

Circleville Allotment
GRINDSTONE FLAT LIVESTOCK AND ELK ENCLOSURES
Aspen Browse and Structure
July 8, 2008

On July 8, 2008, aspen browse transects were conducted in the Grindstone Flat elk enclosure, livestock enclosure, and in the aspen stand outside of the enclosures. Grindstone Flat is located on the Tushar plateau, above Ten Mile Allotment to the east, and Pine Creek/Sulphurbeds Allotment to the west. It lies within the Summer ("Top") Pasture of Circleville Allotment, one of whose permittees (Stephen Sorensen) is the permittee for Ten Mile Allotment.

The enclosures have been in place since 1934. The cattle enclosure was compromised in 1995 for an unknown time period, but the elk enclosure has never been compromised. In 1996 a fire swept through the aspen stand, destroying the enclosures. Cattle were kept off the pasture until the fences were rebuilt in 1997.

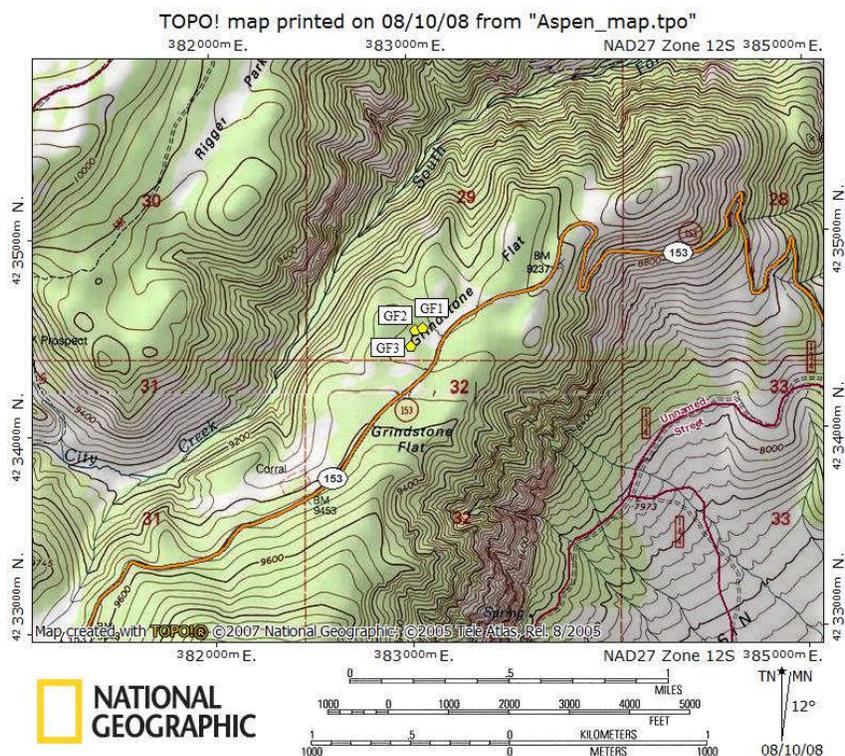
As of July 8, 18.4% of the leaders in the elk enclosure (GF1), 55.4% of the leaders in the cattle enclosure (GF2) and 54.4% of the leaders outside the enclosures were browsed. The Summer/Top Pasture was scheduled to be rested from cattle this season; however, cattle were seen on Grindstone Flat during the day of the surveys.

Grindstone Flat #1 is an elk enclosure surrounded by an 8' high log fence in which the aspen are reaching heights of 10-12' (Fig. 1). Within the fence is a high density stand of recruitment (i.e., young aspen >6') aspen (Fig. 2). There are a handful of young ramets and overstory trees which survived the fire (Fig. 3), but the stand is dominated by the recruitment layer.

Grindstone Flat #2 is a livestock enclosure adjacent to the elk enclosure and surrounded by a 4' high log fence containing aspen approximately 10' tall (Fig. 4). Within the fence there are high density recruitment patches similar to the elk enclosure (Fig. 5), but there are also more open spaces that harbor a diversity of grasses and forbs (Fig. 6). A few mature overstory aspen also persist in this enclosure.

Grindstone Flat #3 is outside of the enclosures but is part of the same aspen stand with aspen approximately 12' tall (Fig. 7). Here patches of dense recruitment sprouting around old aspen stumps (Fig. 8) alternate with open areas with little regeneration (Figs. 9-10). Logging skid trails pass through the stand. Ground cover is dominated by exotic smooth brome in contrast with native grasses, forbs and shrubs within the enclosures (compare, e.g., Figs. 8-9 with Figs. 5-6).

Currently, the most defining differences among these post-fire aspen stands are (1) the 3-fold reduction in browsed leaders in the elk enclosure compared to the cattle enclosure and non-enclosure; and (2) the greater native grass, forb, and shrub understory species and structural diversity within the two enclosures compared to the open flat where smooth brome was seeded and now dominates.



Grindstone Flat #1, #2 and #3 (GF1) (GF2) (GF3)	July 8, 2008 Martin/David/O'Brien/Hoskisson
Fishlake NF/Beaver RD	Allotment: Circleville Pasture: Summer/Top
GPS: GF1 12S E 0383011 N 4234527 GF2 12S E 0383049 N 4234512 GF3 12S E 3838010 N 4234418 NAD CONUS 27	Elevation: 9,300'
Aspect: East	Animal sign: GF1: None GF2: Elk, deer GF3: Cattle, elk, deer
Dominant vegetation: GF1 (Elk enclosure): Aspen, Wood's rose, snowberry, <i>Cirsium</i> sp.(see sample), smooth brome, <i>Epilobium</i> sp., <i>Potentilla</i> sp., <i>Frasera speciosa</i> , <i>Thalictrum fendleri</i> , dandelion, one unknown grass species (See sample and picture 0965). Subdominant: <i>Symphoricarpos oreophilus</i> , <i>Tragopogon dubius</i> , <i>Asteraceae</i> sp., <i>Juniperus communis</i> , <i>Lupinus</i> sp., Indian paintbrush, <i>Astragalus</i> sp., yarrow, <i>Gentiana</i> sp., <i>Helenium hoopsii</i> , Oregon grape, columbine, elderberry,	

squirreltail.

GF2 (Cattle enclosure): Aspen, Wood's rose, *Lupinus sp.*, Indian paintbrush, *Potentilla sp.*, snowberry, yarrow, *Cirsium sp.*, *Helenium hoopsii*, *Asteraceae sp.* (See picture 0985), dandelion, *Penstemon sp.* (see picture 0968-0972), smooth brome, *Leucopoa kingii*, *Poa pratensis*, 3 grass sp. (see samples and pictures 0973-0976, 0978, 0979). Subdominant: Oregon grape.

GF3 (Outside enclosures): Aspen, yarrow, *Lupinus sp.*, Kentucky bluegrass (*Poa pratensis*), clover, dandelion, smooth brome, *Cirsium sp.* (see pictures 1001-1002). Subdominant: snowberry, *Astragalus sp.*, Wood's rose, *Potentilla sp.*, strawberry, Grass like bluegrass same as GF2 sample.

Other notes: The flat outside the enclosures was seeded to smooth brome in the 1950's(?). GF1 and GF2 were not seeded, but GF3 was.

GF1: 176 *Populus tremuloides* >6': Ave. DBH 0.7"

GF2: 89 *Populus tremuloides* >6': Ave. DBH 0.6"

GF3: 174 *Populus tremuloides* >6': Ave. DBH 0.8"

GF1: 7 Dead *Populus tremuloides* >6': Ave. DBH 1.5"

GF2: 0 Dead *Populus tremuloides* >6'

GF3: 5 Dead *Populus tremuloides* >6': Ave. DBH 0.5"

GF1: 1 Dead Conifer sp. >6': DBH 1.5"

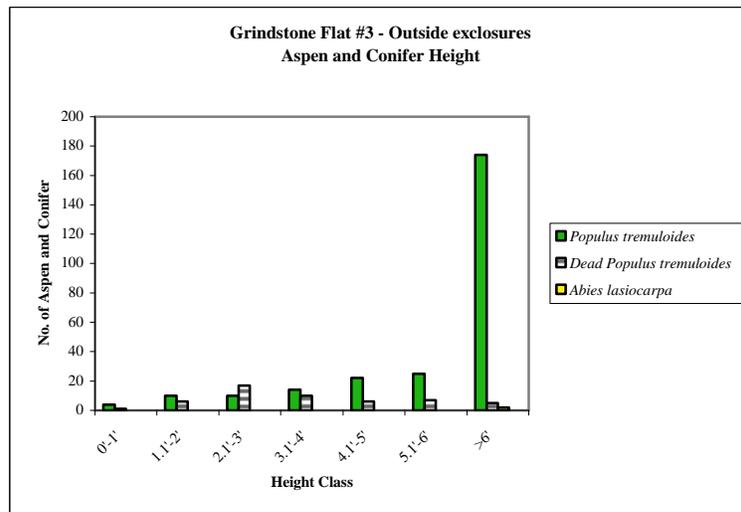
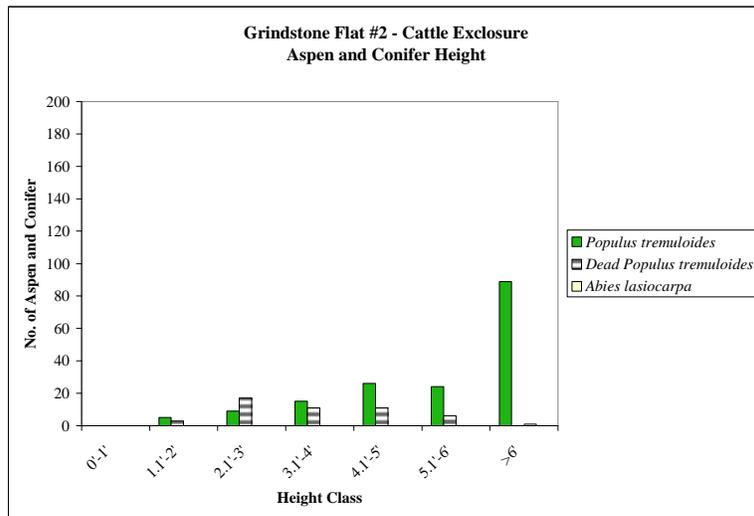
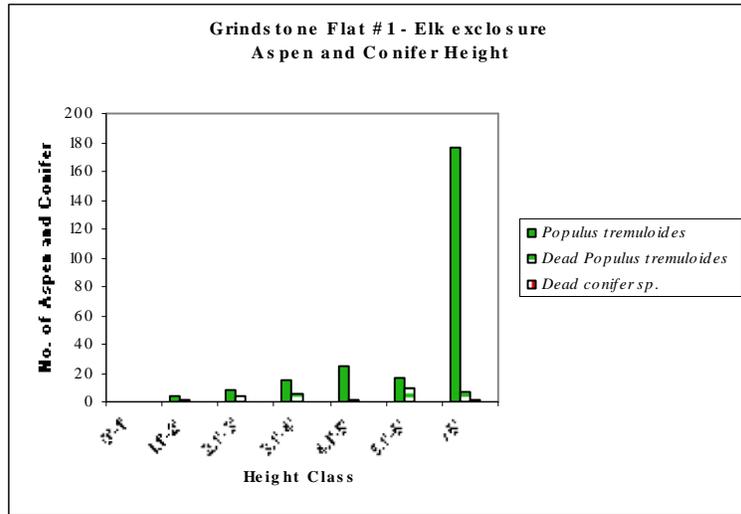
GF2: 0 Dead *Populus tremuloides* >6'

GF3: 0 Dead *Populus tremuloides* >6'

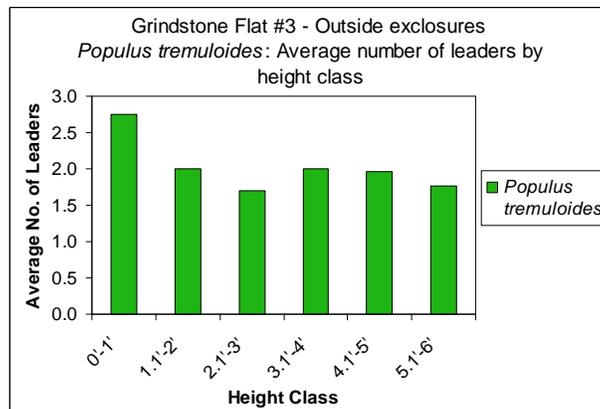
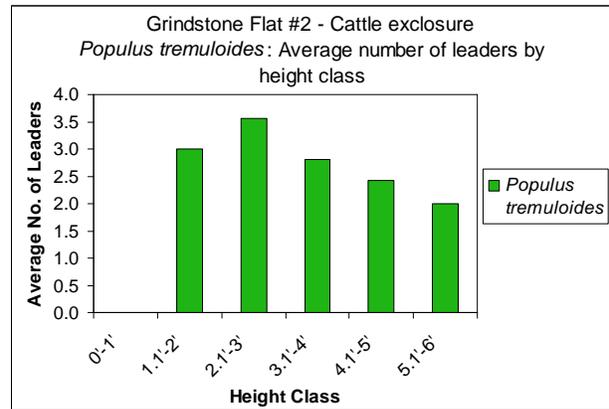
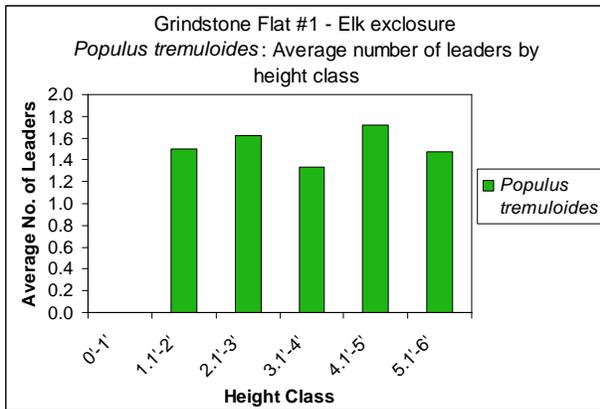
GF1: 0 *Abies lasiocarpa* >6'

GF2: 1 *Abies lasiocarpa* >6': DBH 3.5"

GF3: 2 *Abies lasiocarpa* >6': Ave. DBH 11.5"



Grindstone Flat			
	GF1 - Elk enclosure	GF2 - Cattle enclosure	GF3 - Outside enclosures
	176 <i>Populus tremuloides</i> <6'	79 <i>Populus tremuloides</i> <6'	85 <i>Populus tremuloides</i> <6'
% tall leaders browsed	0.0	30.4	22.6
% tall leaders browsed or dead	10.1	35.4	33.3
% subleaders browsed	18.4	55.4	54.4
% subleaders browsed or dead	36.8	57.0	59.5



Grindstone Flat						
Aspen Stand Structure						
		% cover overstory aspen	% cover recruitment trees	% cover understory trees	% overstory trees senescent	Stand type for each plot / average
GF1 - Elk exclosure	Plot 1	0	40	7	N/A	Replacement stand
	Plot 2	1	40	20	100	Replacement stand
	Average	0.5	40	13.5	100	Replacement stand
GF2 - Cattle exclosure	Plot 1	1	30	7.5	0	Replacement stand
	Plot 2	0	35	7.5	N/A	Replacement stand
	Average	0.5	32.5	7.5	0	Replacement stand
GF3 - Outside exclosure	Plot 1	0	65	10	N/A	Replacement stand
	Plot 2	0	37.5	7.5	N/A	Replacement stand
	Average	0	51.25	8.75	N/A	Replacement stand

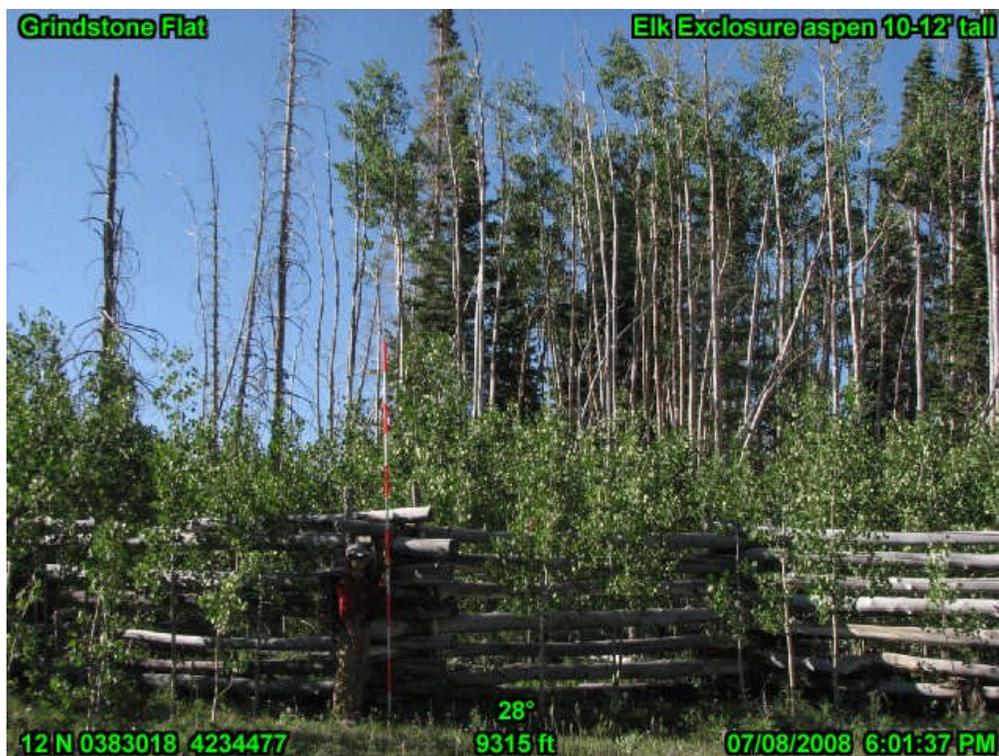


Fig. 1 (GF1). Aspen recruitment height 10-12' with sparse overstory aspen ~25' tall in the elk exclosure.



Fig. 2 (GF1). Dense recruitment inside elk exclosure



Fig. 3 (GF1). Ground cover with the few remaining mature aspen in the background.



Fig. 4 (GF2). Aspen recruitment height ~10', with sparse overstory aspen ~25' in the cattle enclosure.



Fig. 5 (GF2). Patch of recruitment and open area in cattle exclosure.



Fig. 6 (GF2). Forb understory in cattle exclosure.



Fig. 7 (GF3). Aspen recruitment height ~12' outside the enclosures.



Fig. 8 (GF3). Aspen recruitment sprouting from the stump (see arrow) of a burned and dead aspen.



Fig. 9 (GF3). Dense stands of recruitment interspersed with open areas with little regeneration outside of the exclosures.



Fig. 10 (GF3). Dense stands of recruitment interspersed with open areas with little regeneration outside the exclosures.