

**THE PROPOSED
HEPPNER FOREST RESERVE
OREGON**

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Introduction

The area herein referred to as the proposed Heppner Forest Reserve was withdrawn from entry on May 29, 1903, at the request of the writer, pending an examination to determine its suitability for forest reserve purposes. The withdrawal was asked without any definite knowledge of the character of the lands involved, but the records of the La Grande Office showed that a large number of timberland entries were being filed, and having knowledge of the surrounding country and its dependence upon the local supply of water and timber, it was felt that the withdrawal without preliminary examination was justified.

The field examination was begun on June 20, 1903, by the writer, and ten days were spent in riding over the territory.

The proposed Heppner Forest Reserve is located in the northeastern part of the State of Oregon in Morrow, Umatilla, and Grant counties, and includes portions of Townships 7 South, Range 23 East; 6 and 7 South, Range 24; 6, 7, and 8 South, Range 25; 6, 7, and 8 South, Range 26 East; 6, 7, and the west half of 8 South, Range 27 East; 4, 5, 6, and the north half of 7 South, Range 28 East; 4, 5, and 6, Range 29 East; and 4, 5, and 6, Range 30 East of the Willamette Meridian.

Area

The original withdrawal included approximately 334,000 acres, but a large part was found to be unsuitable for forest reserve purposes because of the non-timbered character of the lands. Other sections, outside the withdrawal, were later shown to be vacant, public timber-bearing lands, and these have been included in the recommendations here made. Since these extensions have been decided upon subsequent to the examinations, this report relates particularly to the original withdrawal.

The area of this reserve, as recommended, is approximately 261,600 acres.¹ Of this total 18,320 acres, or 7 per cent, is held under adverse title as follows:

Homestead entries,	2,680 acres
Patented,	6,200 acres
Timber and stone entries,	1,560 acres
School sections,	7,680 acres
State selections,	200 acres

Topography

This area covers a spur of the Blue Mountains which extends south of west from the main range, separating the waters of small tributaries of the Columbia and Umatilla rivers from those of the North Fork of the John Day River, which finds its source within the proposed Blue Mountain Forest Reserve, the western boundary of which is 12 miles east of the eastern line of this territory. This spur has an average altitude of approximately 4,500 feet, the higher points reaching elevations 5,000 to a 6,100 feet above the sea level. The northern slope of this divide breaks quite abruptly from the comparatively level crest into the canyons of the tributaries of Butter, Willow, and Rock

creeks, the waters of which are usually separated by long ridges extending northward. Southward from the divide the topography and geological formation are interesting and peculiar. An even, gentle slope extends downward from the summits toward the John Day River for a distance varying from 7 to 10 miles to the upper "breaks" of the John Day, which form a precipitous escarpment 500 to 1,000 feet in height and several miles in length. Below this is another plateau-like slope descending gradually to the canyon wall above the river.

Finding their extreme sources in the swampy basins or on the levels close to the summit of the ridge, the streams flow smoothly downward across the wide slope uniting the numerous small tributaries, and steadily cutting their ditch-like channels deeper until the upper escarpment is reached. There the erosion of ages has worn deep, impassable gorges back from the cliffs where once were gleaming cascades and waterfalls dropping to the bench below. Along the crests of the divide dome peaks, such as Madison, Tupper, and Peters buttes, Bald and Little Bald Mountain, rise from the general level of the divide and form conspicuous lookouts, but generally the country is one of unusual topographic sameness, and every part looks identical with the others.

The highest part of the divide is in the southeastern quarter of Township 4 South, Range 28 East, where Bald Mountain rises to a given altitude of 6,100 feet. East and west from this point the downward slope of the range is perceptible for several miles on either side to passes several hundred feet lower than the summits. Through these passes lead the transmountain wagon roads southward to interior points.

The topography of the entire area in question is comparatively unbroken, except southward from the upper escarpment. The gorge through which the North Fork of the John Day River flows is cut extremely deep, and so precipitous on either side that access to the stream is almost impossible. There are a number of ranches upon the benches and in favorable spots along the tributary canyons, but in some instances it is impossible to reach them by wagon, so steep and difficult are the slopes. This section of the river's course might well be styled the Grand Canyon of the John Day.

Climate, Precipitation, Etc.

The climate of this region is dry at all times in comparison with the more western portions of the State, nor is the precipitation as great as it is farther east on the main range of the Blue Mountains. Projecting westward, parallel to the course of the rain-laden winds into the semiarid plains, as this spur does, it intercepts less of the moist air currents than would an equal area of the main divide, resulting in a proportionate decrease of rain and snowfall.

The atmosphere of the intermountain region becomes heated and heavy during the long early summer days, and against this blows the cool, moist currents from the Pacific, passing over the Cascade range and across the plains, forcing the heated atmosphere before it to the slopes of the Blue Mountains. There the course of the current is deflected upward, causing sudden intermingling and contact of these differing degrees of humidity and temperature, resulting in most violent and terrific electrical storms which combine thunder, lightning, rain, and hail. The results of the culmination of one of these atmospheric conflicts was heralded to the world in the sad story of the appalling disaster which devastated the little city of Heppner nestling between the treeless hills, near the proposed reserve.

The lateral divides or spurs, such as the one upon which the proposed reserve is located, are more in danger from such storms than is the main range, and that such phenomena are not uncommon is evidenced by the surprising number of lightning-scarred trees, and the soilless tracts found upon the area under discussion.

While the terrific storm which dealt death and destruction to the unfortunate people of Heppner was the worst recorded in the history of the country, many similar but less severe downpours have occurred before and since.

With the exception of infrequent storms such as those referred to, or light showers during the month of June, or occasional rains during September, no rainfall can be counted upon from May 1 to October 1, and often no abundant precipitation falls until November.

The mean annual precipitation recorded at Heppner is 15 inches, but this is not a criterion of the amount of moisture deposited upon the higher elevations, where the indigenous flora clearly indicates a marked increase over this amount. At times snow falls to a depth of 6 feet on the summit of the spur, but this is unusual. The average depth probably would not exceed 3 feet. Usually, severe snow storms are followed by warm Chinook winds from the west, which quickly bare the hills of snow. The range of temperature is probably 120° F., or from -20 to 100 in the shade, but none of these extremes maintain during long periods at any season.

The Forest

The geographic, topographic, and climatic conditions above referred to preclude the growth of forests upon all sections of the proposed reserve, and it was found that a large area included within the withdrawal is timberless or only sparsely dotted with inferior types of juniper or mahogany.

Having no instrument with which to measure elevations, the altitudinal range of the forest could not be accurately determined, but is estimated to be from the summits downward to a mean altitude of 3,500 feet, with numerous interdigitations following the shaded canyon bottoms downward to elevations of less than 3,000 feet.

There are no extensive forests of continuous character anywhere within the proposed reserve, mainly for the reason that the entire tract comprises one of the outposts of forest growth – standing on the ragged edge, as it were – and the components of the forest are of necessity extremely susceptible to climatic and topographic relations. Upon the tracts covered by the various types of growth there is a striking similarity in all parts, but the types are curiously intermingled as each follows the contour of its adapted soil or exposure. Looking upon the forest cover from any elevated station, it presents an extremely broken and irregular appearance. This is especially true of the extreme western end of the withdrawal in Township 6 South, Ranges 26 and 27 East, as seen upon looking southwest from Tupper Butte. Throughout this district 40 per cent of the surface is barren, scab land, upon which, from present appearances, no timber has ever grown. This scab land also occurs in many other parts of the withdrawal.

The forest cover is composed of eight coniferous species, namely:

Yellow pine	<i>Pinus ponderosa</i>
Lodgepole pine	<i>Pinus murrayana</i>
Douglas spruce	<i>Pseudotsuga taxifolia</i>
Engelmann spruce	<i>Picea engelmanni</i>
White fir	<i>Abies grandis</i>
Alpine fir	<i>Abies lasiocarpa</i> (One specimen seen)
Tamarack	<i>Larix occidentalis</i>
Juniper	<i>Juniperus occidentalis</i>

These deciduous species represented consist of alder, quaking asp, mountain mahogany, willow, thorn, ceanothus, mountain ash, serviceberry, wild cherry, and a very few minor species, such as wild rose, snow-bush, etc.

The forest is naturally divided into two general types – the north slope and south slope – but a closer segregation would separate each of these into less important classes exemplifying the effects of exposure and subdrainage. Two timber zones – the yellow pine and lodgepole pine – are immediately distinguishable, but each penetrates the other with singular disregard for the usual lines of definition, both being bounded and defined by conditions other than altitudinal range.

Yellow pine is the predominating species, representing fully 80 per cent of the entire forest. It comprises almost the entire stand of south slope type, being but sparingly interspersed with Douglas spruce of very inferior quality, or occasional groves or specimens of juniper.

The north slope type is represented by a mixed growth of the other species named, and occupies, mostly, the north and east exposures, though on the north side of the mountains it covers the bottom lands which contain sufficient moisture to promote the growth of its components, and frequently creeps up the western and southern exposures.

Over the greater part of the area covered by this type (and that is much the greater portion of the withdrawal), the forest occurs in open stand which differ materially in height, diameter, and volume of merchantable timber. Naturally, the best timber is found along the canyon and ravine bottoms, where a stand of from 20 M to 30 M is sometimes attained, but on the slopes the stand immediately decreases until, on the crests of the low ridges, it runs not higher than 3 to 10 M per acre, even in the most continuous forest.

The lodgepole pine ranks next to the yellow pine in acreage, but it is mostly of a size suitable only for poles. Tamarack is second in value as a commercial timber, and attains an excellent growth, particular in the Willow Creek basin in Township 4 South, Range 28 East. Mingled with the tamarack is some very good Douglas spruce, but the trees are mostly small, usually from 12 to 20 inches in diameter. The other species represented are of but little commercial value, and occur only in small tracts and sparingly.

Reproduction is not general throughout all of the townships except upon the lands covered by the north slope type, where there is usually a dense and thrifty young growth of the component species, most of which reproduce well. In the yellow pine belts the young growth appears mostly in spots, springing up in very close ranks and making a thrifty growth. There are wide tracts upon which little reproduction appears, but where it is needed to replace decaying growth the species is providing well for the future. Throughout the lodgepole pine zone, or, more exactly, above the yellow pine on the south slope, the lodgepole pine has reclaimed hundreds of acres, particularly in Township 5 South, Ranges 28 and 29 East. In many places it was noticed that the yellow pine is encroaching upon the scab lands which lie within seedling distance of the parent trees. East of Potamus Creek in Township 6 South, Range 29, there is a lack of reproduction, there being only occasional thickets of north slope species or yellow pine, sparingly distributed. The outlook for natural reforestation is promising over the entire withdrawal.

Owing to the fact that the areas included in my final recommendations were not fully examined, no detailed estimate can be given of the total stand of timber, but it is roughly and conservatively estimated that the total volume of all species is about one and one-half billion feet, B.M.

Industries

The only industry developed within the proposed reserve is stock raising, but recently-discovered coal beds have led to extensive prospecting and location of coal lands upon and contiguous to the withdrawal. The greater part of Township 4 South, Range 29 East, was located as coal land at the time the discovery was made, and for this reason was not included in the withdrawal.

Three companies have been organized to exploit the field, and active work was in progress at the time of my visit. The Heppner Railroad and Coal Company has engaged an expert on the ground, and several prospect tunnels were being driven to determine the extent and value of the veins. This company has about 2,800 acres of coal land located at the head of Willow Creek in Sections 25, 26, 27, 33, and 34, Township 4 South, Range 28 East. All indications point to the development of valuable coal deposits which would be of inestimable value to the country. A railroad survey has been made up Willow Creek, and the road will be constructed as soon as a sufficient body of coal has been uncovered to justify the expenditures.

The Arbuckle Coal and Transportation Company is also interested in this township and in Township 4 South, Range 29 East. The Butter Creek Coal Company also has a group of claims, but these were not visited, for the reason that they are included within the proposed reserve.

As will be seen from the township plats herewith, all of the north half of Township 5 South, Range 28, is also located as coal land, but no development work was in progress at the time of my examination, and it is probable that much of the land will be relinquished and the claims cancelled.

In the event of these prospects being developed and extensive coal deposits opened, a large amount of timber will be required, but almost all of the claims, and particularly those upon which work is being done, have an abundance of timber of species desirable for mining purposes. Eventually, however, demand would be made for timber from other lands, and it appears to me to be in the interest of this possible industry to surround the claims by a reserve.

Many of the outlying claims have been located without definite knowledge of their character, but, as I overheard one locator remark, "there is timber enough on my claim to pay me for the investment, even though I find no coal."

Since completing my examination of this reserve I have learned through the press that development work has been prosecuted during the summer with very gratifying results. I quote from the Portland (Ore.) "Oregonian" as follows:

"There are seven strata of workable coal seams that have already been discovered... In point of quality the coal is of the best. It ranges from 57.30 per cent fixed carbon to nearly 80 per cent... There is enough coal in two seams that have been opened to supply the demands upon the mines for more than a century at an output of 1500 tons per day."

Arrangements have been completed by which the Heppner branch of the O. R. & N. Ry. will be extended to the mines, and all indications point to the fact that a large business will be developed and one which will be of inestimable value to the State.

The Forest as a Protection Cover

The beneficial effect of the forest cover on these lands can not be overestimated. Under climatic conditions such as those described, the soil is subjected to destructive washing and erosion, particularly during the terrific downpours which accompany the electrical storms referred to. As an evidence of this force, it was everywhere observed that upon tracts upon which there is no forest cover there is no soil. The scab lands referred to are startling illustrations of this erosion. At one time these areas were covered with soil to a depth of from one to two feet, and sufficient soil binding vegetation grew upon it to resist the destructive elements – wind and water – but persistent over-grazing destroyed this cover, and, there being no tree growth to protect the soil, it rapidly disappeared, leaving nothing but a bed of exposed rocks, upon which almost nothing grows. Frequently there may be seen small beds of soil surmounted by resistant forms of vegetation which have held the soil intact and now remain as striking illustrations of the necessity for the perpetuation of the soil cover to prevent the entire mountain slopes from becoming barren wastes of rock.

That the forest has a highly beneficial effect upon the water flow can not be questioned. Most of the living streams find their sources above the yellow pine zone in small, swampy tracts; the creeks which head lower in the yellow pine belt run dry early in the season. Even as early as June 20 the question of water for sheep was a serious one at the lower altitudes where the larger streams flow through deep gorges. Throughout the entire territory the relation between the forest and the water flow is apparent. Where the forests are dense, springs are numerous. Doubtless the reverse is equally true, but the dependence of each upon the other is obvious.

A glance at the map accompanying this report will show that almost the entire watershed is toward the south, the streams flowing directly into the John Day River through a section which is not adapted to agriculture, because of the steep, broken character of the land. The outflow from the proposed reserve is, therefore, of little importance at the present time.

The streams which flow northward, on the contrary, are of great value and importance, since the population of the long, fertile valleys through which they flow is wholly dependent upon this water supply. It is indeed unfortunate that the north slope was not reserved prior to the relinquishment of title by the government. Willow, Butter, and Rock creeks should have been fully protected. As far as I could learn, little or no use is made of the water that flows southward.

Settlements

There are no settlements within the proposed reserve, and scarcely a habitation. Along the stage road in Section 28, Township 6 South, Range 27, there is a stage station around which some improvements have been made by clearing and sowing grass, and some grain truck is raised. In Section 15, Township 5 South, Range 28, there is a cow ranch that is occupied by a family during the summer season. One of the homestead claims in Section 8, Township 5 South, Range 30, has a small shack that is occupied part of the time by an old man who looks out for the cattle pastured along the creek, but he was absent when I visited the place. Many homesteads have been located in different parts of the reserve, but they were taken solely to secure rights to water and usually small natural meadows along the streams, which are used for cattle ranges. Backed by a homestead claim, the cattleman commands respect and recognition from the nomadic sheepmen, and for this purpose all of these claims were filed upon, though apparently no attempt has been made to comply with the homestead law. My observations warrant the assertion that each and all of these claims could be cancelled for noncompliance with the terms of the law. Some desirable tracts of range land have been patented by stockmen who now virtually control all of the surrounding range.

Examples of this are found in the meadow lands shown upon the map in Township 5 South, Range 28. Old cabins remain as relics of the days when the homesteader was "holding down" his claim, but they are now abandoned and the places used, as they always were, simply as summer camps for the herders.

The entire district is essentially range land, and offers but little inducement to the home builder.

During the fall of 1902 professional timberland locators "discovered" the timber bodies within this area, and industriously resurveyed the lines around the most continuous timber belts and located scores of patriots upon the lands for a consideration of \$100 per location. Their operations were temporarily suspended during the winter, but resumed during the month of May. Filings began to pour into the local Land Office, and the rush was on, but fortunately my request for the withdrawal was acted upon promptly and further entries were debarred in time to protect the remaining tract, much to the disappointment of the professionals. I was advised later by one of these that they had planned to locate every timbered 40 acres in that district. The most continuous forest is in Township 6 South, Range 30, between Snake Creek and the John Day. I traversed a number of sections in this township, and was surprised to find that people would surrender the sum of money necessary to secure title to such a small amount of timber. One 40-acre tract that I noted particularly will not cut more than 60 M feet of timber, and this of very inferior quality. The average stand per $\frac{1}{4}$ section is about one and one-half million. Most of the timber claims were located by residents of Heppner, many of whom expected to derive a revenue from their claims by leasing them to stockmen. It is probable that final proof will not be made on many of these claims, for the reason that a larger number of the claimants were affected, either directly or indirectly, by the Heppner flood.

Roads and Railroads.

The entire reserve is easy of access by wagon road, and almost all parts can be reached at the present time. The principal thoroughfare is the Heppner-Monument stage road, which crosses the pass at the head of Rock Creek, thence south to the John Day River, through Townships 6, 7, and 8, Range 27. This road is one of the main arteries of trade with interior points, and a large amount of freight, including the wool clip, is hauled over it. The second road in importance crosses from Heppner via Butter Creek to reach Ukiah and other points on the upper North Fork of the John Day.

Other secondary roads enter and traverse the reserve, as shown approximately upon the map. The open character of the forest and gentle slope of the divide render road building comparatively easy.

The construction of the proposed railroad to the mines will make a large part of the timber on the reserve easy of access, and will greatly stimulate the demand. It is difficult to conjecture just what the effect of the railroad will be, but I can not see that the reserve will interfere with the development of the country in any way, because the reserve itself is incapable of development and ingress or egress will not be prohibited.

Lumbering

There has been no lumbering done within the territory I recommend as a permanent reserve, but there is a sawmill in the northeastern part of Township 4 South, Range 28 (Photo No. 41267), one on Rock Creek about 3 miles from the reserve line, in Township 5 South, Range 26, and an old mill was operated several years ago on Willow Creek near the north line of Township 4 South, Range 28. No cutting has been done south of the divide. The output from these mills was all used locally – the greater part in the building up of the little towns in the county and on neighboring ranches –

but owing to the expense of the long haul from the mills to Heppner it has been found cheaper to import lumber from western Oregon by rail. This condition will be changed, however, upon the completion of the proposed railroad to be built to the coal mines. This will afford an opportunity to supply local demands for fuel, lumber, etc., at a minimum cost, and eventually the demand for timber will extend to the reserve.

Grazing

The use of these lands for grazing purposes is the most important factor to be considered in determining the economic relations between the people and the proposed reserve. The west slope of the Blue Mountains and the adjacent broken plains are essentially a grazing section at this time, and upon this industry the communities are largely dependent. In the neighborhood of the proposed reserve agriculture is practiced where opportunity offers, but winter stock feed of one form or another is the only crop produced. Rye is the only cultivated grass that will grow on the uplands where irrigation is impracticable, and its production is limited by the small area which is susceptible of cultivation. The production of hay is therefore restricted to the narrow canyon bottoms along streams where successive crops of alfalfa can be produced annually. The amount of stock each ranch supports is governed by the amount of hay it produces. A maximum amount of stock to a minimum amount of feed is the usual basis of calculation, the stockmen depending entirely upon the open range except during the most severe winter months. As early as possible in the spring stock is turned out on the foothill range. If the owner has an enclosed tract of bunch-grass land it is used for early range and occupied until about May 15, when cattle are driven to the mountains.

Sheep are handled in much the same way, but reach the mountain range later – usually between the 1st and 15th of June, though some crowd ahead and enter in May.

There is demand for every acre of range included within this withdrawal – and much more. The mountains have been pastured persistently ever since the rapid increase in numbers of stock demanded the utilization of all of the range lands, and this area has been subjected to particularly hard usage by reason of its geographical location. As already described, this spur extends westward from the main range, partly bisecting a wide treeless region, used as winter range. This spur affords an excellent driveway across public lands over which sheep may be driven and ranged in transit, without encroaching upon private lands, and affords earlier range than that of the Blue Mountains proper. This has led to the adoption, by some owners, of a system by which the bands are driven to the earlier range immediately after shearing and lambing, held there for a time, and then taken on to more desirable summer range in the higher mountains. This higher range is occupied, usually, until October 1, when the return trip is commenced. The same system is followed on the homeward journey, and the bands are held on the lower range within the proposed reserve until October 25–31, when they are returned to the winter range on the bunch-grass lands below.

But these transient herds are not the only ones, nor all of the stock that this range is depended upon to sustain. Many herds of sheep are summered upon it in addition to the numerous “bunches” of cattle that wander up from the settlement or are driven in from neighboring valleys. The number is at all times greatly in excess of the capacity of the range which, as a result of this unrestricted, persistent grazing and trailing of band after band, presents a deplorable condition of impaired natural vitality.

Utilization of this range under the system described makes it obviously difficult to determine the amount of stock by which it is annually occupied or the length of the period of occupation. To the transient owner, or, rather, those who do not control range by private claims, it is a **substitute** range

which the occupant is prepared to leave at any time if something better offers in another section. The camp tenders are constantly searching for feed overlooked by others, and the bands are always moving. At the time this examination was made (June 20–30) the open range was already incapable of properly supporting the stock dependent upon it. Gaunt and hungry sheep were trailing everywhere, with apparently as little vegetation before them as there was behind. The ground had already been run over, in some places not only once but many times. There seemed to be no other place to which these herds could go; the range everywhere was fully stocked. Upon what these sheep would subsist during the coming hot months I could not understand. The herders were at a loss to know what to do with their bands, and several declared that they would throw up their jobs rather than herd in a country where there was no feed. During my examination I encountered twelve bands of sheep, averaging 2,000 head per band, and was told of several others. There were at least twenty bands, or 40,000 sheep, besides hundred of cattle, ranging upon this limited area of denuded range. As far as I could learn these were owned as follows:

Montague	Arlington	2
Moneymaker	Heppner (12 miles south)	?
Farnsworth	Hardman	?
Miller	Rhea Creek	?
Rhea	Rhea Creek	?
McMarsen	Castle Rock	?
Hahn	?	?
McCarthy	Juniper	2
Minor Co.	Heppner	3
Kelley	Heppner	3
Hufford, Geo.	Gurdane	3

From this list it appears that, with the exception of Montague, of Arlington, these stockmen are all residents of Morrow County, and, excepting McMarsen, of Castle Rock, all live comparatively close to the proposed reserve. At shearing time of this year there were approximately 240,000 sheep in Morrow County. Adding to this 50 per cent increase by lambs, gives a total of 360,000 from which approximately 6,000 should be deducted to cover a decrease by marketing of spring mutton and shipments to Rocky Mountain range for summer feeding, leaving on the local summer range a total of approximately 300,000 sheep and lambs. Of these 250,000 must have gone to the Blue Mountains to increase the already excessive number owned in the counties in which the Blue Mountain Reserve is situated. That the summer ranges can not long continue to produce sufficient forage to sustain such numbers of stock is obvious to all.

The general character and value of the grazing land contained within the proposed reserve does not differ materially in different sections except as it has been injured by abusive overgrazing. These lands may be divided into four classes, viz., forest, park, scab, swamp, named in the order of their relative extent. These types are illustrated by photographs as follows: Nos. 41270-78 and 87, forest; 41277-83, park; 41275-89-79 (foreground), scab; and 41291, swamp.

The forest type is the most extensive. Throughout the forest there is more or less grass differing in character according to the density of the shade, slope, etc. In some places in the open pine woods the rich, nutritious bunch-grass remains, with some other species, but the tufts are often far apart and afford but little feed. The most abundant species is the common "pine grass" which forms a beautiful carpet of green over wide stretches of open forest, but it is of little value for feed. Horses and cattle eat it readily while it is young and tender, but sheep simply run over it and trample it down

unless very hungry. In the mixed forests, or north slope types, there are more or less under-shrubs affording browse, and often quantities of coarse grass, but this type occupies only a limited area, mainly near the summits of the higher sections. The park lands, as the term is usually understood, are very limited in extent at the present time, though it is reasonable to suppose that at one time the parks were co-extensive with those tracts here classed as park and scab. Over these areas is found more or less grass of different species, but it grows sparingly and affords but little feed. Along some of the streams there are strips of open ground covering the flat, subirrigated bottoms, which produce the most resistant and valuable forage. These strips vary from 10 to 80 yards in width, and are sometimes more than a mile in length. The soil is a fertile loam, well sodded, and produces such rapid growth that bands of sheep have been carried through the summer season by simply trailing them back and forth repeatedly over such an area. On steep southern slopes, such as the one shown in Photo 41283, there is absolutely no forage of any kind, while on the north slopes, as seen in the foreground of the same picture, there may be excellent grass, though that shown is the only spot of this character seen.

In the swampy meadows, such as shown in Photo 41291, there is a rank growth of grass and weeds, but these are mostly patented lands and fenced. The amount of damage done to the forest by sheep is greater than I have ever seen in any other locality. In many places the seedling yellow pine has been persistently browsed from year to year to such an extent that they have failed almost entirely in height growth, and over large areas they are short, stunted, and much branched from the pruning done by sheep. A specimen which illustrates the result of this browsing is shown in Photo 41289. I have long contended that sheep would not browse upon coniferous species unless driven to it by hunger, but while watching a band ranging in open pine woods (Photo 41278) I saw an old ewe approach a pine about 3 feet in height, rise upon her hind feet, and deftly gather in, in a manner born of practice and long experience, the tender spring growth which topped the seedling. The same performance was repeated many times on this occasion, and by sheep that were well filled and ready for their noonday rest. This demonstrated to me that, after the taste is once acquired, these tender leaders are palatable to sheep and frequently eaten as food.

It is probable that the greatest amount of damage to the forest growth is done in the fall when the hungry flocks are returning over a denuded range, but the fact remains that the development of young growth on parts of this reserve has been seriously retarded by browsing done by sheep.

Besides the many sheep that find range on these lands there are about 1,600 head of cattle that occupy portions of it during a part of the season. Of these about 1000 are said to be owned in the Butter Creek section, north of the withdrawal in Range 30, and about 500 are driven in from Camas Creek valley, which lies between the Heppner and Blue Mountains withdrawals. The range frequented by this stock is in Townships 4 and 5 South, Range 30, and the eastern part of Township 5 South, Range 29, mainly within the drainage of Five-Mile Creek and eastward. It is probable that some cattle also frequent the range at the head of Rock Creek in Township 6 South, Ranges 26 and 27, but only a very few were seen in that locality and special consideration will not be given to that section.

Naturally there has been a great deal of contention between the cattle and sheepmen, but no serious conflicts have occurred between them. The cattlemen feel that they are entitled to the full use of certain parts of the range, but, according to their statements, their requests for parts of the range have been ignored and promises made by sheep-men have been violated. Widely blazed lines have been marked by the cattlemen around several sections of land in the vicinity of Five-Mile Creek, and notices posted along the line requesting the sheepmen not to encroach upon the interior area, but these are disregarded, and in the end the cattlemen are practically driven from the range.

Cattle are driven to the mountains about May 15, and held there as long as the feed lasts, but during late years most of the stock has been removed during the month of August (and even on August 1) because of the shortage of feed. So long as forage can be found for the sheep outside the cattle district there is no trouble, but as soon as hunger comes upon the bands it is impossible to hold them anywhere. Herders become desperate and no man's rights are respected. Throughout the entire range the herders would attempt to conceal themselves at the approach of a stranger, or would greet him suspiciously, fearful lest the visitor had come to warn them of trespass committed, or that he was encroaching upon the rights of others. What a striking contrast between conditions here and on the Cascade Reserve where the use of the range has been regulated! There the sheepmen and cattlemen now camp at the same spring, cook by the same fire, and enjoy the most friendly relations, grateful for the changes that have been brought about. Verily the lion and the lamb shall lie down together!

A solution of the range problem in this reserve is not a difficult one, but proper administration will demand a considerable reduction in the number of sheep occupying the range. The territory should be divided between the sheep and cattle, and the cattlemen should unite their herds and use the range assigned them without special allotment. The sheep range should be allotted to the different permit holders, and each restricted to the range to which he may be assigned.

That part of the reserve lying east of the divide between the waters of the Potamus and Matlock creeks and north of the summit of the mountains in Townships 4 and 5 North, Range 28, should be set apart for the exclusive use of cattle. This territory comprises an area of 49,260 acres (less 1,920 acres of alienated land), which, it is believed, will support the cattle now brought to these lands from the Butter Creek Valley and adjacent sections east of the reserve.

It does not appear necessary at this time to set apart other extensive areas for the use of cattle, but the equities to be considered in the most western districts will demand that privileges be granted other cattle owners and the owners of parcels of land within the reserve.

The divisions indicated will amply provide for the number of cattle now using the range, and, with improved conditions to follow, also for any increase in numbers that may occur in future. The remaining public land, comprising 197,000 acres, should support 40,000 sheep even in its present depleted condition, and this number should be permitted to go upon the reserve. This arrangement allows about 5 acres to each sheep, and more than 30 acres for the 1,600 head of cattle said to be owned in the vicinity of the reserve. This is a very large acreage per head but some opportunity must be given the range to recuperate. The permit holders should be required to sow a certain amount of seed per acre each year, as I have often recommended to the Interior Department. In this way the range may soon be brought up to a much more productive condition than at present, and in future the number of stock allowed may be materially increased.

Sheep should not be permitted to enter the reserve before June 15, and should be removed not later than October 20. Such a long grazing season will tax the range to its utmost capacity, but by June 15, the forage will have attained its growth and should carry the stock over the dry months of July and August and into early September, when copious rains will quickly renew vegetation sufficiently to support the stock until the winter range has recuperated. Because of the fact that the altitude of this range is comparatively low – a transition zone, as it were, between the plains and the Blue Mountains proper – it is better adapted to spring and fall grazing than to summer feeding, but the great demand for summer range and the dependence of local stock upon this territory requires the fullest utilization compatible with the purposes of the reserve.

Cattle should be allowed to occupy the range from June 1 to October 15. Finally, I have to recommend that 2,000 head of cattle and horses, and 40,000 head of sheep be authorized to graze upon this reserve.

Forest Fires

The open character of the major portion of the forests of this withdrawal precludes the possibility of serious damage by fire. Fire scars at the bases of the yellow pine are evidence of the fact that many tracts have been burned over by creeping fires, but the injury resulting is not noticeable except in that the seedling growth has been destroyed over limited areas. In the upper zone, however, where lodgepole pine and other indigenous species have formed a stand sufficiently dense to carry overhead fires, a few small tracts have been burned over, but without serious consequences since each area has quickly restocked with a forest cover more dense than the first. Apparently these fires are attributable to carelessness on the part of the builders of camp fires. Possibly lightning has caused an occasional conflagration, but I have yet to discover evidences of such phenomena.

Patrolling against forest fires will be an inconsiderable part of the duties of the forest officers on this reserve.

Administration Necessary

The administration of this reserve will not be a difficult task except, as it appears, in the matter of determining the merits of the individual petitions for grazing privileges. This is the question of greatest concern to the interested public, and upon the equity of his decisions will depend the success of the forest officer and the reserve.

Patrol will be most necessary along the north line of the reserve, because of the fact that the south line is naturally protected by the canyon of the John Day.

Encroachments from tramp sheep may be expected all along the line, however, and close surveillance will be required to prevent trespass by grazing. Applications for free-use privileges will come mostly from the Butter Creek settlements, since these people are more dependent upon reserve timber than any others, having for years drawn their supply of fuel and fencing from within the proposed limits of the reserve of from Township 4 South, Range 29 East, where pine poles and tamarack timber is abundant.

A very little trail work will be necessary. A horse may be ridden almost anywhere without difficulty. All of the land has been surveyed, and the lines may be located with comparative ease, thus obviating any necessity for further surveys to establish the reserve boundary.

Sentiment

The withdrawal of these lands caused but little comment except from timber-land locators, and, so far as I could learn, there is no outspoken opposition to the creation of a permanent reserve. My examination was made during the days following immediately after the awful disaster at Heppner, when men's minds were filled only with the horror of that awful event, but from knowledge obtained I am convinced that a reserve will be welcomed.

Naturally the question is one of vital concern to the sheepmen and cattlemen, and that they will be grateful for any measure which will bring order out of the present chaotic conditions existing on the range is certain. All unite in declaring that they are willing to try the reserve plan, realizing that the present conditions can not be long maintained without ruin to the business. The cattlemen who have endeavored to use a portion of the range are especially eager to have some administration given these lands, believing that they will be allotted a portion for their herds.

Mr. Geo. Couser, of Heppner, one of the most substantial business men of the county, and mayor of the town, was asked for his opinion. He said: "You who have studied this question know more about it than any of us can know. Go up into the mountains and look over the situation; if you think a reserve will benefit our county, go ahead and create it. I have confidence enough in my Government to believe that nothing will be done which will injure our county or community, and I am willing to leave it to you."

The editor of the "Heppner Gazette" also expressed himself as favoring the proposition, and assured me that the sentiment of the county is decidedly in favor of the reservation of these lands.

No arguments against the reserve were presented. Every one appreciates the facts that these lands are for no value other than for the timber that is upon them, the grazing, and as a protection to the water supply. Moreover, they believe that much will be done to mitigate the deplorable conditions existing on the range, and that needed protection will be given to a valuable timber supply which will soon be in demand for local use.

I recommend that the lands included within the following-described boundaries be set apart as a permanent forest reservation to be known as the Heppner Forest Reserve.



Photo Number: 41275. **Locality:** Umatilla National Forest, Oregon. Morrow County. **Date:** None provided (1903?). **Photographer:** H. D. Langille. **Exposure:** Snap. **Stop:** 8. **Hour:** 1:20 PM. **Direction:** South. **Subject:** Looking south toward canyon of John Day River across Wall Creek.



Photo Number: 41280. **Locality:** Umatilla National Forest, Oregon. Morrow County. **Date:** None recorded (1903?). **Photographer:** H. D. Langille. **Exposure:** Snap. **Stop:** 16. **Light:** Sun. **Hour:** 1 PM. **Direction:** Southeast. **Subject:** Looking a little east down Wall Creek Canyon from south-east corner, showing deep canyon and character of timber.



Photo Number: 41283. **Locality:** Umatilla Forest Reserve, Oregon. Morrow County. **Date:** June 24, 1903. **Photographer:** H. D. Langille. **Exposure:** Snap. **Stop:** 12. **Light:** Sun. **Hour:** 3:30 PM. **Direction:** Northwest. **Ground Cover:** Bunch grass. **Stand:** Yellow Pine and Douglas Spruce. **Subject:** Looking down an angle of Swail Creek showing typical forest conditions and character of country. Sandstone reefs. Madison Butte in distance.

¹ Proclamation signed July 18, 1906, area 292,176 acres.