I. INTRODUCTION

1.1 Background

Indonesia is a country that has the third-largest tropical forest in the world after Brazil and Zaire, with a forest area of 134 million hectares, which is 10 percent of the total tropical forest in the world. On a global level, biodiversity in Indonesia ranks second after Columbia so that its existence needs to be maintained. Indonesia has a forest area of 60 percent of the total area of its entire territory. Forests in Indonesia have an essential function as the preserver of the global environment, a source of economic development, and a community life (Badan Penelitian dan Pengembangan Pertanian, 2010).

Lowland tropical forests are one type of forest ecosystem that is very dominating in the Sumatra region (Wahyudi, Rahayu, and Azwin, 2016). However, these lowland tropical forests have the highest risk of damage than other types of forest ecosystems (Suwardi, Mukhtar, and Syamsuardi, 2013). One of them is due to forest degradation, which can be caused by two factors, either due to natural processes or by human intervention. Montagnini and Jordan (2005) explained that tropical forests are generally less protected from human disturbance than temperate-zone forests, and often are subjected to more intense pressure for development. Therefore, it is important that special care can be taken to manage tropical forests in a way that enables their continued existence.

In the wake of widespread loss of old-growth forests throughout the tropics, secondary forests will likely play a growing role in forest biodiversity conservation. The conservation value of the secondary forest is expected to increase over time

(Chazdon, Peres, Dent, Sheil, Lugo, Lamb, Stork, and Miller, 2009). One of the secondary forests is located in PT. Tidar Kerinci Agung (PT. TKA).

Tim NKT TKA (2013) explained that PT. TKA is a large palm oil company on Sumatra island in the valley of Gunung Tujuh, which is a cluster of Bukit Barisan with an area of 28,029 ha with 18.19% allocated for conservation areas that aim to preserve flora and fauna in it. Therefore, besides managing oil palm plantations, PT. TKA also manages HCV (High Conservation Value) areas, which include tropical forests, hilly areas, and watersheds. One of the HCV areas is Prof. Sumitro Djojohadikusumo Conservation Area.

Various kinds of studies can be done to determine the state of the forest in the future. One of them is by knowing the forest canopy. According to Jennings, Brown, and Sheil (1999), forest canopy is one of the chief determinants of the microhabitat within the forest. It affects plant growth and survival, hence determining the nature of the vegetation, and wildlife habitat. This is also in accordance with Ganey and Block (1994), because of the importance of these estimates in habitat assessment and forest management, accurate and precise techniques for estimating canopy are desirable.

Hemispherical Photography (HP) method is one of the new methods used and developed in Indonesia (Baksir, Mutmainnah, Akbar, and Ismail, 2018) in order to describing forest canopies and light regimes(Bianchi, Cahalan, Hale, and Gibbons, 2017). This were also mentioned by Hale and Edwards (2002), this method is a widely used for assessing the light environment beneath forest canopies. Based on Rich (1990), canopy structure and light environment can be sampled above individual plants for studies of demography. There is a new program to support that
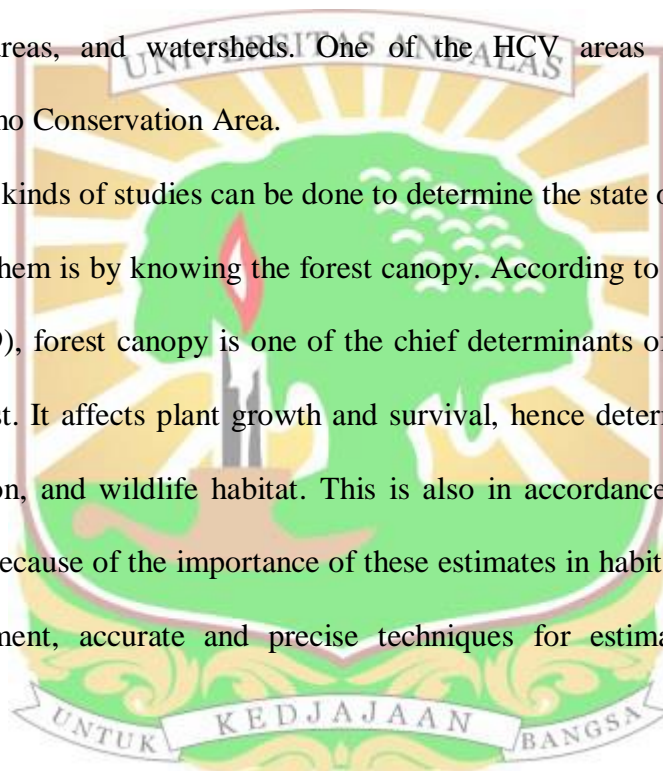
method called *Gap Light Analysis Mobile App* (GLAMA). Accoding to Tichý (2016), this programnewly developed by the author and freely accessible from the Google Play website. It can be used for analysing hemispherical, wide-angle and standard photographs.

Based on the description above, it is necessary to conduct the research using this promising technological advancement method in order to measure the status and condition of the forest, whether it is in a good, moderate or bad condition. So that rehabilitation efforts can be done on an ongoing basis.

1.2   Problem Formulation

Based on the background described, the problem that can be formulated in this study:

How is the canopy cover at Prof. Sumitro Djojohadikusumo Conservation Area of PT. TKA using GLAMA?

1.3   Research Objectives

The objective of this research is:

To clarify the canopy cover at Prof. Sumitro Djojohadikusumo Conservation Area of PT. TKA using GLAMA.

1.4   Benefit of Research

The benefit of this research is to provide the latest information about canopy cover in Prof. Sumitro Djojohadikusumo Conservation Area of PT. TKA as a reference to do the rehabilitation efforts.