

# TREE SPECIES DIVERSITY AND SPATIAL DISTRIBUTION OF HOLM OAK STANDS IN CHETTABA FOREST (ALGERIA)



Dr. ZERROUKI Alia<sup>1</sup>, Assoc. Prof. KARA Karima<sup>2</sup>, Assoc. Prof. REDJAIMIA Lilia<sup>1</sup>, Prof. RACHED-KANOUNI Malika<sup>1</sup>.

<sup>1</sup>Laboratory of Functional Ecology and Environment, Department of Life and Nature Sciences, Faculty of Exact Sciences and Life and Nature Sciences, University of Larbi Ben M'hidi, Oum El Bouaghi/Algeria.

<sup>2</sup>Department of Plant Biology and Ecology, Mentouri Brothers University, Constantine/Algérie.

## Introduction

Forests play a crucial role in sustaining life on the planet [1] are very rich in biodiversity and provide vital resources to human populations. Despite these multiple functions, the management of natural forests, particularly in arid and semi-arid areas in Algeria, is faced with a lack of data to understand the functioning of these ecosystems in terms of floristic composition, structure and regeneration. Consequently, developing sustainable management strategies and approaches based on reliable scientific foundations remains very difficult [2]. However, data concerning the structural characteristics and dynamics of plant species are unfortunately not documented. The study of the structure of a forest formation serves as a basis for its silviculture, guides forest economics, allows the assessment of the state of degradation of ecosystems, helps to understand the past management history of stands and forest dynamics [3].

The holm oak is the main species of the state forest of Chettaba which covers an area of 2398ha where it occupies 1127ha. However, during the last decade, a particular attention and a scientific and forestry interest

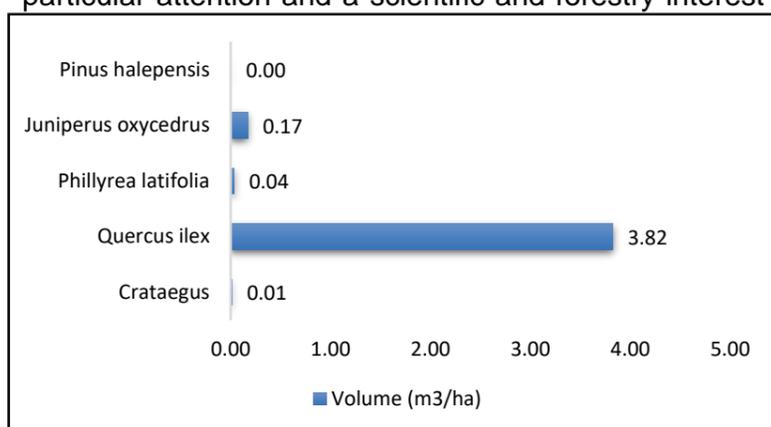


Figure1. Wood Volume of each species.

## Conclusion

The structural study and the floristic composition of the forest allowed knowing the diversity of the plant groups of this ecosystem. The forest of Chettaba functions today as an isolated ecosystem under pressure at its periphery and justifies the need to conserve this ecosystem. The evaluation of the specific diversity by the index of Shannon and the equitability shows a certain relation with the disturbance of the environment. The analysis of viability suggests that, in general, the forest as an ecosystem is viable even if pressures have reduced floristic diversity. Therefore, if the degree of pressure increases and reduces the forest area, the

The objectives of this paper are to collect data on the current ecological status of the Chettaba forest and identify its level of viability. This database will be a reference tool to assist in decision-making for forest service managers, because good management of forest stands, first of all, requires a good knowledge of their

## Results

The surveys carried out at the level of the forest of Chettaba (Algeria) allowed determining 5 woody species (*Quercus ilex*, *Juniperus oxycedrus*, *Phillyrea latifolia*, *Crataegus monogyna*, *Pinus halepensis*). The majority species in terms of number of individuals is *Quercus ilex* (holm oak), which constitutes 84% of all trees observed. The mixing coefficient is 0.05; this coefficient reflects the tendency towards homogeneity of the different stands. The values of the Shannon, Simpson and Pielou indices are not very significant and indicate a low floristic diversity; they are respectively (0.88, 0.40 and 0.38). The Shannon index is often accompanied by the Pielou equitability index.

The graph in Figure 1 shows the wood productivity of each species. *Quercus ilex* is the richest with a volume of 3.82 m<sup>3</sup>/ha. The *Quercus ilex* contains all three diameter classes' perches and small woods, the *Phillyrea latifolia*, *Juniperus oxycedrus*, *Pinus halepensis* and *Crataegus* are only found in the form of perches (Figure 2).

The quality of the stands can be given by the PHF index. The average of the results of the PHF index is 333 for the whole of the studied species since which we deduced a rather good quality of our studied stands.

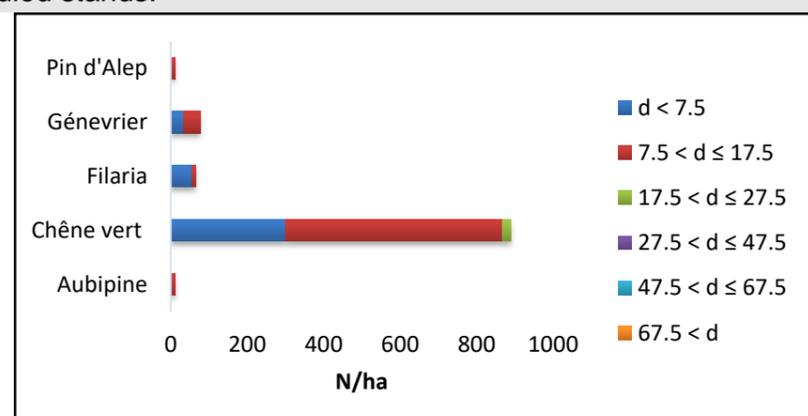


Figure 2. Tree density by diameter class.

**Research** 1.an inventory was carried out. A description of the stand preceded the dendrometric parameters.  
 2.The data obtained were entered into the Excel spreadsheet, which allowed us to determine the ecological characteristics and structure of the natural holm oak population.  
 3.A multitude of indices are developed and those used in this article are the Shannon, Pielou and Simpson indices.

## Acknowledgements

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