

Vegetation Sampling Overview
Great Basin National Park (GRBA)
2004 – 2019

2004 – 2005 (GRBA HabRest Vg Plots on Lehman Flat)

Thirty-two, 100 m vegetation transects were established on Lehman Flat to measure the effects of pinyon/juniper removal and the recovery of native vegetation after thinning treatments. Metal rebar stakes were used to mark the north and south ends of permanent 100 m transects. Twenty-four plots were surveyed in 2004. Thirty-two were surveyed in 2005. Plots were separated into woodland (PJ) and sagebrush (SG) sites.

Plant cover and density were sampled. Pre-treatment cover was assessed using a line intercept method (Bonham, 1989). Herbaceous, shrub and tree cover were measured along the 100 m transect by recording the start and end of vegetation (to the nearest centimeter) that intersected the plane of the transect tape (measuring line or canopy intercept rather than canopy gap). Herbaceous density was measured using a 33 cm X 33 cm density frame placed at meter 10, 20, 30, and 40 on the east side of the transect line. Tree density was measured along a 100 m X 2 m belt transect on the east side of the transect line. Tree class sizes for belt transects and tree cover were Class 1 < 1 m tall; Class 2 = 1 m – 2 m tall; Class 3 > 2 m tall. Six photos were taken at each transect (2 transect photos and four density plot photos). Photo data are saved on the GRBA server, not uploaded to DataStore.

2010 & 2014 (GRBA HabRest Vg Plots on Lehman Flat)

Twenty-eight 100 m transects on Lehman Flat were resurveyed in 2010. Twenty-seven transects were resurveyed in 2014. Survey methods changed in 2010 to line-point intercept (Herrick et al. 2005) instead of the line (canopy) intercept method used in 2004 and 2005 (see above). We ran seven comparative transects in 2010 and found that tree and shrub cover were strongly correlated between methods, but herbaceous cover was not. The same methods used in 2010 were repeated for plots in 2014. Belt transects (tree species only) completed in 2010 and 2014 followed the same protocol as 2004-2005 – Class < 1 m tall; Class 2 = 1 m – 2 m tall; Class 3 > 2 m tall. Herbaceous density plots (quadrats) were completed in 2010 and 2014 using the same method as in 2004-2005. Transect photos were also taken and saved on the GRBA server.

2008 – 2018 (Wildlife and Restoration Plots)

Starting in 2008, vegetation surveys followed the Monitoring Manual for Grassland, Shrub and Savanna Ecosystems (Herrick et al. 2005) with the exceptions listed above and below. Transect photos (saved on park server and not uploaded to DataStore), line-point intercept and belt transects were completed for each plot. All plots had four 50 m transects with the exception of one plot (Wildrye 1, 2018) which only had three 50 m transects. Top canopy height was recorded for most plots. Belt transects were 50 m by 2 m and were centered on the transect tape. We only recorded tree species on belt transects. Tree size classes were measured as diameter at ground level: Seedling < 1" diameter; Class A 1-4"; Class B 4-8";

Class C > 8". Dead standing trees were recorded on the belt transects. Species composition data as a time constrained search were not collected.

2017-2018 Strawberry Creek Plots – Strawberry Creek 1-4

For Strawberry Creek plots (1-4) in 2017 and 2018, we included herbaceous density and canopy gap measures for perennial plants* following the AIM monitoring protocol to monitor post-fire plant establishment and better align with other post-fire monitoring occurring on the Strawberry Fire. Density frames were 0.5 m by 0.5 m and placed at 5, 15, 25, 35 and 45 m along the transect. *A few annual species (e.g. GIIN, NIAT) were recorded in herbaceous density frames and canopy gap transects these years. We included shrubs and invasive forbs in belt transects in Strawberry Creek in 2017, and sagebrush and invasive forbs in 2018 to monitor the establishment of seeded shrub species and invasion of nonnatives after the Strawberry Fire. We used codes PPSH or PPTR for shrub or tree species that were dead and unidentifiable. Dead standing trees were labelled using SPECIESCODE-D (e.g., PIMO-D).

Shrub size classes (Height)

Class A 0-5 cm

Class B 5-50 cm

Class C >50 cm

Class E Dead shrubs

Tree size classes – diameter at ground level

Seedling <1"

Class A 1-4"

Class B 4-8"

Class C >8"

Cheatgrass Plots (2011-2014; 2016; 2018-2019)

Three plots (A, B and C) were installed on Lehman Flat in 2011 using a split-block design to compare effectiveness of three treatment strategies on native plant restoration and cheatgrass control. Each plot contains six blocks with two transects per block (12 transects per plot). Transect length varies. The corners of each plot were marked with rebar for relocation. Plots were read in 2011 (LPI only), 2012, 2013 (Plot A, Blocks 1-4 and 6 only), 2014, 2016, 2018 and 2019.

Two transects were installed and read in each block (NE and NW line) following line point intercept and belt transect methods from the Monitoring Manual for Grassland, Shrub and Savanna Ecosystems (Herrick et al. 2005). Two photos were taken for each transect looking down the transect into the plot. Top canopy height was not recorded. Belt transects were two meters wide – one meter on either side of the transect tape. Only tree species were recorded on belt transects. Size classes were measured as diameter at ground level: Seedling < 1" diameter; Class A 1-4"; Class B 4-8"; Class C > 8"

Surveys were completed in the fall with the exception of 2014. During fall surveys, live (newly sprouted) and dead cheatgrass are recorded separately. Dead, standing cheatgrass was labelled as BRTE-D. Dead cheatgrass on the ground and no longer attached was labelled as litter.