

Whiskey Canyon to Clear Creek, UDAF Grant 150357
2015 Annual Report,
Submitted February 3, 2016 to the Skyline CWMA
By Priscilla Burton

Location

Whiskey Canyon to Clear Creek (6 square miles of private land)

T. 13 S., R. 7 E. Sections 19, 20, 21, 29, 30, 31 and 32

Oxeye Daisy, Yellow Toadflax and Musk Thistle

4,400 acres total = 3,800 acres Private and 600 acres USFS land.

Project description:

The original Whiskey Canyon to Clear Creek Canyon project area encompasses 6 square miles (3,800 acres) in Carbon County, that are privately held. The biological control aspect of the project was expanded by # acres in 2015 to include 600 acres of land managed by the Manti La Sal National Forest on the west. Map 1 shows the current project area in Google Earth.

The project area is bordered on the east by State Road 94 along Mud Creek and on the North by State Hwy 264 in Eccles Canyon. The project area is the watershed for the Clear Creek town and is tributary to Scofield Reservoir. The project area is accessed from the East by private roads up Finn Canyon, Boarding House Canyon, and Slaughter House Canyon. The area is accessed from the North by a private road up Whiskey Creek to the reclaimed White Oak Mine. The project area also includes an additional 10 acres associated with the White Oak Mine that is situated on the Union Pacific Railroad tracks one mile north of the intersection of Hwy 264 and State Road 94.

The 3,800 acres of privately owned, undeveloped, wildlife range land is at an elevation of 8,400 to 9,200 ft. and is the watershed for the town of Clear Creek and contributory to Mud Creek and Eccles Creek a class A fishery. Mud Creek flows into Scofield Reservoir. The project area has been disturbed by a surface coal mine (48 acres), logging activity and associated roads, gas well developments, and a Questar gas pipeline. The cumulative disturbance has brought a seed source that has become established on road sides and in disturbed areas. Control of this weed source will benefit the function of the watershed and make the land more productive for wildlife.

Noxious weeds encountered in the project area are yellow toadflax, oxeye daisy, musk thistle, Canada thistle and houndstongue.

The State of Utah Department of Agriculture and Food Invasive Species Mitigation grant, Utah Division of Finance contract #150357, in the amount of \$17,144 envisioned a three year effort. The first year was from July 1, 2014 to July 15, 2015. The contract was expanded in size and dollar amount in 2015 and extended from July 15, 2015 to December 31, 2015. An application to renew the contract through December 31 2016 has been recently filed with the UDAF.

Accomplishments:

This year's treatments were directed towards mapping, monitoring, and treatment of weed infestations located by the mapping received from Snow College in 2015 (Maps 2 and 3 attached and Map 3 Weed ID attached).

July 8, 2015. Skyline CWMA sponsored a work day to bring together land management agencies, industry and landowners to treat the Whiskey Canyon to Clear Creek area. The sign-in sheet is attached, thirty people participated. There was a good showing from Carbon County, Emery County, USFS, BLM, DOGM, Marion Energy, and landowners. It had been previously agreed to divide the work party in two, such that part of the group (**21 people/210 man hours**) worked on the Whiskey to Clear Creek grant and part of the group (11 people) worked on the Telonis/Nielson/Sampinos/BLM lands East of Scofield.

Therefore on a single day, **210 man hours** were provided to the Whiskey to Clear Creek project by those assembled. The **Division of Oil, Gas &** provided **40 in-kind** man hours. **Emery County** provided **50 hours in-kind** man hours. Marion Energy provided **10 hours** in-kind man hours. Robert Aycock provided **10 hours** in-kind man hours. Snow College provided **40 hours**. **USFS** provided **60 hours**.

Locked gates were opened. A Division of Oil, Gas, & Mining staff member and landowner Robert Aycock spent the morning clearing logs from Boardinghouse Canyon, Slaughterhouse Canyons roads for crews to travel.

The Division of Oil Gas & Mining (DOGM) crews sprayed Milestone at the White Oak Loadout (a **10 acre** area) and in Section 31 (0.5 mile or approximately **1 acre** of Woolsey land along the Finn/Boardinghouse ridge top). However Milestone was determined to have little efficacy on the dominant weed: white top. Crews decided to return to the Woolsey land in 2016 with Telar or Escort.

DOGM also sent a 3 man backpack spray crew down the steep, south slope of Finn Canyon down to the creek bottom in Sec 31 and 32 (Cunningham land) to spray isolated, mapped locations of Yellow Toadflax and Canada thistle. Crews used hand held GPS units to find the locations within the one square mile area and spot sprayed. Crews had to abandon the task and their sprayers to seek shelter during a severe rain/hail storm and recovered them a week later.

Marion Energy paired with Emery County crews and sprayed gas well pads and roadsides using 2,4-D/Tordon in Slaughterhouse and Boardinghouse Canyons (approximately 4 miles of road or **12 acres**).

A six man USFS crew traveled the perimeter of the project area, along Trough Springs Ridge on ATV's and sprayed Weedmaster on USFS lands along the ISM grant boundary (approximately **25 acres**). Grant money designated for biological control was not used this year.

Robert Aycock sprayed 2,4-D within Slaughterhouse Canyon on Hammond family land along the ridge above Slaughterhouse and Sheep Canyons (approximately 2 miles of road or **6 acres**).

The Snow College mapping crew of three students spent two weeks returning to established monitoring points in T13 S., R 7 E Sec 19 & 20 and finalizing mapping in Sec 31 and 32 (on lands owned by D. Cunningham and J. Woolsey). The predominant weeds are musk thistle and hounds tongue. A cluster of oxeye daisy was noted in and around Clear Creek. The daisy was seen in yards and along drainage ways. A few locations of yellow toadflax were found. The Snow College final report is attached.

Future Work Suggestions:

Ask the landowner to clear roads to the area the weekend prior.

Contact Clearcreek Homeowners Association for their involvement and to discuss Oxeye Daisy.

Encourage landowner participation by distributing chemical to landowners within the project.

Musk thistle is so dominant on the ridge of Boardinghouse and Whiskey Creek that Project Manager Robert Aycock wonders if aerial spraying might be an option (personal communication from R. Aycock, 8/15/2015).

Dividing the available pool of volunteers between the Whiskey to Clear Creek project and the Telonis/Nielson/Sampinos project was not effective for either project. Each project deserves a dedicated work day.

Appropriate chemical for mustard family weeds (Telar and Escort) need to be provided to spray white top on Woolsey land. This is an infestation on a dry ridge top that should be followed with desirable seeding.

Backpack access to mapped areas was extremely difficult for volunteers. A single backpack, filled to the halfway mark would be sufficient. In this way, the burden could be shared by the crew. It may be necessary to hire this work out.

Chad Dewey has reported that the release of *Rhinocyllis conicus* as biological control is no longer recommended by APHIS, because the weevil has been found on other species than the target species. Therefore no *R. conicus* will be released in 2016. Photo-Monitoring will occur in 2016 and the toadflax flower beetle *Brachypterolus pulicarius* will be released at mapped toadflax locations. The Skyline CWMA spray day commitment will continue through 2016 as well.

Grant Expenses:

The three year project grant amount was amended to include biological control on adjacent USFS lands. The grant amount was increased to \$33,734 on June 12, 2015. This grant expired December 2015.

2015 Funds were dispersed as follows:

- \$ 597.08 to Robert Aycock for purchase of equipment and chemical
- \$ 7,923.70 to Snow College for mapping work completed in 2014.
- \$ 1,200 to Snow College for monitoring and mapping completed in 2015.
- + 7% administrative costs

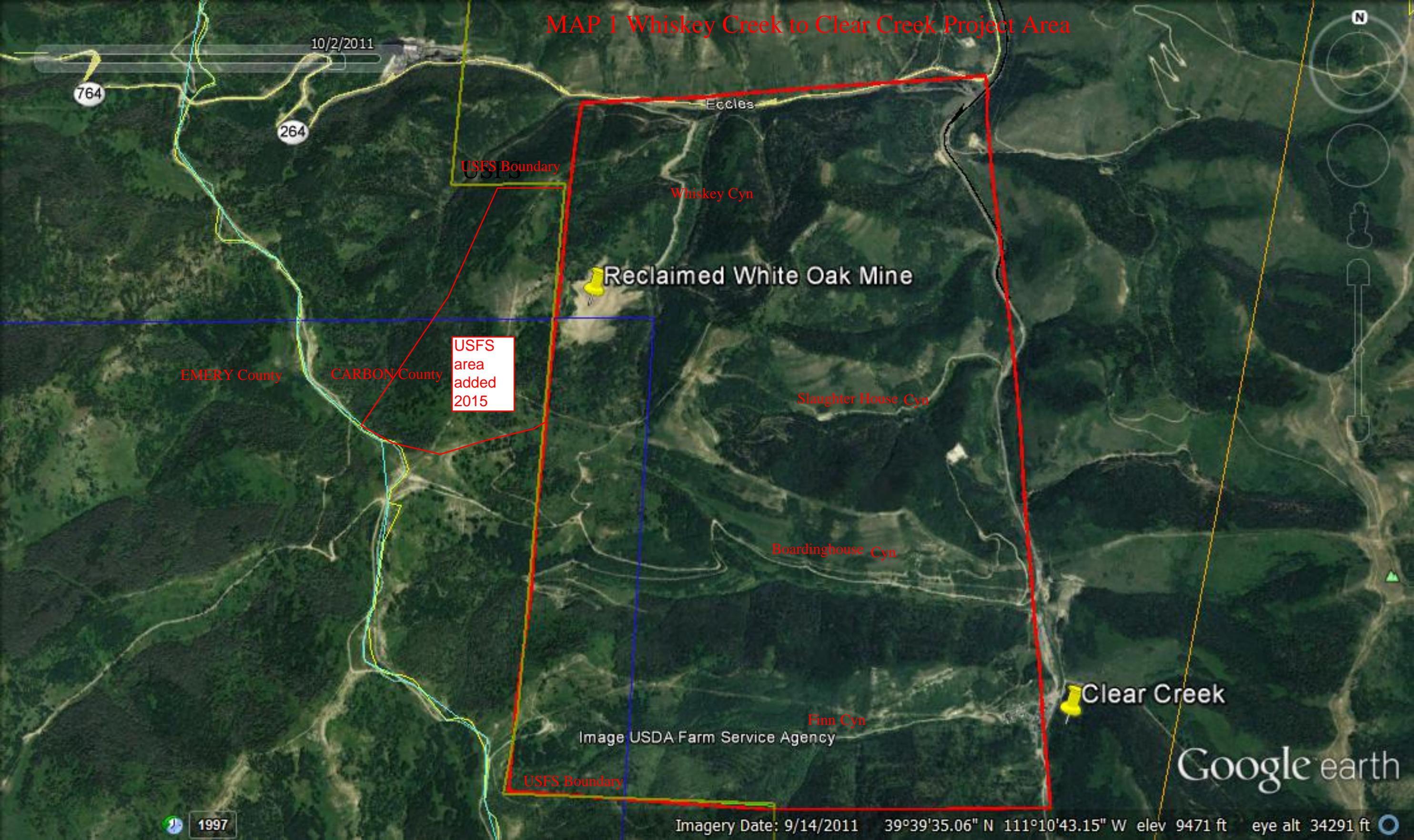
Biological control was not completed in 2015 due to recent concerns cited above.

A 2016 grant extension was filed in May 29, 2015 for the amount of \$4,694.

Projected 2016 costs:

| | |
|--|--------------------|
| Photo point monitoring (Snow College) | \$ 1,200.00 |
| Chemical cost | \$ 1,233.00 |
| Biological control | <u>\$ 1,666.00</u> |
| Total amount requested through December 31, 2016 = | \$ 4,694.00 |

MAP 1 Whiskey Creek to Clear Creek Project Area



10/2/2011

764

264

USFS Boundary

Eccles

Whiskey Cyn

Reclaimed White Oak Mine

EMERY County

CARBON County

USFS
area
added
2015

Slaughter House Cyn

Boardinghouse Cyn

Clear Creek

Finn Cyn

Image USDA Farm Service Agency

USFS Boundary

1997

Imagery Date: 9/14/2011 39°39'35.06" N 111°10'43.15" W elev 9471 ft eye alt 34291 ft

Google earth



Skyline Cooperative Land Management Area
 P O Box 1114
 Castle Dale UT 84513-1114
 (435) 381-2300 Ext. 101
 Fax: (435) 381-5696

Project Name: Whiskey Creek to Clear Creek Project Sign-In Sheet
 Date: 7/8/2015 Project Lead Name: Robert Aycock / Pisciella Burton

| Complete Prior to Project | | Complete After Project | | | | | |
|---------------------------|---|---|-------------------------------------|--------------|---|---|-------------------------------------|
| Name (Please print) | Are you a Volunteer? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | If not a volunteer, please list Agency & Title/Position | What type of work did you do? | Man hours | Total Number of Acres You Treated | Equipment Used and Hours Used for Each | Type and Amount of Chemical Used |
| Forrest Jensen | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Snow College Natural resources Field tech | Mapping | | | | |
| Cory Childs | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Snow college Natural Resources Field Technician | Mapping | | | | |
| Hailey Whittier | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Snow college NATURAL RESOURCES Field tech. | Mapping | | | | |
| <i>[Signature]</i> | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Craig County Weed | Spray | | | | |
| Brandon [Signature] | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Carbon County Weed | SPRAY | | | brandonwise@carbon.utah.gov backpack | |
| Pisciella Burton | <input type="checkbox"/> Yes <input type="checkbox"/> No | Division Oil Gas Mining | backpack spray | | | | milestone |



Skyline Cooperative Weed Management Area
 P O Box 1114
 Castle Dale UT 84513-1114
 (435) 381-2300 Ext. 101
 Fax: (435) 381-5696

Project Name: Whiskey Creek to Clear Creek Project Sign-In Sheet
 Date: 7/8/2015 Project Lead Name: Robert Aycock / Priscilla Burton

| Complete Prior to Project | | | Complete After Project | | | | |
|---------------------------|--|---|-------------------------------------|--------------|---|---|-------------------------------------|
| Name (Please print) | Are you a Volunteer? <input type="checkbox"/> Yes <input type="checkbox"/> No | If not a volunteer, please list Agency & Title/Position | What type of work did you do? | Man hours | Total Number of Acres You Treated | Equipment Used and Hours Used for Each | Type and Amount of Chemical Used |
| Dave Smith 650-3923 | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | Gas Well Motion | 12 hrs | | truck & beatings (Bassings) | 2, 4-D Jordan |
| Rachel Williams | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | DOG M - GIS Analyst | | | | back pack | mulestone |
| Chad Dewey | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Snow College | | 12 hrs | | GPS | 10 hrs |
| BRAD BROWN | <input type="checkbox"/> Yes <input type="checkbox"/> No | LAND OWNER | | | | | |
| NICK SAMPINOS | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | land owner REP. TELONIS Family | | | | | |
| Jay Brown | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |



Skyline Cooperative Forest Management Area
 P O Box 1114
 Castle Dale UT 84513-1114
 (435) 381-2300 Ext. 101
 Fax: (435) 381-5696

Project Name: Whiskey Creek to Clear Creek Project Sign-In Sheet
 Date: 7/8/2015 Project Lead Name: Robert Aycock / Priscilla Burton

| Complete Prior to Project | | | Complete After Project | | | | |
|---------------------------|--|---|-------------------------------------|--------------|---|---|-------------------------------------|
| Name (Please print) | Are you a Volunteer? <input type="checkbox"/> Yes <input type="checkbox"/> No | If not a volunteer, please list Agency & Title/Position | What type of work did you do? | Man hours | Total Number of Acres You Treated | Equipment Used and Hours Used for Each | Type and Amount of Chemical Used |
| Brian Brown | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |
| Rich Reeder | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |
| April's Bearoh | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |
| Tim Wayment | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |
| Garth Stramp | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | backpack spray | | | back pack | milestone |
| Stephanie Barr | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | BLM | Spray | 8 | | UTV ± 60 gal tank | Tordon \$224 2,4-D |



Skyline Cooperative Weed Management Area

P O Box 1114
 Castle Dale UT 84513-1114
 (435) 381-2300 Ext. 101
 Fax: (435) 381-5696

Project Name: Whiskey to Clear Creek Project Sign-In Sheet
 Date: 7/8/2015 Project Lead Name: Robert Aycock / Priscilla Burton

| Complete Prior to Project | | | Complete After Project | | | | |
|---------------------------|---|---|-------------------------------------|--------------|---|---|-------------------------------------|
| Name (Please print) | Are you a Volunteer? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | If not a volunteer, please list Agency & Title/Position | What type of work did you do? | Man hours | Total Number of Acres You Treated | Equipment Used and Hours Used for Each | Type and Amount of Chemical Used |
| Cory Woodward | <input checked="" type="checkbox"/> No | EMERY Co. | weed SPRAY | | | 6x6 | Tordon |
| LES REESE | <input checked="" type="checkbox"/> No | EMERY Co. | weed SPRAY | | | 6x6 | Tordon |
| Jaden Olsen | <input checked="" type="checkbox"/> No | Emery Co. | Weed Spray | | | 616 | Tordon |
| TYLER COX | <input checked="" type="checkbox"/> No | EMERY CO. | WEED SPRAY | | | 6x6 | TORDON |
| Jack Gardner | <input checked="" type="checkbox"/> No | Emery CO. | Weed Spray | | | 6x6 | TORDON |
| Lisa Reinhart | <input type="checkbox"/> Yes <input type="checkbox"/> No | Div. Oil Gas + Mining | SPRAY | 2 | 1 | Shovel | Tordon |



Skyline Cooperative Wood Management Area
 P O Box 1114
 Castle Dale UT 84513-1114
 (435) 381-2300 Ext. 101
 Fax: (435) 381-5696

Project Name: Whiskey Creek to Clear Creek Project Sign-In Sheet
 Date: 7/8/2015 Project Lead Name: Robert Aycock / Priscilla Burton

| Complete Prior to Project | | Complete After Project | | | | Type and Amount of Chemical Used | |
|---------------------------|--|---|-------------------------------|-----------|-----------------------------------|----------------------------------|--|
| Name (Please print) | Are you a Volunteer? <input type="checkbox"/> Yes <input type="checkbox"/> No | If not a volunteer, please list Agency & Title/Position | What type of work did you do? | Man hours | Total Number of Acres You Treated | | Equipment Used and Hours Used for Each |
| April Abate | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Dw. Oil Gas + Mining | cut down musk | 2 | 1 | Shovel | — |
| Robert Aycock | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Landowner | ATV | 8 | 4 miles road | Chainsaw | Wood chips |
| [Faint Name] | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | [Faint Agency] | ATV | 9 | | | Wood chips |
| [Faint Name] | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | [Faint Agency] | ATV | 9 | | | Wood chips |
| | <input type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |
| | <input type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |



Skyline Cooperative Weed Management Area

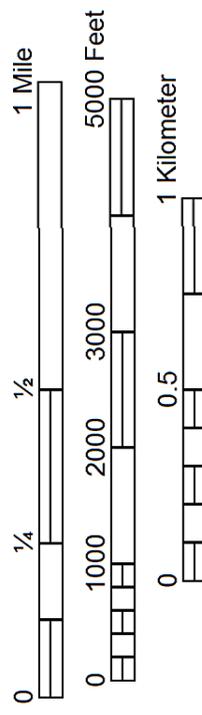
P O Box 1114
 Castle Dale UT 84513-1114
 (435) 381-2300 Ext. 101
 Fax: (435) 381-5696

Project Name: Whiskey Creek to Clear Creek Project Sign-In Sheet
 Date: 7/8/2015 Project Lead Name: Robert Aycock / Priscilla Burton

| Complete Prior to Project | | | Complete After Project | | | | |
|---------------------------|---|---|-------------------------------------|--------------|---|---|-------------------------------------|
| Name (Please print) | Are you a Volunteer? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | If not a volunteer, please list Agency & Title/Position | What type of work did you do? | Man hours | Total Number of Acres You Treated | Equipment Used and Hours Used for Each | Type and Amount of Chemical Used |
| Corinne Dalton | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Weed supervisor USFS | Sprayed weeds | 10 | 25 ACRES | truck, handcam | Weedmaster 2.5gal |
| Kacie Healy | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Crew Lead USFS | " | 10 | | truck, trailer 2 side by sides | this was used by all |
| Cameron Allred | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Seasonal Crew member USFS | " | 10 | | truck trailer 1 fourwheeler | |
| Connor Benson | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Seasonal Crew member USFS | Chopped weeds | 10 | | | |
| Weston Allinson | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Seasonal Crew member USFS | " | 10 | | | |
| Raece Behling | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Seasonal Crew member USFS | Sprayed weeds | 10 | | | ↘ |



Map 2, 2014 mapping of Musk Locations



2015 Declination at Sheet Center
 TN to MN 11.237° (11° 14' 14") (200 mills)
 TN to UTM GN -0.110° (-0° 6' 37") (-2 mills)

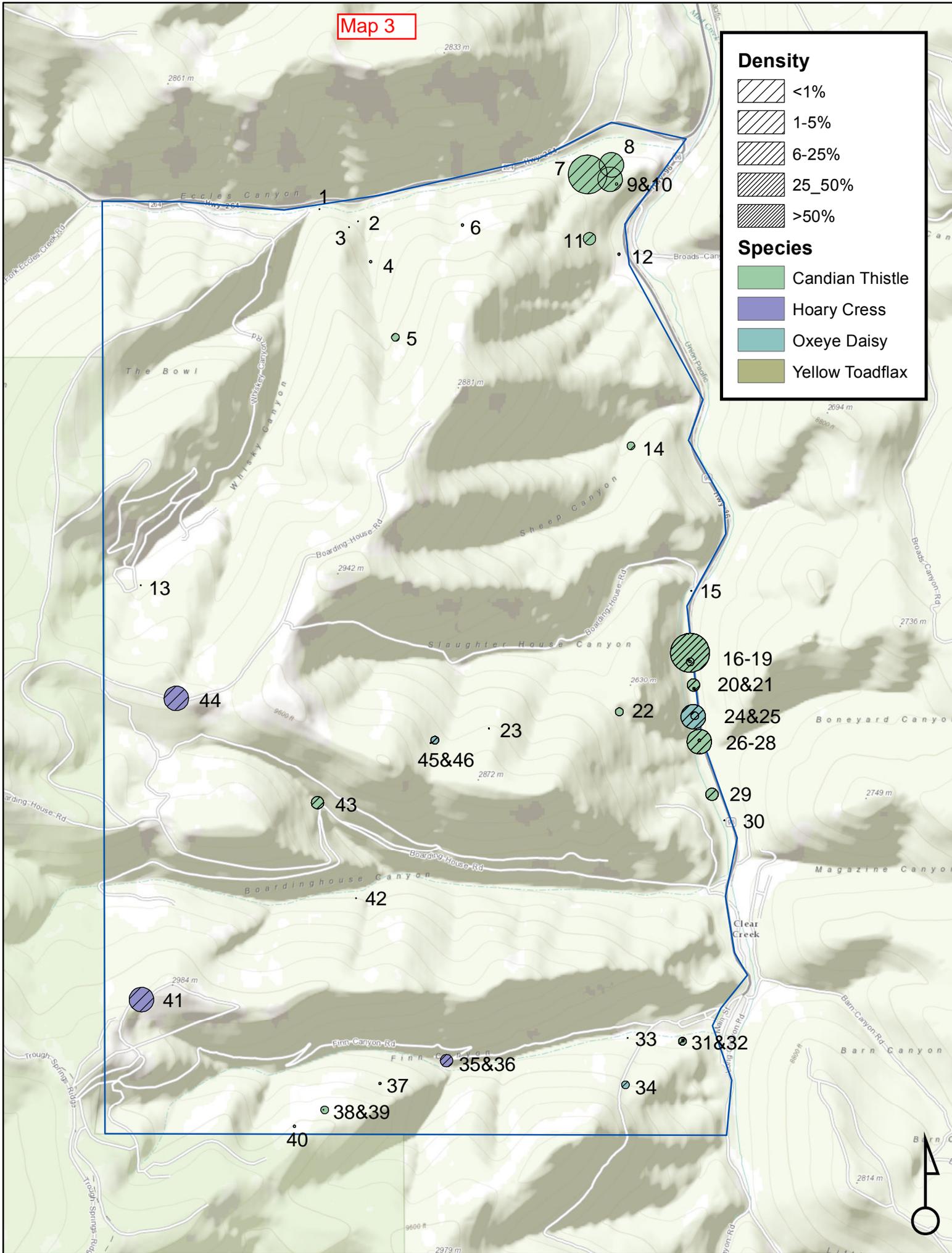
Map 3

Density

-  <1%
-  1-5%
-  6-25%
-  25_50%
-  >50%

Species

-  Candian Thistle
-  Hoary Cress
-  Oxeye Daisy
-  Yellow Toadflax



EDRR MAP COORDINATES

| Number | Weed | Location | Datum | Size (acres) | Density |
|--------|-----------------|-----------------------------|--------|--------------|---------|
| 1 | Canada Thistle | 39.681931000 -111.177853000 | WGS 84 | 0.001 | 1% |
| 2 | Canada Thistle | 39.681357000 -111.175531000 | WGS 84 | 0.001 | 6-25% |
| 3 | Canada Thistle | 39.681085000 -111.176070000 | WGS 84 | 0.001 | 50-100% |
| 4 | Canada Thistle | 39.679468000 -111.174773000 | WGS 84 | 0.01 | 1% |
| 5 | Canada Thistle | 39.675939000 -111.173302000 | WGS 84 | 0.1 | 1-5% |
| 6 | Canada Thistle | 39.681160000 -111.169237000 | WGS 84 | 0.01 | 1% |
| 7 | Canada Thistle | 39.683497000 -111.161673000 | WGS 84 | 2.5 | 1% |
| 8 | Canada Thistle | 39.683938000 -111.160238000 | WGS 84 | 1 | 1% |
| 9 | Canada Thistle | 39.683269000 -111.160320000 | WGS 84 | 1 | 1% |
| 10 | Canada Thistle | 39.683047000 -111.159940000 | WGS 84 | 0.01 | 1-5% |
| 11 | Canada Thistle | 39.680503000 -111.161581000 | WGS 84 | 0.25 | 1% |
| 12 | Hoary Cress | 39.679775000 -111.159806000 | WGS 84 | 0.01 | 1% |
| 13 | Canada Thistle | 39.664424000 -111.188705000 | WGS 84 | 0.001 | 6-25% |
| 14 | Canada Thistle | 39.670835000 -111.159125000 | WGS 84 | 0.1 | 1-5% |
| 15 | Oxeye Daisy | 39.664071000 -111.155524000 | WGS 84 | 0.001 | 1% |
| 16 | Oxeye Daisy | 39.662061000 -111.155727000 | WGS 84 | 0.001 | 1% |
| 17 | Canada Thistle | 39.661178000 -111.155615000 | WGS 84 | 2.5 | 6-25% |
| 18 | Oxeye Daisy | 39.660776000 -111.155622000 | WGS 84 | 0.01 | 1% |
| 19 | Canada Thistle | 39.660755000 -111.155603000 | WGS 84 | 0.01 | 1-5% |
| 20 | Canada Thistle | 39.659673000 -111.155411000 | WGS 84 | 0.25 | 1-5% |
| 21 | Canada Thistle | 39.659509000 -111.155384000 | WGS 84 | 0.01 | 1% |
| 22 | Canada Thistle | 39.658440000 -111.159890000 | WGS 84 | 0.1 | 1% |
| 23 | Oxeye Daisy | 39.657684000 -111.167750000 | WGS 84 | 0.001 | 1% |
| 24 | Canada Thistle | 39.658241000 -111.155346000 | WGS 84 | 0.1 | 1% |
| 25 | Oxeye Daisy | 39.658193000 -111.155436000 | WGS 84 | 1 | 1-5% |
| 26 | Oxeye Daisy | 39.657091000 -111.155077000 | WGS 84 | 0.01 | 1% |
| 27 | Canada Thistle | 39.657029000 -111.155077000 | WGS 84 | 1 | 1-5% |
| 28 | Oxeye Daisy | 39.656488000 -111.155032000 | WGS 84 | 0.001 | 1% |
| 29 | Canada Thistle | 39.654572000 -111.154323000 | WGS 84 | 0.25 | 1-5% |
| 30 | Oxeye Daisy | 39.653355000 -111.153584000 | WGS 84 | 0.001 | 1% |
| 31 | Canada Thistle | 39.643092700 -111.156135900 | WGS 84 | 0.01 | 6-25% |
| 32 | Canada Thistle | 39.643064000 -111.156160000 | WGS 84 | 0.1 | 6-25% |
| 33 | Canada Thistle | 39.643226000 -111.159460000 | WGS 84 | 0.001 | 51-100% |
| 34 | Oxeye Daisy | 39.641046000 -111.159604000 | WGS 84 | 0.1 | 6-25% |
| 35 | Hoary Cress | 39.642204000 -111.170384000 | WGS 84 | 0.25 | 6-25% |
| 36 | Yellow Toadflax | 39.642135000 -111.170397000 | WGS 84 | 0.01 | 1% |
| 37 | Canada Thistle | 39.641153000 -111.174400000 | WGS 84 | 0.01 | 1% |
| 38 | Canada Thistle | 39.639927000 -111.177735000 | WGS 84 | 0.1 | 1% |
| 39 | Yellow Toadflax | 39.639932000 -111.177808000 | WGS 84 | 0.001 | 1% |
| 40 | Canada Thistle | 39.639165000 -111.179558000 | WGS 84 | 0.01 | 1% |
| 41 | Hoary Cress | 39.645103000 -111.188749000 | WGS 84 | 1 | 1% |
| 42 | Canada Thistle | 39.649791000 -111.175804000 | WGS 84 | 0.001 | 1% |
| 43 | Canada Thistle | 39.654252000 -111.178097000 | WGS 84 | 0.25 | 1-5% |
| 44 | Hoary Cress | 39.659140000 -111.186588000 | WGS 84 | 1 | 1% |
| 45 | Oxeye Daisy | 39.657010000 -111.171268000 | WGS 84 | 0.001 | 1% |
| 46 | Oxeye Daisy | 39.657152000 -111.171012000 | WGS 84 | 0.1 | 1% |

Skyline CWMA Monitoring 2015

Snow College Natural Resources Program

Several methods were used to monitor the target weeds for this project. The Snow College Natural Resources Program is currently hired to do all of the monitoring work. Chad Dewey, Director of Natural Resources for Snow College, oversees all monitoring procedures and ensures that proper protocols are followed. Students interested in natural resources are able to get hands-on experience in the field by creating permanent plots and collecting data along transects of each plot.

Within the project, seven permanent plots are being observed. Plot locations were chosen to represent a high density target weed area within each square mile plot. Target weeds include: musk thistle (*Carduus nutans*), oxeye daisy (*Leucanthemum vulgare*), hoary cress (*Cardaria draba*), and houndstongue (*Cynoglossum officinale*). Plots were named after the section numbers in township 13 (T13 S), range 7 (R7 E) of the Public Land Survey System (PLSS). Each plot is 52 meters in length and the beginning and end of the plots are marked with rebarb with a tip painted blue. GPS coordinates of each stake are included in the report. Line-point intercept data is collected on each plot. Belt transect data is collected for all target weed species except for hoary cress. Hoary cress is a stemmy, rhizomatous perennial, making it difficult to accurately count plant numbers required in a belt transect. Line-point intercept methods are much better at accurately showing changes in a hoary cress infestation. Each plot also has a photo-point taken from the beginning post, pointing towards the end post. All data collected follows protocols taken from the "Monitoring Manual for Grassland, Shrubland and Savanna Ecosystems," authored by Jeffrey E. Herrick from the Jornada Experiment Station at New Mexico State University.

One goal of the project is to replace target weed infestations with desirable perennial shrubs, forbs, and grasses. For the most part, these desirable species were merely lumped into a category instead of listing each species. Each plot will be read annually. Densities as well as canopy cover will be analyzed and compared to previous years to measure the success of the program.

In each plot where musk thistle was the dominant weed, a biocontrol survey was also completed to see what percent of the seed heads were infected by the *Rhinocyllus spp.* A total of 30 seed heads were randomly selected, cut open, and inspected for evidence of the weevil. Of the 3 sites where musk thistle was the dominant weed in 2015, an average of 30% of the seed heads were infected by the weevil.

Plot: Skyline 19

Site Visit: 7/6/15

GPS Coordinates: NAD 83 Post 1: N 39.66935, W 111.17531 Post 2: N 39.66893, W 111.17513

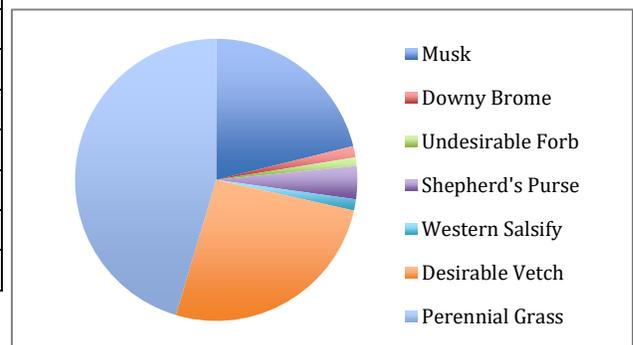
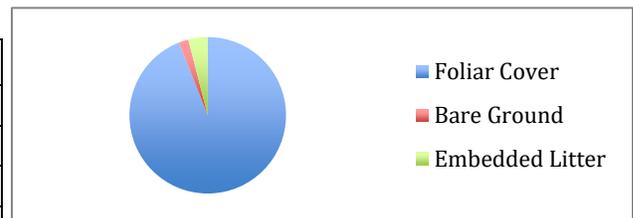


Notes: Picture (left) taken at 4 feet high facing south. Quadrant plot photo (right) taken at 11 meters. Plot line starts at 1 meter and ends at 51 meters. Total length of transect is 52 meters.

Line-Point Intercept Data for Skyline 19

| TOTAL COVER | |
|------------------------------|----------|
| % Foliar Cover | 94% |
| % Bare Ground | 2% |
| % Embedded Litter | 4% |
| TOTAL PLANT COUNT- 80 PLANTS | |
| Musk Thistle | 17 21.3% |
| Downy Brome | 1 1.3% |
| Undesirable Forb | 1 1.3% |
| Shepherd's Purse | 3 3.8% |
| Western Salsify | 1 1.3% |
| Desirable Vetch | 21 26.3% |
| Perennial Grass | 36 45.7% |

Observer: Forrest Jensen, Recorder: Hailey Whittier



Musk Thistle Biocontrol: 10/30 infected

Belt Transect Data for Skyline 19

Musk Thistle= 120,587 Plants per Acre

Plot: Skyline 20

Site Visit: 7/2/15

GPS Coordinates: NAD 83 Post 1: N 39.67842, W 111.15884 Post 2: N 39.67888, W 111.15890

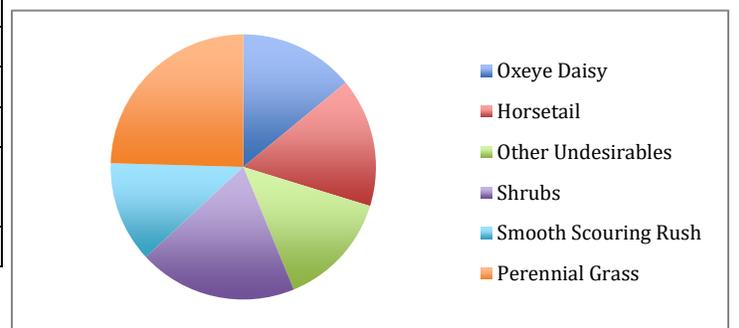
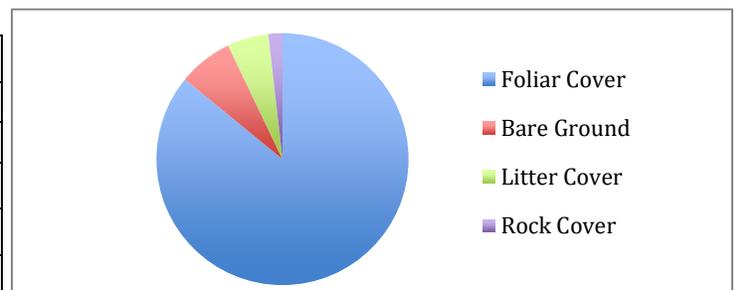


Notes: Picture (left) taken at 4 feet high facing west. Quadrant plot photo (right) taken at 11 meters. Plot line starts at 1 meter and ends at 51 meters. Total length of transect is 52 meters.

Line-Point Intercept Data for Skyline 20:

| TOTAL COVER | |
|------------------------------|----------|
| % Foliar Cover | 85.9% |
| % Bare Ground | 7.0% |
| % Litter Cover | 5.3% |
| % Rock Cover | 1.8% |
| TOTAL PLANT COUNT- 57 PLANTS | |
| Oxeye Daisy | 8 14.0% |
| Horsetail (EQAR) | 9 15.7% |
| Other Undesirables | 8 14.0% |
| Shrubs | 11 19.3% |
| Smooth Scouring Rush | 7 12.3% |
| Perennial Grass | 14 24.5% |

Observer: Forrest Jensen, Recorder: Hailey Whittier



Belt-Transect Data for Skyline 20:

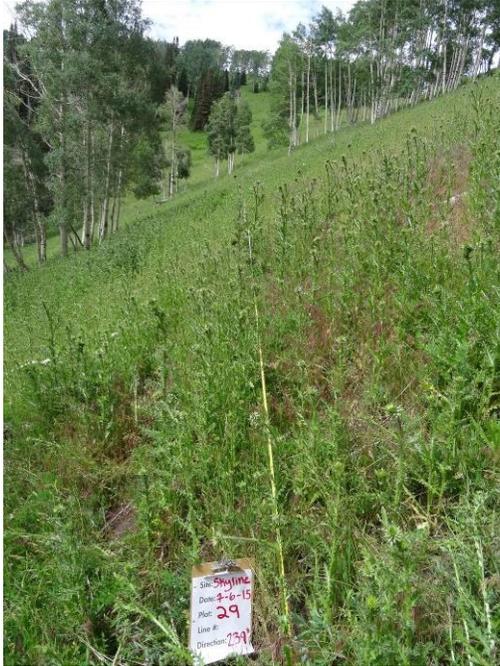
Oxeye Daisy= 95,382 Plants per Acre

Musk Thistle= 6,919 Plants per Acre; Houndstongue= 30,147 Plants per Acre

Plot: Skyline 29

Site Visit: 7/6/15

GPS Coordinates: NAD 83 Post 1: N 39.66705, W 111.17197 Post 2: N 39. 66679, W 111.17243



Notes: Notes: Picture (left) taken at 4 feet high facing west. Quadrant plot photo (right) taken at 11 meters. Plot line starts at 1 meter and ends at 51 meters. Total length of transect is 52 meters.

Line-Point Intercept Data for Skyline 29

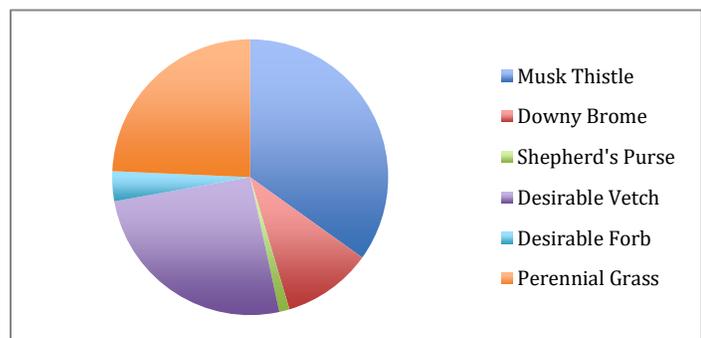
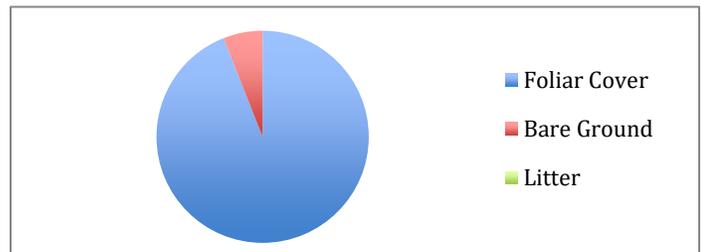
| TOTAL COVER | |
|------------------------------|----------|
| % Foliar Cover | 94% |
| % Bare Ground | 6% |
| % Litter Cover | 0% |
| TOTAL PLANT COUNT- 86 PLANTS | |
| Musk Thistle | 30 34.9% |
| Downy Brome | 9 10.5% |
| Shepherd's Purse | 1 1.2% |
| Desirable Vetch | 22 25.6% |
| Desirable Forb | 3 3.5% |
| Perennial Grass | 21 24.3% |

Observer: Cory Childs, Recorder: Forrest Jensen

Musk Thistle Biocontrol: 14/30 Infected

Belt Transect Data for Skyline 29

Musk Thistle= 400,311 Plants per Acre



Plot: Skyline 30

Site Visit: 7/2/2015

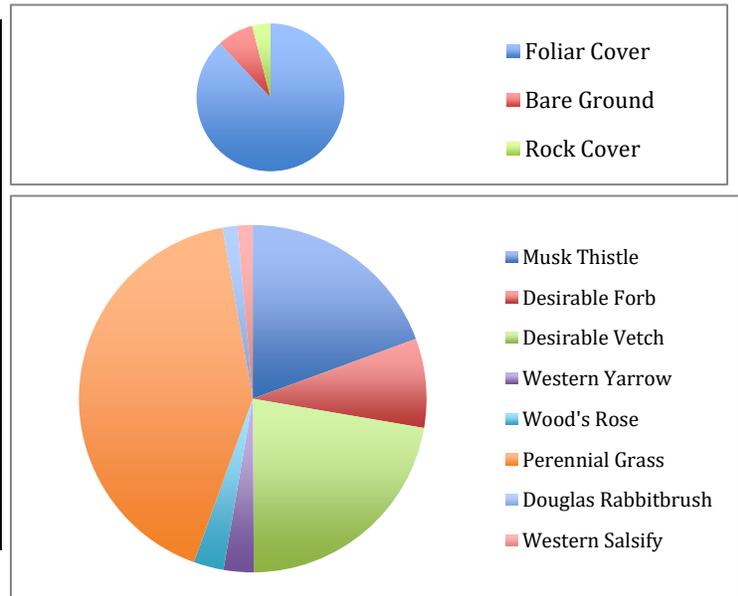
GPS Coordinates: NAD 83 Post 1: N 39.65332, W 111.18829 Post 2: N 39.65295, W 111.18861



Notes: Notes: Picture (left) taken at 4 feet high facing north. Quadrant plot photo (right) taken at 11 meters. Plot line starts at 1 meter and ends at 51 meters. Total length of transect is 52 meters.

Line-Point Intercept Data for Skyline 30

| TOTAL COVER | |
|------------------------------|----------|
| % Foliar Cover | 88% |
| % Bare Ground | 8% |
| % Rock Cover | 4% |
| TOTAL PLANT COUNT- 72 PLANTS | |
| Musk Thistle | 14 19.4% |
| Desirable Forb | 6 8.3% |
| Desirable Vetch | 16 22.2% |
| Western Yarrow | 2 2.8% |
| Wood's Rose | 2 2.8% |
| Perennial Grass | 30 41.7% |
| Douglas Rabbitbrush | 1 1.4% |
| Western Salsify | 1 1.4% |



Observer: Cory Childs, Recorder: Hailey Whittier

Musk Thistle Biocontrol: 3/30 Infected

Belt-Transect Data for Skyline 30

Musk Thistle = 233,676 Plants per Acre

Plot: Skyline 31

Site Visit: 7/16/2015

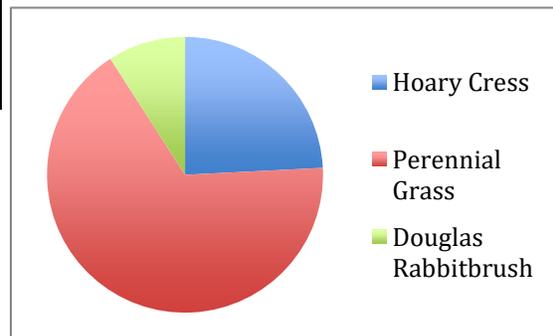
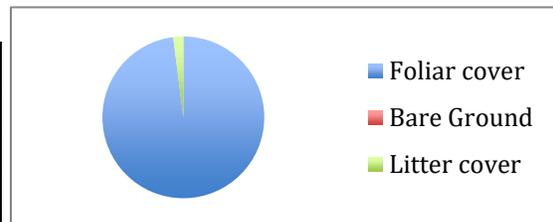
GPS Coordinates: NAD 83 Post 1: N 39.64565, W 111.18690 Post 2: N 39.64552, W 111.186352



Notes: Notes: Picture (left) taken at 4 feet high facing north. Quadrant plot photo (right) taken at 11 meters. Plot line starts at 1 meter and ends at 51 meters. Total length of transect is 52 meters.

Line-Point Intercept Data for Skyline 31

| TOTAL COVER | |
|------------------------------|---------------|
| % Foliar Cover | 98% |
| % Bare Ground | 0% |
| % Litter Cover | 2% |
| TOTAL PLANT COUNT- 66 PLANTS | |
| Hoary Cress | 16 24.2% |
| Perennial Grass | 44 66.7% |
| Douglas Rabbitbrush | 6 9.1% |

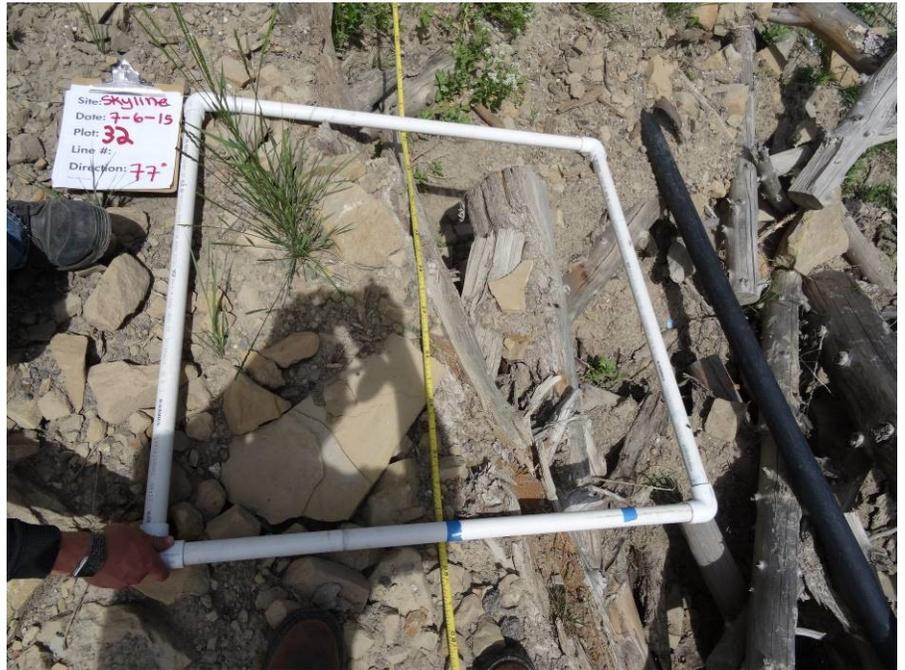


Observer: Chad Dewey, Recorder: Hailey Whittier

Plot: Skyline 32

Site Visit: 7/2/15

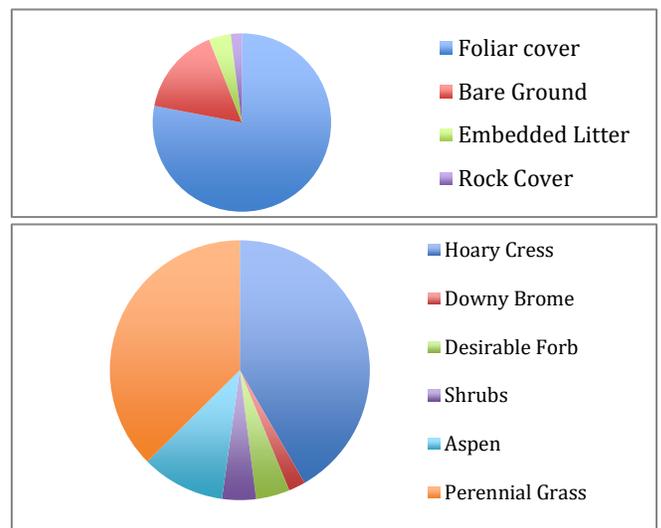
GPS Coordinates: NAD 83 Post 1: N 39.64214, W 111.17003 Post 2: N 39.64222, W 111.16951



Notes: Notes: Picture (left) taken at 4 feet high facing east. Quadrant plot photo (right) taken at 11 meters. Plot line starts at 1 meter and ends at 51 meters. Total length of transect is 52 meters.

Line-Point Intercept Data for Skyline 32

| TOTAL COVER | | |
|------------------------------|----|-------|
| % Foliar Cover | | 78% |
| % Bare Ground | | 16% |
| % Embedded Litter | | 4% |
| % Rock Cover | | 2% |
| TOTAL PLANT COUNT- 48 PLANTS | | |
| Hoary Cress | 20 | 41.7% |
| Downy Brome | 1 | 2.1% |
| Desirable Forb | 2 | 4.2% |
| Shrubs | 2 | 4.2% |
| Aspen | 5 | 10.4% |
| Perennial Grass | 18 | 37.4% |

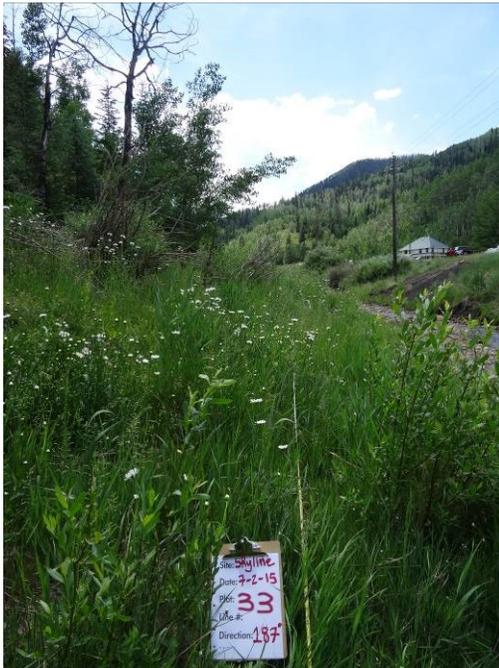


Observer: Hailey Whittier, Recorder: Cory Childs

Plot: Skyline 33

Site Visit: 7/2/15

GPS Coordinates: NAD 83 Post 1: N 39.64370, W 111.15272 Post 2: N 39.64326, W 111.15292

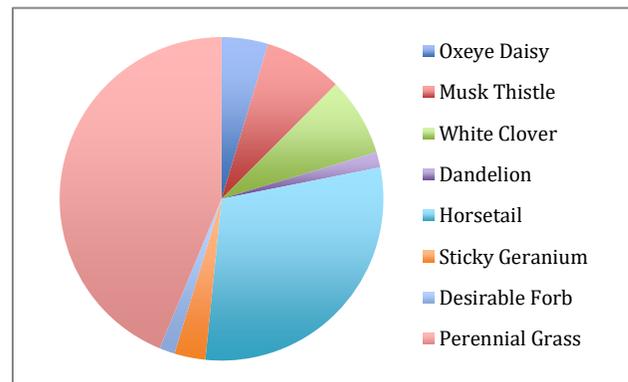
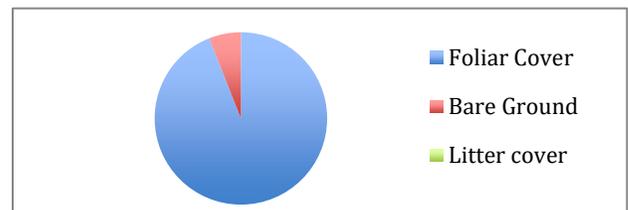


Notes: Picture (left) taken at 4 feet high facing south. Quadrant plot photo (right) taken at 11 meters. Plot line starts at 1 meter and ends at 51 meters. Total length of transect is 52 meters.

Line-Point Intercept Data for Skyline 33

| TOTAL COVER | |
|------------------------------|----------|
| % Foliar Cover | 94% |
| % Bare Ground | 6% |
| % Litter Cover | 0% |
| TOTAL PLANT COUNT- 66 PLANTS | |
| Oxeye Daisy | 3 4.5% |
| Musk Thistle | 5 7.6% |
| White Clover | 5 7.6% |
| Dandelion | 1 1.5% |
| Horsetail | 19 28.8% |
| Sticky Geranium | 2 3.0% |
| Desirable Forb | 1 1.5% |
| Perennial Grass | 28 42.4% |

Observer: Hailey Whittier, Recorder: Forrest Jensen



Belt-Transect Data for Skyline 33

Oxeye Daisy= 29,652 plants per acre; Musk Thistle= 42,008 plants per acre