

A Brief History of Knowledge of Black Stain Root Disease in Mesa Verde National Park

1906

Pockets of dead and dying piñon noted in the Mesa Verde N.P. ⁴ (original source not noted)

1933-1934

About 12,000 dead and dying piñon are cut and burned in the Park for cleanup purposes. Ten years later, examination of stumps showed that a large proportion had been infected with black stain root disease, considered the chief cause of the heavy mortality. ⁶

1942

First report of black stain root disease on piñon is from Mesa Verde N.P. ⁶ It is found to be common and widespread in the Park. The disease eventually proved to be caused by a variety (*Leptographium wageneri* var. *wageneri*; probably a separate species) distinct from that of the fungus causing black stain of other conifers.

1944

James Mielke establishes a permanent plot to study the development of black stain root disease centers in piñon in Mesa Verde N.P. ⁶

1961

Report of sampling Mielke's permanent plot over 11 years. ⁶ Thirty additional trees were killed at the margin of the center; six trees escaped. Waves of mortality (such as in 1932-1934) appear to follow years with well-distributed, relatively heavy summer rains.

1976

Distribution and other features of the disease in Colorado are reported. ² A definite association with site quality and deeper soils is established, with the disease appearing on cooler and more moist sites, and also with greater density.

1978

At the request of Park administrators, who expressed a desire to know the extent, distribution and biological associations of the disease, insect and disease conditions are studied at Mesa Verde N.P. by USFS pathologists and entomologists. ¹ Mielke's 1944 plot is resampled and seven additional plots are established.

Black stain root disease is identified as a major driving force in piñon stands in the Park. ¹ The fire regime and plant succession in the Park are briefly reviewed; the results of the absence of fire to plant communities and the disease are discussed. Heavy fuel accumulation is identified as a major consequence of the disease.

1985

Resampling of the 1978 plots is reported. ⁴ About 1/3 of the trees in the plots was killed.

In the early 1980's additional plots were established in the Park to test several control approaches (trenching around centers and fumigation) but these were unsuccessful and were not followed over a long period.

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2. Landis, T.D. and L.B. Helburg. Black stain root disease of pinyon pine in Colorado. Plant Disease Reporter 60:713-717.
3. Raimo, B.J. 1993. Letter to Terry Gess, Acting Superintendent, Mesa Verde National Park, reporting results of investigations pursuant to request of Linda Towle. Service Trip Report GSC-93-10, USDA Forest Service, Rocky Mountain Region.
4. Sharon, E.M., D.W. Johnson J.R. Beavers. 1985. Black stain root disease of pinyon in Mesa Verde National Park, 1985. Biological Evaluation R2-85-2. USDA Forest Service, Rocky Mountain Region; Timber, Forest Pest and Cooperative Forestry Management; Lakewood, Colorado.
5. Towle, L.A. 1993. Letter to U.S. Forest Service requesting assistance identifying cause of mortality on 20 acres at the base of White's Trail. Chief of Research and Resource Management, Mesa Verde National Park.
6. Wagener, W.W. and J.L. Mielke. 1961. A staining-fungus root disease of ponderosa, Jeffrey and pinyon pines. Plant Disease Reporter 45:831-835.
7. Wagner, R.O. 1979-1980, 1982, 1984. Progress Reports: Pinyon Pine – Black Stain Root Disease Relationship in Mesa Verde National Park, Colorado. Research conducted as part of the Volunteer-in-the-Park program.

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