PROCEEDINGS OF THE 2nd ANNUAL WESTERN INTERNATIONAL FOREST DISEASE WORK CONFERENCE

Berkeley, California
December 1954

Proceedings of the 2nd Annual Western International Forest Disease Work Conference

Berkeley, California
December 1954

Report on the Second International Western Forest Disease Work Conference
Berkeley, California

December 1954

TABLE OF CONTENTS

SECOND INTERNATIONAL
WESTERN FOREST DISEASE WORK CONFERENCE
BERKELEY, CALIFORNIA, DECEMBER 1954

The 1954 work conference of forest pathologists engaged in research in the western United States and Canada was held in the Hotel Durant, Berkeley, California on December 2, 3, and 4. Pathologists attenting are listed in Appendix I. Western forest entomologists held a similar meeting at the same time and place. The opening session was a joint one for both groups. The entomologists were welcomed by R. L. Furniss, Chairman for the entomologists, and the pathologists were welcomed by Willis Wagener, Chairman for the pathologists. Dr. Wagener then introduced Dr. George W. Jemison, Director of the California Forest and Range Experiment Station, who talked briefly on problems in forest entomology and forest pathology. He predicted a bright future for these two fields of endeavor. Mr. Furniss then introduced Dr. M. L. Prebble, Chief of the Division of Forest Biology and head of the Unit of Forest Zoology in Canada. Dr. Prebble gave a brief history of forest biology in Canada and outlined the organization of the present Division of Forest Biology. Dr. J. E. Bier, Associate Chief of the Canadian Division of Forest Biology and head of the Unit of Forest Pathology expressed his pleasure at being able to attend, and similar sentiments were expressed by Dr. Lee M. Hutchins, Chief of Forest Disease Research, and Dr. James Beal, Chief of Forest Insect Research, U. S. Forest Service. The pathologists then adjourned to a separate room to carry on their meetings.

The pathologists meeting was opened by Chairman Wagener who called on Dr. Bier and Dr. Hutchins for a few remarks. Dr. Bier described the joint activity of forest pathology and forest entomology in Canada and stated that the organizational union in that country has proven beneficial. The individual approach has been shown to be often wasteful and time consuming. Dr. Hutchins outlined briefly the organization of the Division of Forest Disease Research, past and present, in the United States, and stated that the biggest problem, at the Washington level, is to keep up-to-date on the progress of work in the field. He feels that the Division has brought as many problems to the U. S. Forest Service as they have brought to the Division.

Following these elucidating summaries of the general organization of work in the respective countries, reviews of new or previously unreported projects, and of projects completed since the last meeting, were made. These are recorded in Appendix II.

Discussion followed the report of some of the projects. The highlights of these remarks follow:

(1) After the report by J. L. Mielke on "Spray Control of Lodgepole Pine Mistletoe" in which he pointed out that Endothol in water seemed to give good results i.e., little sprouting after 1 year:

Hutchins: This is a worthwhile project. National Forest Administration will "go to town" for control on National Forests if airplane spraying is feasible.

Wagener: Has probable application in high-recreational-use areas in California.

Andrews: We should pool our resources and procedures.

Gill: We should use known compounds and not just numbered formulations.

Wright: Foresters will support such projects.

LeBarron: Suggest a half-day session at next annual meeting.

Offord: Should study physiology of both plants and should also interest commercial laboratories to study.

Hutchins: Will try to interest hormone group in BPIS&AE in this study.

Waters: Can try using isotopes in this study.

Bourchier: Same experience as in the Pacific Northwest. Would like a seminar at next annual meeting. Experiments indicate that the time of year of spray application is important.

Hutchins: Beltsville might assist in a study and supply materials for testing.

Wagener: We shouldn't wait another year. Propose that we follow the program on Saturday morning with a mistletoe discussion by those interested.

(2) After the report by G. A. Zentmyer on "The Host Range of Phytophthora cinnamomi".

Hutchins: How long has this organism been on the west coast?

Zentmyer: Reports since 1920. Probably started in southern California and spread northward.

Hutchins: How serious is the disease on Douglas-fir?

Roth: It can spread, live, and kill in 3 forest soils.

Offord: It is not found on Douglas-fir in nature.

Roth: True.

(3) After the report by R. W. Davidson on "Aspen Disease Studies".

Mielke: Did you find Radulum and does it cause decay?

Davidson: Yes, I found it but it was not associated with extensive decay.

Bier: Did you find Rhizina?

Davidson: I don't know yet.

Buckland: Briefly described rot caused by Rhizina.

Mielke: Described decay in aspen used for excelsior.

The theme for the second annual meeting was "Methods and Methodology" under the program chairman, Dr. L. F. Roth. The first topic of discussion was "New or otherwise interesting methods", (1) W. W. Wagener lead off with a short statement on the control of root diseases in the forest. He pointed out that at times special circumstances exist which parallel orchard conditions and cited the occurrence of Fomes annosus in the arboretum at the Institute of Forest Genetics. He indicated that mortality from F. annosus shows wide periodic fluctuations. Until the cause of these fluctuations is determined, we are hardly in a position to consider control.

Discussion:-

Gill: How are you going to obtain information on the cause of the fluctuations?

Wagener: The fluctuations are region-wide and should be studied in that vein to begin with.

Thomas: Have you studied pH?

Wagener: pH varies and doesn't seem to enter into the picture here.

Bier: In Saskatchewan certain undesirable soil conditions are being altered through methods of irrigation and drainage.

Mielke: Some plots in Idaho with heavy cutting have shown a minus annual increment.

Hutchins: The action of Trichoderma in the control of Fomes annosus is very interesting and has enormous possibilities.

E. Wright: Trichoderma in the soil acts and reacts differently from Trichoderma in wood. The actions are very complex. So far, encouragement of Trichoderma in the soil has had no beneficial effects in combating nursery diseases.

(2) E. Wright discussed the use of mixed species in planting as an aid to forest disease control. He advocated using a checkerboard system in replanting an area as a method of obtaining a measure of disease suppression.

Discussion:-

Buckland: Differences of root systems are as important as differences in susceptibility in forest disease control.

Waters: Site is also important. Freedom from disease may not be due to resistance as much as it is to the suitability of the species to the site.

(3) A simple spore isolation technique was described by R. W. Davidson. This involves the use of a small piece of sporophore suspended over the slanted surface of agar in a test tube by attaching it to the wall of the tube with a small amount of agar. Spores are discharged in from 12 to 24 hours onto the agar slant and these are then removed with a sterile needle and transferred to another tube for incubation.

(4) The last item to be discussed was "Grafting as a technique in forest disease research". L. F. Roth described a grafting technique with Pinus ponderosa. He pointed out that it is possible to graft physiologically older wood on a young stem and thus overcome some of the difficulties experienced in working with diseases which attack trees past the seedling or small sapling stage.

The second topic of discussion was "Methods of damage appraisal". (1) C. D. Leapheart described survey and other methods used in the northern Rocky Mountains in connection with pole blight of western white pine.

(2) R. E. Foster described the methods used in British Columbia on Poria weirii damage appraisal, and E. Wright those in the Pacific Northwest with the same pathogen.

Discussion:-

LeBarron: The overall amount of damage is as useful, in many ways, as the intensive amount. The overall does not apply to any one operation but gives a region-wide picture and can be obtained with relatively little effort.

Bier: Maybe permanent sample plots are necessary to get a true picture for use in damage appraisal.

E. Wright: T. W. Childs definitely thinks that permanent sample plots are necessary and that they must be of fair size - about 10 acres.

(4) J. W. Kimmey described methods used in damage appraisal in Alaska.

(5) D. R. Miller described blister rust survey methods in the U. S.

(6) R. J. Bourchier described the forest disease surveys in Alberta.

(7) F. G. Hawksworth described the survey methods used for mistletoe in the Southwest.

A joint session with the forest entomologists was held at this point with E. Wright, as Cochairman with H. Richmond presiding. Notes on the topics discussed and the remarks made by various members of both groups are attached as Appendix III. Following the joint session, a business meeting of the forest pathologists was held, the minutes of which are attached as Appendix IV.

The scheduled program was resumed following the business meeting. G. P. Thomas, in view of the large number of topics still to be discussed, moved that the Damage Appraisal sections devoted to merchantable and old-growth timber and to immature timber be dropped at this session and taken up at length at the next meeting. D. C. Buckland seconded the motion. After a brief discussion by R. E. Foster, the question was called for and the motion passed unanimously.

The meeting resumed with topics on the "Methods employed in investigating specific types of diseases". (1) R. E. Foster gave a very thought-provoking talk on Methods used in Decay Studies. Because of a large number of requests for copies, the text of Dr. Foster's talk is recorded below in its entirety.

"Limitations in Current Methods of Analysis of Decay

"Decay studies may be directed to the estimation of defect volume, the utilization of sound wood, the management of defective stands, or to biological interrelationships. It is evident that time would not permit more than cursory reference to a general review of methodology in studies of such diversified nature. Rather than deal with the broad field of methodology, therefore, it is my intention to refer to what in my opinion are limitations in current methods of approach. These may be discussed under the headings; (1) definitions of accuracy; (2) geographical limitations, and (3) lack of standardization.

Definitions of accuracy

"It is evident that we make limited use of the various techniques available to define the accuracy of our results. This goal is not reached through simple addition of the first or second decimal point to our average values. The lack is that of statistical analysis.

"I offer the suggestion that the standard deviation should be derived for all average values and that at least first year college tests of significance should be applied to all mathematical comparisons. There are now machine methods for computing these values that obviate the necessity of the time consuming text book approach. If we have any aversion to the use of statistics, however, there are other methods even though of lesser value, to refer to the variability of data and to the degree of confidence that may be enjoyed in their application. For example, minimum and maximum as well as average values can be presented; or data can be segregated in cull classes and reference made to the proportion of trees in each class, or curves can be presented showing individual rather than average values. In failing to utilize one or more of these methods I suggest that we may inadvertently be confusing the literature with information that is not amenable to reliable interpretation. The road leading from misinterpretation of to lack of confidence in the reliability of our work, is short and unobstructed.

"Why then do we not introduce at least preliminary statistical tests to our data? Are there valid reasons why this cannot be done?

Geographical limitations

"Many authors take great pains to caution against too general application of their results. This word of caution frequently extends to the title of the paper as well. Thus, we have "Losses from heartrot in two short leaf and loblolly pine stands", and "Decay in white spruce at the Kanaskis Forest Experiment Station". Why do we place restrictions of this nature on our studies? I suggest that the following reasons may be involved, at least in part:

"1. Our sampling is restricted to a local population and we are not adequately familiar with the host species or forest conditions elsewhere.

"2. We fail to appreciate the factors contributing to variation in decay. These failures place considerable limitation on the interpretation and application of our studies. If these failures are real and not imaginary, should we not make some effort to contribute to their solution? I suggest that there are at least two obvious ways in which we might contribute more fully than at present.

"1. Establish sampling procedures in such manner that we evaluate well-defined forest conditions. The results of sampling are of limited application beyond the area examined unless influencing factors are recorded in such manner that the same conditions may be recognized elsewhere.

"2. Take steps to provide information in regard to the causal agents of decay. There is evidence to demonstrate that not all forest fungi react in similar manner or degree to variations in tree age, size or site. Do we not lose an important appreciation, therefore, if we analyze decay only in terms of its total volume?

"Geographical extension of our results is equally as unwarranted as geographical restriction. We have been so bold as to refer to decay in western hemlock on the Queen Charlotte Islands. These Islands extend over 2 parallels of latitude and contain some 500,000 acres of productive forest land. Our sampling was confined to a radius of 20 miles. Our title implies that results are applicable over the entire area. Further, we have referred to decay in balsam fir in the Upper Fraser region. Our sampling was restricted to 25 one-acre plots situated within a radius of 30 miles. We made no attempt to define the Upper Fraser region but we did estimate that the volume of balsam amounted to not less than 5 billion cubic feet. Subsequently the total productive forest land has been estimated at not less than 4,000,000 acres. Do these examples not illustrate another extreme that we should take steps to avoid?

Lack of standardization

"I am of the opinion that there is a deplorable lack of standardization in methods of decay analysis. I doubt that there are any two decay studies conducted along sufficiently parallel lines to permit of more than casual interrelation. This deficiency may arise in one of several ways,

as for example, in varying methods of decay volume computation, in varying interpretations of site and in the degree to which the entire stand is treated for analysis.

"I consider that our current lack of standardization is unfortunate. Studies conducted in one region are often of limited use and value in another region. In addition we lack the opportunity to appraise in any critical sense broad trends in decay that may become apparent only through the interrelation of data from adjacent regions.

"Within practical limits should we standardize our methods of field study and analysis? Can this be done without interfering with other objectives? Specifically, should we and can we establish uniform methods of computing decay, of appraising site quality, and of classifying stands?

"Could we not present data in such manner as to satisfy local requirements and at the same time provide supplementary data capable of broader interpretation?

"I am of the opinion that some consideration must be granted to the questions raised if we are to improve our existing methodology in decay studies?"

Discussion:-

Leaphart: Are we as pathologists qualified to say what sites we use?

Foster: We should present published data in a standardized way.

Leaphart: Shouldn't we say then presentation of data in a standard form?

Foster: No. We should have a standard way to measure decay.

LeBarron: The Society of American Foresters has for several years, been trying to standardize and have not been successful. Standardization tends to supress expression.

Wagener: The objectives must be kept in mind. Different objectives require different standards.

Bier: I agree with Wagener. You can't do everything in each study. The number of things included must be decided by considering the funds available and the end point desired.

(2) G. A. Zentmyer discussed the "Methods with root diseases" and "Methods for studying soil environments". He outlined some of the methods developed in studying the Phytophthora root-rot of avocados and pointed out how these same techniques could be used in studying root diseases of forest trees and forest soils.

Bier: Mycorhiza are important. Discussed some aspects of birch decline and spruce deterioration.

Hutchins: Told briefly of the high oxygen requirements of certain soils and plants.

(3) C. D. Leaphart spoke on "Physical soil factors associated with pole blight of western white pine". The work is just getting under way, with a qualified soils man working on the project.

Discussion:-

Hutchins: The forest is full of virus diseases. We must be prepared to find situations similar to the phony peach disease.

Offord: Has anyone made a study of soil profile in connection with pathological studies?

Waters: We don't have enough fundamental information on what the normal tree should be.

Foster: Described the root-washing studies being conducted in British Columbia. He mentioned temperature and precipitation studies being made for pole-blight and non-pole-blight areas.

Gill: A 1927 study showed that we were then in the longest period of reduced growth in over 200 years.

Hutchins: Studies on sweet gum blight have considered the possibility of climatic changes.

Wagener: There is no correlation between the foresters "site" and pathological "site" and there doesn't need to be. What we need is a good index for "pathological site". In soils we need to consider all seasons of the year. In the case of Fomes annosus, the fluctuations in intensity may go back to very wet years or seasons when soils that are normally well-drained become waterlogged.

(4) Methods with foliage diseases were discussed by W. W. Wagener, P. C. Lightle, and J. L. Mielke. Wagener pointed out that there must be as much continuity as possible in the observations on incidence from year to year and that we must develop standards and criteria so that observations from year to year will be more or less comparable.

P. C. Lightle recounted work with Elytroderma deformans and described methods used in working with this obligate parasite.

J. L. Mielke told of work with E. deformans and pointed out that J. S. Boyce, Jr. had found similar difficulties in working with Hypoderma lethale in the South.

(4) R. W. Davidson pointed out that we had discussed many methods of studying known diseases which are applicable to studying diseases of undetermined cause and suggested that unless specific problems were mentioned we could consider that this topic had been covered.

Discussion:-

Hutchins: We should try to provide as large a series of plants as possible in the initial series of tests. Consider the plants as test tubes so that time will not be lost waiting for the plants to grow.

Bier: Root injection has merit in forest pathological work. Might be used in pole-blight work and should be carried on jointly with root washing studies to determine normal versus diseased roots.

Roth: Pointed out the possibility of the presence of latent viruses and the movement of viruses from weeds to commercial plants.

Hutchins: Cautioned that we must be careful in introducing plants from foreign countries.

(5) E. Wright discussed methods of measuring disease intensification and spread.

Leaphart: What is the difference between spread and intensification?

General opinion: A boundry of some sort is implied. Spread is the movement of the disease across or outside this boundry; intensification is the movement of the disease within the boundry.

(6) General suggestions for future meetings.

a. E. Wright: Provide an extra day for meetings to allow for full discussions of topics of wide general interest.

b. Roth: Topics for next meeting should be decided on at current meeting.

c. Kimmey: Reserve the last half day for discussion of special topics.

d. Buckland: Keep the "bull sessions" for evening meetings.

e. All: Full discussion of mistletoe problem.

The meeting adjourned at 11:45 A.M., December 4, 1954.

Following the regular meeting a special group meeting was held by those interested in dwarf mistletoe control. After considerable discussion of needs, particularly with respect to means for determining whether satisfactory selective spray materials can be found that will kill dwarf mistletoe

without serious injury to the host trees, it was agreed that one need was to determine what experimentation had been undertaken to date and what results were obtained. Gill agreed to attempt to gather and summarize this information; Hutchins agreed to explore the possibilities for guidance in the problem from the ARS at Beltsville, Maryland, and Wagener and Offord agreed to confer on other possibilities for aid on the problem from outside sources. Kuijt called attention to a recent paper by Cohen on the anatomy of the endophytic system in Arceuthobium campylopodum.

APPENDIX II

I. New or previously unreported projects listed in the order reported.

Unfortunately, the secretary was not supplied with project outlines for several projects and so these are listed by project title only.

1. Decay in Relation to the Priority of Cutting of Mature Western Hemlock and Amabilis Fir in the Franklin River Area, British Columbia.

R. E. Foster (Cdn. Forest Biology (Pathology) Laboratory, Victoria, B.C.)

Objectives: To appraise the stand characteristics and pathology of western hemlock and amabilis fir; to evaluate trends in stand volume and decay; to appraise measures of stand decadence in terms of loss from decay, natural mortality and succession to less desirable forest growth, and to correlate these findings in terms of priority cutting and other forest management considerations.

Publications:

Foster, R. E. Interim report on decay losses as related to forest management in the Franklin River area, British Columbia. Cdn. Dept. Agr. Bot. and Plant Path. Div. Victoria. (Mimeographed). April, 1946.

Buckland, D. C., R. E. Foster and V. J. Nordin. Studies in forest pathology VII. Decay in western hemlock and fir in the Franklin River area, British Columbia. Cdn. Jour. Res., C., 27:312-331. December, 1949.

2. Decay of Alpine Fir in the Prince George Forest District.

N. T. Engelhardt (Cdn. Forest Biology (Pathology) Laboratory, Victoria, B. C.)

Objectives: To evaluate the characteristics and abnormalities of alpine fir in relation to the incidence and extent of hidden defect, the inter-regional variation in cull, and the distribution and relative importance of the more important fungi responsible for decay.

Publications:

Bier, J. E., P. J. Salisbury, and R. A. Waldie. Studies in forest pathology V. Decay in fir Abies lasiocarpa and Abies amabilis in the Upper Fraser Region of B. C., Can. Dept. Agr. Tech. Bull. 66. 1948.

Foster, R. E., Decay of balsam fir in the upper Fraser region of British Columbia. Can. Dept. Agr. For. Biol. Div., Victoria. (multigraphed). Juen, 1954.

3. Decay of Western Hemlock and Amabilis Fir in the Upper Kitimat Region British Columbia.

R. E. Foster, G. P. Thomas and J. E. Browne (Cdn. Forest Biology (Pathology) Laboratory, Victoria, B. C.)

Objectives: To determine the frequency of occurrence and importance of the fungi responsible for decay; to interpret the significance of visible abnormalities in relation to hidden defect, and to establish pathological concept and relationships as aids to the forest inventory and management of the species.

Publications:

Bier, J. E. Forest pathology in relation to the utilization and management of balsam and hemlock in the Kitimat area, British Columbia. Can. Dept. Agr. Bot. and Plant Path. Div., Victoria (Typewritten). 1945.

Browne, J. E., A. T. Foster, and G. P. Thomas. A preliminary investigation into the decay losses sustained in western hemlock and amabilis fir in the upper Kitimat region. Can. Dept. Agr. Bot. and Plant Path. Div., Victoria. (Multigraphed). May, 1950.

4. Canker of Lodgepole pine.

A. C. Molnar (Forest Biology (Pathology) Laboratory, Victoria, B.C.)

Objectives: To determine the extent, incidence of infection and causal agent of a reported severe outbreak of canker disease in lodgepole pine in the Kelowna area, British Columbia.

Reports and Publications:

Molnar, A. C. Canker damage to lodgepole pine. Can. Dept. Agr., Forest Biol. Div., Bi-monthly Progress Rep. 8:2. 1952.

Molnar, A. C. Severe canker damage to immature lodgepole pine in British Columbia. Can. Dept. Agr. For. Biol. Div., Victoria, (Multigraphed). August, 1954.

5. White pine blister rust on sugar pine in California

J. W. Kimmey (U. S. Forest Service, Berkeley, California)

Objectives: To study the behavior of blister rust on sugar pine in California; to determine the rate of canker growth; to determine the minimum distance between the visible canker and the point of cut when pruning out pine infections.

Publications:

Kimmey, J. W. Determining the age of blister rust infection on sugar pine. Calif. Forest and Range Exp. Sta., Forest Research Notes No. 91, 3 pp. 1954.

6. Extension of the survey for Phytophthora root rot in cedar.

T. W. Childs (U. S. Forest Service, Portland, Oregon)

7. Cold decking of logs.

E. Wright (U. S. Forest Service, Portland, Oregon)

8. Reactivation of blister rust study.

T. W. Childs? (U. S. Forest Service, Portland, Oregon)

9. Control of Fusarium root rot.

E. Wright (U. S. Forest Service, Portland, Oregon)

10. Mycorhiza on ponderosa pine.

E. Wright (U. S. Forest Service, Portland, Oregon)

11. Mycrohiza on Douglas-fir.

E. Wright (U. S. Forest Service, Portland, Oregon)

12. Spraying ponderosa pine mistletoe.

E. Wright? (U. S. Forest Service, Portland, Oregon)

13. Spray control of lodge-pole pine mistletoe.

J. L. Mielke (U. S. Forest Service, Logan, Utah)

14. The host range of Phytophthora cinnamomi.

G. A. Zentmeyer (Citrus Exp. Sta., Riverside, California)

15. The influence of moisture and other factors on the activity of heartwood fungi in Subalpine Spruce.

D. E. Etheridge (Calgary, Alberta, and Imperial College, University of London, England)

Objectives: (1) To determine the moisture amplitudes for infection and decaying activity of the major heartwood fungi occurring on subalpine spruce in Alberta.

(2) To determine the relative cellulolytic activity of these fungi so that reference may be made to possible variations in decaying activity among the fungi due to this factor.

(3) To determine the effect of prior colonization of the heartwood by Coryne sarcoides (Jacq.) Tul. on the decaying activity and infecting powers of butt- and trunk-rot fungi.

(4) To determine the effect of possible differences of the wood substrate as displayed by growth characteristics of the host tree on these fungi. These experiments will utilize heartwood material obtained from suppressed and overstory subalpine spruce cut on moist and dry sites.

Reports and Publications:

Etheridge, D. E. Occurrence of a purple agar-staining fungus with decay in Alberta. Can. Dept. Agric., Forest Biol. Div., Bi-monthly Progress Rept. 10(4):3-4. 1954.

16. Dwarfmistletoe survey of Arizona and New Mexico.

S. R. Andrews and F. G. Hawksworth (U. S. Forest Service, Albuquerque, New Mexico)

Objectives: To determine the abundance of dwarfmistletoes in the commercial tree species of Arizona and New Mexico and to obtain quantitative information on the extent of damage caused by these parasites.

Publications: None.

17. A survey of diseases of aspen in the Central Rocky Mountain Area.

Ross W. Davidson (U. S. Forest Service, Fort Collins, Colorado)

Objectives: To determine the more important diseases of aspen and obtain information on their relative importance in the various stands.

Publications: None.

18. Status of control plots.

D. R. Miller (U. S. Forest Service, Berkeley, California)

Objectives: Maintain and check (for ribes and rust on pine) 10 status-of-control plots (1 acre each) in California and 6 similar plots in Oregon. One of these California plots (Goat Creek, Lassen N.F.) includes a 10-chain buffer strip for a study of distance of ribes to pine spread and one of the Oregon plots (Mill Creek, Rogue River N.F.) includes a 20-chain buffer strip for a similar study.

Publications: None (In B.R.C. Annual Reports).

19. Summary of disease survey and scouting data.

D. R. Miller (U. S. Forest Service, Berkeley, California)

Objectives: Prepare an annual summary on IBM punch cards of all disease survey and scouting data pertaining to rust spread and damage to sugar pine (Willamette N.F. to Sequoia N.F.).

Publications: None (In B.R.C. Annual Reports).

20. Check rust specimens.

H. R. Offord (U. S. Forest Service, Berkeley, California)

Objectives: Check by laboratory staining procedure all rust specimens (Ribes) collected during the fall scouting work. 491 samples identified (C. ribicola or C. occidentale) in 1954.

Publications: None.

21. Test fungicides for protection of white pines.

H. R. Offord (U. S. Forest Service, Berkeley, California)

Objectives: Test conventional fungicides (e.g. Fermate) for protection of white pine nursery stock or recently planted stock against rust infection; test possible systemic toxicants (e.g. Acti-dione, calcium sulfamate, Rosin Amine D pentachlorophenate) for killing branch cankers, for local killing of residual mycelium around the margin of excised cankers, and for preventing attack of pruned or excised trees by insects and other fungi.

Publications: None (In B.R.C. Annual Report).

22. Search for blister-rust-resistant white pines.

D. R. Miller, (U. S. Forest Service, Berkeley, California)

Objectives: Continue search for blister-rust-resistant white pines and participate in cooperative program for development and testing of resistant sugar pine and western white pine. Assist with collections of rust samples for studies on rust races now in progress at University of Minnesota.

Publications: None (In B.R.C. Annual Reports).

23. Appraisal and prediction of timber losses caused by blister rust.

H. R. Offord, (U. S. Forest Service, Berkeley, California)

Objectives: Develop improved technique for appraisal and prediction of timber losses caused by blister rust.

Publications: None.

24. Analysis of physical and ecological site factors contributing to high rust hazard.

C. R. Quick, (U. S. Forest Service, Berkeley, California)

Objectives: Coordinate studies on ecology of Ribes spp. and the rust hazard of typical white pine sites with special reference to the relation of physical and geographic factors on local climate.

Publications:

Quick, Clarence, R. Estimation of blister rust infection intensity by regression analysis of selected habitat factors. Pac. Div. A.A.A.S. 1954 Meeting, Pullman, Washington. Ecology Section (Abstract).

25. Epidemiology of blister rust.

H. R. Offord (U. S. Forest Service, Berkeley, California)

Objectives: Develop in cooperation with Federal, State, and University agencies concerned an expanded program of research on the epidemiology of the pathogen to provide a basis for more effective and economical control.

Publications: None.

26. An undescribed disease on Rocky Mountain juniper.

C. W. Waters (Montana State Univ., Missoula, Montana)

27. Rhabdocline on Douglas-fir.

C. W. Waters (Montana State Univ., Missoula, Montana)

28. Vegetative propagation of western white pine.

C. W. Waters (Montana State Univ., Missoula, Montana)

29. Damage surveys of pole blight.

Donald P. Graham (U. S. Forest Service, Spokane, Washington)

Objectives: To collect information which will provide an appraisal of pole blight damage in diseased white pine stands for assistance in making satisfactory plans with respect to white pine management, including blister rust control and salvage operations and to provide information to those doing research with the relationship, if any, between the disease and certain site factors.

Publications: None.

30. Physical soil factors associated with pole blight of western white pine.

Otis L. Copeland, Jr. (U.S. Forest Service, Spokane, Washington)

Objectives: In conjunction with the rootlet mortality studies, to determine if a relationship or association exists between physical soil characteristics and (1) root distribution. (2) root mortality, (3) root abundance, (4) pole blight incidence, (5) lesser vegetation, (6) site index, and (7) to determine if a relationship exists between site index, lesser vegetation, and the incidence of pole blight.

Publications: None.

31. Rootlet mortality studies of western white pine (subproject of pole blight investigations).

Charles D. Leaphart (U. S. Forest Service, Spokane, Washington)

Objectives: To determine the normal mortality of rootlets attached to living roots, 2 to 20 mm. in diameter, of the western white pine root system in healthy stands. To compare the normal mortality to that found in pole blight stands and stands apparently susceptible to this disease. This study will be carried out in conjunction with a soils study on the same areas sampled for rootlet mortality.

If significant differences are found to occur between healthy and diseased stands, a secondary objective will be to determine the cause of the abnormally high mortality in the latter. Mycorrhizal relationships between healthy and diseased stands will also be studied.

Publications: None.

32. A broom disease of Douglas-fir.

D. C. Buckland. Co-workers: Dr. A. H. Hutchinson and Mr. H. Sweet, Prof. Emeritus in Histology and Technical Assistant, respectively (University of British Columbia, Vancouver, B. C.)

Objectives: To determine the cause of a broom disease of Douglas-fir. The broom is unusually compact, and is found in the Rocky Mountain trench and on Gulf Islands in the Straits of Georgia.

Publications: None.

33. Establishment of the Oregon State College Forest Experiment Station.

Lewis F. Roth (Department of Botany & Plant Pathology, Corvalis, Oregon)

II. Completed projects.

1. Lodgepole pine canker.

R. E. Foster (Cdn. Forest Biology (Pathology) Laboratory, Victoria, B. C.)

2. Decay in western hemlock.

R. E. Foster (Cdn. Forest Biology (Pathology) Laboratory, Victoria, B. C.)

3. Decay of Douglas-fir in the coastal region of British Columbia.

G. P. Thomas (Forest Pathology Laboratory, Victoria, B. C.)

An investigation of Douglas-fir in coastal British Columbia has shown that decay losses in old-growth stands are low, amounting to 2.6 and 7.3% of the gross volume of living and combined living and dead trees respectively. Twenty-five decay-producing fungi were isolated from living trees and 29 from dead trees. The most important of these were Fomes pini, Polyporus schweinitzii, and Fomes pinicola. Certain irregularities in the occurrence of decay-producing fungi and the amounts of decay associated with them were traced to the influences of site, tree age or size, latitude, and stand history. Root infections were the most frequent but branch-stub infections caused the greatest average amount of decay. An examination of tree abnormalities showed that a select group of them, sporophores and swollen knots of Fomes pini in particular, are useful indicators of hidden decay. A separate analysis of dead trees has shown that they occasionally form a high proportion of Douglas-fir stands and that much of the wood in such trees is sound.

APPENDIX IV

Minutes, Business Meeting, Second International Western Forest Disease Work Conference

The business meeting of the Second International Western Forest Disease Work Conference was opened at 1:40 P.M., December 3, 1954, in the Hotel Durant, Berkeley, California. Chairman Willis W. Wagener presiding.

Discussions were held on the following:

1. Whether annual meetings were necessary.

2. The time of the year to hold the meeting.

3. Whether to hold a joint work conference with western forest entomologists.

4. The place to hold the next meeting. Mr. Bourchier suggested Banff - School of Fine Arts.

MOTION: That the western forest pathologists hold their meeting at the same time and place as the western forest entomologists, made by D. C. Buckland and seconded by A. K. Parker. After a discussion in which G. P. Thomas suggested that our leaders try to influence the entomologists away from the Western Forestry and Conservation meeting, the question was called for by R. E. Foster. CARRIED.

MOTION: By S. R. Andrews that the present chairman confer with his entomological counterpart on the location of the next meeting and report back before new officers were elected. The motion was seconded by E. Wright. CARRIED.

The minutes of the meetings at Victoria, B. C. last year were called for and read by the secretary. They were approved as corrected.

The suggestion was made, and approved, that each member of the conference supply the secretary with a list of publications and reports, available for distribution and reference, published since the last meeting. The secretary to compile a complete list and mail to all forest pathologists in the west.

L. S. Gill asked whether we in the U. S. could put out a publication similar to the bimonthly report from Canada. After a lively discussion it was agreed to have Dr. Hutchins explore the possibilities with entomologists and pathologists in the U. S. Also that he would contact the Editor of the Plant Disease Reporter about publishing something similar, for pathologists, in P.D.R.