I. INTRODUCTION

1.1 Background of the Study

Due to its rich flora and fauna, Indonesia is an archipelago (country of islands) made up of over 17,000 islands of various sizes. In terms of both kind and endemicity, Indonesia is home to some of the world's most varied biodiversity. One of them is amphibians and reptiles, which make up over 1100 species or about 16 percent of all species on the world (Iskandar and Erdelen, 2006). Despite the fact that Indonesia's progress in amphibian and reptile research is far slower than that of the neighboring country, Indonesia will most likely have the largest population of amphibians and reptiles in the whole planet. For instance, when compared to the overall number of species in Southeast Asia, the number of species in Indonesia has declined from 60% to 50% during the past 70 years. This is due to the fact that most novel taxa were found outside of Indonesia. Many of these species were subsequently found in Indonesia. Only 262 new taxa from Indonesia have been found in the past 70 years compared to 762 from other countries (Iskandar and Erdelen, 2006).

In terms of taxonomy, biological characteristics, and ecology, Indonesian herpetofauna was generally not well studied. Furthermore, little is known about a species geographic distribution. Considering the ongoing deforestation and removal of forest components, specific precautions are needed to protect living things (in this case amphibians and reptiles). Nearly all regulations enacted to preserve amphibians and reptiles, both locally and internationally through membership in the International Union for Conservation of Nature (IUCN) and CITES (Convention on International Trade in Endangered Species) groups, are not well known or understood. Even the bulk of information on the herpetofauna in Indonesia is challenging to find (Iskandar and Ederlen, 2006).

One of the most well-known species of the Serpentes suborder is the king cobra, scientifically known as *Ophiophagus hannah* (Cantor, 1836). It is a member of the monotypic *Elapidae* genus. This species is categorized as a species complex because of changes in color, scalation, and body proportion (Das, 2002). Different locations have different patterns and color variations (Pfaff, 2008). It is the largest venomous snake in the world, measuring between 4.8 and 6 meters (Campden-Main, 1970; Cox, 1991; Daniel, 1983; Schmidt and Inger, 1957; Whitaker and Captain, 2008; Zug, 1993). The Indian cobra (*Naja naja*) and monocle cobra (*Naja kaouthia*), as well as other snakes in the genus *Naja*, are true cobras, despite the king cobra's common moniker (Charlton, 2018).

One technique for estimating species diversity is morphometrics, which looks at the basic morphological traits. To explain population differences and similarities, morphometric data may be employed. The interplay of genes whose expression is influenced by the environment results in most observable characteristics (Munshi and Dutta, 1996). Malhotra (2004), one of several researchers that studied snake morphometrics, found that the *Trimeresurus vogeli*, which is found in Cambodia, Laos, and Vietnam, showed sexual dimorphism in both males and females. *Dendrelaphis Pictus*, which may be found in Sumatra, Nias, Mentawai, and Belitung Island, has genus-level morphological diversity according to Roijen and Vogel (2008). Environmental factors may have an impact on an animal's morphology or body size. The interplay of environmental and genetic factors leads to phenotypes. Animals must adapt in order to live since habitat conditions might change. Animals may modify their body size and shape to adapt to changing environmental conditions (Badriah, 2011).

Along with the color variations, there is a phylogenetical variation study conducted by Suntrarachun (2014) regarding the phylogenetic analysis of *O. hannah* in Thailand. According to the genetic distance result of this study, there are some possibilities for a new sub-species of *O. hannah*. Although this study has only discovered the potential being of *O. hannah* sub-

species, it does support Charlton's (2018) opinion about the *Ophiophagus* genus that can be consisting of several species or sub-species because of phylogenetic variations across the continent. Significant breakthroughs in evolutionary biology have been facilitated by observations into the geography of life (Brooks and McLennan 1991; Lieberman 2000; Morrone 2008; Wiley and Lieberman 2011).

This research was particularly relevant because it considered how species differentiation across geographic space became translated into evolutionary differentiation through time. It is necessary to research the morphological variations of *O. hannah* in Indonesia because the varied natural conditions of Indonesia are possible for the occurrence of morphological variations on *O. hannah* in scattered islands following the Indonesian archipelago. With this information, it is expected will become primary data to wildlife management in supporting knowledge and conservation.

1.2 Formulation of the Problem

The issue that will be addressed in this research is as follows:

1. What kind of morphological characters show the differences in *O. hannah* specimens found on various islands in Indonesia?
2. What kind of taxonomic status that shown among the population of *O. hannah* from various islands in Indonesia?

1.3 The Objective of Research

The objective of this research is as follows:

1. To determine the morphological characters that show the differences between *O. hannah* from various islands in Indonesia.
2. To evaluate the taxonomic status among the population of *O. hannah* from various islands in Indonesia.

1.4 The Benefits of Research

The benefits of this research are expected to contribute to the development of science that can be used as an initial source of information in further research that is more effective. The results of this study can be used as the future reference for conservation of *O. hannah* in Indonesia.