John Leiberg on forest fires, Indian burning, old-growth forests, logging history, and reforestation of southwest Oregon, ca. 1400 to 1899

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INTRODUCTION:

Background & Biography

This report consists largely of verbatim quotes excerpted from the 1900 US Geological Survey report authored by John B. Leiberg regarding the federal forest reserves of southwest Oregon. The quotes are arranged thematically, by five forest types (1) old-growth; 2) Indian burning; 3) logging; 4) forest fires; and 5) reforestation), and geographically, with more than 200 topical quotes regarding 80 separate townships, totaling more than 150,000 select acres of mostly forested land in the southern Cascade Range and eastern Siskiyou Mountains.

During the 1899 field season, Leiberg "examined" the Ashland Forest Reserve and the southern portion of the Cascades Forest Reserve in southwest Oregon, and filed a detailed report with the US Geological Survey.

"Cascade Range Forest Reserve from Township 28 South to Township 37 South, Inclusive, Together With the Ashland Forest Reserve and Forest Regions from Township 28 South to Township 41 South, Inclusive, and from Range 2 West to Range 14 East, Willamette Meridian, Inclusive."

The area he traversed was from Rogue River, Medford, and Mount Ashland to the west, along more than 70 miles of the California border to the south, Lost River, Yainax Butte, and Sycan Marsh to the east, and north to Yamsay Peak, Klamath Marsh, and Crater Lake (see map or read Leiberg's report title). In all, he expertly mapped, photographed, measured, and described about 3,000,000 acres of forestland, as it existed in 1899.

The following year, 1900, Leiberg's report was included in Part V (of seven total), ***"Forest Reserves," of the 21st Annual Report of the Survey to the Secretary of the Interior****. Part V contained nine reports, including Henry Gannett's introductory remarks, totaling 690 pages, with an appended 20-page fine-print index. These reports included detailed descriptions, colored maps, photographs, tabulated measurements, and were arranged and indexed by General Land Office (GLO) surveyed legal descriptions. This collection was the most comprehensive and detailed scientific forest inventory ever published to that time. It set a standard for methodology, observation, documentation, and written clarity that remains to this time.*

*In addition to Gannett's summary, "****Part V -- Forest Reserves****" also contained: Horace B. Ayers reports on the Lewis and Clark Forest Reserve in Montana and the pine regions of Minnesota; Fred G. Plummer on Mount Rainier Forest Reserve, Washington; Arthur Dodwell and Theodore F. Rixon on Olympic Forest Reserve, Washington; George B. Sudworth on "Stanislaus and Lake Tahoe Forest Reserves, California and Adjacent Territory"; C. H. Fitch on "Woodland of Indian Territory" (with a great wall map); Gannett and others (including Leiberg) on "Classification of Lands"; and Leiberg's 290-page standard.*

Well before Leiberg evens mentions that SW Oregon forest fires are a result of people, he describes the methods and results of local burning practices. Detailed discussions of pine, oak,

grass, and huckleberries, for example, describe the burning practices of people, and the results of those practices:

(p. 248) But the open character of the yellow-pine type of forest anywhere in the region examined is due to frequently repeated forest fires more than to any other cause.

(p. 249) The forest floor in the type is covered with a thin layer of humus consisting entirely of decaying pine needles, or it is entirely bare. The latter condition is very prevalent east of the Cascades, where large areas are annually overrun by fire. But even on the western side of the range, where the humus covering is most conspicuous, it is never more than a fraction of an inch in thickness, just enough to supply the requisite material for the spread of forest fires.

(p. 268) In other places fires have destroyed a certain percentage of the forest. The damage may vary from 10 to 60 per cent or higher. The destruction has not been all in one place or body. The fire has run through the forest for miles, burning a tree or group of trees here and there.

Leiberg then goes and maps, measures, describes, tabulates, and photographs examples of these conditions, township by township, from Medford and Ashland to Klamath Falls; California border to Crater Lake. He was perhaps the most accomplished forest scientist and an important botanist (mosses) in North America during the 19th century. He reported on several forests in the western US and at least two of his botanical collections of over 1,000 named plants each have been valuable components of major herbariums for nearly 100 years (OSU and NY). In addition to his published forestry reports, he also completed a number of unpublished USDA botanical reports for specific plants and areas of Idaho, Oregon, and California. His power of observation and his ability to identify and document plants are of the highest order.

Note: A key inference I have made regarding stand and species ages in other areas of the Pacific Northwest are from Omer Stewart, who identified even-aged stands of conifer trees as indicators of regular firings by people -- more than 50 years after Leiberg had done the same thing. The ca. 1900 age groupings that Leiberg describes also gives an idea as to forest structure (wildlife habitat) and life expectancy of certain stands and species:

(p. 274) The age of the timber utilized in sawmill consumption varies from 100 to 350 years. Most of the yellow pine falls below 175 years; the higher limit is reached chiefly in the sugar pine. Most of the sugar pine in the region is of great and mature age. Comparatively little red fir is sawn. It varies in age from 100 to 500 years, and some of the very large individuals seen were doubtless even older. The noble fir and white pine of mill-timber size varies in age from 100 to 350 years, most of it falling below 180 years. The alpine hemlock of mill size runs from 80 to 250 years, 120 to 140 years representing the age of the bulk of the standard growth. The white fir, with sufficient clear trunk development to come within the limit of these estimates, varies in age from 75 to 120 years.

So much for inferred burning practices. The following pages include most of Leiberg's main points about Indian burning practices, except for his descriptions of peeling (and burning) thousands of contiguous yellow and sugar pine trees to get the inner bark (food) and pitch

(multiple uses). As a result, tree ring analysis of pine in SW Oregon is more likely to yield cultural resource management information and history than forest fire history.

The following titles and subtitles are from the report, and all quotes are as verbatim as I could type them, including his conjectures and qualifying statements on prehistoric Indian burning practices.

References mostly inferred regarding oak, yellow pine, madrone, sugar pine, and lodgepole pine:

TOWNSHIPS & INDEXES

The entire table represents an area of southwest Oregon about 84 miles by 78 miles in size: nearly 180 townships *[a township is about 36 square miles, or 23,000 acres]* totaling about 6,500 square miles; more than 4,000,000 mostly-forested acres, and bounded to the south by more than 70 miles of California border.

OLD-GROWTH TREES, GROVES, & STANDS

FOREST FIRES & INDIAN BURNING

FOREST TYPES, SUBTYPES, & FIRE REGIMES

(p. 245) The term forest type, as here employed, is used to define large aggregations of one or many species of trees, usually comprised within definable territorial limitations.

(p. 245) The term subtype is applied to a multitude of lesser groupings of the species which form this type. Collectively they give each type its characteristic features.

(p. 245) The duration of the forest type is indefinite. While undoubtedly subject to evolutionary changes, its modifications or transitions to other types are so slow as to be quite imperceptible to us. Not so with subtypes, They frequently change, sometimes two or three times in a generation. Forest fires are fertile causes for inducing such rapid changes. But even when left undisturbed a subtype rarely persists in any particular locality for more than 250 or 300 years. Such at least is the rule on the eastern and immediate western slope of the Cascades and in the basins between the Cascades and the Rocky Mountains. The only exception to this rule in the region named that is known to me occurs in pure yellow-pine and western-juniper growths.

T. 29 S., R. 5 E. (pp. 263, 305-306)

(p. 305) This region was burned periodically during the Indian occupancy, as the many different ages represented in the lodgepole pine stands prove. But when the white man came into the region the areas in this particular township was covered with a uniform stand of the species.

Lodgepole Pine (p. 240)
Yellow-Pine Type. (p. 246)

Yellow-Pine Subtypes. (p. 249)

(p. 250) The madrona rarely forms groups by itself. Usually it is scattered through out otherwise nearly pure stands of yellow pine, aggregations of red fir and white fir in varying rations, and groups of broad-leaved species mostly oak and madrona.

Red-Fir Type. (p. 251)

(p. 252) The percentage of red fir in stands of the type varies from 50 per cent, which here is considered the lowest ratio for stands representative of the type, to 75 and in some cases 85 per cent. A characteristic stand, and one which is typical of much of the red-fir forests of the region, contains about 60 per cent of red fir, the balance being made up of white fir, sugar pine, yellow pine, and occasional trees of incense cedar.

LOGGING

(p. 457) The Pokegama Lumber Company operates here, sending the logs to their mills at Klamathon, on the southern Pacific Railroad, by way of the Klamath River. They cut pine exclusively, and cut all pine clean as they go, leaving great accumulations of debris behind them for future fires. They take all trees far into the crown, trimming off the limbs and making the last cut on a basis of 7 to 8 inches in diameter at the small end. In consequence they realize about 40 per cent higher yield than the customary cruisers' estimates provide for.

AFFORESTATION & REFORESTATION

Leiberg's report was 290 pages long and included detailed descriptions of nearly 200 23,000-acre townships encompassing nearly 3,000,000 acres of forested land.

descriptions of nearly

Three kinds: 1) geographic locations of references, 2) thematic content of references, and 3) primary locations of references.

1. Table of townships

2. Thematic content table

3, Index of townships and page numbers

The index is arranged by geographic area ("townships") and by forest types (management "themes").

Old-growth trees and stands.

Indian burning patterns.

Historic logging patterns.

Historic forest fire patterns.

Historic reforestation patterns.

General, p. 233 (Historical Fire), 235, 237-238, 243

Western Hemlock, p. 258

Yew, p. 259

Alpine Forests, p. 259-262 (fire)

(p. 280) At the time of passing it had spread into the adjoining forest and had burned over between 300 and 400 acres. The fire

T. 40 S., R. 4 E.

Forest Fires: After-Effects Of Fires. (p. 280)