



Photo 2, August 2000. 350 stems.



Photo 3, September 2000. 498 stems, 2 meters tall.



Photo 4, October 2000. 273 stems, 0.2 meters tall.

**Summary:** This site was manually cut every month from April to October. No herbicides were used.

## Japanese Knotweed Photomonitoring Series

Plot # 13 - MM - page 2 of 5



Photo 5, April 2001. 265 stems.



Photo 6, May 2001. 95 stems.



Photo 7, June 2001. 341 stems, 0.25 to 1 meter tall



Photo 8, July 2001. 344 stems, 0.25 to 1 meter tall.

**Japanese Knotweed Photomonitoring Series**  
**Plot #13 - MM - page 3 of 5**



Photo 9, August 2001. 355 stems, 0.25 to 1 meter tall.



Photo 10, September 2001. 373 stems. Less than 0.25 meters tall.  
Patch is spreading and all stems are returning.



Photo 11, October 2001. 92 shoots. Less than 0.25 meters tall.  
Scattered small stems.

## Japanese Knotweed Photomonitoring Series

Plot # 13 - MM - page 4 of 5



Photo 12, April 2002. 144 stems, less than 0.25 meters tall.



Photo 13, May 2002. 106 stems, less than 0.25 meters tall.



Photo 14, June 2002. 65 stems, 0.25 meters tall. Blackberry is encroaching on site.



Photo 15, August 2002. 45 stems, less than 0.25 meters tall. Small stems average of 4-6 leaves each.

## Japanese Knotweed Photomonitoring Series

Plot # 13 - MM - page 5 of 5



Photo 16, September 2002. 6 stems, less than 0.25 meters tall.



Photo 17, June 2003

**Japanese Knotweed Photomonitoring Series**  
**Plot # 14 - HHSG - page1 of 5**



Photo 1, June 2000. One month after spring treatment of 22, 1.5 meter tall stems.

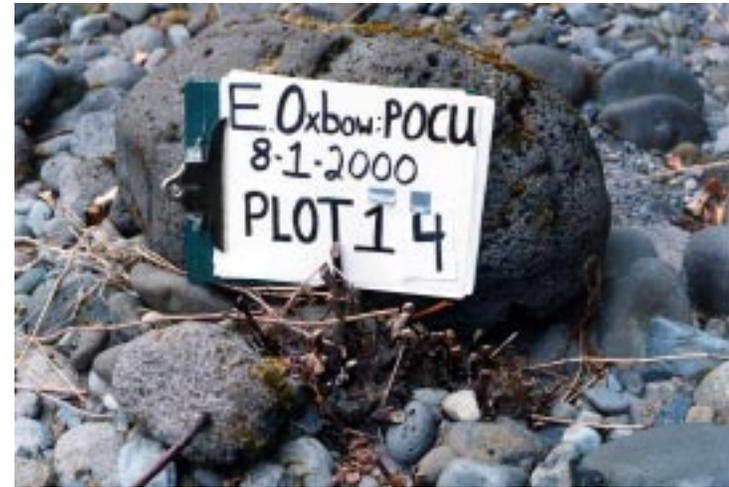


Photo 2, August 2000. No resprouts in 2000.



Photo 3, September 2000



Photo 4, October 2000

**Summary:** This site was treated by cutting stems to ground and applying a 50% solution of Garlon and water to the cut stems in the spring and fall.

## Japanese Knotweed Photomonitoring Series

Plot # 14 - HHSG - page 2 of 5



Photo 5, April 2001. No resprouts in 2001.



Photo 6, May 2001



Photo 7, June 2001



Photo 8, July 2001

**Japanese Knotweed Photomonitoring Series**  
**Plot # 14 - HHSG - page 3 of 5**



Photo 9, August 2001



Photo 10, September 2001



Photo 11, October 2001

## Japanese Knotweed Photomonitoring Series

Plot # 14 - HHSG - page 4 of 5



Photo 12, April 2002. No resprouts in 2002.



Photo 13, May 2002



Photo 14, September 2002



Photo 15, June 2003

# Japanese Knotweed Photomonitoring Series

Plot # 14 - HHSG - page 5 of 5

Photo X

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 15 - MHSB - page 1 of 5**



Photo 1, June 2000. One month after cutting 55 stems that were 1.8 meters tall.



Photo 2, August 2000



Photo 3, September 2000. Date of stem treatment. Stems are 0.5 meters tall.



Photo 4, October 2000

**Summary:** Treatment consisted of a spring manual cut to ground and fall stem herbicide application of 50% Garlon.

## Japanese Knotweed Photomonitoring Series

Plot # 15 - MHSB - page 2 of 5



Photo 5, April 2001. Date of spring cut treatment. 45 stems cut to ground.



Photo 6, May 2001. 22 stems.



Photo 7, June 2001. 27 stems, 0.25 to 1 meters tall.



Photo 8, July 2001. 26 stems.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 15 - MHSB - page 3 of 5**



Photo 9, August 2001. 27 stems, 0.25 to 1 meter tall.



Photo 10, September 2001. Date of stem treatment. 48 stems, 1 to 2 meters tall.



Photo 11, October 2001. 3 small stems 1 month after stem injection.

## Japanese Knotweed Photomonitoring Series

Plot # 15 - MHSB - page 4 of 5



Photo 12, April 2002. 18 stems, less than 0.25 meters tall. This may include some that were not part of the original patch.



Photo 13, May 2002. Date of spring cut. 32 stems, 0.25 to 1 meter tall.



Photo 14, September 2002. Date of stem injection. 32 stems, 0.25 to 1 meter tall.



Photo 15, June 2003

**Japanese Knotweed Photomonitoring Series**

**Plot # 15 - MHSG - page 5 of 5**

Photo X

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 16- MHFG - page1 of 5**



Photo 1, June 2000. One month after spring cutting. 50, 1.5 meter tall stems were treated.



Photo 2, August 2000



Photo 3, September 2000. Date of fall treatment. Stems are 0.5 meters tall.



Photo 4, October 2000

**Summary:** Treatment consisted of spring manual cut to ground and a fall foliar herbicide treatment of 5% Garlon and 1% surfactant.

## Japanese Knotweed Photomonitoring Series

Plot # 16- MHFG - page 2 of 5



Photo 5, April 2001. Spring manual cut treatment. 4 stems, less than 0.25m tall, cut to ground.



Photo 6, May 2001. No stems were found for the rest of 2001.



Photo 7, June 2001



Photo 8, July 2001

**Japanese Knotweed Photomonitoring Series**  
**Plot # 16- MHFG - page 3 of 5**



Photo 9, August 2001



Photo 10, September 2001



Photo 11, October 2001

## Japanese Knotweed Photomonitoring Series

Plot # 16- MHFG - page 4 of 5



Photo 12, April 2002. No stems



Photo 13, May 2002. No stems, spring treatment did not occur.



Photo 14, September 2002. Date of foliar treatment. 2 stems 0.25 to 1 meter tall.



Photo 15, June 2003

**Japanese Knotweed Photomonitoring Series**  
**Plot # 16- MHFG - page 5 of 5**

Photo X

Photo X

Photo X

Photo X

## Japanese Knotweed Photomonitoring Series

Plot # 17 - MM - page1 of 5



Photo 1, June 2000. 245 stems 0.8 meters tall.



Photo 2, August 2000. 320 stems



Photo 3, September 2000. 300 stems.



Photo 4, October 2000. 197 stems 0.3 meters tall.

**Summary:** This site was treated manually cutting stems to ground every month from April to October. No herbicides were used.

## Japanese Knotweed Photomonitoring Series

Plot # 17 - MM - page 2 of 5



Photo 5, April 2001. 140 stems.



Photo 6, May 2001. 115 stems.



Photo 7, June 2001. 227 stems, 0.25 to 1 meter tall.



Photo 8, July 2001. 225 stems, 0.25 to 1 meter tall.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 17 - MM - page 3 of 5**



Photo 9, August 2001. 220 stems, 0.25 to 1 meter tall.



Photo 10, September 2001. 218 stems, 0.25 to 1 meter tall.



Photo 11, October 2001. 75 small scattered stems less than 0.25 meters tall.

## Japanese Knotweed Photomonitoring Series

Plot # 17 - MM - page 4 of 5



Photo 12, April 2002. 160 stems less than 0.25 meter tall. Reed Canary Grass is encompassing site.



Photo 13, May 2002. 140 stems, 0.25 to 1 meter tall.



Photo 14, June 2002. 110 stems less than 0.25 meters tall. Site is overgrown by Reed Canary Grass, Blackberry and Morning Glory.



Photo 15, August 2002. 135 stems, 0.25 to 1 meter tall.

## Japanese Knotweed Photomonitoring Series

Plot # 17 - MM - page 5 of 5



Photo 16, September 2002. 21 stems less than 0.25 meters tall.



Photo 17, June 2003:

## Japanese Knotweed Photomonitoring Series

Plot # 18 - HHSG - page 1 of 5



Photo 1, June 2000. One month after spring treatment. 33 stems that were 1.5 meters tall were treated.



Photo 2, August 2000



Photo 3, September 2000. No resprouts. Fall treatment did not occur.



Photo 4, October 2000

**Summary:** This site was treated by cutting stems to ground and applying a 50% solution of Garlon and water to the cut stems in the spring and fall. Note site had high sun exposure and sandy soil conditions.

## Japanese Knotweed Photomonitoring Series

Plot # 18 - HHSG - page 2 of 5



Photo 5, April 2001. No stems in 2001.



Photo 6, May 2001



Photo 7, June 2001



Photo 8, July 2001

**Japanese Knotweed Photomonitoring Series**  
**Plot # 18 - HHSG - page 3 of 5**



Photo 9, August 2001



Photo 10, September 2001



photo 11, October 2001

## Japanese Knotweed Photomonitoring Series

Plot # 18 - HHSG - page 4 of 5



Photo 12, April 2002. No stems in 2002.



Photo 13, May 2002



Photo 14, September 2002



Photo 15, June 2003

**Japanese Knotweed Photomonitoring Series**

**Plot # 18 - HHSG - page 5 of 5**

Photo X

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 19- HHSG - page1 of 5**



Photo 1, June 2000. One month after spring treatment of 67 stems at 1.8 meters.



Photo 2, August 2000



Photo 3, September 2000



Photo 4, October 2000

**Summary:** This site was treated by cutting stems to ground and applying a 50% solution of Garlon and water to the cut stems in the spring and fall.

## Japanese Knotweed Photomonitoring Series

Plot # 19 - HHSG - page 2 of 5



Photo 5, April 2001. Date of spring stem herbicide treatment. 8 stems cut and treated. Height prior to treat = 1 to 10 cm.



Photo 6, May 2001. 9 stems.



Photo 7, June 2001. Date of spring treatment. 22 stems, 1 to 2 meters tall.



Photo 8, July 2001. 25 stems, 0.25 to 1 meter tall.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 19 - HHSG - page 3 of 5**



Photo 9, August 2001. 27 stems, 0.25 to 1 meter tall.



Photo 10, September 2001. Date of fall treatment. 32 stems, 0.25 to 1 meter tall.



Photo 11, October 2001. 4 small scatted stems.

## Japanese Knotweed Photomonitoring Series

Plot # 19 - HHSG - page 4 of 5



Photo 12, April 2002. 18 stems less than 0.25 meters tall.



Photo 13, May 2002. Spring treatment. 34 stems, 0.25 to 1 meter tall.



Photo 14, September 2002. Fall treatment. 8 stems, 0.25 to 1 meter tall.



Photo 15, June 2003

# Japanese Knotweed Photomonitoring Series

Plot # 19 - HHSG - page 5 of 5

Photo X

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 20 - NcHrFG - page1 of 5**



Photo 1, June 2000.



Photo 2, August 2000. Date of cutting. 32 stems 1 meter tall. 1 stem is flowering.



Photo 3, September 2000



Photo 4, October 2000. Date of herbicide application. 15 stems 0.1 meter tall.

**Summary:** Treatment consisted of cutting stems to ground in the fall and then foliar spraying resprouts with 5% Garlon and 1% surfactant one month later.

## Japanese Knotweed Photomonitoring Series

Plot # 20 - NcHrFG - page 2 of 5



Photo 5, April 2001. 26 stems.



Photo 6, May 2001. 26 stems.



Photo 7, June 2001. 35 stems. 0.25 to 1 meter tall.



Photo 8, July 2001. 35 stems. 0.25 to 1 meter tall.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 20 - NcHrFG - page 3 of 5**



Photo 9, August 2001. 37 stems, 0.25 to 1 meter tall.



Photo 10, September 2001. Date of cutting. 31 stems, 1 to 2 meters tall.



Photo 11, October 2001. Date of fall foliar regrowth treatment. 35 stems, 0.25 to 1 meter tall. Light rain began after treatment.

## Japanese Knotweed Photomonitoring Series

Plot # 20 - NcHrFG - page 4 of 5



Photo 12, April 2002. 24 stems, 0.25 to 1 meter tall.



Photo 13, May 2002. 44 stems, 0.25 to 1 meter tall.



Photo 14, August 2002. Date of cutting. 45 stems, 0.25 to 1 meter tall. Reed Canary Grass has crept into site.



Photo 15, September 2002. No regrowth to treat. Herbicide application did not occur.

## Japanese Knotweed Photomonitoring Series

Plot # 20 - NcHrFG - page 5 of 5



Photo 16, June 2003

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 21 - HHFG - page1 of 5**



Photo 1, June 2000. One month after spring treatment of 79, 1.5 meter tall stems.



Photo 2, August 2000



Photo 3, September 2000. Date of fall treatment. 10 scattered stems, 0.2 meters tall.



Photo 4, October 2000

**Summary:** Treatment consisted of a spring and fall foliar herbicide application of 5% Garlon and 1% surfactant.

## Japanese Knotweed Photomonitoring Series

Plot # 21 - HHFG - page 2 of 5



Photo 5, April 2001. Date of spring foliar treatment. 6 stems treated.



Photo 6, May 2001. No stems.



Photo 7, June 2001. 1 stem less than 0.25 meters.



Photo 8, July 2001. 1 stem less than 0.25 meters.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 21 - HHFG - page 3 of 5**



Photo 9, August 2001. 1 stem less than 0.25 meters.



Photo 10, September 2001. Fall treatment. 1 stem less than 0.25 meters tall.



Photo 11, October 2001. No stems.

## Japanese Knotweed Photomonitoring Series

Plot # 21 - HHFG - page 4 of 5



Photo 12, April 2002. No regrowth or treatment in 2002.



Photo 13, May 2002



Photo 14, September 2002



Photo 15, June 2003

# Japanese Knotweed Photomonitoring Series

Plot # 21 - HHFG - page 5 of 5

Photo X

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 22-MHFG - page1 of 5**



Photo 1, June 2000. One month after spring treatment. 51 stems, 1.5 meters tall were cut.



Photo 2, August 2000



Photo 3, September 2000. Date of fall treatment. Stems are beginning to flower at 0.8 meters tall.



Photo 4, October 2000

**Summary:** Treatment consisted of spring manual cut to ground and a fall foliar herbicide treatment of 5% Garlon and 1% surfactant.

## Japanese Knotweed Photomonitoring Series

Plot # 22-MHFG - page 2 of 5



Photo 5, April 2001. No stems. Spring treatment did not occur.



Photo 6, May 2001. No stems.



Photo 7, June 2001. No stems.



Photo 8, July 2001. 2 stems less than 0.25 meters tall.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 22- MHFG - page 3 of 5**



Photo 9, August 2001. 3 stems, 0.25 to 1 meter tall.



Photo 10, September 2001. Fall treatment. 5 stems, 0.25 to 1 meter tall.



Photo 11, October 2001. 2 stems, 0.25 to 1 meter tall.

## Japanese Knotweed Photomonitoring Series

Plot # 22- MHFG - page 4 of 5



Photo 12, April 2002. No regrowth or treatment in 2002.



Photo 13, May 2002



Photo 14, September 2002



Photo 15, June 2003

**Japanese Knotweed Photomonitoring Series**

**Plot # 22- MHFG - page 5 of 5**

Photo X

Photo X

Photo X

Photo X

## Japanese Knotweed Photomonitoring Series

Plot # 23 - HHSR - page1 of 5



Photo 1, June 2000. One month after spring treatment of 60 stems at 1.5 meters. Stems are now 0.3 meters.



Photo 2, August 2000



Photo 3, September 2000. Fall treatment. 45 stems at 0.3 meters.



Photo 4, October 2000

**Summary:** This site was treated by cutting stems to ground and applying 50% Rodeo to the cut stems in the spring and fall.

## Japanese Knotweed Photomonitoring Series

Plot # 23 - HHSR- page 2 of 5



Photo 4, April 2001. Date of spring herbicide stem treatment. 9 stems cut and treated.



Photo 5, May 2001. 1 stem 0.1m tall.



Photo 6, June 2001. No stems.



Photo 7, July 2001. No stems.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 23 - HHSR- page 3 of 5**



Photo 9, August 2001. No stems.



Photo 10, September 2001. No stems. Fall treatment did not occur.



Photo 11, October 2001. 4 mutated small stems. 1 stem not mutated.

## Japanese Knotweed Photomonitoring Series

Plot # 23 - HHSR - page 4 of 5



Photo 12, April 2002. 4 stems less than 0.25 meters tall.



Photo 13, May 2002. Spring treatment. 4 stems, 0.25 to 1 meter tall.



Photo 14, September 2002. Fall treatment. 5 mutated clumps with 20 stems total.



Photo 15, June 2003

# Japanese Knotweed Photomonitoring Series

Plot # 23 - HHSR - page 5 of 5

Photo X

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 24 - NHR - page1 of 5**



Photo 1, June 2000



Photo 2, August 2000



Photo 3, September 2000. Date of treatment. 61 stems, 2.3 meters tall prior to cutting and herbicide treatment.



Photo 4, October 2000

**Summary:** Treatment consisted of cutting stems to the ground and then application of 50% Rodeo to cut stems in the fall only.

## Japanese Knotweed Photomonitoring Series

Plot # 24 - NHR - page 2 of 5



Photo 5, April 2001. 5 stems.



Photo 6, May 2001. 7 stems.



Photo 7, June 2001. 3 stems, 0.25 to 1 meter tall.



Photo 8, July 2001. 10 stems, less than 0.25 meters tall.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 24 - NHSR - page 3 of 5**



Photo 9, August 2001. 20 stems, less than 0.25 meters tall. 15 stems are mutated.



Photo 10, September 2001. Date of treatment. 18 stems, less than 0.25 meters. Many are mutated.



Photo 11, October 2001. No stems.

## Japanese Knotweed Photomonitoring Series

Plot # 24 - NHR - page 4 of 5



Photo 12, April 2002. No stems.



Photo 13, May 2002. No stems.



Photo 14, September 2002. Date of treatment. 30 mutated clumps, 60 stems, less than 0.25 meters tall.



Photo 15, June 2003

# Japanese Knotweed Photomonitoring Series

Plot # 24 - NHR - page 5 of 5

Photo X

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 25 - HHFG - page1 of 5**



Photo 1, June 2000. Date of spring treatment. 53 stems at 1.2 meters were recorded and accidentally cut in May.



Photo 2, August 2000



Photo 3, September 2000. Fall treatment. Stems are 0.2 meters tall.



Photo 4, October 2000

**Summary:** Treatment consisted of a spring and fall foliar herbicide application of 5% Garlon and 1% surfactant.

## Japanese Knotweed Photomonitoring Series

Plot # 25 - HHFG - page 2 of 5



Photo 5, April 2001. No stems or treatment in 2001.



Photo 6, May 2001



Photo 7, June 2001



Photo 8, July 2001

**Japanese Knotweed Photomonitoring Series**  
**Plot # 25 - HHFG - page 3 of 5**



Photo 9, August 2001.



Photo 10, September 2001



Photo 11, October 2001

## Japanese Knotweed Photomonitoring Series

Plot # 25 - HHFG - page 4 of 5



Photo 12, April 2002. No regrowth or treatment in 2002.



Photo 13, May 2002



Photo 14, September 2002



Photo 15, June 2003

# Japanese Knotweed Photomonitoring Series

Plot # 25 - HHFG - page 5 of 5

Photo X

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 26 - HHFR - page1 of 5**



Photo 1, June 2000. One month after spring treatment. 122, 1.5 meter tall stems were treated. Stems are now 0.3 meters.



Photo 2, August 2000



Photo 3, September 2000. Fall treatment. 1 stem at 0.1 meter tall.



Photo 4, October 2000

**Summary:** Treatment consisted of a spring and fall foliar herbicide application of 5% Rodeo and 1% surfactant.

## Japanese Knotweed Photomonitoring Series

Plot # 26 - HHFR- page 2 of 5



Photo 5, April 2001. Date of spring foliar herbicide treatment.  
1 stem treated.



Photo 6, May 2001. 1 stem.



Photo 7, June 2001. 1 stem at 0.5 meter tall.



Photo 8, July 2001. 1 stem less than 0.25 meters.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 26 - HHFR- page 3 of 5**



Photo 9, August 2001. 2 stems, less than 0.25 meters. Stems appear to be nibbled on.



Photo 10, September 2001. Fall treatment. 1 stem, less than 0.25 meters.



Photo 11, October 2001. No stems.

## Japanese Knotweed Photomonitoring Series

Plot # 26 - HHFR- page 4 of 5



Photo 12, April 2002. 5 stems, less than 0.25 meters tall.



Photo 13, May 2002. Spring treatment. 6 stems, less than 0.25 meters tall.



Photo 14, September 2002. No stems. No fall treatment.



Photo 15, June 2003

**Japanese Knotweed Photomonitoring Series**

**Plot # 26 - HHFR- page 5 of 5**

Photo X

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 27 - NcHrFG - page1 of 5**



Photo 1, June 2000



Photo 2, August 2000. Date of cutting. 123 stems, 1 meter tall.



Photo 3, September 2000. Date of foliar application. Stems are 0.3 meters tall.



Photo 4, October 2000

**Summary:** Treatment consisted of no spring treatment, cutting stems to ground in the fall and then resprouts are foliar sprayed with 5% Garlon and 1% surfactant one month later.

## Japanese Knotweed Photomonitoring Series

Plot # 27 - NcHrFG - page 2 of 5



Photo 5, April 2001. No stems.



Photo 6, May 2001. 2 stems.



Photo 7, June 2001. 7 stems, 0.25 to 1 meter tall.



Photo 8, July 2001. Stems sprayed with 5% Garlon solution by accident.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 27 - NcHrFG - page 3 of 5**



Photo 9, August 2001. 5 stems 0.25 to 1 meter tall.



Photo 10, September 2001. Date of cutting. 4 stems, less than 0.25 meters tall.



Photo 11, October 2001. No stems or treatment.

## Japanese Knotweed Photomonitoring Series

Plot # 27 - NcHrFG - page 4 of 5



Photo 12, April 2002. 1 stem less than 0.25 meters tall.



Photo 13, May 2002. 2 stems in Reed Canary Grass.



Photo 14, August 2002. Date of cutting. 6 stems. Blue flagging marks stem locations.



Photo 15, September 2002. Date of herbicide application. 2 stems.

## Japanese Knotweed Photomonitoring Series

Plot # 27 - NcHrFG - page 5 of 5



Photo 16, June 2003:

Photo 17

Photo 18

Photo 19

**Japanese Knotweed Photomonitoring Series**  
**Plot # 28 - NcHFR - page1 of 5**



Photo 1, June 2000



Photo 2, August 2000



Photo 3, September 2000. Date of fall foliar treatment. 88 stems.



Photo 4, October 2000

**Summary:** Treatment consisted of a single fall treatment of foliar spray of 5% Rodeo w/ 1% surfactant. Stems were cut to height of 1.5m on date of treatment.

## Japanese Knotweed Photomonitoring Series

Plot # 28 - NcHFR- page 2 of 5



Photo 5, April 2001. 15 stems.



Photo 6, May 2001. 9 stems.



Photo 7, June 2001. 51 stems, less than 0.25m tall. Stems appear mutated.



Photo 8, July 2001. 28 stems, less than 0.25m tall.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 28 - NcHFR- page 3 of 5**



Photo 9, August 2001. Date of cutting. 35 stems, less than 0.25m tall. All stems are mutated.



Photo 10, September 2001. Date of foliar herbicide application. 46 mutated stems, 0.25m - 1m tall, treated.

## Japanese Knotweed Photomonitoring Series

Plot # 28 - NcHFR- page 4 of 5



Photo 12, April 2002. No regrowth or treatments in 2002.



Photo 13, May 2002



Photo 14, September 2002



Photo 15, June 2003

# Japanese Knotweed Photomonitoring Series

Plot # 28 - NcHFR- page 5 of 5

Photo X

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 29 - MHSR - page1 of 5**



Photo 1, June 2000. One month after spring manual cut of 45,1-2m tall stems.



Photo 2, August 2000

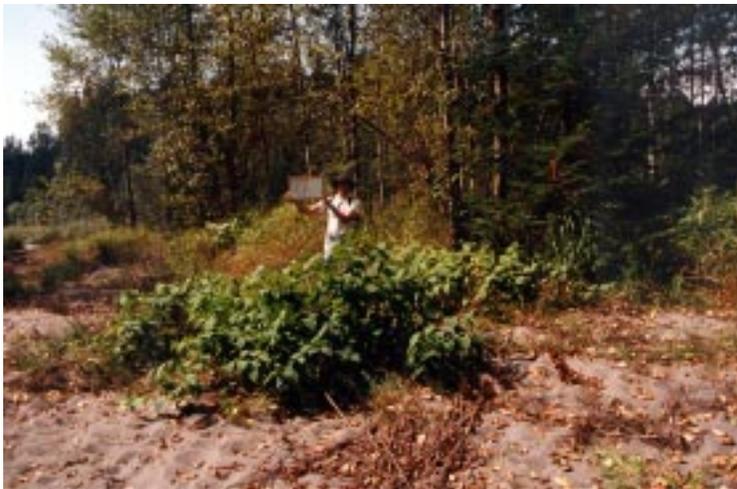


Photo 3, September 2000. Fall stem herbicide treatment. 73 stems were treated.



Photo 4, October 2000

**Summary:** Treatment consisted of a spring manual cut to ground and fall stem herbicide application of 50% Rodeo.

## Japanese Knotweed Photomonitoring Series

Plot # 29 - MHSR - page 2 of 5



Photo 5, April 2001. Spring manual cut treatment. 65 stems cut.



Photo 6, May 2001. 23 stems, 0.1m tall.



Photo 7, June 2001. 12 stems, 0.25 to 1m tall.



Photo 8, July 2001. 18 stems, 0.25 to 1m tall.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 29 - MHSR - page 3 of 5**



Photo 9, August 2001. 25 total stems, 0.25m to 1m tall. More than half of stems are mutated.



Photo 10, September 2001. Fall stem herbicide treatment date. 36 stems cut and then treated.

## Japanese Knotweed Photomonitoring Series

Plot # 29 - MHSR - page 4 of 5



Photo 11, April 2002. 19 stems, less than 0.25m tall.



Photo 12, May 2002. Spring manual cut treatment. 25 stems cut to ground.



Photo 13, September 2002. Fall stem herbicide treatment date. 47 stems cut and then treated. Most stems are mutated.



Photo 14, June 2003

# Japanese Knotweed Photomonitoring Series

Plot # 29 - MHSR - page 5 of 5

Photo X

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 30 - MHSR- page1 of 5**



Photo 1, June 2000. One month after spring manual cut of 55, 1-2m tall stems.



Photo 2, August 2000



Photo 3, September 2000. Fall stem herbicide treatment. 93 stems were cut to ground and then treated.



Photo 4, October 2000

**Summary:** Treatment consisted of a spring manual cut to ground and fall cut stem herbicide application of 50% Rodeo.

## Japanese Knotweed Photomonitoring Series

Plot # 30 - MHSR - page 2 of 5



Photo 5, April 2001. Spring manual cut treatment. 45 stems, less than 0.25m, cut to ground.



Photo 6, May 2001. 32 stems, 0.25 to 0.5m tall.



Photo 7, June 2001. 37 stems, 0.25 to 1m tall.



Photo 8, July 2001. 39 stems, 1m to 2m tall.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 30 - MHSR- page 3 of 5**



Photo 9, August 2001. 40 stems, 1 to 2m tall.



Photo 10, September 2001. Fall stem herbicide treatment date. 50 stems cut and then treated.

## Japanese Knotweed Photomonitoring Series

Plot # 30 - MHSR- page 4 of 5



Photo 12, April 2002. 132 stems, less than 0.25m tall.



Photo 13, May 2002. Spring manual cut treatment. 166 stems cut to ground.



Photo 14, September 2002. Fall stem herbicide treatment date. 80 stems cut and then treated. Stems were 0.25 to 1m in height and appeared healthy.



Photo 15, June 2003

**Japanese Knotweed Photomonitoring Series**

**Plot # 30 - MHSR- page 5 of 5**

Photo X

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 31 - NHSG - page 1 of 5**



Photo 1, June 2000



Photo 2, August 2000

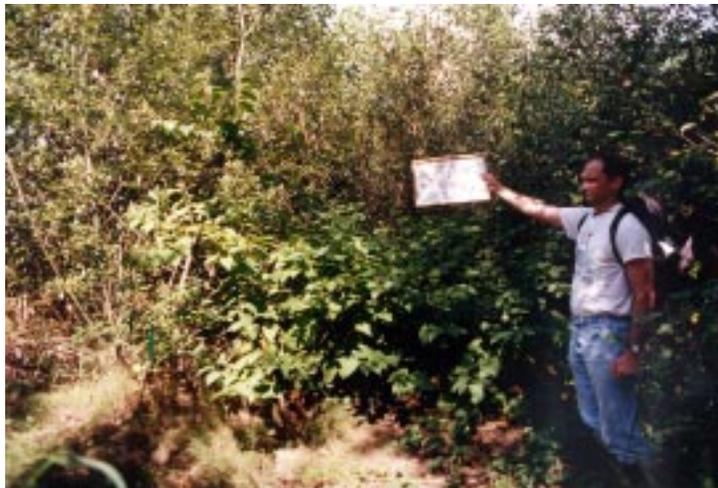


Photo 3, September 2000. Fall stem herbicide application. Stems were 1 to 2m tall before cutting. 48 stems treated.



Photo 4, October 2000

**Summary:** Treatment consisted of cutting stems to the ground followed by application of 50% Garlon to cut stems in the fall.

## Japanese Knotweed Photomonitoring Series

Plot # 31 - NHSG - page 2 of 5



Photo 5, April 2001. 37 stems, less than 0.25m tall.



Photo 6, May 2001. 72 stems, 0.25m to 1m tall.



Photo 7, June 2001. 70 stems, 1 to 2m tall.



Photo 8, July 2001.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 31 - NHSG - page 3 of 5**



Photo 9, August 2001. 65 stems, most greater than 2m tall.



Photo 10, September 2001. Fall stem herbicide application date. 96 stems cut and treated.



photo 11, October 2001. 3 stems, less than 0.25m tall.

## Japanese Knotweed Photomonitoring Series

Plot # 31 - NHSG - page 4 of 5



Photo 12, April 2002. 28 stems scattered in site, less than 0.25m.



Photo 13, May 2002. 27 stems, 0.25m to 1m tall.



Photo 14, September 2002. Fall stem herbicide application date.  
53 stems cut and treated. Height prior to treatment was .25 to 1m.



Photo 15, June 2003

# Japanese Knotweed Photomonitoring Series

Plot # 31 - NHSG - page 5 of 5

Photo X

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 32 - MHSR - page 1 of 5**



Photo 1, June 2000. One month after spring manual cut of 3, 1-2 m tall stems.



Photo 2, August 2000



Photo 3, September 2000 Fall stem herbicide treatment. 17 stems were cut to ground and treated.



Photo 4, October 2000

**Summary:** Treatment consisted of a spring manual cut to ground and fall stem herbicide application of 50% Rodeo.

## Japanese Knotweed Photomonitoring Series

Plot # 32 - MHSR - page 2 of 5



Photo 5, April 2001. Spring manual cut treatment. 15 stems cut to ground.



Photo 6, May 2001 1 stem 0.5m tall.



Photo 7, June 2001. 17 stems, less than 0.25m tall.



Photo 8, July 2001. 17 stems, less than 0.25m tall. Many stems are mutated.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 32 - MHSR - page 3 of 5**



Photo 9, August 2001. 18 stems, less than 0.25m tall.



Photo 10, September 2001 Fall stem herbicide treatment date. 25 stems cut and then treated.



photo 11, October 2001. no regrowth 1 month after treatment.

## Japanese Knotweed Photomonitoring Series

Plot # 32 - MHSR - page 4 of 5



Photo 12, April 2002. Spring manual cut treatment. 7 stems cut to ground.



Photo 13, May 2002. 0 stems.



Photo 14, September 2002. Fall stem herbicide treatment date. Stems appear stunted (<0.25m tall) and mutated. 40 stems cut and then treated. Blue flagging marks stem locations.



Photo 15, June 2003:

# Japanese Knotweed Photomonitoring Series

Plot # 32 - MHSR - page 5 of 5

Photo X

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 33 - NHSG - page 1 of 5**



Photo 1, June 2000



Photo 2, August 2000. Average stem height exceeds 2m.

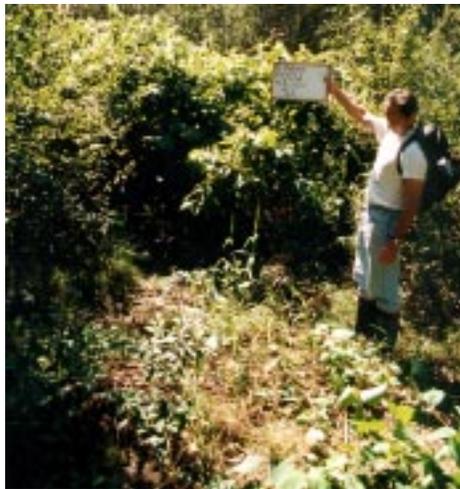


Photo 3, September 2000. Fall stem herbicide treatment. 210 stems cut and then treated with Garlon.



Photo 4, October 2000. Site boundary includes 0.5m outside the 2 logs.

**Summary:** Treatment consisted of cutting stems to the ground and then application of 50% Garlon to cut stems in the fall. No spring treatment.

## Japanese Knotweed Photomonitoring Series

Plot # 33 - NHSG - page 2 of 5



Photo 5, April 2001. 278 stems.



Photo 6, May 2001. 288 stems. Note peculiar growth pattern



Photo 7, June 2001



Photo 8, July 2001. 310 stems, height exceeds 2m.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 33 - NHSG - page 3 of 5**



Photo 9, August 2001. Many knotweed stems flowering in plot. Some stems exceed 2.5m in height.



Photo 10, September 2001. Fall stem herbicide application. 351 stems cut and then treated with Garlon.



photo 11, October 2001. 20 stems, 0.25m to 1m tall. Stem location marked by blue flagging. Some stems appear to have survived treatment.

## Japanese Knotweed Photomonitoring Series

Plot # 33 - NHSG - page 4 of 5



Photo 12, April 2002. 208 stems, 0.25m to 1m tall.



Photo 13, May 2002. 164 stems, 1 to 2m tall.



Photo 14, September 2002. Fall stem herbicide application. 133 stems cut and then treated.



Photo 15, June 2003:

# Japanese Knotweed Photomonitoring Series

Plot # 33 - NHSG - page 5 of 5

Photo X

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 34 - NcHFG - page 1 of 5**



Photo 1, June 2000. Note test plot is encompassed by the four alders (leftmost has orange flag.)



Photo 2, August 2000. Some stems beginning to flower.



Photo 3, September 2000. Date of fall treatment. Some stems exceeded 2m prior to cutting to 1.5m. 98 stems treated.



Photo 4, October 2000

**Summary:** Treatment consisted of only a fall treatment of foliar spray of 5% Garlon w/ 1% surfactant. Stems were cut to height of 1.5m on date of treatment.

## Japanese Knotweed Photomonitoring Series

Plot # 34 - NcHFG - page 2 of 5



Photo 5, April 2001. No stems present.



Photo 6, May 2001. 18 stems, 0.2m average height.



Photo 7, June 2001. 28 stems, 0.25 to 1m tall.



Photo 8, July 2001. 33 stems, 1 to 2m tall.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 34 - NcHFG - page 3 of 5**



Photo 9, August 2001. 37 stems, 1 to 2m tall. Some of the stems (left of sign) are growing parallel to ground.



Photo 10, September 2001. Date of fall treatment. Some stems exceeded 2m prior to cutting to 1.5m height. 98 stems treated.



photo 11, October 2001. 6 surviving stems after fall treatment. Some leaves on stems are yellowing.

## Japanese Knotweed Photomonitoring Series

Plot # 34 - NcHFG - page 4 of 5



Photo 12, April 2002. No shoots present.



Photo 13, May 2002. 1 shoot, 0.1m tall.



Photo 14, September 2002. Date of fall treatment. 3 stems treated (blue flagging marks location.) Stems were 0.25 to 1m tall and showed signs of animal nibbling on the tops.



Photo 15, June 2003:

# Japanese Knotweed Photomonitoring Series

Plot # 34 - NCHFG - page 5 of 5

Photo X

Photo X

Photo X

Photo X

## Japanese Knotweed Photomonitoring Series

Plot # 35 - MHFG - page 1 of 5



Photo 1, June 2000. One month after spring cutting treatment. 31 stems that were 1.5 meters tall were treated.



Photo 2, August 2000. Note presence of reed canary grass in test plot.



Photo 3, September 2000. Date of fall treatment. Stems are 0.5 meters tall.



Photo 4, October 2000

**Summary:** Treatment consisted of spring manual cut to ground and a fall foliar herbicide application of 5% Garlon and 1% surfactant. Test site conditions include sandy soil and minimal shade.

## Japanese Knotweed Photomonitoring Series

Plot # 35 - MHFG - page 2 of 5



Photo 5, April 2001. No regrowth in 2001.



Photo 6, May 2001



Photo 7, June 2001. Note reed canary grass is flourishing at site.



Photo 8, July 2001

**Japanese Knotweed Photomonitoring Series**  
**Plot # 35 - MHFG - page 3 of 5**



Photo 9, August 2001



Photo 10, September 2001



photo 11, October 2001

## Japanese Knotweed Photomonitoring Series

Plot # 35 - MHFG - page 4 of 5



Photo 12, April 2002. No stems present. No spring treatment.



Photo 13, May 2002. No stems present.



Photo 14, September 2002. Date of fall treatment. 1 stem, 0.7 m tall. Many leaves on stem.



Photo 15, 2003:

# Japanese Knotweed Photomonitoring Series

Plot # 35 - MHFG - page 5 of 5

Photo X

Photo X

Photo X

Photo X

## Japanese Knotweed Photomonitoring Series

Plot # 36 - NcHrFR - page 1 of 5



Photo 1, June 2000. Test plot parallels creek bank and tree with orange flag is near center of plot.



Photo 2, August 2000. Date of fall cutting. 104 stems, 1 to 2m tall.



Photo 3, September 2000.



Photo 4, October 2000. Date of foliar treatment of resprouts. 7 stems treated, 0.3 meters tall.

**Summary:** Treatment consisted of cutting stems to ground in the fall and then resprouts are foliar sprayed with 5% Rodeo and 1% surfactant one to two months later.

## Japanese Knotweed Photomonitoring Series

Plot # 36 - NcHrFR - page 2 of 5



Photo 5, April 2001. 45 stems.



Photo 6, May 2001. 69 stems.



Photo 7, June 2001. 36 stems.



Photo 8, July 2001. 44 stems, 0.25 to 1m tall.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 36 - NcHrFR - page 3 of 5**



Photo 9, August 2001. 54 stems, 0.25 to 1m tall.



Photo 10, September 2001. Date of fall cutting. 48 stems cut to ground.



photo 11, October 2001. Date of foliar treatment of resprouts. 6 stems treated, 0.2 meters tall.

## Japanese Knotweed Photomonitoring Series

Plot # 36 - NcHrFR - page 4 of 5



Photo 12, April 2002. 12 stems, less than 0.25m tall.



Photo 13, May 2002. 12 stems. Most stems have mutated leaves and are forming small clumps.



Photo 14, August 2002. Date of fall cutting. 37 stems, less than 0.25m tall, cut to ground. Blue flagging marks stem locations.



Photo 15, September 2002. Date of foliar treatment of resprouts. 30 stems treated, less than 0.25 meters tall.

## Japanese Knotweed Photomonitoring Series

Plot # 36 - NcHrFR - page 5 of 5



Photo 16, June 2003:

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 37 - NHSG - page 1 of 5**



Photo 1, June 2000. Test plot consists of large knotweed patch located in sandy bank.



Photo 2, August 2000. Stems are 1 to 2m in length.



Photo 3, September 2000. Fall stem herbicide treatment. 65 stems cut and then treated with Garlon.



Photo 4, October 2000

**Summary:** Treatment consisted of cutting stems to the ground and then application of 50% Garlon to cut stems in the fall only.

## Japanese Knotweed Photomonitoring Series

Plot # 37 - NHSG - page 2 of 5



Photo 5, April 2001. 34 stems.



Photo 6, May 2001. 80 stems.



Photo 7, June 2001. 47 stems, 1 to 2m tall.



Photo 8, July 2001. 50 stems.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 37 - NHSG - page 3 of 5**



Photo 9, August 2001. Some stems are flowering.



Photo 10, September 2001. Fall stem herbicide treatment. 135 stems cut and then treated with Garlon.



photo 11, October 2001. 2 stem resprouts, less than 0.25m tall. Stem location marked by blue flagging.

## Japanese Knotweed Photomonitoring Series

Plot # 37 - NHSG - page 4 of 5



Photo 12, April 2002. 11 stems.



Photo 13, May 2002. 21 stems, 0.25 to 1m tall.



Photo 14, September 2002. Fall stem herbicide treatment. 60 stems cut and then treated with Garlon.



Photo 15, June 2003:

**Japanese Knotweed Photomonitoring Series**

**Plot # 37 - NHSG - page 5 of 5**

Photo X

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 38 - MHFR - page1 of 5**



Photo 1, June 2000. One month after cutting 73 stems.



Photo 2, August 2000.



Photo 3, September 2000. Date of fall foliar herbicide treatment.  
Stems 1 to 1.5 meters tall.



Photo 4, October 2000

**Summary:** Treatment consisted of spring manual cut to ground and a fall foliar herbicide of 5% Rodeo and 1% surfactant. Note sandy, cobble soil and high sun exposure conditions at site.

## Japanese Knotweed Photomonitoring Series

Plot # 38 - MHFR - page 2 of 5



Photo 5, April 2001. No regrowth or treatment in 2001.



Photo 6, May 2001



Photo 7, June 2001



Photo 8, July 2001

**Japanese Knotweed Photomonitoring Series**  
**Plot # 38 - MHFR - page 3 of 5**



Photo 9, August 2001



Photo 10, September 2001



photo 11, October 2001

## Japanese Knotweed Photomonitoring Series

Plot # 38 - MHFR - page 4 of 5



Photo 12, April 2002. No regrowth or treatment in 2002.



Photo 13, May 2002



Photo 14, September 2002



Photo 15A, June 2003:  
(Note: Close-up Photo 15B on page 5)

## Japanese Knotweed Photomonitoring Series

Plot # 38 - MHFR - page 5 of 5



Photo 15B, June 2003:

**Japanese Knotweed Photomonitoring Series**  
**Plot # 39 - NcHFG - page 1 of 5**



Photo 1, June 2000



Photo 2, August 2000. Some stems beginning to flower.



Photo 3, September 2000. Date of fall treatment. Some stems exceeded 2m prior to cutting to 1.5m. 90 stems treated.



Photo 4, October 2000

**Summary:** Treatment consisted of only a fall treatment of foliar spray of 5% Garlon w/ 1% surfactant. Stems were cut to height of 1.5m on date of treatment.

## Japanese Knotweed Photomonitoring Series

Plot # 39 - NcHFG - page 2 of 5



Photo 5, April 2001. No stems present.



Photo 6, May 2001. No stems present.



Photo 7, June 2001. 1 stem, less than 0.25m tall.



Photo 8, July 2001. 6 stems, less than 0.25m tall. Stems emerging 0.5m in front of original treated clump.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 39 - NcHFG - page 3 of 5**



Photo 9, August 2001. 21 stems.



Photo 10, September 2001. Date of fall treatment. 32 stems, 0.25m to 1m tall when treated.



photo 11, October 2001. 1 new stem, less than 0.25m tall emerged since fall treatment.

## Japanese Knotweed Photomonitoring Series

Plot # 39 - NcHFG - page 4 of 5



Photo 12, April 2002. No stems.



Photo 13, May 2002. 3 stems, less than 0.25m tall.



Photo 14, September 2002. Date of fall treatment. 28 stems, 0.25m to 1m tall when treated.



Photo 15, June 2003:

# Japanese Knotweed Photomonitoring Series

Plot # 39 - NCHFG - page 5 of 5

Photo X

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 40 - NcHFG - page1 of 5**



Photo 1, June 2000



Photo 2, August 2000. Some stems to flowering.



Photo 3, September 2000. Date of fall treatment. Some stems exceeded 2m prior to cutting to 1.5m. 220 stems treated.

**Summary:** Treatment consisted of only a fall treatment of foliar spray of 5% Garlon w/ 1% surfactant. Stems were cut to height of 1.5m on date of treatment.



Photo 4, October 2000

## Japanese Knotweed Photomonitoring Series

Plot # 40 - NcHFG - page 2 of 5



Photo 5, April 2001. no stems.



Photo 6, May 2001. 9 stems.



Photo 7, June 2001. 18 stems, 0.25 to 1m tall.



Photo 8, July 2001. 39 stems, 0.25 to 1m tall.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 40 - NcHFG - page 3 of 5**



Photo 9, August 2001. 55 stems, 1 to 2m tall.



Photo 10, September 2001. Date of fall treatment. Some stems exceeded 2m prior to cutting to 1.5m. 60 stems treated.



photo 11, October 2001. 2 stems- 1 new and 1 surviving.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 40 - NcHFG - page 4 of 5**



Photo 12, April 2002. no stems.



Photo 13, May 2002. 5 stems, less 0.25m tall.



Photo 14, September 2002. Date of fall treatment. 60 stems, 0.25m to 1m tall treated.



Photo 15, June 2003:

# Japanese Knotweed Photomonitoring Series

Plot # 40 - NcHFG - page 5 of 5

Photo X

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 41 - MHSG - page 1 of 5**



Photo 1, June 2000. One month after spring cutting 23 stems that were 1.5 meters tall.



Photo 2, August 2000



Photo 3, September 2000. Date of stem treatment. 32 stems, 0.5 meters tall prior to cutting and treatment.



Photo 4, October 2000

**Summary:** Treatment consisted of a spring manual cut to ground and fall stem herbicide application of 50% Garlon. Site was located under clump of cottonwoods. Over 2 years, beavers eventually removed many of the cottonwoods in vicinity of test site.

## Japanese Knotweed Photomonitoring Series

Plot # 41 - MHSG - page 2 of 5



Photo 5, April 2001. No stems present, no spring cutting treatment.



Photo 6, May 2001. 9 stems. Note beaver activity.



Photo 7, June 2001. 17 stems, 0.25m to 1m tall.



Photo 8, July 2001. 17 stems, 0.25m to 1m tall.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 41 - MHSB - page 3 of 5**



Photo 9, August 2001. 19 stems, 0.25m to 1m tall.



Photo 10, September 2001. Date of stem treatment. 23 stems, some flowering prior to cutting and treatment.



photo 11, October 2001. 1 stem (blue flagging marks location.)

## Japanese Knotweed Photomonitoring Series

Plot # 41 - MHSB - page 4 of 5



Photo 12, April 2002. 3 stems, less than 0.25m tall.



Photo 13, May 2002. Date of spring cut. 5 stems, 0.25 to 0.5 meters tall.



Photo 14, September 2002. Date of stem treatment. 1 stem cut and treated. (blue flagging marks location.)



Photo 15, June 2003:

# Japanese Knotweed Photomonitoring Series

Plot # 41 - MHSG - page 5 of 5

Photo X

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 42 - NcHrFR - page1 of 5**



Photo 1, June 2000



Photo 2, August 2000. Date of fall cutting. 68 stems, some exceed 2m tall.



Photo 3, September 2000. Date of foliar treatment of resprouts. stems 0.3 meters tall.



Photo 4, October 2000.

**Summary:** Treatment consisted of cutting stems to ground in the fall and then resprouts are foliar sprayed with 5% Rodeo and 1% surfactant one month later.

## Japanese Knotweed Photomonitoring Series

Plot # 42 - NcHrFR - page 2 of 5



Photo 5, April 2001. No stems present, no spring treatment.



Photo 6, May 2001. No stems present.



Photo 7, June 2001. No stems present.



Photo 8, July 2001. 1 stem, less than 0.25m tall.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 42 - NcHrFR - page 3 of 5**



Photo 9, August 2001. 1 stem, less than 0.25m tall.



Photo 10, September 2001. Date of fall cutting. 1 stem cut. Small (1-2 cm) mutated stem clusters emerging from sand were not cut.



photo 11, October 2001. Date of foliar treatment of resprouts. 31 mutated stem clusters counted & treated.

## Japanese Knotweed Photomonitoring Series

Plot # 42 - NcHrFR - page 4 of 5



Photo 12, April 2002. 1 stem, 1 cm tall. Yellow flagging marks location.



Photo 13, May 2002. no stems present.



Photo 14, August 2002. Date of fall cutting. 12 mutated stem clusters counted & cut. Many stems in each cluster.



Photo 15, Close-up August 2002. Note many stems and elongated leaves in each mutated cluster.

## Japanese Knotweed Photomonitoring Series

Plot # 42 - NcHrFR - page 5 of 5



Photo 16, September 2002. Date of foliar treatment of resprouts.  
12 mutated stem clusters treated. Blue flagging marks location.



Photo 17, June 2003:

**Japanese Knotweed Photomonitoring Series**  
**Plot # 43 - HHFG - page 1 of 5**



Photo 1, June 2000. Date of foliar herbicide treatment. 20 stems, 1.5m tall, were treated.



Photo 2, August 2000.



Photo 3, September 2000. Fall treatment. 1 stem, 0.2 meters tall.



Photo 4, October 2000

**Summary:** Treatment consisted of a spring and fall foliar herbicide application of 5% Garlon and 1% surfactant. Note sandy soil and full sun exposure site conditions.

## Japanese Knotweed Photomonitoring Series

Plot # 43 - HHFG - page 2 of 5



Photo 5, April 2001. No regrowth in 2001.



Photo 6, May 2001



Photo 7, June 2001.



Photo 8, July 2001

**Japanese Knotweed Photomonitoring Series**  
**Plot # 43 - HHFG - page 3 of 5**



Photo 9, August 2001



Photo 10, September 2001



Photo 11, October 2001

## Japanese Knotweed Photomonitoring Series

Plot # 43 - HHFG - page 4 of 5



Photo 12, April 2002. No regrowth in 2002.



Photo 13, May 2002



Photo 14, September 2002



Photo 15, June 2003:

# Japanese Knotweed Photomonitoring Series

Plot # 43 - HHFG - page 5 of 5

Photo X

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 44 - MHSB - page 1 of 5**



Photo 1, June 2000. One month after spring cutting 48, 1.5m tall stems.

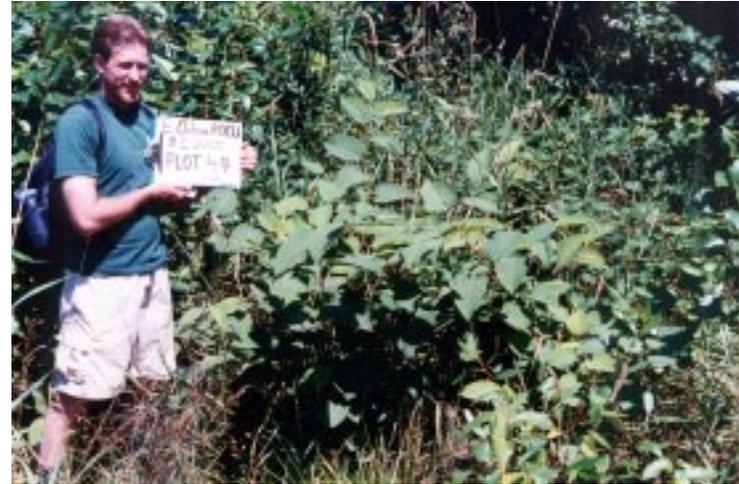


Photo 2, August 2000

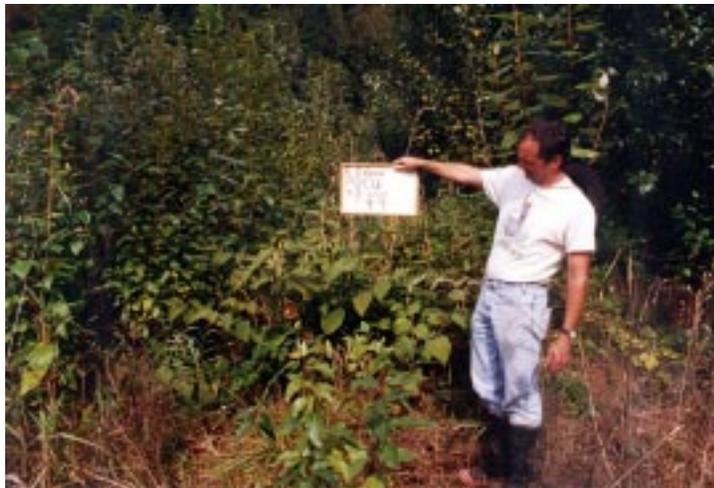


Photo 3, September 2000. Date of stem treatment. 27 stems, 1.5 meters tall prior to cutting and treatment.



Photo 4, October 2000

**Summary:** Treatment consisted of a spring manual cut to ground and fall stem herbicide application of 50% Garlon.

## Japanese Knotweed Photomonitoring Series

Plot # 44 - MHSB - page 2 of 5



Photo 5, April 2001. Date of spring cut. 17 stems, 0.25 to 0.5 meters tall.



Photo 6, May 2001. 32 stems.



Photo 7, June 2001. 17 stems, 1 to 2 meters tall.



Photo 8, July 2001. 19 stems, 1 to 2 meters tall.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 44 - MHSB - page 3 of 5**



Photo 9, August 2001. 19 stems, 1 to 2 meters tall. Some stems are flowering.



Photo 10, September 2001. Date of fall stem treatment. 18 stems, some exceed 2 meters tall prior to cutting and treatment.



photo 11, October 2001. No stems present.

## Japanese Knotweed Photomonitoring Series

Plot # 44 - MHSB - page 4 of 5



Photo 12, April 2002. Date of spring cut. 2 stems, less than 0.25 meters tall. Note reed canary grass encroaching site.



Photo 13, May 2002. 1 stem (hidden in reed canary grass.) Note POCU stems 1m behind sign are not part of study plot.



Photo 14, September 2002. Date of fall stem injection. 1 stem, 0.4 meters tall prior to cutting and treatment.



Photo 15, June 2003:

# Japanese Knotweed Photomonitoring Series

Plot # 44 - MHSG - page 5 of 5

Photo X

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 45 - NHSR - page 1 of 5**



Photo 1, June 2000



Photo 2, August 2000. Knotweed is flowering.



Photo 3, September 2000. Date of treatment. 22 stems, 2 meters tall prior to cutting and herbicide treatment.

**Summary:** Treatment consisted of cutting stems to the ground and then application of 50% Rodeo to cut stems in the fall only.



Photo 4, October 2000. One month after treatment.

## Japanese Knotweed Photomonitoring Series

Plot # 45 - NHR - page 2 of 5



Photo 5, April 2001. 1 stem.



Photo 6, May 2001. 2 stems, less than 0.25m tall.



Photo 7, June 2001 2 stems, less than 0.25m tall. Note taller knotweed in background in not part of test plot.



Photo 8, July 2001. 2 stems, less than 0.25m tall.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 45 - NHR - page 3 of 5**



Photo 9, August 2001. 2 stems, 0.25m to 1m tall. Note mutated stem on right is stunted and many small leaves.



Photo 10, September 2001. Date of treatment. 1 stem, 0.3m meters tall prior to cutting and herbicide treatment.



photo 11, October 2001

## Japanese Knotweed Photomonitoring Series

Plot # 45 - NHR - page 4 of 5



Photo 12, April 2002. 3 small stems marked by yellow flagging.



Photo 13, May 2002. 4 stems, less than 0.25m tall.



Photo 14, September 2002. Date of treatment. 22 stems, less than 0.25m tall. Many stems are stunted and multiple small leaves.



Photo 15, June 2003:

# Japanese Knotweed Photomonitoring Series

Plot # 45 - NHR - page 5 of 5

Photo X

Photo X

Photo X

Photo X

**Japanese Knotweed Photomonitoring Series**  
**Plot # 46 - SNFG - page 1 of 5**



Photo 1, June 2000



Photo 2, August 2000. Date of summer treatment. 25 stems, 1 to 2m tall treated.



Photo 3, September 2000. 1 month after treatment. No green stems.



Photo 4, October 2000. No regrowth after summer treatment.

**Summary:** Treatment consisted of foliar spray application of 5% Garlon w/ 1% surfactant in summer only. Note sandy soil conditions of site.

## Japanese Knotweed Photomonitoring Series

Plot # 46 - SNFG - page 2 of 5



Photo 5, April 2001. No regrowth in 2001.



Photo 6, May 2001



Photo 7, June 2001



Photo 8, July 2001

**Japanese Knotweed Photomonitoring Series**  
**Plot # 46 - SNFG - page 3 of 5**



Photo 9, August 2001



Photo 10, September 2001



photo 11, October 2001

## Japanese Knotweed Photomonitoring Series

Plot # 46 - SNFG - page 4 of 5



Photo 12, April 2002. No regrowth in 2002.



Photo 13, May 2002



Photo 14, June 2002 Note establishment of reed canary grass at site.



Photo 15, September 2002

## Japanese Knotweed Photomonitoring Series

Plot # 46 - SNFG - page 5 of 5



Photo 16, June 2003:

**Japanese Knotweed Photomonitoring Series**  
**Plot # 47 - SNSG - page 1 of 5**



Photo 1, June 2000



Photo 2, August 2000. Date of stem treatment. 34 stems, 1 to 2m tall, were cut and then treated.



Photo 3, September 2000. 2 stems, less than 0.25m tall, have regrown.



Photo 4, October 2000

**Summary:** Treatment consisted of cutting stems to ground and then application of application of 50% Garlon to cut stems in summer only.

## Japanese Knotweed Photomonitoring Series

Plot # 47 - SNSG - page 2 of 5



Photo 5, April 2001. 3 stems, less than 0.25m tall.



Photo 6, May 2001. 10 stems, less than 0.25m tall.



Photo 7, June 2001. 18 stems, 1 to 2m tall.



Photo 8, July 2001. 19 stems, 1 to 2m tall.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 47 - SNSG - page 3 of 5**



Photo 9, August 2001. Date of summer stem treatment. 19 stems, 1 to 2m tall, were cut and then treated.



Photo 10, September 2001. 7 stems regrown.



photo 11, October 2001. 11 stems, less than 0.25m tall.

## Japanese Knotweed Photomonitoring Series

Plot # 47 - SNSG - page 4 of 5



Photo 12, April 2002. 35 stems, less than 0.25m tall.



Photo 13, May 2002. 36 stems, 1 to 2m tall.



Photo 14, June 2002. Date of summer stem treatment. 36 stems, 1 to 2m tall, were cut and then treated.



Photo 15, September 2002. No new stems present.

## Japanese Knotweed Photomonitoring Series

Plot # 47 - SNSG - page 5 of 5



Photo 16, June 2003:

**Japanese Knotweed Photomonitoring Series**  
**Plot # 48 - SNFG - page1 of 5**



Photo 1, June 2000



Photo 2, August 2000. Date of summer treatment. 31 stems, 1 to 2m tall treated.



Photo 3, September 2000. No new stems.



Photo 4, October 2000. No new stems.

**Summary:** Treatment consisted of foliar spray application of 5% Garlon w/ 1% surfactant in summer only.

## Japanese Knotweed Photomonitoring Series

Plot # 48 - SNFG - page 2 of 5



Photo 5, April 2001. No stems.



Photo 6, May 2001. No stems.



Photo 7, June 2001. 1 stem, 0.25m tall.



Photo 8, July 2001. 3 stems, 0.25m to 1m tall.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 48 - SNFG - page 3 of 5**



Photo 9, August 2001. Date of summer treatment. 4 stems, 0.25 to 1m tall treated.



Photo 10, September 2001. No new stems.



photo 11, October 2001. No new stems.

## Japanese Knotweed Photomonitoring Series

Plot # 48 - SNFG - page 4 of 5



Photo 12, April 2002. No stems.



Photo 13, May 2002. No stems.



Photo 14, June 2002. Date of summer treatment. 1 stem, 0.25m tall treated. Blue flagging marks stem.



Photo 15, September 2002. 4 stems, 0.25m to 1m tall, appear healthy.

## Japanese Knotweed Photomonitoring Series

Plot # 48 - SNFG - page 5 of 5



Photo 16, June 2003

**Japanese Knotweed Photomonitoring Series**  
**Plot # 49 - SNFG - page 1 of 5**



Photo 1, June 2000.



Photo 2, August 2000. Date of summer treatment. 32 stems, 1 to 2m tall treated.



Photo 3, September 2000.



Photo 4, October 2000

**Summary:** Treatment consisted of foliar spray application of 5% Garlon w/ 1% surfactant in summer only. Note site is surrounded by himalayan blackberry.

## Japanese Knotweed Photomonitoring Series

Plot # 49 - SNFG - page 2 of 5



Photo 5, April 2001. 1 stem.



Photo 6, May 2001. 1 stem, less than 0.25m tall.



Photo 7, June 2001. No stems found.



Photo 8, July 2001. No stems.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 49 - SNFG - page 3 of 5**



Photo 9, August 2001. No stems.



Photo 10, September 2001. No stems.



photo 11, October 2001. No stems.

## Japanese Knotweed Photomonitoring Series

Plot # 49 - SNFG - page 4 of 5



Photo 12, April 2002. No stems.



Photo 13, May 2002. No stems.



Photo 14, June 2002. Date of summer treatment. 2 stems, 1 to 2m tall treated. These stems were 1 m away from original main patch, but mostly likely same rhizome mass.



Photo 15, September 2002. No new stems present.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 49 - SNFG - page 5 of 5**



Photo 16, June 2003:

**Japanese Knotweed Photomonitoring Series**  
**Plot # 50 - SNSG - page 1 of 5**



Photo 1, June 2000



Photo 2, August 2000. Date of summer stem treatment. 31 stems, 1 to 2m tall, were cut and then treated.



Photo 3, September 2000.



Photo 4, October 2000.

**Summary:** Treatment consisted of cutting stems to ground and then application of foliar spray application of 50% Garlon to cut stems in summer only.

## Japanese Knotweed Photomonitoring Series

Plot # 50 - SNSG - page 2 of 5



Photo 5, April 2001. 6 stems, less than 0.25m tall.



Photo 6, May 2001. 11 stems, less than 0.25m tall.



Photo 7, June 2001. 16 stems, 1 to 2m tall.



Photo 8, July 2001. 19 stems, 1 to 2m tall.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 50 - SNSG - page 3 of 5**



Photo 9, August 2001. Date of summer stem treatment. 21 stems, 1 to 2m tall, were cut and then treated.



Photo 10, September 2001. 5 stems marked by blue flagging.



photo 11, October 2001. 6 stems marked by blue flagging.

## Japanese Knotweed Photomonitoring Series

Plot # 50 - SNSG - page 4 of 5



Photo 12, April 2002. 15 stems, less than 0.25m tall. Some locations marked by pink flagging.



Photo 13, May 2002. 34 stems, 1 to 2m tall.



Photo 14, June 2002. Date of summer stem treatment. 39 stems, 1 to 2m tall, were cut and then treated.



Photo 15, September 2002. No new stems.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 50 - SNSG - page 5 of 5**



Photo 16, June 2003:

**Japanese Knotweed Photomonitoring Series**  
**Plot # 51 - SNSG - page 1 of 5**



Photo 1, June 2000



Photo 2, August 2000. Date of summer stem treatment. 28 stems, 1 to 2m tall, were cut and then treated.



Photo 3, September 2000



Photo 4, October 2000. Stem regrowth activity present.

**Summary:** Treatment consisted of cutting stems to ground and then application of foliar spray application of 50% Garlon to cut stems in summer only.

## Japanese Knotweed Photomonitoring Series

Plot # 51 - SNSG - page 2 of 5



Photo 5, April 2001. 4 stems, less than 0.25m tall.



Photo 6, May 2001. 9 stems, less than 0.25m tall.



Photo 7, June 2001. 20 stems, 1 to 2m tall.



Photo 8, July 2001. 28 stems, 1 to 2m tall.

**Japanese Knotweed Photomonitoring Series**  
**Plot # 51 - SNSG - page 3 of 5**



Photo 9, August 2001. Date of summer stem treatment. 35 stems, 1 to 2m tall, were cut and then treated.



Photo 10, September 2001. 15 stems, 0.25m to 1m tall. Site includes only knotweed to left of down tree, not behind signboard.



photo 11, October 2001. 20 stems, 0.25m to 1m tall.

## Japanese Knotweed Photomonitoring Series

Plot # 51 - SNSG - page 4 of 5



Photo 12, April 2002. 50 stems, 0.25m to 1m tall.



Photo 13, May 2002. 50 stems, 1 to 2m tall.



Photo 14, June 2002. Date of summer stem treatment. 45 stems, 1 to 2m tall, were cut and then treated.



Photo 15, September 2002. 1 new stem, just to the right of signboard.

## Japanese Knotweed Photomonitoring Series

Plot # 51 - SNSG - page 5 of 5



Photo 16, June 2003: