

BRCA Vegetation Crew Activities -- Summer 2000

Jeanette Muller, Biological Science Technician, Vegetation Crew-Leader. November 17, 2000

General Comments:

At Bryce Canyon, the vegetation crew's main duties has been site restoration and exotic plant location, documentation, and control. In mid and late summer 2000, Resource Management filled two, key permanent positions: Fletcher Linton, Botanist, and Kelly Cahill, Data Manager and GIS. We were to have three or four seasonal bio-technicians and an intern. However, in April and May, last-minute seasonal cancellations left the field crew under-staffed. Fortunately, Biological Science Technicians, Ken Mills, Jeanette Muller, and a Student Intern, Josh Ahmann (shared with a wildlife technician and fence crew) were assisted on several occasions by the fence crew, fire crew, and staff from other squads. Though available only about four days/month, Juli Ames-Curtis a BRCA bio-technician since 1997, (intermittent status 2000) was invaluable to the all-new staff for her perspective and experience.

NPS staff from other divisions notified us about new, possible non-native sites, or helped control known sites and helped with some restoration activities. For example, when starting restoration of "Ground zero", in May, I was working alone. Maintenance's Roads and Trails crew, (especially Glen Mitsch), were great labor and time savers. They brought several dump-truck loads of topsoil, put it where it was most needed and later spread 80% of it with the bobcat, taking care to avoid the scant, established vegetation.

Exotics:

In the 2000 field season, 126 sites were treated and 83 new sites were documented with exotic plants data sheets. Total exotic plant species are 67, with 9 new species documented in the park (although, a couple plants haven't been collected and 100 % verified yet). Many of the 83 new sites are still small, with just a handful of individuals and a good opportunity for control or extermination. Other new sites are already large, well established and spreading such as: the Fairyland/Rim trail and horse trail Bromus tectorum, and Swamp Canyon Convolvulus arvensis colonies.

Some sites were visited as much as 3 times but not treated, as either the plants were not found or, it was not optimal time for treatment. Other sites such as the Swamp Canyon meadow, developed areas, and the horse trail received much effort and time. For example, Swamp Canyon was treated seven times, often with a crew. We also, spent 7 days pulling cheatgrass along (the main body of) the horse trail. These sites will be of special concern in the next few years, for continued treatment, and to ascertain containment success.

To promote understanding, identification, and documentation, we presented brief workshops about Resource Management policies, exotic plants and restoration to other Bryce staff members. In early June, I presented sessions to the ranger staff and the fence crew using posters, a video, herbarium sheets, live plant specimens, and weed identification cards. Rick presented an abbreviated training to the interpreters in mid-summer. I loaned a copy of "Weeds of the West" to the ranger division. I distributed BRCA plant, and exotic plant lists, and I.D. cards for target exotic species to the ranger division and fence crew.

We took opportunities in the field to show differences between confusing native and exotic species to maintenance staff, rangers, volunteers, AmFac employees, visitors, and even a member of the Visitor Center construction crew. The training sessions generated interest, questions and directly resulted in several sites reported, including the previously unrecorded, Fairyland/Rim trail and horse trail BRTE sites. It also, gave people who came out to work with us a better understanding of the "Why's" & "How's" behind the often, tedious work. Both the rangers and fence crew were extremely helpful on several occasions.

I advise presenting the training to park staff again in 2001, especially for the rangers and fence crew since they will be spending large amounts of time in the backcountry. We should try to reach more people, including maintenance, Campground hosts, VIPs, interpreters. Work with the interpretation staff to create a display/poster about Resource Management exotics/ restoration projects to be placed in the Visitor Center to educate the public.

One field observation of the bio-technicians, and rangers working with us on the horse trail, was that in several places there is a direct correlation between horse or mule droppings and colonies of yellow sweet clover (Melilotus officinalis), and cheatgrass (Bromus tectorum). In some locations the cheatgrass is growing directly out of the manure. Most of the other trails in the park have only small, scattered populations of cheatgrass or none at all.

Seed Collection:

During August, we collected seed from Colorado rubber plant (Hymenoxys richardsonii) ~4.25 oz., blueleaf aster (Aster glaucodes) ~4.25 oz, and a bit (<1/2 oz) from a Solidago species, as time permitted. This seed totaling ~9 ounces dried (but un-cleaned) is to augment the purchased seed mix in rocky, less fertile soil. Both the rubber plant and the blueleaf aster were collected from roadsides and should do well in the disturbed substrate. The seed is stored for the winter in the metal two-drawer, (rodent-proof?) cabinet in the Bio-Tech.cabin.

Bryce Canyon Seeding Rates and Areas

Several, previously disturbed sites were seeded with a mixture purchased from Granite Seed Company in past seasons. The oldest seed being some mountain brome from 1992, it was mixed into the 1998 seed at a ratio of 6 lbs new to 1 lb old seed or an 8 to 2 ratio. Germination seems to have been successful, even for the older grass, though the forbs have been slower to show. As of October, 2000, only blue flax had been seen in good numbers.

Due to the lack of snow in winter 1999- 2000, and continued drought through spring and summer 2000, germination was not seen until the "too little, too late" monsoons. The exceptions being the small, entrance station traffic islands, and "Ground Zero" where we watered once or twice a week. Because of the extreme drought conditions, and construction projects like the Shuttle Staging Area (requiring huge amounts of water), we were instructed to water only the sites that had already germinated, to reduce further stress on the water levels in the park's wells.

Grand Totals: Seeded Areas: 120,716 sq ft. Seed Used: ~130 lbs.

- 1.
2. "Ground Zero" -Total Area = ~23,070 square ft
 - a. South side. Dimensions: 100' x 50' plus 30' x 50'
5,000 ft² plus 1,050 ft² = 6,050 sq ft
Seeded July: 7 pounds (using a ratio of 5 lbs mix, to ~1# mtn. brome, ~1oz.penstemon)
 - b. Main. Total Dimensions: 120' x 115' = 13,800 sq ft²
Seeded: May 24, central area: used ~6 ¾ lbs (made up total 10 lbs: of 8 lbs BRCA mix, 1 ¾ lbs mtn brome, 1oz both lupine & penstemon).
Remainder of mixed 10# seed used at entrance station islands in mid-June.)

July 12, outer area (later soil addition) seeded using ~8 lbs (from 6:2? ratio of BRCA mix to mtn brome)
 - c. North of path. Dimensions: ~28' x 115' = 3,220 ft²
Seeded July 11, using ~8 ¼ lbs mixed seed (6 lbs BRCA mix, 2 lbs mtn brome, 1oz each: penstemon & lupine)

"Ground Zero" is the old nickname for the area West of the standard cabins, South of the Lodge and East of the Boy's dorm. Work to restore vegetation was begun there in May 2000, when Roads and Trails hauled in soil. The soil was spread and seeded, and watered from May until October. Germination was successful, with grass plants reaching up to 3 inches tall by season's end, and a few forbs, such as blue flax showed by September. The bare trampled area West of Sunrise Motel unit has acquired the name "Ground Zero II" and is about 125 ft by 250 ft, not including social trails and related bare areas.

Both of these areas were once covered with many standard cabins, before they were sold and hauled off in the mid-1980's, leaving behind the water, sewer pipes and electrical and telephone lines. Since some of the shallow lines are still active, digging or ripping the soil here is not safe. Work is restricted to hand tools: pulaskis, McLeods, rakes and shovels. Restoration of "Ground Zero II" will begin in 2001. During autumn 2000, the fire crew raked vast amounts of pine needles, perhaps 50 + years accumulation, away from the historic district cabins. Nearly all of these needles were taken to Ground Zero II, where the piles will be burned, to add nutrients to the compacted soil.

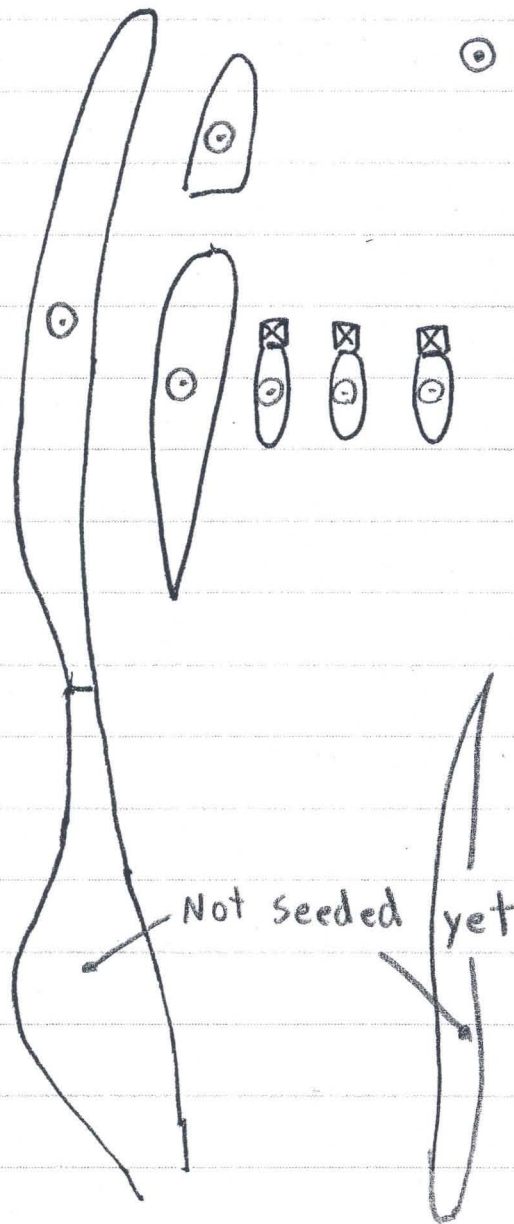
Future (2001, 2002, 2003) Priorities for Vegetation Management at Bryce Canyon

1. Read through all exotic plant data sheets, especially the comment sections, before beginning fieldwork.
2. Monitor and treat roadside exotics especially, Convolvulus arvensis (COAR), Cardaria draba (CADR), Melilotus alba and M. officialis (MEAL/ MEOF). (Likely 2002, depending on road completion date.)
3. Hit roadside and horse trail Bromus tectorum (BRTE) sites early in season with herbicide. Monitor, pull and bag any plants going to seed. (Work in 2001 and following years.)
4. Seed select areas (roadside and horse trails) after treatment to give BRTE, COAR and SAIB etc more competition. (2001, 2002)
5. Follow up on old sightings of exotic locations and document (create data sheets for) these sites. (As possible, in 2001-2 depending on aggressiveness of species.)
6. Re-search key drainages and boundary sections near priority sites, such as Swamp Canyon bindweed, Riggs Spring campsite, horse trail, Tropic wash, Highway 12. (2001: any zones with aggressive species nearby)
7. Work with Forest Service personnel on noxious plant esp. Centaurea ssp. (knapweeds) locations near the park boundary, initiate control and cooperative efforts. (2001)
8. Hike all trails, old roads, campsites, springs, cattle trails, possible homesteads or CCC sites, burns, completed road and Visitor Center construction zones, looking for non-natives. (2001: cattle trails, old roads, campgrounds, springs, completed road sections. 2002: VC and other road constructions zones, CCC sites, burns, campsites, trails, main road.)
9. Train other park staff to recognize key exotic species, especially the rangers and fence crews, include Maintenance, Interpretation, campground hosts, and VIP's. (Every year)
10. Ask to share occasional boundary (road) patrols with rangers (since they have more reliable vehicles). Teach them search images for select weeds. (Every year)
11. Control all Tamarix ramosissima (TARA) and Elaeagnus angustifolia (ELAN) after nesting season or before nesting begins for all bird species. (2001: untreated sites. 2003: recently treated sites).
12. Send two or three people to herbicide class. (2001)
13. Send two people to chainsaw and hazard tree classes. (2001)
14. Control all exotics around the condos (housing 26, 27, 28). Pull and spray. (2001)
15. Continue restoration of "Ground zero I", and Entrance Stations areas.. (2001-2003)
16. Burn, fence and seed "Ground zero II". The main area is 150 ft by 250 ft, not including social trails. (2001-2003)
17. Document all social trails: GPS, measure, photograph, enter data, create maps. Close, re-seed and camouflage more social trails. (2001-2002)
- *18. "Remember, it's all fun, some fun is just hard to recognize..." & "If you're not bleeding, it's not science." —Dr. M. Kearsley Grand Canyon/ N.A.U. 1998.

<u>Species</u>	<u>Common Name</u>	<u>\$/lb.</u>	<u># Seeds/lb.</u>
Agropyron trachycaulum	Slender wheatgrass		
Aristida purpurea	Purple three-awn		
Bouteloua gracilis	Blue gramma		
Bromus marginatus	Mountain brome		
Hilaria jamesii	Galleta grass		
Oryzopsis hymenoides	Indian ricegrass		
Sitanion hystrix	Squirreltail		
Stipa comata	Needle and thread grass		
Stipa lettermani	Letterman needlegrass		
Aster chilensis	Pacific aster		
Balsamorhiza sagittata	Arrowleaf balsamroot		
Linum lewisii	Blue flax		
Lupinus sericeus	Silky lupine		
Oenothera caespitosa	White tufted evening primrose		
Penstemon eatonii	Firecracker penstemon		
Penstemon rydbergii	Blue mountain penstemon		
Penstemon strictus	Rocky mountain penstemon		
Sphaeralcea coccinea	Scarlet globemallow		
Sphaeralcea parvifolia	Nelson globemallow		
Viguiera multiflora	Showy goldeneye		

• 7/7/2000

Entrance Station Reveg Project
Linton/Muller



⊙ seeded / raked / contoured
and straw put down

SEED MIX

shawey goldeneye
Prushia tridentata
Blue flax
Needle & thread
west wheat
Oryzopsis hymenodes
Bromus carinatus
Penstemon sp.
Lupinus sp.

- things seeding in naturally
fringed sage Artemesia frigida
weedy native borages
Verbena bracteata
Hymenoxys richardsonii
numerous small rosettes and
grasses

Bryce Canyon Seeding Rates and Areas, Summer, 2000

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BRCA mix to mtn brome)

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mtn brome, 1 oz each: penstemon & lupine)

2. Entrance Station

- a. small East traffic island. Dimensions: x =

Seeded ¼ lb on May 24, using leftover mix from Ground zero

- b. small center & West traffic islands. Dimensions: ~4' x 18' =

Seeded ~1/4 lb each on June 13

Entrance Station conti.

- c. Two large islands. Dimensions: South island: $128' \times 38' = 2375 \text{ sq ft}$
North island: $445' \times 16' = 7120 \text{ sq ft}$

Seeded both on June 13 using 9 lbs on large (North) and ~6 lbs on medium-sized island

3. **East road shoulder** (of main park road, near Entrance Station)

- a. North Campground crosswalk to 'one-way' sign (in line with entrance to employee parking lot)

Dimensions: $496' \times 33' = 16,368 \text{ sq ft}$

Seeded ~ June 14th with ~26 lbs mixed seed

- b. Big Road Cut (terraced hill starting North of 'one-way' sign)

Dimensions: $32' \times 92' = 2944 \text{ sq ft}$ &
 $378' \times 84' = 31,752 \text{ sq ft}$. Total: 34,696 sq ft.

Seeded ~35 lbs on July 15, 16, 17, 2000

4. West Road Shoulder

Dimensions $350' \times 20' = 7,000 \text{ ft}^2$

20lbs BRCA 99

raked / broadcast / raked in

