Observations on Buckskin Knoll and in Lander and Trail Creeks

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September 21, 28, 29, and 30

These observations were made during a hunting trip.

Areas covered (see attached maps):

- Southeast side of the summit of Buckskin Knoll and the ridge running to the South (which is the north end of Porcupine Ridge) and the head of North Fork Lander Creek (Maps 1.a and 1.b).
- The southern half of the divide between Trail Creek and Lander Creek.
- Headwater area of Trail Creek and divide between the headwaters of Trail Creek, SE fork of Trespass Creek, and Porcupine Creek.
- The forested area (with small openings) east of Trail Creek (partway up the west-facing slope above Trail Creek, from the headwaters to about ½ mile from the bottom).
- West-facing slope east of Lander Creek and south of the confluence with North Fork of Lander Creek.
- The southernmost 1 mile along the divide between Trail Creek and Smiths Fork and the divide between the headwaters of Trail Creek and west fork of Trespass Creek.
- Overall this covers a majority of the openings within a 3 square mile area (roughly 2,000 acres). Observations were made in Trespass Creek and Buckskin Knoll sheep allotments.
- Surrounding open slopes appeared to have similar conditions, based on the ease with which bare ground was observed without the aid of binoculars. With binoculars, alteration of the herbaceous vegetation was readily noticeable. This adds the square miles affected (beyond 3 square miles).

On September 28, Jim and I hiked up the bottom of Lander Creek for about ½ mile or so and then worked our way up and to the east and slightly southeast toward the pond east of Lander Creek (Maps 2.a and 2.b).

On September 29, Jim and I hiked up the bottom of Lander Creek for about ½ mile or so and then worked our way up the slope to the southwest (toward Trail Creek; Maps 2.a and 2.b). After hiking south along/near the ridgeline (heading south), we came upon larger openings and this continued the rest of the way to the head of Trail Creek and divide between Trail Creek and Trespass Creek/Porcupine Creek. On September 30, we hiked south (up) the unnamed creek just west of Trail Creek to the head of the creek and then hiked west to the divide between Trail Creek, north Fork of Trespass Creek and Smiths Fork (Maps 2.a and 2.b).

The following are a few observations about these herbaceous communities, shrub-forb communities, and aspen forestland (see pictures 1-12). Aspen forestland, prior to being dominated by conifer trees, typically supports diverse and productive herbaceous vegetation.

Herbaceous and shrub–forb communities:

1. Ground cover[A] was mostly about 40-60% and, where ground cover was >60%, rocks oftentimes comprised relatively high proportions of the ground cover. Also, views of surrounding hill slopes

[A] Based definition of ground cover that incudes basal vegetation as ground cover but not herb canopy cover.

indicated similar situations surrounding the area that we hiked; low ground cover was readily apparent by looking through binoculars, and even without binoculars).

2. Herbaceous species richness was typical very low, and the herbaceous canopy cover in most openings was dominated by cutleaf balsamroot (by a long shot), but some were dominated by mule ears, and an even small proportion were dominated by black coneflower. Grass-dominated sites were lower down in Trail Creek and Lander Creek watersheds. There were a few large Canada thistle patches near the bottom of Trail Creek (up to 150 x 80 ft.).

3. More than 90% of acreage of openings we walked through had been grazed by sheep this season, as evidenced by sheep droppings, sheep tracks, soil disturbance, and grazing/trampling of vegetation.

4. Surprisingly little elk sign was observed, given the topography, mix of conifer, aspen, and openings. In some places, very little or no elk sign was observed. Although deer appeared to be somewhat more common, deer sign was also sparse, and we only saw about a half dozen deer during the three days. Very little moose sign was observed (only a few pellet groups in three days).

5. Herbaceous retention was variable, but it was consistently low, recognizing that bent over and matted vegetation is counted as "utilized" (*Wyoming Rangeland Monitoring Guide*). In many places, herbaceous retention was low even if bent over vegetation is counted as "retained." At the south end of the divide between Trail Creek and Smiths Fork and headwaters of Trail Creek and the west fork of Trespass Creek, very little herbaceous vegetation remained standing, mostly stalks and parts of stalks (including the main vane of leaves). Many stalks were on the ground. These areas must have been grazed before the plants dried because, if the leaves would have been grazed when the plants were dry, the leaf part of the plant would probably have shattered without leaving an upright center-vane of the leaf. Assuming roughly 70% of the weight of cutleaf balsamroot plants are the leaf (including center vane), roughly 20% is stalk material, and 10-15% is flower, retention appeared to be in the neighborhood of 40% or less in these areas. Where nearly all plant material had been grazed or is now on the ground, percent retention was lower than this.

6. Sheep trails, as seen from opposing hillsides, are prominent. In some cases, there were parallel trails through sagebrush that were spaced roughly a few feet apart.

Aspen Forestland:

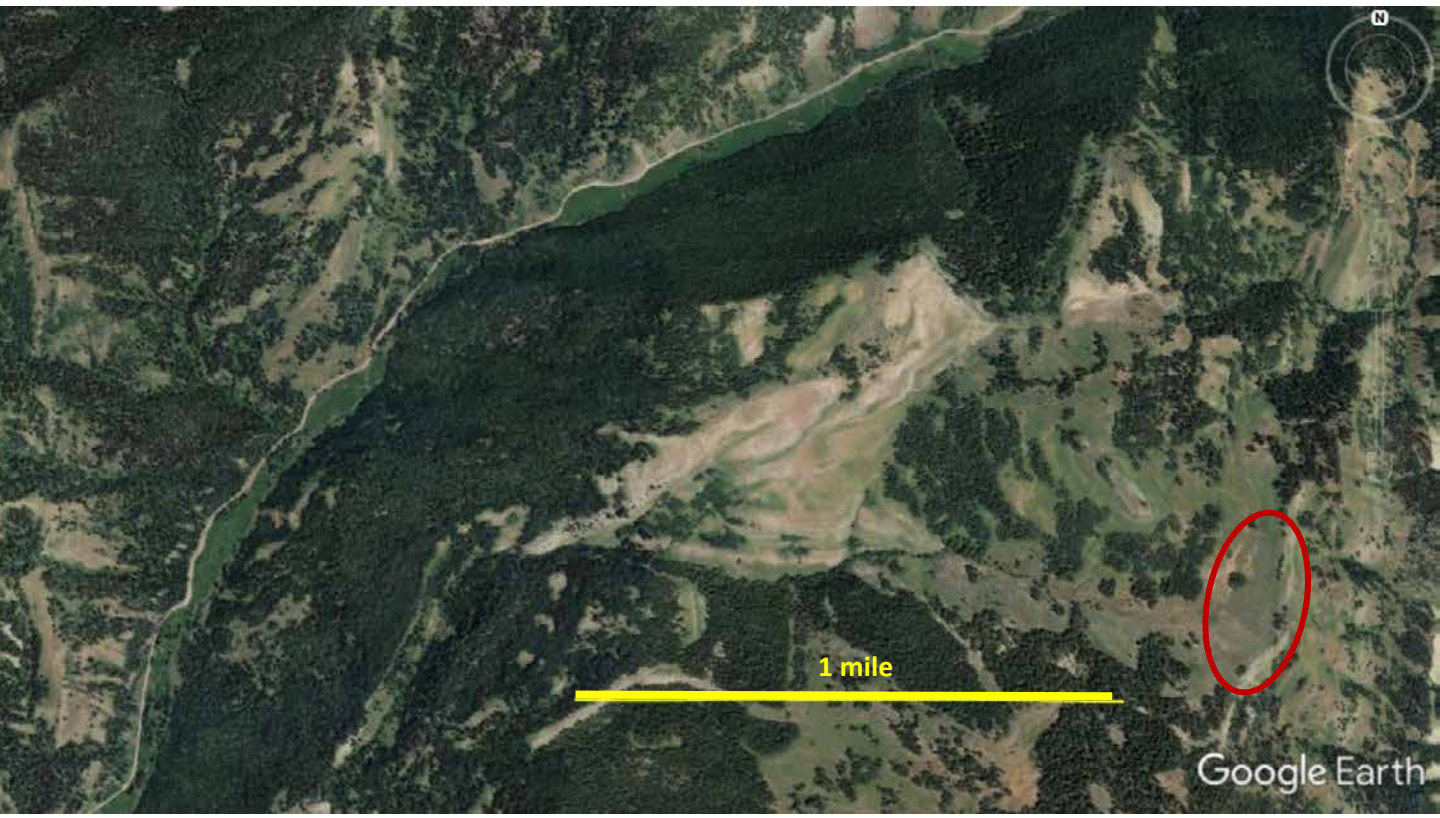
7. Two things about the influence of veg succession on herbaceous communities / understories and the reduced production of herbaceous vegetation in the area (which in turn impacts wildlife associated with herbaceous vegetation). First, conifer trees continue to expand into herbaceous and herb-shrub communities, which continues to reduce herbaceous production in these communities and, eventually, the acreage of the herbaceous forage base. Second, while there is a large footprint inhabited by aspen (which typically produces productive herbaceous understories), nearly all (≥90-95%) of this footprint is characterized by (1) canopies dominated by mature conifer trees, (2) low densities of mature aspen trees, (3) low density or absence of aspen suckers, (4) accumulations of aspen logs, and (5) very little in the way of understory herbaceous vegetation.

8. A large proportion of aspen suckers are show a history of heavy browsing, and many aspen suckers have died. At first I thought the browsing was due to elk, but — given the very low numbers of elk using this area, and given the low prevalence of forb species preferred by sheep, low % retention of cutleaf balsamroot, the high extent to which sheep moved into and through forests (and the proximity of areas of low herb retention and aspen suckers) — I realized that sheep probably have contributed to the heavy browsing of young aspen. Many aspen suckers (as

well as some snowberry and current bushes) had been recently browsed (and again, there was very little elk sign, little sign of mule deer, and only a few places where moose sign was seen).

The low diversity of herbaceous vegetation in forb and shrub–forb communities and low herbaceous retention levels in those communities compound the impacts described in the previous paragraph.

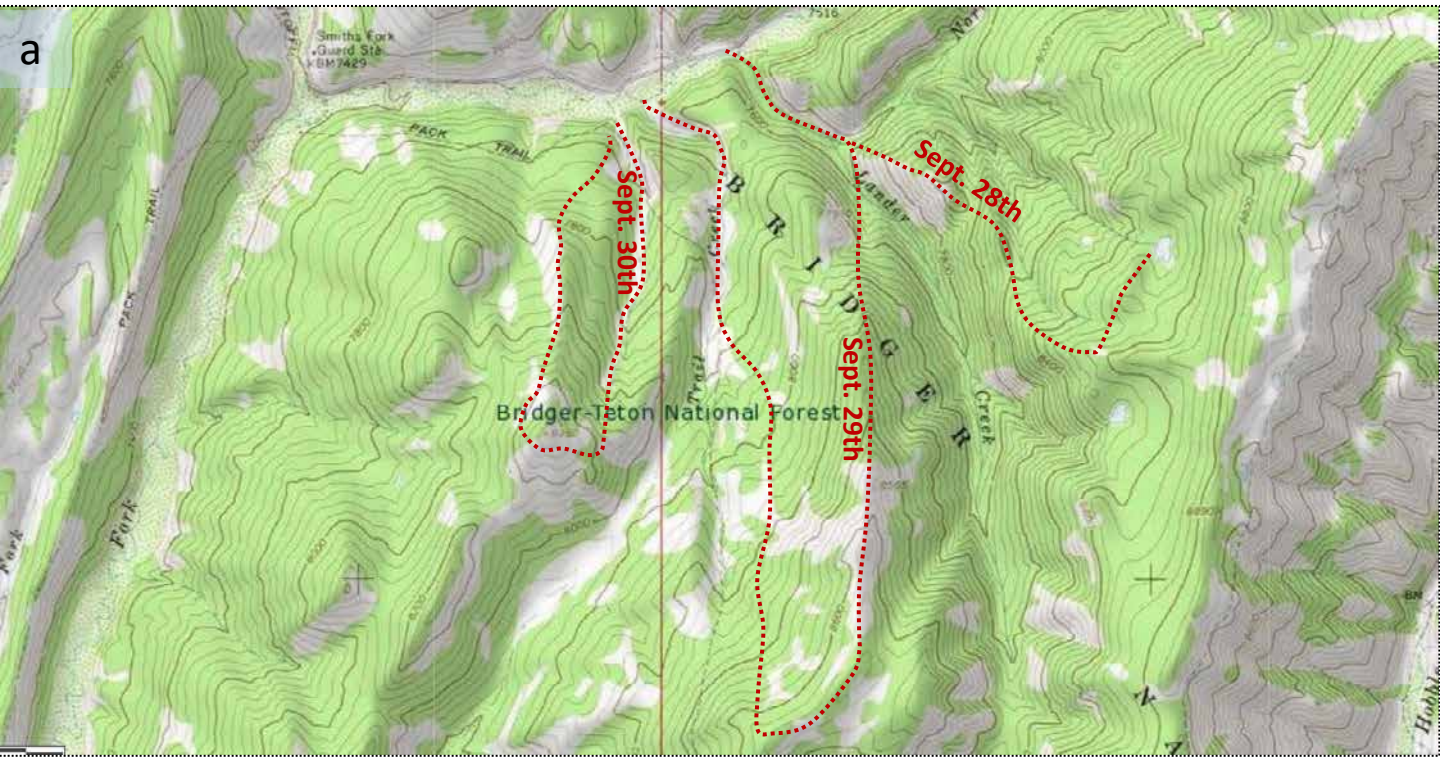
Conifer forestland. Sheep sign was encountered periodically as we hiked downslope from the divide between the headwaters of Trail Creek and SE fork of Trespass Creek, and then on the east side of Trail Creek (probably for about 1 mile). Most of this was conifer forestland, definitely open enough for sheep to pass through, but there were also small openings. The understory was mostly grouseberry, but there were also places where huckleberry or snowberry were more common, or little understory veg. Scattered mature aspen were seen in places.

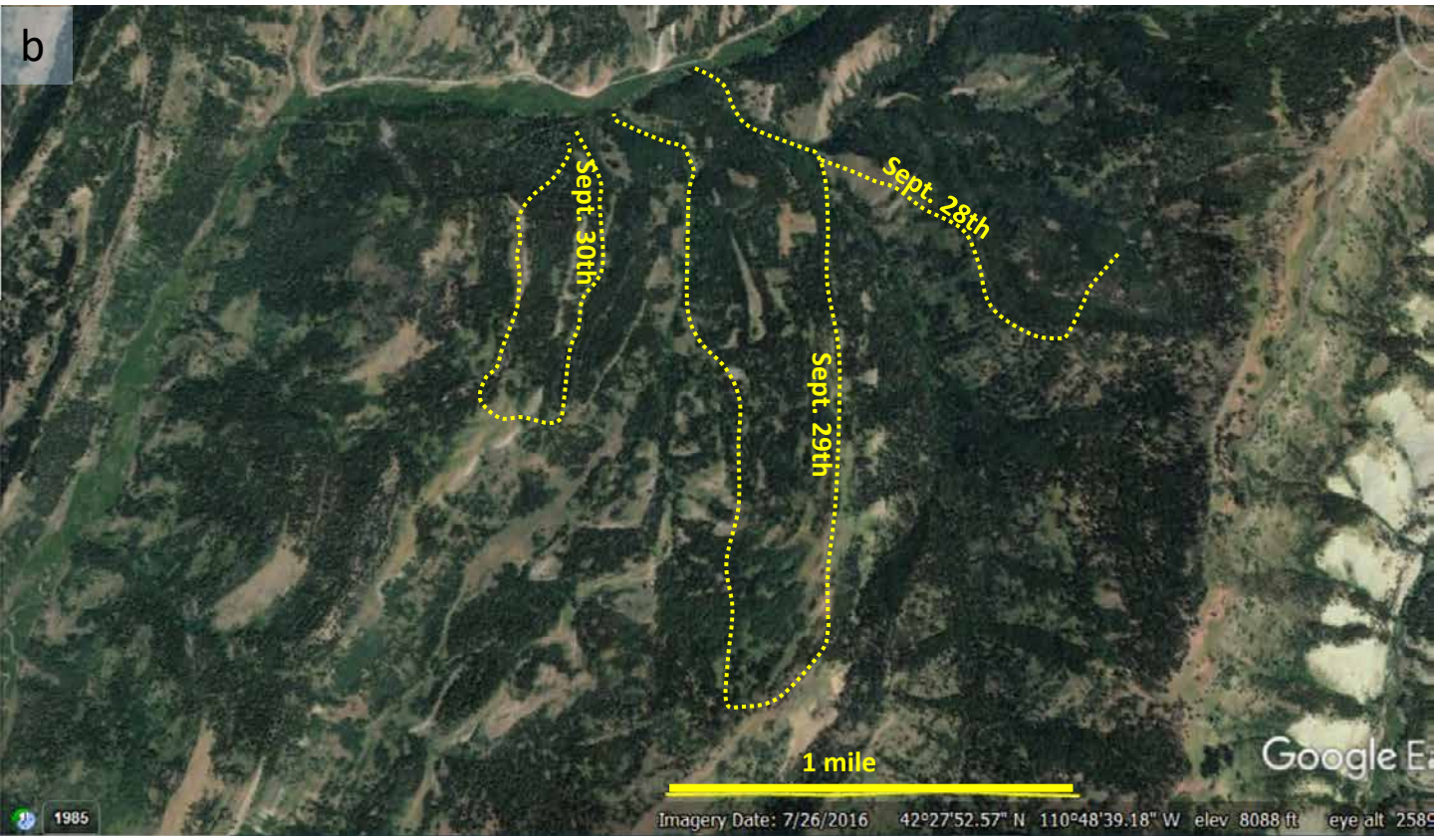


Maps 1a and 1b. Southeast side of the summit of Buckskin Knoll, 9-21-2020.

Fig. 1.a-f. Southeast side of the summit of Buckskin Knoll and the ridge running to the South (which is the north end of Porcupine Ridge) and the head of North Fork Lander Creek. Ground cover is low and most herbaceous vegetation had been grazed or bent-over / trampled, although there was some herb vegetation that remained upright in places. Note the active gully. 9-21-2020

Fig. 2.a-d.Ridge running to the south of the summit of Buckskin Knoll (which is the north end of Porcupine Ridge) and the head of North Fork Lander Creek. 9-21-2020





Maps 2.a and2.b. Approximate Routes taken on September 28, 29, and 30, 2020.

Fig. 3.a-c. Near bottom of Lander Creek, west-facing slope. Ground cover appeared to be below 60% and active soil movement. These conditions existed along a 75 x 500 ft stretch. 9-28-2020.

Fig. 4.a. Near the previous picture. Many aspen suckers and small aspen trees have been heavily browsed. In this cases, there was elk sign in the area. 9-28-2020

Fig. 4.b-c. High on west-facing slope east of Lander Creek. Note low ground cover (except for falling aspen leaves). Low retention on lupine: <5% of leaves and flowers remained, and a portion of stalks were bent over or broken off (see insert).

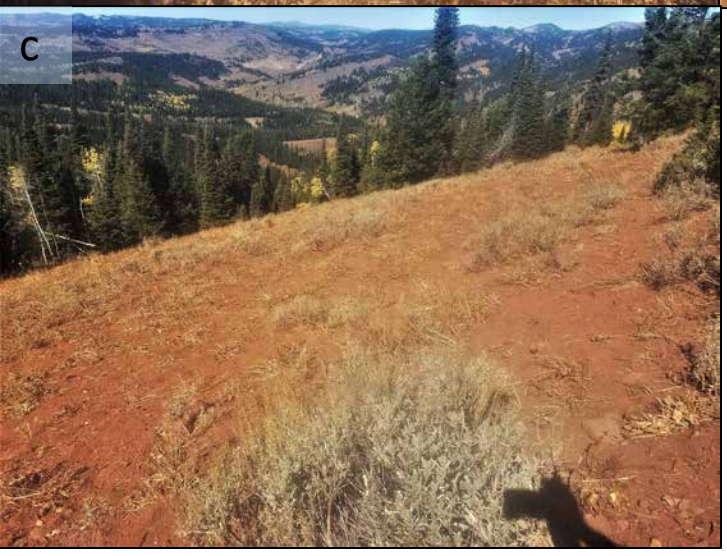


Fig. 5.a-c. Ridgeline between Lander Creek and Trail Creek, about halfway up the drainages. Clockwise: looking north, looking east into Lander Creek, and looking NW looking into Trail Creek (far left) and into Smiths Fork (middle left). Herb species compositions was dominated (by far) by cutleaf balsamroot. In some areas, most balsamroot leaves remained ungrazed, although many leaves and flower stalks had been bent over or broken. In other places, only stalks of balsamroot leaves and flowers, and center-vane of leaves, remained. Some stalks were grazed down to about 3 inches (only a few balsamroot plant had been grazed to this level). Ground cover appeared to be 50-70% or lower, with ground cover above 60% being facilitated by high rock cover in many cases. 9-29-2020

Fig. 6.a-e. Trail Creek side of ridgeline between Lander Creek and Trail Creek, about three-quarters or more up the drainage. Herbaceous communities and understories dominated by cutleaf balsamroot (appeared to be ≥90% of herb composition). In some areas, most leaves remained ungrazed, although many leaves and flower stalks had been bent over or broken. In other places, only stalks of leaves and flowers, and center-vane of leaves, remained. Some stalks were grazed down to about 2-3 inches. Ground cover appeared to be mostly 50-70% or lower, with ground cover above 60% being facilitated by high rock cover (≤50-60% ground cover where rock cover was low). Aspen suckers and small aspen trees have been heavily browsed. 9-29-2020

Fig. 7. In headwaters of north fork of Trespass Creek, just over the divide with Lander Creek. 9-29-2020.

Fig. 8.a-b. Divide between Trail Creek and north fork of Trespass Creek, just over the ridge from Lander Creek. Low ground cover, low canopy cover of herbaceous vegetation, and substantial browsing of aspen. 9-29-2020

Fig. 9.a-f. Ridgeline between Lander Creek and Trail Creek, more than three-quarters of the way up the drainages. The middle two and bottom left pictures are on the Trail Creek side, and the bottom right picture is of the Lander Creek side. Herbaceous communities and understories were dominated by cutleaf balsamroot (appeared to be ≥90% of herb composition). In some areas, many leaves remained ungrazed, although many leaves and flower stalks had been bent over or broken. In other places, only stalks of leaves and flowers, and center-vane of leaves, remained; a large proportion of these were on the ground in places. Ground cover appeared to be mostly 50-60% or lower, except where rock content was high. Aspen suckers and small aspen trees had been heavily browsed. 9-29-2020

Fig. 10.a-g. Upper Trail Creek (UTM = 0515246 E 4700787 N, NAD 83); east-facing slope. Herbaceous communities and understories dominated by cutleaf balsamroot (appeared to be ≥90% of herb composition). In some areas, some leaves remained ungrazed, although many leaves and flower stalks had been bent over or broken. In most places, only leaf stalks, center-vane of leaves, and flower stalks remained, with little left standing in some places; or whatever hadn't been grazed was flattened. Ground cover appeared to be mostly 50-60% or lower. Considerable soil disturbance / movement in places.

Fig. 11.a-b. Upper Trail Creek , two pictures of west-facing slope. Similar soil and vegetation conditions as described on the previous page. 9-29-2020

Fig. 11.c-f. Upper Trail Creek , four pictures of riparian zone and adjoining upland hillsides (UTM take in sedge meadow = 051524 E 4700787 N, NAD 83). See previous page for description of upland conditions. Low ground cover, high levels of exposed bare soil, and soil disturbance / movement was not uncommon. 9-29-2020

Fig. 12.a-f. Tri-Basin Divide between Trail Creek, north fork of Trespass Creek, and Smiths Fork. Most pictures taken on the Trespass Creek side. Herbaceous communities and understories dominated by cutleaf balsamroot (appeared to be ≥90% of herb composition). In some areas, some leaves remained ungrazed, although many leaves and flower stalks had been bent over or broken. In most places, only leaf stalks, center-vane of leaves, and flower stalks remained, or whatever hadn't been grazed was flattened (e.g., very little herbaceous vegetation remained standing in the herb community in the top left picture). Ground cover appeared to be mostly 50-60% or lower. 9-30-2020