

I. INTRODUCTION

1.1. Background

Insects are one of the animal groups which has high abundance and most identified species in nature. (Chapman, 2006). Originally, insects are much longer before a living-human being. Hence, the abundance of their existences affects in any activities of other living organisms continuously. Therefore, we need to understand them in order to deal with their existence (Pedigo, 1999).

Ants are one of most abundance insects belong to the order of Hymenoptera, Suborder of Apocrita, and Family of Formicidae, which distributed well at worldwide (Borror *et al.*, 1992). Ants growth in high dominance of terrestrial, tropical, and subtropical areas on 15-25% of terrestrial animal biomasses (Schultz, 2000). Ants presences are involved by environmental changes, which give sensitively respons of habitat disruption that made ants became as one of the potential environmental bioindicators (Claver *et al.*, 2013). Ants thrived almost at the whole type of ecosystem and has different types of distribution. In the terrestrial ecosystem, ants played essential roles as predators, scavengers, herbivores, detritivores, and granivores, some of ant types also interacted with other plants or insects on ecosystems (Latumahina *et al.* 2013).

Altitudinal of several habitats were presumed to affect diversity of some species. The type of pattern that often appears was inverted or a decrease in type (Rahbek, 1995). Araujo and Fernandes (2003) on their study at Mountain of Espinchaco, Brazil was revealed the decreased number of ant species at high elevation which indicated some degradation of habitat complexity that restricted ants survival in the extreme area such as

high elevational gradient. The several studies were done at the overseas area by Bruhl *et al.* (1999). There were 285 species belonged to 55 genera at Mount Kinabalu, Sabah, Malaysia were collected. The data were distinguished by elevational gradients with the result expanded 49% number of genera were discovered at low elevation. Other similar study has been observed at Mount Himalayan by Bharti *et al.* (2013), which discovered 144 total species with the highest number of species were at the middle elevation related to the optimum climate at the elevational gradient.

The recent studies in West Sumatra were accomplished at Mount Singgalang by Susanto (2016), at Mount Talang, Solok (Herwina *et al.* 2020), and at Mount Marapi, Agam (Sakdiah, 2021) with various types of elevation. This study was conducted at Sago Malintang Nature Reserve, the one of *in-situ* conservation area which located at Lima Puluh Kota Regency, West Sumatra. The topographical of the area were consists of the mountainous area covered with secondary forest at hills which has the altitude of 2.271 m above sea level (BKSDA, 2007). Previously, there are some of the studies about Exploration of Flora by Hartini (2005), Diversity of Butterfly by Rusman *et al.* (2016), Herpetofauna by Nugraha *et al.* (2019), and Ectoparasite Infestation by Hidayat and Mairawita (2021). Therefore, this area was chosen to pursue for the observation primarily on ant diversity at mountainous related to one of the ant roles as a bioindicator. According to the explanation above, the identification and biodiversity value of ants at mountain-hills area were required to be carried out due to the few of information about ants as particularly throughout this area at West Sumatra.

1.2 Research Problem

Based on the background explained above, the research questions in this resereach are as follow:

1. What kind of ant species (Hymenoptera: Formicidae) and its description at Sago Malintang Natural Reserve, Lima Puluh Kota Regency, West Sumatra?
2. How is the diversity index (Shannon-wiener, Evenness, and Similarity) of ants at Sago Malintang Natural Reserve, Lima Puluh Kota Regency, West Sumatra

1.3 Research Objectives

The objectives of this study are:

1. To know the kind of ant species and its description (Hymenoptera: Formicidae) at Sago Malintang Natural Reserve, Lima Puluh Kota Regency, West Sumatra.
2. To determine the diversity index of ants (Shannon-wiener, Evenness, and Similarity) at Sago Malintang Natural Reserve, Lima Puluh Kota Regency, West Sumatra through the elevational gradient.

1.4 Research Significances

The significances of this study are:

1. As the references of the latest information about the biodiversity of ants at the natural reserve areas at different elevations for the furthermore study.
2. As the data inventories through the ant study on West Sumatra.

