

2001 END OF SEASON REPORT – EXOTIC PLANT INVENTORY & CONTROL

This year we had (the equivalent of) two full-time seasonals working on the vegetation crew. Sixty percent of their time was spent on weed inventory and control activities. We also received occasional help in control activity from the protection rangers, VIPs, and the Sierra Club work group. The table below lists the common name, scientific name, and priority for treatment (from Hiebert, 1993) of all the species treated in the spring, summer, and fall of 2001. Acres, populations, and individuals treated are shown in the attached spreadsheet.

<u>Common Name</u>	<u>Scientific Name</u>	<u>Priority for Treatment</u>
Cheat Grass	<u>Bromus tectorum</u>	High
Bull Thistle	<u>Cirsium vulgare</u>	High
Prostrate Vervain	<u>Verbena bracteata</u>	High
Russian Thistle	<u>Salsola iberica</u>	Medium
Canada Thistle	<u>Cirsium arvense</u>	High
Bindweed	<u>Convolvulus arvensis</u>	High
Russian Knapweed	<u>Centaurea repens</u>	Medium
Russian Olive	<u>Elaeagnus angustifolia</u>	Medium
Musk Thistle	<u>Carduus nutans</u>	High
Common Mullein	<u>Verbascum thapsus</u>	Medium
Common Burdock	<u>Arctium minus</u>	Medium
Hounds Tongue	<u>Cynoglossum officinale</u>	High
White Top	<u>Cardaria draba</u>	High

Cheat Grass populations were surveyed and treated within the loop and main amphitheater areas of the park. Fifteen new populations were inventoried and treated. Thirty-five existing populations were monitored and retreated. Treatments were mechanical and consisted of pulling, digging, and mowing (by lawn-mower and weed-whacker). After the seeds became viable the treatment included bagging the plants.

Bull Thistle was surveyed for and treated within the loop area, along the main park road south, and in Swamp canyon. Fifteen new populations were documented and treated. Fifteen existing populations were resurveyed and retreated. Bull Thistle was mechanically treated by digging bolts and rosettes and bagging viable seed heads.

Prostrate Vervain was surveyed for and treated in the loop area, and along the main park road. Seven new populations were inventoried and treated. Thirteen existing populations were resurveyed and retreated. All treatments were mechanical and consisted of pulling seedlings and digging mature plants. Plants with viable seeds were bagged.

Russian Thistle was surveyed for and treated in the loop area, along the main park road, and on along highway 12. Three new populations were inventoried and treated. Twelve existing populations were resurveyed and retreated. Treatment consisted of pulling and digging of plants and bagging those with viable seeds. More survey work needs to be done for Russian Thistle, especially under the rim.

Canada Thistle was surveyed for and treated in the loop area and in Daves hollow. No new populations were found within the park. Three existing populations were resurveyed and retreated. Individual populations received a combination of chemical and mechanical treatment. Plants were sprayed with herbicide twice (Spring and Fall) and dug once (Summer). Canada Thistle populations are being contained and reduced within the Park.

Bindweed was surveyed for and treated within the loop area, along the main road, and below the rim. Four new populations were documented and treated. Sixteen populations were resurveyed and retreated. Treatments consisted of spraying each plant with herbicide. Bindweed needs more extensive and intensive surveys within the Park.

Russian Knapweed was surveyed for and treated around Cooks Ranch, and along highway 12. Four existing populations were surveyed and retreated. Plants were dug/pulled and bagged if they had viable seeds.

Russian Olive was surveyed for and treated along highway 12 and under the rim. Three existing populations were resurveyed and retreated. Treatment consists of sawing down stems and painting the cut face with a herbicide.

Musk Thistle was surveyed for and treated in the loop area and at Swamp canyon. Four existing populations were resurveyed and retreated. Musk Thistle was mechanically treated by digging bolts and rosettes and bagging viable seed heads.

Common Mullein was surveyed for and treated in the loop area, along the main park road, and along the Riggs Springs trail. Ten existing populations were resurveyed and retreated. Mullein was mechanically treated by digging bolts and rosettes and bagging the viable seed heads.

Common Burdock was surveyed for and treated in the area around Cooks Ranch. Two existing populations were resurveyed and retreated. Treatment consisted of digging plants and bagging plants with viable seed.

Hounds Tongue was surveyed for in the loop area. Two existing populations were resurveyed and retreated. Plants were dug/pulled and viable seed heads were bagged. These populations are contained and are decreasing.

White Top was surveyed for along the main park road. One existing population was resurveyed and retreated. Plants were sprayed in the Spring and Fall and dug in the Summer. This population is contained and is decreasing.

References

Hiebert, R. D. and J. Stubbendieck 1993 Handbook for ranking exotic plants for management and control. Natural Resource Report NPS/NRMWRO/NRR-93/08, USDO, National Park Service, Natural Resource Publication Office, Denver, Co.

2001 END OF SEASON REPORT – REVEGETATION AND RESTORATION

This year we had (the equivalent of) two full-time seasonals working on the vegetation crew. Twenty percent of their time was spent on revegetation and restoration. We also received occasional help from the protection rangers, VIPs, and the Sierra Club work group.

We re-seeded two of the entrance islands, which had been seeded last year. Total acreage treated was $\frac{3}{4}$ of an acre. This seeding took place in June. The seed was broadcast and then raked-in to cover the seed with a little bit of soil. This area received no topsoil after construction was left untreated for one year after. This makes restoration very challenging for this area.

The disturbed power-line corridor behind the visitor center was also seeded in June. Total acreage was **1 acre**. The seed was broadcast and then raked-in to cover the seed with a little bit of soil. This area was lightly disturbed during construction and should recover with a minimum of re-treatment.

A $\frac{1}{2}$ acre section of “ground zero” was seeded in June. The seed was broadcast and then raked-in to cover the seed with a little bit of soil. This area has seen a lot of abuse in the past and will be difficult to fully restore.

In early June (as part of the road project) we had an outside contractor come into the Park to seed topsoil along the road corridor. The contractor seeded **7 acres** of topsoil in place and in stockpiled windrows. This seeding was essential in conserving the topsoil until such time as our highway project resumes.

Bryce Canyon National Park
GPRA 2001 Accomplishments
Goal IA1B - Exotic Plants

This year we had (the equivalent of) two full-time seasonals working on the vegetation crew. Both of these positions were funded out of a Federal Highway project account. Sixty percent of their time was spent on weed inventory and control activities. We also received occasional help in control activity from the protection rangers, VIPs, and the Sierra Club work group. Acres, populations, and individuals treated in FY 2001 are shown in the attached spreadsheet.

The Bryce Canyon GPRA goal covering non-native plants (IA1B) states that "by the year 2005 the park will contain non-native species on 25% of the area they were identified at during the 1998/99 baseline inventory". In addition our goal says the park will continue to inventory areas of potential invasion and use integrated pest management (IPM) for treatment. Finally, it states that monitoring of treatment effectiveness will be given high priority.

The Park is on target to contain non-native species on more than 25% of the area that was identified during the 1998/99 baseline inventory. This year, we monitored and re-treated approximately 75 % of the sites identified in the 1998/99 baseline inventory. Most of these sites are contained, and some are actually being reduced in size and density.

The park is continuing to discover and document new areas and identify new populations of non-native plants. Thirty-three new non-native sites were discovered within the park. The species involved were Cheat Grass, Bull Thistle, and Russian Thistle.

The park is striving to use integrated pest management (IPM) for control and eradication of non-native plants. We use a combination of mechanical and chemical treatments to control and reduce non-native plant populations. Examples of mechanical treatments include mowing, pulling, and digging of individual plants. Chemical controls include spot application of growth-regulator and amino acid herbicides. Herbicide use is timed to maximize the effectiveness on the target species and to minimize the movement of herbicide to non-target species or groundwater. We are also using social/cultural methods to reduce the introduction and spread of non-native plants. Some examples include requiring cleaning of construction equipment and use of certified weed-free hay within the park. In addition, we have an active weed education program for park employees, concessionaires, and contract employees working within the park.

All control activities are fully documented and treated sites are re-monitored to determine the effectiveness of each treatment combination.

	Sites Found 98/99	Acres 98/99	Sites Found 2000	Sites Found 2001	Total Sites Found	Sites Treated 2001	Sites Missed 2001	Sites Extirpated	Acres (98/99) Contained
Arctium minus, Common burdock	2	0.186	0	0	2	2	0		0.185
Bromus tectorum, Cheatgrass	5	0.256	15	14	34	29	5		0.245
Cardaria draba, Whitetop	1	0.018	0	0	1	1	0		0.018
Carduus nutans, Musk thistle	6	0.101	0	0	6	3	3	2	0.083
Centaurea maculosa, Spotted knapweed	1	0.002	1	0	2	1	1		0.002
Centaurea repens, Russian knapweed	2	0.335	1	0	3	3	0		0.335
Cirsium arvense, Canada thistle	5	0.713	0	0	5	3	2	2	0.713
Cirsium vulgare, Bull thistle	23	7.205	4	15	42	34	8		7.145
Convolvulus arvensis, Field bindweed	20	0.739	3	4	27	17	10		0.708
Cynoglossum officinale, Hounds tongue	1	0.002	1	0	2	2	0		0.002
Elaeagnus angustifolia, Russian Olive	5	0.005	3	0	8	0	8		0.002
Erodium cicutarium, Redstem filaree	2	0.005	0	0	2	0	2		0.000
Salsola iberica, Russian thistle	11	3.273	3	3	17	7	10		0.532
Tamarix ramosissima, Tamarisk	12	0.367	3	0	15	0	15		0.000
Verbena bracteata, Prostrate vervain	3	0.018	9	4	16	15	1		0.018
Verbascum thapsus, Common mullein	7	3.922	2	1	10	5	5		1.452
TOTAL	106	17.147	45	41	192	122	70	4	11.4401