Duplicate for information of District Forester.

G
Reconnaissance-Cascade
(1916)

February 10, 1917.

Forest Supervisor,

Eugene, Oregon.

Dear Mr. Seitz:

I am submitting to you a report on the sheep ranges which were included in the grazing reconnaissance work undertaken during the last season.

This completes the reconnaissance of this class of range on the Cascade Forest.

The following discussion of each allotment is thought to cover the ground in sufficient detail for the administration of these ranges for some time to come.

The season of 1916 was an unusual one in many respects. Snowfall during the preceeding winter was heavy and much of this snow remained on the higher ranges till mid-summer. In addition to this there were several snowstorms during the summer and early fall. As a result, forage growth was from a month to six weeks later than usual, and in some cases could hardly be said to have started at all.

Under such circumstances it was extremely difficult to estimate what the carrying capacity and general range conditions on the higher allotments would be for a normal season and in some

cases I had to rely largely upon information secured from stockmen who had used such range for a number of years.

In order to have the data for all the sheep range arranged in uniform manner I have followed the outline used by Mr. Dutton in his report on the range in the south end of the Forest. For some allotments a more detailed description of forage types has been attempted. In the field work also, Mr. Dutton's method of examining each camp as a unit was used. Possibly less attention was given to the work of locating camps accurately, for the map which was used as a base for such work was hardly accurate enough in itself to warrant much time being spent in "tying in" to topographic features represented on it.

Wherever possible photographs were taken to supplement the report as it is believed that a group of pictures that are truly representative of an allotment, convey a clearer idea of conditions than a lengthy discussion would.

About 50 plant specimens were collected during the last summer. These include the most important forage plants in the region covered by the reconnaissance. They will be sent to the District Office for identification, and the mounted duplicates sent to the rangers in whose districts they were found.

As it was impossible to await the identification of these by the Bureau of Plant Industry, a tentative list of the species discussed in the report was made. Piper's Flora of Washington, Clement's Rocky Mountain Flowers, Sweetzer's

Flora of Oregon, and the Forest Service booklet of grass notes were the texts used in identifying these. Also some time was spent in the herbarium at the University of Oregon in connection with this work.

In the type descriptions the common or local name of species will be given as far as possible. As these vary in different localities the following list of local names, with their corresponding scientific names is given to avoid confusion:

Grasses.

Local name	Scientific name.
Alpine timothy	Phleum alpinum
Blue grass	Poa olneyae
Brome grass	Bromus marginatus
Bunch grass	Festuca viridula
Idaho red top	Agrostis idahoensis
Oat grass	Danthonia intermedia
Porcupine grass	Stipa minor
Reed grass	Cinna latifolia
Rye grass	Elymus glaucus
Slender hair grass	Deschampsia elongata
Squirrel tail grass	Sitanion californicum
Tufted hair grass	Deschampsia caespitosa
Velvet grass	Notholcus lanatus
Winter red top	Agrostis hiemalis

Grass-like plants.

Baltic rush	Juncus balticus
Dry-land sedge	Carex oregonensis
Sedge	Indicates ordinary wet meadow sedges as C.pennsylvanica, C. festiva, C. variabilis, etc.
(Wood rush (Smooth wood rush	Juncoides glabratum

Non grass-like plants.

Anemone	Anemone occidentalis
Aster (Purple aster)	Aster foliaceus
Black-eyed Susan	Rudbeckia occidentalis
Blue bell	Mertensia (sp.?)
Blue-eyed grass	Sisyrinchium
Buttercup	Ramunculus suksdorfi & flamula

Non grass-like plants (Cont'd)

Butterweed(senecio)	Senecio triangularis
Cats ear	Calochortus labbii
Cinquefoil	Potentilla gracilis
Clover	Trifolium wormskjoldii
Collensia	Collensia
Cornel (bunchberry)	Cornus canadensis
Dandelion	Agoseris aurantica
Desert-daisy	Eriogonum (sp.not determined)
Devil's club	Echinopanax horridum
Dogtooth violet	Erythronium parviflorum
	(Chamaenerium angustifabrum
Fireweed	(Epilobuim spicatum
Goldenrod	Solidago missouriensis
Hellebore (white)	Veratrum californicum
Knotweed	Polygonum
Larkspur (low)	Delphinium menzeisii
Larkspur (tall)	" stachydeum
Linear leaved vetch	Vicia linearis
Lupine (Low)	Lupinus minimus
Lupine (tall)	Lupinus (sp.unknown)
Marsh marigold	Caltha (leptosépala / biflora
Monkey flower	Mimulus scouleri
Painted cup	Castilleia (parviflora / oreopola- (Piper)
Pearly everlasting	Anaphalis margaritacea
Pentstemon	Pentstemon confertus
Polemonium	Polemonium pulchellum
Polygonum	Polygonum
Saxifrage	Saxifraga mertensiana
Shooting star	Dodecatheon meadia
Sour grass	xerophyllum tenax
Thistle	Carduus(various species)
Thimble berry	Rubus parviflorus
Valerian	Valeriana sitchensis
Wild caraway	Carum gairdneri
Yarrow	Achillea millefolium

Trees and Shrubs

Alder	Alnus oregona
Alder, tag	Alnus sinuata(sp.doubtful)
Cherry	Prunus emarginata
Currant	Ribes sanguineum
Devil's club	Echinopanax horridum
Hard hack	Spirea densiflora
Huckleberry (blue)	Vaccinium ovalifolium
Huckleberry (red)	" parvifolium
Salmon berry	Rubus spectabilis
Thimble berry	" parviflorus
Service berry	Amelanchier alnifolia

It will be noted that the term "bunch-grass" is used as type descriptions. On west side forests Festuca viridula comprises the bulk of the "Bunchgrass" range; and on account of local usage "bunchgrass" appears to be the most appropriate name for this species. Where the name has been confined to practically one species as it has been in this locality, this term gives a clearer conception of the type of range referred to than "fescue", which is rarely, if ever, used.

On the map which accompanies this report the location of allotment boundaries and camps, and the carrying capacity of camps is indicated in the same way as in Mr. Dutton's report of last year.

In listing range in conifer timber only that which supports forage above 2/10 in density of actual ground cover and which is so accessible that it can be readily used in conjunction with the main camps is included in the estimate for this type.

Much of the information concerning soil and formation in the Black Crater and the Three Sisters ranges was obtained from the May issue of the Mineral Resources of Oregon, published by the Oregon Bureau of Mines.

Respectfully submitted,

John C. Luhrs.

Forest Ranger.

Handling Stock
Cascade

Black Crater Range

GENERAL DISCUSSION OF EXISTING ALLOTMENT.

Boundary desctiption for 1916.

"Beginning at the summit of the Cascade Mts. near the center of Sec. 27 T. 15 S., R 8 E; thence southwesterly to the head of Alder Springs; thence south to the North Fork of Horse Creek; thence northwesterly to Belknap Springs; thence northerly along the McKenzie River to the township line between Townships 15 and 16 S.; thence easterly to the lava fields; thence southeasterly along the western edge of lava beds to the McKenzie Wagon Road; thence easterly along the McKenzie wagon road to the summit of the Cascades; thence southerly to point of beginning."

Topography.

Scott Mt., with an elevation of approximately 7200' lies very nearly in the center of this allotment. This is a cone shaped butte, from the base of which the land slopes rather uniformly to the south and west as a sort of plateau, breaking over abruptly into the canyon of White Branch and Lost Creeks on the south slope of Deer Butte, and into the McKenzie River canyon west of the Fingerboard Ranger Station.

East from Mt. Scott there is an average slope of 30% into Hand Lake which is about 5000' in elevation. Here there are several miles of nearly level bottom land, known as Lake Valley. East and north of this the land rises towards the summit of the Cascades, and Lake Valley is fringed with lava flows on three sides. The direction of the drainage of upper Lake Valley is somewhat uncertain. One map shows it as being an underground

Lake Valley near Scott Lake.
Typical meadow range inforeground
Three Sisters in Distance.

Scott Lake and Three Sisters.

channel through the lava from Hand Lake to Olallie Creek.

North of Scott Mt. the slope is mostly in a westerly direction except for range on the Santiam Forest below Bunchgrass where the drainage is nearly due north to Beaver Dam, in Sec. 33, T. 14 S., R. 7 E.

Most of the range on the allotment is above 4000' in elevation where the topography is fairly uniform, and some of the camps are nearly level. Below this elevation the drainage channels have been cut out deeply and precipitous slopes are to be frequently encountered.

Soil and Formation.

With the exception of its western edge the allotment is nearly surrounded by lava flows which emanated chiefly from Belknap Crater and the base of the North Sister.. These consist of vast fields of black glassy basalt- a jumbled mass of broken up lava, so rough that it is extremely difficult to traverse it even on foot.

In the northeast end of the allotment are a couple of areas where the original formation was sufrounded but not covered by the later lava flows. The surface of these "islands" has been smoothed down by glacial action and is now covered with sand from the original andesite lava, and also with considerable volcanic ash. It now supports a fair growth of vegetation,- in marked contrast with the desolate appearamce of the adjacent barren lava field.

On the main part of the allotment the formation is considerably older, and rock outcrops are uncommon except on the

Lava field which has to be crossed enroute to the inner "Island".

Looking north across a large sand island in lava field between Belknap Crater and N.Sister. Black Crater and Mt. Jefferson in distance.

south slopes of Deer Butte and at Cupel Rock where the formation is seen to be made up of a succession of andesite lava flows. The soil resulting from the decomposition of this is light and loose in texture and rather yellowish in color. In the meadow areas in Lake Valley soil deposits appear to be alluvial, and the surface soil contains considerable humus.

Timber types.

On the western edge where the land slopes steeply towards the McKenzie river there is an exdellent stand of young merchantable Douglas fir which will run approximately 50 M per acre.

Between Beaver Dam and Bunchgrass there is a heavy stand of overmature Douglas fir with some Engelmann spruce in the moister bottom land.

Aside from this the predominating species is Lodgepole pine of pole size, with some upper type fir and white pine. Lodgepole reproduction only is found to any extent in the vicinity of the main camps.

On the southern part of the allotment, on the steep south slope of Deer Butte snow brush, mountain balm and wild lilac constitute most of the ground cover.

Forage Types.

The following table shows acreage of each type of range:

Type #1	Type # 2		Type #3.	Type # 5.	Type # 6.
	Meadow				Range in con-
Grass	Wet	Dry	Weed	Browse	ifer timber
300 Acres	25 A.	580 A.	0	560 A.	400 Acres

The main opening at Bunchgrass Camp.
August 24, 1916.

Unutilized feed at Bunchgrass camp after area had been grazed. The dry seed stalks of the porcupine, oat and bunchgrass are not relished by sheep after the grass has headed out.

Bunchgrass,(Festuca viridula) on grassland type on summit of Scott Mtn. Altitude 7200'

Mixture of bunchgrass,porcupine grass and sitanium in Type 1. on top of Scott Mt., August 21, 1916.

Type No.1--Grass: On the high and dry range at Deer Butte, Scott Mt. and Bunchgrass a large part of the forage is bunchgrass. Associated with this is rye grass, porcupine grass, brome grass, squirrel tail grass, oat grass (this latter being an important part of the Bunchgrass camp) and such weeds as fern, butterweed, purple aster, low lupine and pearly everlasting. Average density 8/10.

Grassland in the lower and moister openings is chiefly made up of rye grass and brome grass with some tufted hair grass and winter red top. Associated weeds are butterweed, purple aster, fern, painted cup, black eyed Susan, goldenrod, hellebore, thistle, vetch and sourgrass. Average density 9/10.

Type No. 2.--Meadow: Twenty-five acres of this type were classed as wet meadow. Sedges comprise the bulk of the ground cover with an occasional clump of buttercup, shooting star and blue eyed grass. Of the remaining 580 acres, that part which lies in Lake Valley is wet and swampy early in the season; but dries up later on. Here the commonest species are buttercup, clover, linear-leaf vetch, red top, dandelion, knotweed, wild caraway and sedge. Average density 9/10.

The drier meadows have considerable rye and brome grass, some red top, dry land sedge and Baltic rush, squirrel tail grass and porcupine grass in mixture with the following weeds: Butterweed, purple aster, fern, pentstemon, sourgrass, black eyed Susan, linear leaved vetch, lupine, hellebore, thistle, yarrow, pearly everlasting, polemonium, clover, goldenrod, collensia. Average density 8/10.

Sourgrass is especially in evidence at the Knobs camp where it constitutes a large part of the timber and dry meadow range over an area about two hundred acres in extent.

One species of anemone was found at the inner island. This is the only place where anemone was found on the Cascade Forest.

Type No.3--Weeds: There is no rank growth of weeds on this allotment, such as characterizes this tupe and such weed range as exists here borders so closely on the dry meadow type that the whole was included in Type No.2. At the Island camp such weeds as aster, pentstemon, yarrow and buttercup form clumps of weed type; but these areas have not been listed separately.

Type No. 5.--Browse: This type is found throughout a large part of the allotment, where huckleberry, and sometimes thimbleberry occur in varying quantities; but in most places it constitutes so small an amount of available forage that it is not included in the estimate. Two areas are given under this head, namely: the most westerly of the islands and the Bunchgrass burn. At the island huckleberry and hard hack form an important part of the forage on an area several hundred acres in extent. It is probable this will be reserved for the use of huckleberry pickers.

At Bunchgrass burn, a dry land willow and wild lilac are found in mixture with snow brush and mountain balm. A large part of this is new growth, that has come in since the area was burned in 1914. An understory of tufted hairgrass, fireweed, blackberry, fern, thistle and pearly everlasting also is found.

On 10 acres of wet bottom land at Beaver Dam there is

Park area in the timber between Bunchgrass and Beaver Dam on the Santiam N.F. Flowering plants are purple aster, yarrow and painted cup. Also brome grass, clover and vetch

Weeds in dry meadow range at the Islands Camp. Purple aster and pentstemon predominate Anemone at the left.

vine maple, alder, elderberry, and salmon berry browse.

Type No. 6.--Range in Conifer Timber: This type consists largely of low lupine, sourgrass, fern, vetch, butterweed, rye grass, tufted hair grass; and in the moister areas in Douglas fir timber, cornel and saxifrage. Huckleberry browse also constitutes an important part of this type.

Large areas of this latter class of forage are found throughout the central part of the allotment in the lodgepole timber; but only that part which contained enough forage to warrant its use has been included in the total acreage given in the table.

In lodgepole type 4/10 of ground surface covered by tree growth; remaining 6/10 supports a 6/10 density of grass, weed, or browse type.

Overgrazed areas.

Four acres on the upper part of Deer Butte camp have been damaged by overgrazing and trampling. The soil at this place is dry and loose, and care in handling stock here is the only preventative measure needed.

Five acres on the west slope of Scott Mt. have been depleted till the average density of forage is less than 5/10. So far as could be learned this was caused by grazing this camp too early and bedding the sheep on the grass land. This camp was unused this season. Aside from these small areas the whole allotment is in very good condition.

MANAGEMENT.

Changes in Boundaries

The boundaries, as already given, do not include all the range which is usually used by stock on this allotment, and does embody range on Foley Ridge which frequently is not grazed because of the difficulty in reaching it from the main part of the Black Crater allotment.

The boundaries should be as follows:-

Beginning at the point where the McKenzie wagon road leaves the lava fields, approximately 2 miles northeast of the pole bridge; thence east to the summit of the Cascade Mts.;thence south along the summit to a point due east of the head of White Branch Creek; thence in a westerly direction bordering White Branch Creek and Lost Creek to Belknap Springs; thence in a northerly direction, following the McKenzie River to the north line of Section 31, T. 14 S., R. 7 E.,; thence east to the lava fields; thence south easterly along the lava fields to the place of beginning.

Class of Stock Adapted.

This range is easily accessible by wagon road from McKenzie Bridge which is only 9 miles distant from the west edge of the allotment, and it is probable that there will soon be a demand for it by cattlemen.

The area as a whole is better suited to grazing by sheep than cattle, and can be more fully utilized by the former class of stock.

Deer Butte, Scott Mt. and Bunchgrass are dry camps, and

stock using them have to be driven thru the timber to water which is seldom less than one-half mile distant. These watering places are small lakes, with small meadows in the vicinity, and it is very probable that cattle, unless very closely herded, would congregate at these lakes and spend the greater part of the season there instead of on the dry range.

There is good cattle range with sufficient water at Lake Valley and several of the smaller camps, but to open these relatively small areas to cattle would cause more confusion than the resulting benefits to cattle owners would justify.

The present condition of the range and the ease with which sheep can be handled here have demonstrated that this allotment is adapted to grazing by sheep.

The forage as a whole is equally suited to sheep or cattle, but the lack of water would throw the balance in favor of the sheep.

Local Class A cattlemen can be placed on small units as Foley Ridge at present, and only when they become sufficient in number to be able to utilize the whole of the Black Crater Allotment should this be opened to them.

Carrying Capacity.

The estimated capacity of the area within the proposed allotment boundaries is 80 days for 2400 ewes with lambs.

Camps.

This year one band of 2000 dry sheep used this allotment. They entered by way of the McKenzie Wagon Road from the east and

made a circuit of the area, counter clockwise. Where one large band uses the range the following schedule of grazing could be used.

Camp	Capacity for 1200 sheep.
Camp No.1. Mt.Scott burn	4 days
" 2. Upper Bunchgrass	30 "
" 3. Bunchgrass Burn	12 "
" 4. Lower Bunchgrass	6 "
" 5. Beaver Dam	7 "
" 6. Knobs	20 "
" 7. Little Meadows	5 "
" 8. Fingerboard	10 "
" 9. Deer Buttes	11 "
" 10. Scott Mt.	5 "
" 11. Lake Valley	20 "
" 12. The Islands	30 "

Every two years the order of use could be reversed and areas used first during the two previous years would be given an opportunity to reseed. This is by no means an ideal arrangement, but it seems to be the most practicable one that can be applied here. Drawbacks to this are, that range at upper Bunchgrass camp matures early and consists of a great deal of oatgrass and porcupine grass which lose much of their value as forage after heading out. One the other hand, Lake Valley does not dry up till well along in the summer and could seldom be used to advantage early in the season. It is so situated that it can be conveniently grazed either upon entering or leaving the allotment.

The Knobs and Fingerboard camps would always be used about the same time, but, as this would be about the middle of the season, grasses would have an opportunity to reseed in normal season before stock entered these camps.

Looking north from Scott Mt.
Scott Mtn. Burn in foreground.
Mt. Washington and Mt. Jefferson
in distance.

Typical park area in the timber.
The "Little Meadows Camp" near Finger-
board R.S. In foreground remains of white
hellebore-after area had been grazed by sheep.

If two permittees, each owning 1200 sheep, used the allotment the following division of camps should be made:

Permittee No. 1			Permittee No. 2.		
Camp No.	Name	Cap'y days	Camp No.	Name	Capacity days
1.	Mt. Scott Burn	4	1.	Islands	30
2.	Upper Bunchgrass	30	2.	Deer Buttes	11
3.	Bunchgrass burn	12	3.	Fingerboard	10
4.	Lower Bunchgrass	6	4.	Little Meadows	5
5.	Beaver Dam	7	5.	Scott Mt.	4
6.	Knobs	20	6.	Lake Valley	20
		79			80
Also 1 days feed S. of Scott Mt. and 1 days feed at Lake Valley or the Islands.					

The order of using these camps can be reversed with such modifications as abnormal seasons may require, for the purpose of obtaining natural reseeding.

IMPROVEMENTS.

Water.

Sufficient water for the use of stock can be found at all camps except the upper Bunchgrass camp, the top of Scott Mt. and the Deer Buttes. These latter are all dry camps with no possibility of developing water supply, and sheep must be driven through the timber to water, the nearest of which is seldom less than one-half mile distant.

At the inner Island camp, running water was found near the centre of the area; but in times of unusual drought this stream may dry up, as its flow is intermittent even in wet seasons.

There are no large streams traversing this allotment. At several camps water is obtained from springs or from small

lakes, a considerable number of which are found in this region. The largest of these are Hard Lake and Scott Lake.

Water troughs at Lower Bunchgrass camp and the Knobs and trails to water from the dry camps would be an aid in handling stock here, but there is no urgent need for these improvements.

Roads and Trails.

The McKenzie wagon road traverses the south and east edges of this allotment, and is used by stock in entering from the east side of the mountains. A system of blazed trails, in fair condition, connect each camp. The range as a whole is easy to get over, even when off of the trails.

Other Improvements:

Salt troughs on this, as well as all the other ranges on this forest, should be constructed as soon as possible at places where the least damage to range from trampling will result.

Poisoinous plants and Predatory Animals.

Low larkspur, at Lake Valley and at Beaver Dam, was the only poisonous plant found. It is possible that water hemlock occurs in the swamp at Beaver Dam; but none of the plants collected there were identified as such. Low lupine is common in the timber, but this plant (even the ripened pods) is not regarded as being poisonous in this locality.

The range as a whole is especially free from poisonous plants, and no losses from this source have been reported.

missing

171081

Unused range in burn west of Bunchgrass Camp. Typical of the better portions of range near the top of the ridge. This is on the Santiam Forest.

Also there appear to be few predatory animals in this section, and in recent years there have been few, if any, sheep killed.

In these respects, conditions on this allotment are very nearly ideal for sheep grazing.

Rodents.

At Deer Butte gophers have been operating to some extent, and, while they are not especially numerous, their tunnelling is injurious to the range because of the loose nature of the soil.

The east end of Upper Bunchgrass camp is being damaged, also the little Meadows camp, but the gophers have so far confined their activities to small patches in which possibly 10% of the ground is covered with mounds.

Fortunately, however, a large part of the range is almost entirely free from them so that the proportion of infested area is very small.

At present it is not important that steps be taken to eradicate these pests; but if poisoning operations were begun now, a far greater future expense might be avoided, as well as serious damage to the range.

Additional Points.

A large burned area south-west of Bunchgrass camp and adjoining it has been included in the estimate for the allotment. This has never been used by sheep; but efforts should be made to induce permittees to use it, not only for the purpose of utilizing forage; but also for protective purposes.

Over 500 acres of the burned area was originally brush land, and a large part of this is again growing up to mountain balm, wild lilac, snow brush and dry-land willow. A great deal of the fire killed brush and young timber is still standing and, unless something is done to check the new growth a dense stand of brush will again occupy this area.

As much of the burned over part has a steep slope to the south and west it becomes very dry in the summer months and constitutes an important fire hazard. The adjoining timber on the south and further north is Douglas fir of good quality.

Fire lines can be used as trails in travelling between the main camps at Bunchgrass and the Burn. As the former camp has no water supply, even for camp use, it might be advantageous to have one of the main camping places in the south edge of the burn where water is plentiful.

To fully utilize the forage on this burn will entail extra work on the part of the herder, and on this account close supervision by Forest officers may be necessary to prevent stock being held on the open grass land at the Upper Bunchgrass camp longer than the allotted time - instead of being moved on to the burn.