



United States Department of the Interior

NATIONAL PARK SERVICE
AIR QUALITY DIVISION
P. O. BOX 25287
DENVER, CO 80225

IN REPLY REFER TO:

October 24, 1983

N3615(475)

Joe RZA
Return please
ACADIA NATIONAL PARK
RESOURCE MANAGEMENT DIVISION

Memorandum

Carroll
To: Resource Manager, Acadia National Park
From: Ecologist, Research Branch, Air and Water Quality Division-Denver
Subject: Air Pollution Injury to Vegetation in Acadia National Park, 1983

I want to thank you for the Eastern white pine samples and the one white spruce sample which you sent me for examination in September. I have had the opportunity to check them for air pollution injury and here is my assessment.

Of the four white pine samples, three had some variable tipburn while one had none; two had current year needles only while the other two had some live second year needles; all four had some chlorotic mottling while one had extensive chlorosis; and needle length was highly variable with average lengths for each of the samples being 4, 5, 7, and 9 cm. This data, along with the photos you sent, does indicate to me some effects of ozone in the park. If this continues to occur, we should plan to establish some permanent white pine plots in the park.

The one spruce sample had no tipburn; 3-4 years of needles; extensive chlorosis with some at the base of the needles; and average needle length was about 1 cm. The sample could not have come from a healthy tree. However, the symptology of air pollution injury on spruce is poorly known, so I am unable to identify what caused the symptoms on the sample. It could be acid precipitation, for example. The spruce seedlings that Sandy McLaughlin planted in the park should be observed for this set of symptoms.

Attached are my notes for the individual samples. I suggest you file this information and observe the same trees again next year for the same set of symptoms. I have pressed the samples and stored them here in my air pollution herbarium for future comparisons.

James P. Bennett, Ph.D.

Attachment

cc:

Sandy McLaughlin - Oak Ridge National Laboratory

Air Pollution Injury in Acadia National Park - 1983

#1 - McFarland Hill - Eastern White Pine - September 9, 1983

1. Variable tipburn.
2. Current year needles only - older over gone or dead and falling off.
3. Some chlorotic mottling - 1 percent.
4. Needles 8-10 cm long.

#2 - Aunt Betty Pond - Eastern White Pine - September 9, 1983

1. No tipburn.
2. 2 years of needles.
3. Extensive chlorosis and some mottling.
4. Needles only 3-5 cm long.

#3 - Aunt Betty Pond - White Spruce - September 9, 1983

1. No tipburn.
2. 3-4 years of needles.
3. Extensive chlorosis - some at base of needles.
4. Needles 1 cm long.

#4 - Gilmore Meadow - Eastern White Pine - September 9, 1983

1. Some variable tipburn.
2. Current year needles only. Dead 2nd year needles.
3. Small amount of chlorotic mottling.
4. Needles 4-6 cm long.

#5 - Eagle Lake Carriage Road - Eastern White Pine - No date

1. Some variable tipburn.
2. Current year and some live 2nd year needles.
3. Some chlorotic mottling.
4. Needles 6-8 cm long.