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# Effects of Forest Stand Structure in Biomass and Carbon

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Ana Cristina Gonçalves

Additional information is available at the end of the chapter

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## Abstract

Biomass has been gaining an increased interest due to its importance in sustainable forest management and in carbon sequestration. Biomass in each forest stand varies according to its structure and influences not only the biomass per area unit but also its distribution in space and time. The structure analysis with absolute stand density measures and structure and diversity measures and indices for the number of trees and basal area does not always reflect the above-ground biomass distribution and variability. The use of above-ground biomass as an absolute density measure and the development of diversity measures and indices derived from it enable further details in the stand structure characterisation. The results of this study highlighted the differences between pure even-aged, pure multiaged, mixed even-aged and mixed multiaged structures. The measures and indices of above-ground biomass are considered primordial as they integrate the horizontal and the vertical distribution, thus enabling a more detailed evaluation of biomass and carbon stocks.

**Keywords:** stand structure, biomass, density measures, structure and diversity indices

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## 1. Introduction

Forest stands provide a wide range of products and services, from timber and other woody and nonwoody products to services [1, 2]. Traditionally, forest inventories evaluated forest area, crown cover, tree species, number of trees, diameter at breast height and total height [3–6]. National Forest Inventories started to evaluate biomass from the late twentieth century onwards in order to assess wood for timber and bioenergy, carbon stocks and carbon