

INTERNAL REPORT 6

RELATION OF BIOLOGICALLY DEFINED ENVIRONMENTAL MEASUREMENTS TO DISTRIBUTION AND PRODUCTIVITY OF FOREST ECOSYSTEMS IN THE CENTRAL OREGON CASCADES

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Work accomplished during the growing season, 1971, included the following. Most of the work outlined below was accomplished by W. Arthur McKee, who was employed as a full-time technician, resident at Blue River, on 1 April 1971.

a. Air temperature at 1 m and soil temperature at 20 cm were measured at 12 sites ("reference stands") representing 11 types of plant communities for the entire season. Thermographs were installed at 2 other sites later in the season. We will attempt to continue measurements throughout the winter at selected sites.

Data has been digitized and average day and night air temperatures computed. Further summarization will be done.

It is obvious from examination of the data that a definite temperature inversion occurs regularly during clear warm weather on the Andrews, with night temperatures at higher elevations often exceeding those at lower elevations. Such information should be used to aid in placement of future meteorological installations.

b. Plant moisture stress was measured at the 14 reference stands, between midnight and dawn. Diurnal patterns were monitored at 3 contrasting low-elevation sites. Little stress developed this year, because of a late, wet spring and an half-inch rain in mid-August. These measurements must be repeated to determine whether stress differences exist between the several sites having very low stress this year.

Measurements were made on at least 4 tree sites, using Pseudotsuga, Tsuga heterophylla, or Abies amabilis (in a few instances, Taxus) seedlings 1-2 m tall.

c. From available moisture and temperature data an environmental ordination of 12 stands will be made. A copy of a preliminary ordination is attached, using very limited temperature data, to show the type of results envisioned.

d. Foliage samples for determination of nutrient status (N at all; Ca, P, K at some stands) of understory trees at time of peak demand were taken, from at least 4 trees per site, and are being analyzed. Fall foliage (time of low nutrient demand) will be sampled later.

e. Date of bud swell of tree seedlings was determined at all sites. Pins to use for establishing the time of termination of cambial divisions were placed in seedlings at all sites at two-week intervals after mid-July.

Phenology of canopy tree species, Rhododendron macrophyllum, Acer circinatum, Chimaphila umbellata, and Linnaea borealis (and other species) was followed at 1-2 week intervals.

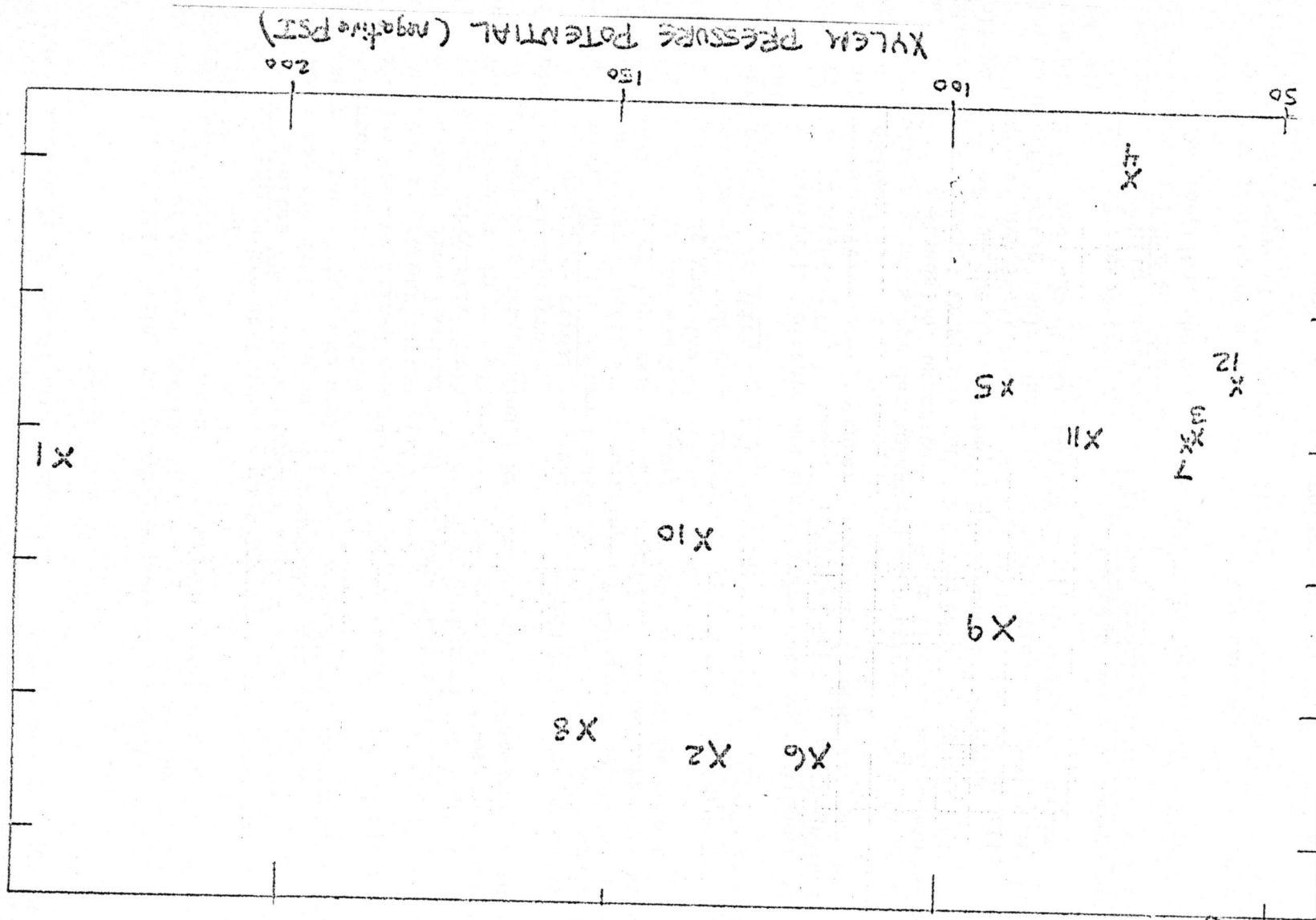
f. Plot location, shelter construction and installation were done as necessary.

g. Installation of a surveyed 50-m grid on watershed 10 (a year-2 objective) was begun (2 1/2 weeks). The grid is half-complete, in terms of time required.

h. Cooperative work for other projects by Mr. McKee--3 weeks.

i. Administrative tasks--guiding tours and acting as local representative in biome business--2 weeks.

TEMP. AXIS (In this case, average day temp, 12 days
in July)



Each X represents 1 reference stand
This information is preliminary. Therefore stand vegetation
types are not shown