Chapter 1

Multi-Species Stand Classification: Definition and Perspectives

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Additional information is available at the end of the chapter

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Abstract

The increasing demands for products and services from forests enhanced new approaches to stand composition, structure, and management, which encompass multiple use systems, frequently mixed either even aged or uneven aged. Stand classification is frequently based on one density measure (number of trees, basal area, volume or crown cover). As no standard criteria exist, the direct comparison between the different stand classifications is difficult. This created a need for a stand classification that incorporates not only the forest species and composition but also their horizontal and vertical arrangements. The four criteria stand classification incorporates the number of species and their proportion, their horizontal and vertical distribution. The application of this methodology enables an integrated approach, bridging the gap between composition and stand structure. Its use in the National Forest Inventories and in research studies is simple, as shown in the two cases of study presented. It also allows the evaluation of stands in a certain moment in time and their dynamics.

Keywords: density measures, composition, mixture degree index, horizontal distribution, vertical distribution

1. Introduction

Forests occupy vast areas of the world and were able to satisfy the human needs for a long time. They were at the same time a reserve and a resource, which provided shelter, wood, food and have been associated with culture and religion [1]. From the IX century onwards, the increase in human population and agriculture originated a reduction in the forest area. It was during the XIII century and following that an intensive use of wood occurred, which directed several countries in Europe to promote the protection of forests [2]. That gave rise to the development of the forest sciences in the XVII century. In the beginning, due to wood shortage, a pressure was put to create systems that were able to produce large quantities of wood. This