

## Identification of Bird Species in Argowiloso Peak Mount Muria

Muhammad Ridho<sup>1\*</sup>, Siti Mukhlisoh Setyawati<sup>2</sup>, Saifullah Hidayat<sup>3</sup>

<sup>1</sup> Departement of Biology, Faculty of Science and Technology

<sup>2,3</sup> Department of Biology Education, Faculty of Science and Technology

### Abstract

Indonesia is a country that has abundant flora and fauna. Mount Muria, Kudus Regency, Central Java, has a high potential for bird biodiversity. The area, a naturally protected forest area, is very supportive of the existing bird habitat. However, this potential is still rarely known by the general public due to the lack of publications. This study aimed to find out and analyze the types of birds and to find out and analyze the condition of the bird habitat found in the Mount Muria area. The research was conducted using the transect method with three observation stations. The observed birds were then photographed and identified based on the field guide of MacKinnon. The results revealed that 22 species of 18 families were identified, including *Campephagidae*, *Vangidae*, *Sittidae*, *Pycnonotidae*, *Rhipiduridae*, *Nectariniidae*, *Eurylaimidae*, *Pellorneidae*, *Hirundinidae*, *Cisticolidae*, *Dicaeidae*, *Pittidae*, *Alcedinidae*, *Meropidae*, *Megalaimidae*, *Apodidae*, *Accipitridae*, and *Cuculidae*. Biotic and abiotic components strongly influence habitat conditions to support the survival and diversity of birds on Mount Muria

**Keywords:** Bird, diversity, Muria mountain.

### Introduction

Indonesia's biodiversity level is very high, with 1,598 bird species that can be found, and it places Indonesia as the fourth most prosperous country in the world in terms of the number of bird species after Columbia, Peru, and Brazil. Of these, 372 (23.28%) are endemic bird species, and 149 (9.32%) are migratory birds. However, it is deplorable that in Indonesia, there are 118 (7.38%) bird species categorized as endangered species in the International Union for Conservation of Nature (IUCN) Red List (Pranoto et al., 2015).

In Java and Bali, 494 species of birds can be found. This number covers half of the world's bird families. The bird species found were divided into two groups, namely resident birds (368 species, 24 endemics) and migratory birds (126 species) (Sari et al., 2015). The fauna on the island of Java is relatively poor, with only about 289 species of the total number of species. About 28% of the birds in Java are mountain birds, a slightly higher proportion compared to the other two islands, namely Kalimantan Island and Sumatra Island (MacKinnon et al., 2010).

---

\*Corresponding Author: Saifullah Hidayat; Email: [hidayatsaifullah@walisongo.ac.id](mailto:hidayatsaifullah@walisongo.ac.id), Departement of Biology, Faculty of Science and Technology, UIN Walisongo, Jl. Walisongo No. 3-5, Semarang City, Central Java, Indonesia, 501851

Ecologically, Central Java province is a transitional area between the climate in East Java which tends to be dry and arid, with the climate in West Java and Banten, which tends to be wet and humid, so in this province, we find abundant species of plants, animals or microbes (Sari et al. al., 2015). One area in Central Java Province that has bird potential is Kudus Regency, which is in the Mount Muria area but has not been widely studied.

Mount Muria, Kudus Regency is a mountainous area located in the north of Central Java, east, with an altitude of 1,602 meters above sea level. There are 2,377.57 hectares of forest located in the area of Kudus Regency. The forest area in Kudus Regency, Central Java, is a Protected Forest area managed by Perhutani (Widjanarko & Wismar'ain, 2011). The area holds a biological wealth of about 80 species of trees consisting of palms and grasses. Meanwhile, the richness of fauna includes five types of spoon snakes (Javanese cobras), green pythons, monkeys, porcupines, squirrels, pangolins, and even wild boars. In addition, there are also 109 species of plants belonging to 51 families, which include grass, orchids, and typical Muria trees in the form of *mranak* trees, types of fruits such as mango, durian, guava, soursop, papaya, rambutan, and plants typical of Kudus, Central Java. namely parijotho (Seputar Kudus, 2019).

Chrystanto et al., 2014 observed the diversity of avifauna species in the Keling II/III Nature Reserve, Jepara Regency, Central Java, showing 23 bird species from 6 orders and 14 families were found. A total of six species found were recorded as protected in government regulation No. 7 of 1999 concerning the preservation of plant and animal species as well as Law No. 5 of 1990, including the Javan cuckoo (*Halcyon*

*cyaniventris*), the river cuckoo (*Halcyon chloris*), Blekok rice field (*Ardeola speciosa*), Buffalo egret (*Bubulcus ibis*), small egret (*Egretta garzetta*), and *sriganti* honeybird (*Cinnyris jugularis*).

Based on the results of observations, according to Mr. Teguh Budiono and Mas Aprilianto Rahayu (2018), who are members of the Community Concerned Forest Community (PMPH) in Colo Village, Kudus Regency, Central Java, there are still around 70 species of birds that inhabit the forest area in the Gunung Muria area, Kudus Regency. Central Java is one of the rare species, namely the Javan Eagle (*Spizaetus bartelsi*). Bird research data in Colo Village, Kudus Regency, Central Java, has not been widely reported.

Referring to the background above, the researcher intends to uncover the potential sources of biodiversity, especially birds. Based on this, the research entitled "Identification of Bird Species in the Mount Muria Area, Kudus Regency, Central Java" is needed.

## Research Methods

This research employed the line transect method. In the line transect method, the observer walked along a predetermined transect line, and observations were made on both sides. The transect route passed was in the form of footpaths, river flows, coffee plantations, and *parijoto* plantations as far as  $\pm 3$  km.

The security was carried out at one location, namely in the Gunung Muria area, Kudus Regency, Central Java, in Colo Village. In the observation path, there is one observation path along  $\pm 3$  km. The observation was carried out for three days in the morning at 06.00-11.00 WIB and in the afternoon at 13.00-17.00 WIB, by repeating

three times. The process of repetition activities was carried out three times in three weeks. Bird data taken during observation was the types of birds and habitat conditions around the observation path.

The researcher walked down the graduation path slowly and stopped when he saw or heard the sound of birds, then took notes in written form and pictures (photos) for a period of  $\pm$  20 minutes. During the trip, the researchers also measured the travel distance and coordinates using GPS, while the habitat conditions (nesting places, feeding, and bird activities) were carried out by direct observation in the field and direct interviews with resource persons.

The morphological and behavioral data of birds obtained were analyzed descriptively, namely by describing based on the identification book MacKinnon et al. (2010)

### Research Results and Discussion

Based on the results of the identification of bird species in the Gunung Muria area, Kudus Regency in March-April 2019, research data obtained were as many as 22 species belonging to 21 genera and 18 families and divided into 6 different orders, including: Forest Sepah (*Pericrocotus flammeus*), Jingjing Batu (*Hemipus hirundinaceus*), Munguk Velvet (*Sitta frontalis*), Merbah Corok-corok (*Pycnonotus simplex*), Swallow Linci/Sriti (*Collocalia linchi*), Takur Tenggeret (*Psilopogon australis*), Cucak Kutilang (*Pycnonotus aurigaster*), Kipasan Hill (*Rhipidura euryura*), Coconut Honey Bird (*Anthreptes malacensis*), Jungle Rainforest (*Eurylaimus javanicus*), Shrub Bush (*Malacocincla sepiarium*), Red Back Shrimp (*Ceyx rufidorsa*), Bido Snake Eagle (*Spilornis*

*cheela*), Striped Kite (*Cecropis striolata*), Banana Cinenen (*Orthotomus sutorius*), Fire-Flower Chili (*Dicaeum trigonostigma*), Rainbow Pentis (*Prionochilus percussus*), Flower lizard (*Zanclotomus javanicus*), Javanese cuckoo (*Halc yon cyanoventris*), Twilight Cricket (*Merops leschenaulti*), Pancawarna Paok (*Hydrornis guajanus*) and Birah Kadalan (*Phaenicophaeus curvirostris*).

The data in table 2 shows that at observation station I, 14 bird species were observed, with six birds not observed at other stations. The birds that can only be observed at this Station are birds with low shrub and tree habitats, such as *Dicaeum trigonostigma* and *Ceyx rufidorsa*.

The birds observed at observation station I were birds with habitats near water sources or living in environments that tended to be humid outside the forest, such as *Ceyx rufidorsa*, *Dicaeum trigonostigma*, *Prionochilus percussus*, *Hydrornis guajanus* (Andira et al., 2014).

Observations at observation station II succeeded in observing 15 species of birds, with six species of birds only being observed at station II and three species of birds also being observed at Station I. The birds observed at station II were birds with forest or plantation habitats. with an open environment, such as *Pericrocotus flammeus*, *Pycnonotus simplex*, *Hemipus hirundinaceus*, *Sitta frontalis* and *Merops leschenaultia* (Rana, 2018., Alghifari, 2021).

Observations at observation station III managed to observe seven species of birds. One bird species can only be observed at Station III, while five can be observed in all stations. One bird species only observed at Station III is *Eurylaimus javanicus*. The following table presents a description of each species:

**Table 1**  
*Observations at observation station III*

<b>Order</b>	<b>Family</b>	<b>Genus</b>	<b>Species</b>
	<i>Campephagidae</i>	<i>Pericrocotus</i>	<i>Pericrocotus flammeus</i>
	<i>Vangidae</i>	<i>Hemipus</i>	<i>Hemipus hirundinaceus</i>
	<i>Sittidae</i>	<i>Sitta</i>	<i>Sitta frontalis</i>
	<i>Pycnonotidae</i>	<i>Pycnonotus</i>	<i>Pycnonotus simplex</i>
	<i>Rhipiduridae</i>	<i>Rhipidura</i>	<i>Rhipidura euryura</i>
	<i>Nectariniidae</i>	<i>Anthreptes</i>	<i>Anthreptes malacensis</i>
<i>Passeriformes</i>	<i>Eurylaimidae</i>	<i>Eurylaimus</i>	<i>Eurylaimus javanicus</i>
	<i>Pellorneidae</i>	<i>Malacocincla</i>	<i>Malacocincla sepiarium</i>
	<i>Hirundinidae</i>	<u><i>Cecropis</i></u>	<i>Cecropis striolata</i>
	<i>Cisticolidae</i>	<i>Orthotomus</i>	<i>Orthotomus sutorius</i>
	<i>Dicaeidae</i>	<i>Dicaeum</i>	<i>Dicaeum trigonostigma</i>
	<i>Pittidae</i>	<i>Prionochilus</i>	<i>Prionochilus percussus</i>
	<i>Pittidae</i>	<i>Hydrornis</i>	<i>Hydrornis guajanus</i>
	<i>Alcedinidae</i>	<i>Ceyx</i>	<i>Ceyx rufidorsa</i>
<i>Coraciiformes</i>	<i>Alcedinidae</i>	<i>Halcyon</i>	<i>Halcyon cyanoventris</i>
	<i>Meropidae</i>	<i>Merops</i>	<i>Merops leschenaultia</i>
<i>Piciformes</i>	<i>Megalaimidae</i>	<i>Psilopogon</i>	<i>Psilopogon australis</i>
<i>Caprimulgiformes</i>	<i>Apodidae</i>	<i>Collocalia</i>	<i>Collocalia linchi</i>
<i>Accipitriformes</i>	<i>Accipitridae</i>	<i>Spilornis</i>	<i>Spilornis cheela</i>
		<i>Zanclostomus</i>	<i>Zanclostomus javanicus</i>
<i>Cuculiformes</i>	<i>Cuculidae</i>	<i>Phaenicophaeus</i>	<i>Phaenicophaeus curvirostris</i>

The analysis of the species evenness index in table 1 shows that the species evenness index between habitats indicates that each observation station has an evenness index value in the high and medium categories. Adelina et al. (2016) wrote that if the value of the evenness index is high, this is a sign that the bird population

is evenly distributed and no one species dominates the area.

Research by Kartono (2015) stated that the species evenness index could show the diversity of species in a habitat. Because the species diversity index at each Station tended to be high, it could be concluded that the bird species at each observation station were less diverse.

**Table 2**  
*Observations at observation station IV*

Num	Location	Local Name	Scientific Name
1	1	Jingjing batu	<i>Hemipus hirudenacius</i>
2		Pelanduk semak	<i>Malacocinda sepiarium</i>
3		Udang punggung merah	<i>Ceyx rufidorsa</i>
4		Elang Ular Bido	<i>Spilornis cheela</i>
5		Layang-layang Loreng	<i>Cecropis striolata</i>
6		Walet Linci/Sriti	<i>Collocalia linchi</i>
7		Takur Tenggeret	<i>Psilopogon australis</i>
8		Cucak Kutilang	<i>Pycnonotus aurigaster</i>
9		Cabai Bunga-Api	<i>Dicaeum trigonostigma</i>
10		Pentis Pelangi	<i>Prionochilus percussus</i>
11		Kadalan Kembang	<i>Zanclostomus javanicus</i>
12		Cekakak Jawa	<i>Halcyon cyanoventris</i>
13		Paok Pancawarna	<i>Hydrornis guajanus</i>
14		Kadalan Birah	<i>Phaenicophaeus curvirostris</i>
1	2	Sepah Hutan	<i>Pericrocotus flammeus</i>
2		Merbah Corok-corok	<i>Pycnonotus simplex</i>
3		Jingjing Batu	<i>Hemipus hirundinaceus</i>
4		Munguk Beledu	<i>Sitta frontalis</i>
5		Elang Ular Bido	<i>Spilornis cheela</i>
6		Layang-layang Loreng	<i>Cecropis striolata</i>
7		Cinenen Pisang	<i>Orthotomus sutorius</i>
8		Walet Linci/Sriti	<i>Collocalia linchi</i>
9		Takur Tenggeret	<i>Psilopogon australis</i>
10		Cucak Kutilang	<i>Pycnonotus aurigaster</i>
11		Kipasan Bukit	<i>Rhipidura euryura</i>
12		Burung Madu Kelapa	<i>Anthreptes malacensis</i>
13		Kadalan Kembang	<i>Zanclostomus javanicus</i>
14		Kirik-kirik Senja	<i>Merops leschenaulti</i>
15		Kadalan Birah	<i>Phaenicophaeus curvirostris</i>
1	3	Elang Ular Bido	<i>Spilornis cheela</i>
2		Layang-layang Loreng	<i>Cecropis striolata</i>
3		Walet Linci/Sriti	<i>Collocalia linchi</i>
4		Cinenen Pisang	<i>Orthotomus sutorius</i>
5		Cucak Kutilang	<i>Pycnonotus aurigaster</i>
6		Kadalan Birah	<i>Phaenicophaeus curvirostris</i>
7		Sempur Hujan Rimba	<i>Eurylaimus javanicus</i>

Research conducted by Aronson et al, (2014) stated that the diversity of plant species in an area could affect the diversity of bird species in the area. The lack of diversity of bird species in Mount Muria could be indicated by the lack of plant diversity in this area. This was because, at the three observation stations, the area was a plantation (coffee plantations and parijoto gardens at stations II and III), so they tended to have similar plants.

Gregory and Strien (2010) wrote that birds could indicate an area's environmental health level. This was because birds had an essential role in the food chain and were sensitive to environmental changes, such as declining water quality, plant species, air temperature, and other environmental conditions.

Biotic factors, especially vegetation types, and abiotic factors, especially temperature and altitude, are two essential factors that affect the diversity of birds in an area. In winter, birds will move to the inner side of the forest to get warmer air temperatures at night. Meanwhile, in spring, the breeding season, some birds will move to the outer side of the forest with lower air temperatures during the day (Seoane et al, 2013).

Table 2 shows that each observation station's air temperature and altitude varied. The average air temperature at Station I is 31 0C. Meanwhile, the air temperature at stations II and III is cooler, namely 27 0C and 25 0C. In addition to varying air temperatures, the altitude at each Station also varies. From Station I to Station III, the height of the place is getting higher.

Branco et al. (2015) wrote that there is a correlation between abiotic variables in air temperature and the diversity of bird species in a place. The diversity of bird species in the waters does not correlate with the abiotic variables of wind speed and current speed.

The number of bird species that can be observed at each Station also varies. In Station I, 14 bird species can be observed, and at Station II, there are 15 bird species. Meanwhile, at Station

III, there are seven species of birds. Although the air temperature and altitude at each observation station are different, five bird species can be found at all stations, including *Spilornis cheela*, *Cecropis striolata*, *Collocalia linchi*, *Pycnonotus aurigaster*, *Phaenicophaeus curvirostris*. In addition, 3 species can be found at Station I and Station II, namely *Hemipus hirudenacius*, *Psilopogon australis*, *Zanclotomus javanicus*. This shows that other factors influence the presence of bird species in a place besides air temperature and altitude.

Karr (1976) wrote that several factors influence the diversity of bird species in an area, including microhabitat conditions, food availability, vegetation complexity, rainfall, and air temperature.

## Conclusion

In Muria, Bird identified 22 species and 18 families, including Campephagidae, Vangidae, Sittidae, Pycnonotidae, Rhipiduridae, Nectariniidae, Eurylaimidae, Pellorneidae, Hirundinidae, Cisticolidae, Dicaeidae, Pittidae, Alcedinidae, Meropidae, Megalaimidae, Apodidae, Accipitridae, and Cuculidae.

Biotic and abiotic components strongly influence habitat conditions to support the survival and diversity of birds on Mount Muria. Homogeneous plants dominate the bird habitat condition on Mount Muria due to the conversion of forest functions as coffee plantations and parijoto gardens. The station I is dominated by shrubs, low trees, and waterfalls, and station II is dominated by coffee plants, shrubs, and low tree plants. Parijoto plants and various trees dominate station III. At Station III, a small river flows at the bottom of the Parijoto garden.

## Acknowledgment

We want to express our gratitude to those who have assisted in the implementation of this research, especially to institutions of UIN Walisongo Semarang, who have helped with research costs. Hopefully, this research will be helpful for all parties and the progress of science.

## References

- Adelina, M., Harianto, S.P. and Nurcahyani, N., 2016. Keanekaragaman jenis burung di hutan rakyat pekon kelungu kecamatan kotaagung kabupaten tanggamus. *Jurnal Sylva Lestari*, 4(2), pp.51-60.
- Andira, A., Nurdin, J. and Novarino, W., 2014. Struktur Komunitas Burung Pada Tiga Tipe Habitat di Kampus Universitas Andalas, Padang. *Jurnal Biologi UNAND*, 3(3).
- Alghifari, M.K., Mardiasuti, A. and Mulyani, Y.A., 2021, December. Patch size does not always indicate bird species diversity: case in peri-urban tropical habitat in Riau, Indonesia. In *IOP Conference Series: Earth and Environmental Science* (Vol. 948, No. 1, p. 012028). IOP Publishing.
- Aronson, M.F., La Sorte, F.A., Nilon, C.H., Katti, M., Goddard, M.A., Lepczyk, C.A., Warren, P.S., Williams, N.S., Cilliers, S., Clarkson, B. and Dobbs, C., 2014. A global analysis of the impacts of urbanization on bird and plant diversity reveals key anthropogenic drivers. *Proceedings of the royal society B: biological sciences*, 281(1780), p.20133330.
- Chrystanto, Siti Asiyatun, and R Margareta. 2014. "Keanekaragaman Jenis Avifauna Di Cagar Alam Keling Ii/Iii Kabupaten Jepara Jawa Tengah." *Indonesian Journal of Conservation* 3(1): 1-6.
- Kartono, A.P., 2015. Keragaman dan kelimpahan mamalia di perkebunan sawit PT Sukses Tani Nusasubur Kalimantan Timur. *Media Konservasi*, 20(2).
- Karmelitha, Y., Dewantara, I. and Yani, A., Keanekaragaman Jenis Burung Diurnal Di Kawasan Taman Wisata Alam Bukit Kelam Kecamatan Kelam Permai Kabupaten Sintang Kalimantan Barat. *Jurnal Hutan Lestari*, 9(1), Pp.145-153
- MacKinnon, John, Karen Phillipps, and Bas van Balen. 2010. *Lipi - Seri Panduan Lapangan Burung- Burung Di Sumatera, Jawa, Bali Dan Kalimantan (Termasuk Sabah, Sarawak Dan Brunei Darussalam)*. Bogor: Burung Indonesia.
- Pranoto, Eko Achmad, Roro Eko Susetyorini, And Wahyu Prihanta. 2015. "Identifikasi Burung Di Kepulauan Kai Maluku Tenggara." (2010): 762-73.
- Rana, S., 2018. Nesting and Incubation Behaviour in Tailor bird (*Orthotomus sutorius*) in Urban Areas of Haryana. *International Journal of BioSciences & Technology*, 11(1).
- Sari, Dewi Puspita, Puguh Karyanto, and Muzayyinah. 2015. "Studi Avifauna Gunung Lawu Berdasarkan Distribusi Altitudinal." *Jurnal Ilmiah Biologi* 3(2): 81-86.
- Seputarkudus.com diakses pada 09 Januari 2019 pukul 06:40 WIB
- Widjanarko, Mochamad, and Dian Wismar'ain. 2011. "Identifikasi Sosial Potensi Ekowisata Berbasis Peran Masyarakat Lokal." *Jurnal Psikologi Undip* 9(1): 33-39.

