

# **ECOLOGY OF INSECTIVOROUS BATS IN GUNUNG SEWU KARST AREA: POPULATION DYNAMICS, REPRODUCTIVE STATUS, ECHOLOCATION, PHYSIOLOGICAL ADAPTATION, AND FEED PREFERENCES**

**by Tatag Bagus Putra Prakarsa, Suhartini, Rizka Apriani Putri**

## **ABSTRACT**

Insectivorous bats mostly use caves as their roosting habitat. These habitats are generally karst caves. In Indonesia, one of the karst areas that represents tropical karst is Gunung Sewu Karst, which is also a UNESCO version of the World Geopark status. Microchiroptera bats as a keystone species require special attention because they have a very important role ecologically. In addition, Geopark status does not make Gunung Sewu free from the threat of habitat destruction. The main objectives of this study are Studying the Ecology of Cave-Dwellers of Bats (insectivorous bat) in the Gunung Sewu Karst Area" with details of sub-sub-objectives of the study 1) Studying population dynamics and reproductive status of cave-dwelling bats in the Gunung Sewu karst area, 2) Studying the echolocation of cave-dwelling bats in the Gunung Sewu karst area, 3) Studying one form of physiological adaptation of cave-dwelling bats in Gunung Sewu karst area, 4) Study the feed preferences of cave-dwellers (insectivorous bat) in the Gunung Sewu karst area. This research was conducted from July 2021 – October 2022. The research site includes six caves on Mount Sewu. Tools for catching bats consist of mistnet, harpnet, dan handnet. Suara kelelawar direkam dengan Pettersson u256 USB Ultrasound Microphone. Analysis for population dynamics using ANOVA assay Reproductive status was analyzed with The Crude Birth Rate (CBR) and The General Fertility Rate (GFR). Analysis for bat echolocation used one way ANOVA and two way ANOVA to look at differences between species. Analysis for physiological adaptation of bats using a linear univariate model with multiple regression. Analysis for bat feed using Niche overlap Pianka and Multivariate Canonical Correspondence Analysis (PCA). The analysis was performed with the help of paleontological statistics (PAST) software, ver. 4.09 and R. Studio v1.4.1717-3. This study shows that the population dynamics of cave-dwelling insectivorous bats in the Gunung Sewu Karst Area are stable throughout the year. The reproductive pattern of these bats is once a year and there is no delay in pregnancy. Each bat species has a very specific echolocation pattern that can be used as one of its species identification characteristics. One form of physiological adaptation of cave-dwelling bats in Gunung Sewu is the erythrocyte and hemoglobin profile that adapts to the physicochemical conditions of the roosting habitat in the cave. Each species has its own feed preferences although each genus tends to have a high niche overlap.

*Kata Kunci: Physiological adaptation, Population dynamics, Ecology, Echolocation, Feed, Bat Insectivorous*