CHAPTER I

INTRODUCTION

1.1 Background

Indonesia is a country with a wealth   diversity both in terms of culture, ethnicity, religion, language, as well as biodiversity and topography. Indonesia is one of the countries with very fertile soil conditions because the soil is mineralized due to volcanic processes. The increase in plant productivity in Indonesia is due to the sunlight available throughout the year in the tropical climate in Indonesia (Sutarno & Setyawan, 2015). With the tropical condition of the country, the diversity of flora is very abundant in Indonesia so that it ranks second with the largest natural wealth in the world. In terms of species diversity, Indonesia has the largest wealth of palm species in the world, more than 400 types of dipterocarp wood (the largest commercial wood species in Southeast Asia), and approximately 25 thousand flowering plants (MoEF, 2003).

The definition of forest is a form of vegetation dominated by trees that have reached perfect growth and have a minimum height of 7 m and have a minimum canopy cover of 10% of the land surface (Enquette Commission, 1994). The complexity and dynamics of ecosystems in forests are reflected by the diversity of plant species that exist. For example, tropical forests are known as one of the ecosystems with the highest biodiversity in the world. This diversity includes different categories of plants, such as large trees, shrubs, herbs, and lianas, each of which has a different ecological role. Climate factors, soil types, topography, and interactions between species contribute to this diversity. In the

forest, large trees form a canopy as shade for the lower plants, while other species adapt to grow under low light conditions. The diversity of fauna is also supported by plant diversity, as various animal species depend on certain plants for food and habitat.

The vegetation in the forest has a complex structure and composition, reflecting the high biodiversity. Forests typically consist of several layers, including an upper canopy layer dominated by tall trees, as well as a lower layer that includes sapling (young trees), seedling (seeds), and undergrowth such as shrubs and herbs. According to Dansereau in Dumbois and Ellenberg (1974), vegetation structure can be defined as the organization of plant individuals in space that form stands and more broadly form vegetation types or tumble-han associations. Kershaw (1973) stated that the form of vegetation is limited by three main components, namely: (1) stratification which is the constituent layer of vegetation (strata) which can consist of trees, poles, shrubs, weaners, seedlings and herbs. (2) the horizontal distribution of the type of vegetation that describes the position between individuals (3) the number of individuals (abundance) of a certain type of vegetation.

In Indonesia, the large diversity of flora in forest ecosystems has been used by the surrounding community as raw materials for food, buildings, and medicines. The history of the use of plants as medicine in Indonesia is very close and has existed since ancient times. The use of plants as medicine has been a part of the daily lives of Indonesian people for centuries. The local Indonesian people have in-depth knowledge of the medicinal properties of various plants that are

around them. The abundance of medicinal plant species in Indonesia makes the use of traditional medicine by individuals in households has been carried out from generation to generation from ancestors until now, this habit has become the cultural heritage of the Indonesian nation (Jennifer & Saputyningsih, 2015). Medicinal plants are obtained by local communities from various landscape units in the surrounding environment, including gardens, yards, fields, agroforestry, and forests. Communities identify these landscape units according to the type of vegetation that exists (Silalahi, 2015). Since ancient times, medical scientists have proposed that the raw materials for medicines used are medicinal plants taken from forests. It is estimated that Indonesia's forests have the potential to be home to around 30,000 species of medicinal plants (Nurrani, 2013), and according to (Kinho *et al.,* 2011), about 80% of the 120.35 ha of Indonesian forests have plants that have medicinal properties. One of the forestry areas that has the potential for medicinal plant diversity is in the Haurbentes Special Purpose Forest Area, Bogor. KHDTK is a nature conservation area that has the potential for biodiversity such as collections of plants, natural or non-natural animals, native and non-native species that are used for research, development, education, training, and cultural and religious purposes (Kurniasih, 2019; Suharti *et al.,* 2005).

Laksono, 2014 has conducted research in Wirajaya village in KHDTK Haurbentes and concluded that the community around KHDTK (Forest Area with Special Purpose) Haurbentes is known to use 21 species of medicinal plants to treat 15 types of diseases. Laksono's 2014 study relied solely on interviews to identify medicinal plants used by local people, without investigating the actual

ecological conditions or vegetation structure in the area. Previous research has provided various valuable insights into the use of medicinal plants in local communities around KHDTK Haurbentes at Wirajaya village. However, even though a lot of information has been collected, there are still many aspects that have not been fully revealed, especially related to the study of medicinal plant ecology by knowing the composition and structure of the Haurbentes KHDTK, Bogor. Therefore, more in-depth further research is needed to explore the ecological conditions of medicinal plants and their species diversity in KHDTK Haurbentes, Bogor. This research seeks to thoroughly examine the composition and arrangement of plants in the field and integrate these observations with information gathered from local residents regarding the use of medicinal plants found during the vegetation survey. This method offers a more detailed insight into the relationship between plant diversity and traditional medicinal practices in the area.

Medicinal plants are often related to forest ecosystems, both in the context of conservation, protection, and production (Priyanti *et al.,* 2015). As stated by Kartawinata *et al.,* (2008), a comprehensive understanding of ecological information, which includes the structure and composition of forest vegetation, is essential for sustainable development in forest areas. By conducting vegetation analysis, information on the structure and composition of a vegetation can be determined. The analysis was carried out to determine the diversity of types, frequencies, dominance, important value index (IVI), and the index of diversity of medicinal plant species in KHDTK Haurbentes.

Environmental factors in the ecosystem, such as soil conditions, climate, and the presence of other organisms, can affect the growth and abundance of medicinal plants (Astutik *et al.,* 2015). Environmental factors that affect the growth of medicinal plants are temperature, light intensity, soil and air moisture, and soil pH or soil acidity. Temperature is an important factor because it determines the speed of reactions and chemical activity in life processes. The temperature in each region can vary due to differences in sunlight intensity, depending on the angle of arrival of sunlight, latitude, distance or location of land to the ocean, altitude, and vegetation cover (Kurniasih, 2019).

Local socio-cultural influences also play an important role in influencing the agricultural, plantation, and forestry ecosystems that are habitats for medicinal plants (MoEF, 2019). Along with the changing times, such as population growth, changes in different ecosystems, and the development of the market economy, this causes differences in the social system of the Indonesian population. This includes increasing local knowledge and practices regarding the use and management of plants used as traditional medicines by local communities, and may be lost (Kinho *et al.,* 2011). Therefore, a study on medicinal plants in the KHDTK area needs to be carried out to complete the study information related to the study of plant ecology. By understanding the interaction between medicinal plants and the environment, we can identify the factors that affect the growth, distribution and survival of the species.

In addition, this research is very relevant and can help in the development of good conservation strategies to protect biodiversity and utilize the potential of

a very valuable asset for Indonesia, namely medicinal plants in a sustainable manner. The use of medicinal plants by local communities not only provides more affordable and accessible alternative medicine, but also preserves rich and diverse traditional knowledge. Through extensive research, it can integrate traditional knowledge and scientific knowledge, thus contributing to public health and environmental protection. Furthermore, the use of medicinal plants can improve the welfare of the local community through the development of herbal products with high economic value.

1.2 Problem Formulation

1. What is the composition and structure (parameters: density, frequency, dominancy) of vegetation and medicinal plants in KHDTK Haurbentes?

2. How is the use of medicinal plants in 10 Villages around KHDTK Haurbentes?

1.3 Research Objectives

1. Analyze the composition and structure (parameters: density, frequency, dominancy) of vegetation and medicinal plants used by the local community in Jugalajaya Village in KHDTK Haurbentes.

2. Analyze the use of medicinal plants in 10 Villages in KHDTK Haurbentes.

1.4 Research Benefits

The data obtained from the results of this study can be used to improve the understanding of the structure, composition, biodiversity and utilization of medicinal plants in the community. In addition, the benefit of this research is that

it can provide useful information and recommendation to preserve medicinal plants and maintain biodiversity.