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Whitman National Forest

Annual Silvical Report

North Slope Sub-Type of the Blue Mountains

By

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(North Slope Sub-Type of the Blue Mountains.)

The North Slope sub-type of forest occurs in the Blue Mountains of Eastern Oregon.

Its segregation from the general yellow pine slope type of this region is due to the fact that the physical conditions of the sites on which it occurs differ sufficiently from those of the slope type to produce a stand of different quality and mode of growth and consequently demanding a different method of management.

It is not classed as a distinct type, as it has a number of points of similarity with the slope type. It is found at the same elevations and on soils of about the same quality. Both have the same tree species though the percentages of each of these species in the stand of the slope type proper is very much different from those in the sub-type.

The typical stand of the slope type is one composed of western yellow pine almost pure, with a small percentage (generally less than 20%) of western larch, Douglas fir and grand fir and an occasional lodgepole pine. The stand is open and the ground remarkably free of debris.

The typical north slope stand is composed largely of western larch, lodgepole pine, Douglas fir and grand fir, with an occasional yellow pine in the mixture. The stand is very dense and the amount of debris upon the ground is very large.

Occurrence of the North Slope Sub-type.

The physical feature which determines to a large extent if an area is "North Slope" or "Slope" is moisture in the soil and in the air. A good supply of moisture during the growing season is very favorable to the four inferior species named above and yellow pine cannot compete with them successfully. Their reproduction is so dense and fast-growing that yellow pine is choked out.

It is interesting to note the extent to which these inferior species are dependent upon abundant moisture. Small knolls and side ridges jutting out from a north slope area are covered almost invariably with an open stand of yellow pine due to the exposure to sun and wind, which dry out the soil and thus make the site unfavorable for the north slope species.

Much of the yellow pine on north slope areas occurs on this kind of site. The yellow pines which occur as scattered individuals throughout the entire stand undoubtedly secure a foothold in

openings made by windfall or otherwise when a number of unusually dry summers occurring in succession produce soil conditions favorable to reproduction of this species.

The name "North Slope Sub-type" is rather misleading for the aspect cannot always be taken as an indication of the presence of this class of forest. A cool situation is the only condition demanded and very frequently it is found on moist flats, the lower slopes and bottoms of canyons with any aspect whatever and the summits of flat-topped ridges. In fact, numerous examples have been seen of this type occupying west and southwest exposures on one side of a canyon and the east and northeast exposures on the opposite side carrying slope type. Here the east slopes were warm, having bedrock close to the surface with numerous large outcrops in many places. The west exposures were cooler, due to deep soil and gentle slopes. A better name for the sub-type would be one that indicates its occurrence on cool sites.

There is a difference of opinion as to just what constitutes this sub-type, or, in other words, where to draw the line between it and the slope type on the lower situations, and between it and the transition type at the upper limits of its occurrence.

At the lower elevations areas are frequently found to contain quite a number of yellow pine trees per acre, although north slope species occupy the greater percentage of the ground space. Also, slope type conditions sometimes grade gradually in north slope, the per cent of yellow pine decreasing and grand fir, Douglas fir, etc., increasing.

It is near the dividing line between type and the sub-type that we find the best yellow pine trees. They are very large, straight and clean and cut a high percentage of upper grade lumber. For this reason it is important to know if we can depend on reproduction to produce a good stand of yellow pine of a quality equal to that of the individual pines scattered over the area or if the reproduction will be largely of the inferior species.

In trying to classify these areas it must be remembered that lodgepole pine, grand fir, etc., are often found to be occupying typical yellow pine sites as the result of an accident, and the sites must not be classed as north slope. Cutting a part of the scattered yellow pines and the best of the western larch, Douglas fir and grand fir on such areas will so open up the forest that yellow pine will reestablish itself.

Areas on which yellow pine reproduction cannot be depended upon to form good stands need a different system of management and consequently must be classed as sub-type. This, undoubtedly, should be basis of the division.

To be done correctly, this type classification requires a man who has had much experience in timber-sale work and has carefully studied the reproduction on areas of this kind which have been logged. However, to aid in making the determination, the reproduction can be carefully studied on a large number of small openings made by windfall, etc., and the chances for yellow pine reproduction figured out. The study of one or two areas would not give a fair result, because of the possibility of unusual conditions for reproduction when that particular opening was made.

If a study of these openings shows that yellow pine reproduction can form a good stand on that site it is safe to classify it as slope type, for when logging takes place the inferior species will be so handled that yellow pine will have a better chance of reproduction than in the openings studied.

The volume percentage of yellow pine in the present stand can be used as a guide in determining the type, but should not be considered as a controlling factor. A young stand may be composed almost entirely of north slope species but have two or three large old yellow pine trees per acre which form fully 80 per cent of the volume. Yellow pine reproduction could not be secured by managing as a slope type stand and it should not be classed as such.

In fixing the line between the north slope and transition types some maintain that the former should include only those sites on which yellow pine can be grown if the inferior species were removed, while others classify as north slope all sites found at the same elevations at which yellow pine occurs.

The latter idea is certainly incorrect when applied to areas located near the upper limits of the slope type. Here the warm slopes of canyons are frequently found to carry a stand of good yellow pine for five or six miles further up the stream courses than the cool slopes. These cool sites cannot be called north slope, although occurring at the same elevation as slope type stands for their physical conditions are exactly similar to those of the transition type higher up, due to aspect, etc. They are simply spurs of the transition type extending down into slope elevations and should be classed as such.

It is impossible to base the dividing line between the types on species as most of them are found in both types. Of course scattered yellow pine when present usually signifies north slope and Engelmann spruce is a good indication of transition.

Life History of North Slope Stands.

Fire is the most important factor in determining the length of life of these stands as well as their composition. Fires are usually severe in dry seasons because of the density of the stands and the great amount of debris upon the ground.

When a fire crosses over an area, much of the lodgepole pine is killed outright. Grand fir, Douglas fir and larch are badly injured, but are seldom killed. Reproduction after the fire is a mixture of lodgepole pine, Douglas fir and grand fir on the greater part of the burned area and lodgepole pine with western larch in the more moist situations.

Many of the north slope stands on this Forest consist of an open stand of these defective trees under which is a dense stand of reproduction of the species named above.

The lodgepole pine which makes up a large percentage of the reproduction rarely forms any considerable percentage of the merchantable stand later on. It grows very rapidly until about six inches in diameter, but after reaching this size grows very slowly and is finally overtopped and killed by the other species in the mixture. If fire is then long delayed these species form a stand of timber of fair quality intermixed with the old defective parent trees.

Very few of the scattered yellow pines are killed by the frequent fires in these stands but very little reproduction results from them, as it cannot compete with that from the other species.

Economic Value.

The timber of this type has little commercial value at the present time. The upper grades of western larch sell for a fair price, but the lower grades are not greatly in demand. Douglas fir and grand fir are also very difficult to dispose of at a profit.

However, all of these species can probably be sold at a profit within ten or fifteen years, due to the general increase in lumber prices and the decreasing supply of better species.

Lodgepole pine is used extensively for mine timbering and a local demand may furnish a market for a small percentage of this material. In this region lodgepole seldom reaches saw log size and it cannot be cut for lumber. It must be used "in the round" or for fuel.

The amount of defect in the north slope species is very great and this is one of the reasons for the present low prices of the stumpage. In the larch and Douglas fir much of this is due to repeated fires and with the present systems of fire protection should be much less in the future.

Management.

It is very evident that natural reproduction of yellow pine cannot be secured in this sub-type under the systems of management used on the adjoining slope type. The physical conditions of the site are too favorable to the less valuable species. If natural reproduction must be depended upon the best stand that we can hope to secure is one with a high percentage of larch and Douglas fir. To get this stand these species must be favored when logging against grand fir and lodgepole pine.

This is difficult to do at present when the latter can scarcely be disposed of by the lumbermen and cuttings remove more of the larch and Douglas fir, which is exactly contrary to what is desired.

Because of the above and the fact that all of this timber has such a low stumpage value at present, it is best for all concerned to eliminate north slope stands from timber sale areas and to hold them for a future demand. Suppose this requires fifteen years. We will then be able to get the kind of reproduction most desired. If cuttings are made now lodgepole pine and grand fir are certain to reseed the cut-over areas and there is little prospect of getting rid of them until the trees are large enough for market,--probably fifty or sixty years.

When large timber sales are a possibility in north slope stands, artificial reproduction may be feasible and it is suggested that experimental planting be done to determine the best species to use. A long time is required to get the facts from these experiments and they could well be started now.

Western white pine should be well considered in this connection. It occurs on this Forest in limited quantities on north slope and transition sites. The trees are first class in every way, being clean-stemmed, thrifty and of good size, and there seems to be no reason why this species could not be made the leading tree in all of the north slope stands of this Forest.

March 5, 1913 — B. F. Heintzleman
Approved: Henry Ireland – Supervisor — Forest Assistant.