

TECHNICAL NOTES
 of the
ALASKA FOREST RESEARCH CENTER
 U. S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE

No. 46

JUNEAU, ALASKA

SOME SEASONAL GROWTH DATA
FOR PAPER BIRCH, WHITE SPRUCE, AND ASPEN
NEAR FAIRBANKS, ALASKA--1958

Measurements of leader and radial growth of paper birch (*Betula papyrifera* Marsh.) were obtained as part of a study of the biology of the spear-marked black moth (*Eulype hastata* (L.)) in Interior Alaska in 1958. In this study, which will be reported separately, the growth measurements were obtained to relate insect defoliation dates to periods of tree growth. Some radial growth measurements of white spruce (*Picea glauca* (Moench) Voss) and quaking aspen (*Populus tremuloides* Michx.) were also taken.

METHODS

Measurements were taken at about weekly intervals.

Type of growth data, tree species, and location were:

	: Mile 302	: Mile 43	:
	: Richardson High-	: Elliott High-	:
	: way	: way	:
Radial growth	: Birch, Spruce	: Birch, Aspen	:
	:	:	:
Leader growth	: Birch	: Birch	:
	:	:	:

Leader Growth - Measurements were to the nearest one-eighth inch on ten birch saplings, six to twelve feet tall, from each location. The terminal from one tree on the Elliott Highway was broken early in the season and this tree was omitted from the record.

Radial Growth - Measurements were taken to the nearest one-thousandth inch, with a dial gauge dendrometer ¹/₁₀₀₀.

Measurements of paper birch were made on ten trees at each location. The trees on the Richardson Highway averaged six inches d.b.h. and on the Elliott Highway eight inches d.b.h.

The four white spruce and four aspen measured at each location were approximately twelve inches d.b.h.

¹/ Daubenmire, R. F., an improved type of precision dendrometer. Ecology 26:97-98. 1945.

RESULTS

Leader Growth - Birch leader growth followed the same seasonal pattern on both areas (fig. 1). Leader growth started the last week in May and ended the beginning of the second week in July for a total growth period of approximately 43 to 47 days. The shortness of the growth period is even more striking when it is noted that fully ninety percent of the total seasonal growth was attained within a period of one month.

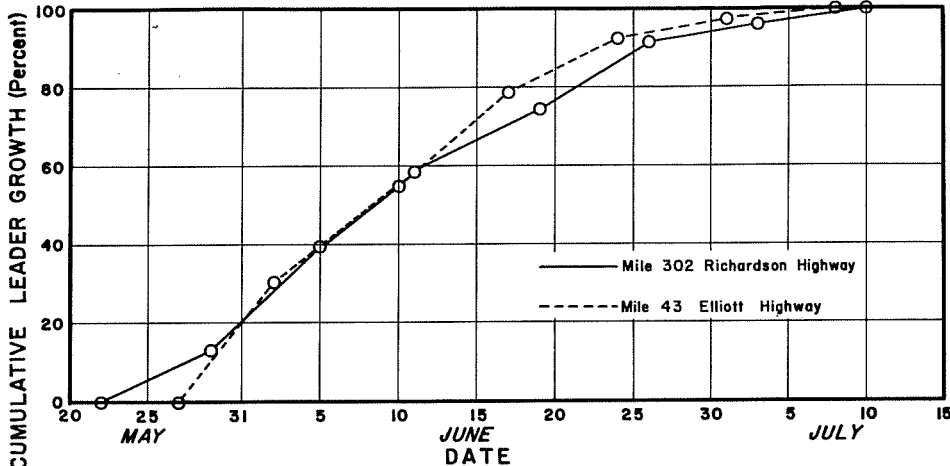


Figure 1. -- Cumulative leader growth of paper birch near Fairbanks, Alaska, 1958.

Average total leader growth per tree for the 1958 season at the two locations was: 4.70 inches at Mile 302 Richardson Highway and 0.82 inch at Mile 43 Elliott Highway. Trees in the latter area exhibited exceedingly slow leader growth.

Radial Growth - In computing the seasonal radial growth the beginning measurement was considered as zero and the last measurement as one hundred percent. The seasonal pattern for all three species is quite similar (fig. 2), with growth starting about the beginning of June and ending the middle of July. Some of the deviations in the readings, especially those below zero and above one hundred percent, are believed due to variations in the moisture content of the tree trunks associated with warm sunny periods and wet cloudy periods.

Average total radial growth per tree in 1958 was:

Mile 302, Richardson Highway

Paper birch	.012 inch
White spruce	.028 inch

Mile 43, Elliott Highway

Paper birch	.002 inch
Aspen	.030 inch

Radial growth of paper birch in the Elliott Highway area was not enough to establish a seasonal pattern and was omitted from figure 2.

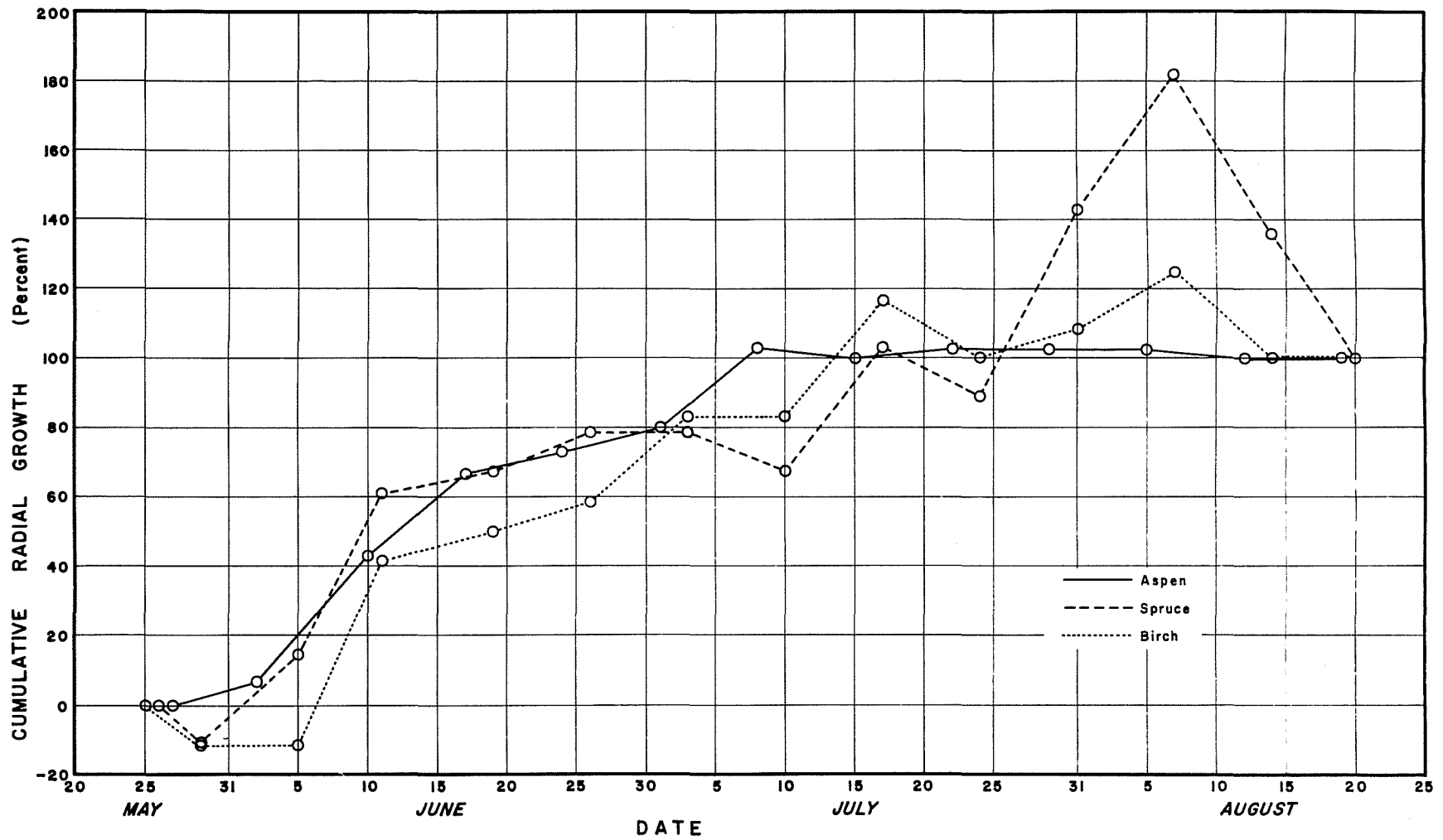


Figure 2.-- Cumulative radial growth, near Fairbanks, Alaska, 1958.