

AN ABSTRACT OF THE THESIS OF

GLENN MARTIN HAWK for the DOCTOR OF PHILOSOPHY

in PLANT ECOLOGY (BOTANY) presented on _____

Title: COMPARATIVE STUDY OF TEMPERATE CHAMAECYPARIS FORESTS

Abstract approved: _____

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The objectives of this study include: (1) analysis of Chamaecyparis lawsoniana, C. taiwanensis, and C. formosensis forests including the structure, composition, and dynamics of plant communities and their environmental relationships; and (2) comparison of the temperate Chamaecyparis forests of Taiwan and the Pacific Northwest with emphasis on structural and successional characteristics.

One vegetation zone with four communities in Taiwan and three zones with eight communities in the Pacific Northwest are described. All communities are defined on the basis of their vegetative differences which arise primarily in response to changes in climate and/or soils.

The Chamaecyparis communities show varying degrees of site specificity. The two Taiwan species are sympatric over most of their ranges. Chamaecyparis taiwanensis occurs on high elevation, well drained landforms and on many aspects. The soils are typically podzolized or undifferentiated. Most vigorous forests tend to be in northwestern portions of the generic range. Chamaecyparis formosensis is found at lower elevations, on less well drained and more commonly podzolized soils, and is more restricted to north and northwestern aspects. The most vigorous stands are in the southeastern portion of its range. Climatic variation is more pronounced in the Pacific Northwest, and Chamaecyparis lawsoniana communities reflect this. In the north, middle and low elevations are occupied by the Tsuga heterophylla-Chamaecyparis lawsoniana/Polystichum munitum-Oxalis oregana community on more mesic areas and by the Tsuga heterophylla-Chamaecyparis lawsoniana/Rhododendron macrophyllum-Gaultheria shallon community on better drained sites.

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