BLISTER RUST SITUATION IN THE INLAND EMPIRE

White pine blister rust became established at a number of widely separated points in the Inland Empire during 1923. So far as can be ascertained, this establishment took place from long distance spread of aeciospores. It was first discovered in 1928. During the seasons of 1928-1930, inclusive, 16 local centers of pine infection were found. During the first half of the summer season of 1931, 24 other centers of pine infection were discovered, making a total of 40. From the rate at which these centers of pine infection are now being discovered it is obvious that the white pine type of the Inland Empire is, over its greatest part, potentially infected with the rust and that the rate of damage will rapidly accelerate from this time forward.

Two infection areas now known in north Idaho are indicative of conditions which may be generally expected over the white pine belt when the rust has had sufficient time to develop to a similar degree in numerous localities. The first of these areas, known as the Long Meadow Infection Area, is near Elk River, Idaho. Infection evidently originated upon the area in 1923 and is known to occur over approximately 48 acres of an uneven aged stand of white pine. A 4% cruise of the area showed that 18% of the pines upon this 48 acres are now infected with blister rust, with an average of 14 cankers per infected tree. The Ribes eradication which has been done upon this area will stop the formation of new pine infections within the limit of the eradicated area, but will not prevent the spread of aeciospores to Ribes in more distant points, thereby setting up further new pine infection centers.

The second area of heavy infection has recently been discovered in Fishhook Creek on the St. Joe National Forest. A preliminary scouting of this area shows it to be approximately 100 acres in extent with an average of 250 pines

per acre, of which 50 to 75% are now infected. Original infection on this area seems to have taken place in 1923, thus showing that under conditions similar to those existing in many parts of the Inland Empire white pine belt 50 to 75% of the pines can show infection within eight years from the time of original infection within an area.

Local centers of pine infection are generally only found after considerable intensification has developed about local points, making it practicable to locate them by scouting. Generally speaking, the amount of rust which develops on Ribes the year of initial infection from long distance spread is so meager on the average wild Ribes bush that it cannot be found by any intensification of scouting that we could afford to do. The initial Ribes infection results from a single aeciospore which infects only a part of one or possibly several Ribes plants at the most in millions of such plants. The odds against finding one of these points are so great as to be beyond practical consideration. The infection centers are not found as a rule until the rust has spread to a considerable extent locally as a result of aeciospores produced on pine from the initial or subsequent Ribes infection.

The accompanying map shows, in red hachure, the area of white pine type over which numerous Ribes infections occur. These Ribes infections occur as local spots, frequently of heavy infection, often several in a single drainage. In many cases they are not as yet known to be accompanied by pine infection, but the presence of the rust on these Ribes will in many cases result in local pine infection, if this has not already taken place.

The red dots represent those locations at which pine infection has been found.

A summation of the knowledge now available regarding the extent of white

pine blister rust infections now present in the Inland Empire white pine belt, shows first, that 40 centers of pine infection are now known to exist; second, that numerous other centers undoubtedly exist which it has not been possible to locate by any reasonable degree of scouting; third, that the rust can within a relatively few years rapidly develop within and out and from a new focus of infection; fourth, that under conditions existing in this region, western white pines very rapidly become infected; fifth, that because of the extent and condition of infections now known to exist, and because of the large acreage to be covered and the difficulties involved in eradicating Ribes over the terrain concerned, only the most rapid, thoroughly organized and most aggressive efforts can save this large area of western white pine from very heavy damage within the next decade.

Status of Local Control Work

Experimental local control in the Inland Empire was first undertaken in 1922. The work was entirely experimental in nature until 1928 when the first co-operative control operation was started. The following is a brief history of the work thus far accomplished: The area numbers refer to numbers on the map.

Area #1. Work done in 1922 in the vicinity of Elk River, Idaho. Ribes eradicated from 414 acres of privately owned white pine type as a first experiment in developing western methods of control.

Area #2. 1923. Further experimental work at the Priest River Experiment Station on the Kaniksu National Forest. Ribes eradicated from 1,698 acres of white pine type.

Area #3. 1924-1925. Upper Priest River, Kaniksu National Forest, Idaho. Further continuation of experimental work in developing western control methods. Ribes eradicated from 9,777 acres of national forest lands.

Area #4. 1926. Lamb and Binarch Creeks, Kaniksu National Forest, Idaho con-

tinuation of experimental work whereby Ribes were removed from 8,865 acres of national forest land.

Area #5. 1927-1928. Honeysuckle Ranger Station District, Coeur d'Alene National Forest, Idaho. Experimental work leading to the eradication of Ribes from 25,777 acres of national forest land.

Area #6. 1928. First cooperative control operation. Cooperative work between the State of Idaho and the Bureau of Plant Industry at Big Creek near Priest River, Idaho. Ribes eradicated from 8,457 acres of white pine type.

Area #7. 1928. First experiments on specialized methods for eradicating Ribes from stream type only. Ribes removed from stream bottoms occurring within 10,000 acres of privately owned land.

Area #8. 1929-1931. Clearwater Timber Protective Association, Idaho. Cooperative local control between this Association and the Bureau of Plant Industry consisting of Ribes eradication from stream bottoms. Ribes removed from stream bottoms occurring within 82,500 acres of private and state owned land in 1929 and 1930, and within 56,880 acres in 1931.

Area #9. 1929-1931. Potlatch Timber Protective Association, Idaho. Cooperative blister rust control operation between the Potlatch Timber Protective Association and the Bureau of Plant Industry cooperating. Ribes removed from stream type lying within 222,010 acres of private and state owned white pine land in 1929 and 1930, and within 16,293 acres in 1931. Ribes also removed from both stream and upland types over 10,880 acres in 1931.

Area #10. 1930-1931. Blister rust control operation conducted by the United States Forest Service on the Clearwater National Forest, Idaho. Ribes removed from stream bottoms occurring within 20,545 acres of federally owned white pine land in 1930. Ribes removed from stream and upland types on 92,100 acres in 1931.

Area #11. 1931. Cooperative work by Bureau of Plant Industry, Milwaukee Land Company, Edward Rutledge Timber Company and State of Idaho. Ribes being removed from stream and upland types in 11,900 acres of white pine land.

Area #12. 1931. Cooperative work by Bureau of Plant Industry and State of Idaho on state land, near Priest Lake, Idaho. Ribes being removed from both stream and upland types on 9,600 acres of white pine type.

The following tabulation summarizes the results of the above work.

PROGRESS OF LOCAL CONTROL WORK
INLAND EMPIRE

Period	National Forest Land			State and Private Land			Both		
	Stream and Upland Types	Stream Type Only	Total	Stream and Upland Types	Stream Type Only	Total	Stream and Upland Types	Stream Type Only	Total
Prior to 1931	46,117	20,545	66,662	8,871	314,510	323,381	54,988	335,055	390,043
1931	92,100	-	92,100	44,280	73,170	117,450	136,380	73,170	209,550
Total	138,217	20,545	158,762	53,151	387,680	440,831	191,368	408,225	599,593

It shows that 191,368 acres of white pine type will have been worked over for removal of Ribes in both the stream type and upland types and that 408,225 acres of land have been worked over for removal of Ribes from the stream type area, making a total of 599,593 acres partially or completely protected from white pine blister rust infections. Of this total 390,043 acres were worked prior to 1931, and 209,550 acres will be treated during the 1931 season. From the amount of pine infection now known to exist in this region and from the rate of intensification now taking place, it was determined in 1930 that the three million acres of white pine type land would have to be protected within the next ten years if serious damage is to be averted. This would mean that 300,000 acres per year should be given protection in order to prevent this damage. During the first year of this decade

only approximately 200,000 acres will be treated. The rate of progress in the western control program must be increased by fifty per cent if the purpose of the work is to be accomplished.

SPREAD OF THE RUST AND DEVELOPMENT OF LOCAL CONTROL IN OTHER PARTS OF THE FAR WEST

In addition to the rapid spread and intensification of white pine blister rust in the Inland Empire this disease is also spreading rapidly through the coast region of Oregon and Washington. Ribes infections have been found on the southern coast of Oregon only fifty miles north of the California border. A local but intensified area of pine infection is known to exist upon the Santiam National Forest, Oregon, lying upon the west slope of the Cascade Mountains. It is to be expected that the rust will be found in California within the next few years and the large area containing sugar pine will then be directly threatened by the rust.

Experimental local control work in Oregon has been carried on at two points. One on the Still Creek area, Mt. Hood National Forest and one near Prospect, Oregon on the Crater National Forest. Both operations are experimental in nature, have been carried out upon national forest lands and are designed to develop specialized methods of Ribes eradication to meet the local conditions involved. During the course of this work the Ribes have been removed from 3,857 acres of land bearing white and sugar pine.

Experimental local control has been under way in California since 1926 and has been centered upon the Stanislaus, Plumas and Lassen National Forests. At the close of the present season approximately 33,000 acres will have been cleared of Ribes.

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