RESEARCH ABSTRACT

Principal Investigator(s): Chris Topik, Dale Brockway, Nancy Diaz
USDA-Forest Service, (Area Ecology-GP/MTH NF's)
2955 NW Division Street
Gresham, OR 97030
(503) 666-0697

Study Title: Forested plant association classification

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Abstract: This work, which includes sample sites on the Mount St. Helens National Volcanic Monument, extends across forested areas of the entire Gifford Pinchot National Forest.

Vegetation zones are of interest because they generally represent major large-scale climatic differences within a region. A forest zone is the area within which a particular tree species is the stand dominant in the climax plant community. For example, the western hemlock zone encompasses forests where western hemlock would eventually dominate the overstory (assuming no disturbance takes place). Of the forest zones studied, three occur in the Mount St. Helens vicinity: western hemlock zone, Pacific silver fir zone, mountain hemlock zone. The western hemlock zone generally occupies warm moist sites and is found below 3000' elevation. The pacific silver fir zone occupies higher elevation sites (approximately 3000'-4300') where winter snow packs are common. The mountain hemlock zone occupies very cold, moist sites above the Pacific silver fir zone.

Forest zones were subdivided into plant associations, a stable group of plant species capable of self-perpetuation. By knowing the plant association of a site we can infer a number of climatic attributes and anticipate site response to various treatments. Associations can be used as a basis for inventory of the productive potential of vegetation and other resources which depend upon vegetation for their quality or quantity. Associations also provide a framework for communicating management experiences and research results.

On the Gifford Pinchot National Forest, 17 plant associations have been described in the western hemlock zone, 11 in the silver fir zone, and 12 in the mountain hemlock zone. Plant Association and Management Guides are published according to forest zone and include an overview of the forest zone, dichotomous keys to the plant associations within the zone, and detailed descriptions of each plant association (structure, composition, environment, distribution, productivity, and management).

Sampling schemes involve selecting undisturbed forested stands of at least 60 years of age that represent a range of natural vegetation variation. Data collected includes percent cover of all vascular plants on 500 meter square plots, as well as detailed environmental, timber, snag, down wood, and soils information. Old-growth plots were more heavily weighted as they better reflect the eventual floristic composition which

defines associations. Preliminary keys were field-tested and the final classifications modified.

Type of Measurement(s):
Plant cover: by species - % cover (at sampled area)
grouped by plant type - % cover (at sampled area)
Substrate: % cover (of sampled area) of rock, gravel, bare ground, litter.
Slope: % slope
Aspect: azimuth
Slope shape: convex/flat/concave/undulating
Position: topographic position, elevation in feet
Soil: depth, color, texture of layers, rooting depth
Timber: DBH, height, site index, growth basal area, basal area, age
Snags: DBH, height class, degree of decay, # of cavities
Down Wood: size class, length, number of pieces, amounts of fine fuels
Observations: wildlife, disease/pathogens

Frequency of Measurement(s): Study sites within forest zones were sampled once each during years 1979-1987. Plot locations were documented, allowing revisits for subsequent studies and monitoring opportunities.

Data Storage:
Primary: Oracle and IS/CLI data files on main frame computer
Secondary: Original field data cards

Long-term plans: Data available for collaborative efforts: Plant Association and Management Guides have been published. Plot locations have been documented, allowing revisits for subsequent studies and monitoring opportunities. Area Ecology staff and data are available for collaborative efforts.