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Five-year survey of bird species inventory and distribution in Sanggabuana Mountains, West Java, Indonesia

BERNARDINUS T. WAHYU WIRYANTA[1,2,♥], FENI SUGIARTI[2], ASYSYAMS ANNISA[2], SITTI BALQIS KHADIJAH[2], UCE SUKENDAR[2], YUNUS TRIYONGGO[3], DELFANIA MATASIK[3]

[1]Founder, Sanggabuana Conservation Foundation. Cintalaksana, Tegalwaru, Karawang 41362, West Java, Indonesia. Tel./fax.: +62-887-1471925, ♥email: konservasisanggabuana@gmail.com

[2]Division of Species and Genetic Biodiversity Conservation, Sanggabuana Conservation Foundation. Cintalaksana, Tegalwaru, Karawang 41362, West Java, Indonesia

[3]PT Bridgestone Tire Indonesia. Suryacipta Industrial Estate, Kutanegara, Ciampel, Karawang 41361, West Java, Indonesia

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Abstract. *Wiryanta BTW, Sugiarti F, Annisa A, Khadijah SB, Sukendar U, Triyonggo Y, Matasik D. 2026. Five-year survey of bird species inventory and distribution in Sanggabuana Mountains, West Java, Indonesia. Biodiversitas 27 (6): d270605. https://doi.org/10.13057/biodiv/d270605*. The Sanggabuana Mountains in West Java are a tropical forest area of substantial ecological importance, yet information on bird diversity in this region remains limited. This study aims to document bird species diversity, taxonomic composition, feeding guild proportions, spatial distribution patterns, and the conservation status of birds as a basis for conservation planning in the Sanggabuana Mountains. This study presents one of the first baseline inventories of bird species conducted during the 2021-2025 period using a combination of line transect and point count methods. In total, 176 bird species were recorded, representing 57 families and 18 orders, with the order Passeriformes being the dominant group. A diversity index value of 1.84 indicates a moderate level of taxonomic composition. Additionally, the presence of four migratory bird species highlights the importance of this area as a tropical forest habitat and a regional migration stopover site. Based on spatial analysis using the average nearest neighbor (ANN) method, species distribution patterns tend to be clustered, although some feeding guilds exhibit random distribution patterns. A total of 13 species are classified as threatened according to the International Union for Conservation of Nature (IUCN), comprising three critically endangered, five endangered, and five vulnerable species. Based on regional distribution data, 98.29% of the recorded species are known to occur in Java. These results provide relevant basic ecological information to support long-term biodiversity monitoring efforts and serve as a foundation for developing conservation strategies in the Sanggabuana Mountains.

Keywords: Baseline data, bird inventory, conservation planning, forest bird communities, tropical montane forest

INTRODUCTION

Indonesia constitutes one of the countries possessing tropical forest ecosystems that play a crucial role in maintaining global bird diversity. Indonesia is home to 1,746 bird species, including 386 endemic species, and ranks fourth among the countries with the highest bird diversity in the world (Widjaja et al. 2015; Avibase n.d). This diversity is a vital component closely linked to the existence of tropical forest ecosystems. However, many tropical forested areas across various regions of Indonesia, including Java Island, are increasingly impacted by habitat degradation due to land-use changes and infrastructure development (Ibrahim et al. 2018). Forest ecosystems on Java play a vital role in supporting species groups that depend on forest habitats with heterogeneous vegetation structures.

Birds play various ecological roles in forest ecosystems, one of which is through their feeding patterns, which help maintain ecosystem balance (Mosisa 2023). Several groups of bird species in Indonesia, particularly birds of prey and insectivores, are known to be highly sensitive and vulnerable to habitat changes (Vitorino et al. 2022). Pressure from habitat changes is increasingly intense in ecological areas that have not yet been designated as protected areas. One approach to safeguarding these areas from land-use changes, deforestation, agricultural expansion, and habitat fragmentation is to strengthen conservation-based management and protection of these areas (Wiryanta 2024). However, the process of designating an area as a protected zone is time-consuming and relies on various biodiversity inventory data, including bird inventories, which serve as a basis for ecological monitoring and conservation management.

Previous bird inventories have been conducted in several protected mountainous areas on the island of Java, documenting 242 species in Gunung Halimun Salak National Park and 289 species in Gunung Gede Pangrango National Park based on repeated surveys and long-term observations (Avibase n.d). Repeated surveys across different seasons and habitat types are crucial in tropical mountain ecosystems because bird detectability and species occurrence can vary over time and across habitats (Bibby et al. 2000; Scanes 2018). Long-term inventories also increase the likelihood of recording rare, seasonal, migratory, and habitat-specialist species that might go undetected during short-term surveys (Lindenmayer et al. 2010). However, the intensifying anthropogenic pressure recorded in 2014 has the potential to threaten areas critical for regional

biodiversity conservation (Ekawati et al. 2015). On the other hand, bird inventories on Java remain uneven, particularly information regarding functional composition, such as feeding guild structure and habitat-associated distribution patterns, remains limited in mountainous areas that lack protected area status and have limited scientific documentation and more evidence-based future conservation planning strategies.

The Sanggabuana Mountains in West Java, Indonesia, represent an ecologically important ecosystem, yet they remain inadequately documented. This area encompasses approximately 16,500 ha of lowland and lower montane forests, interspersed with agroforestry systems, secondary forests, plantation areas, and other human-modified habitats (Wiryanta 2024). Although it still possesses relatively extensive forest cover, information bird diversity patterns across heterogeneous mountainous area consisting of forest and human-modified areas remain insufficiently understood in this area remains limited, and no comprehensive long-term inventory has been conducted previously. The lack of a long-term baseline inventory limits the ability to assess future changes in bird communities amid ongoing habitat transformation. Therefore, the availability of comprehensive baseline data is essential for enhancing understanding of bird diversity patterns and supporting biodiversity monitoring in rapidly changing tropical regions. This inventory is one of the first long-term baseline inventories of bird diversity in the Sanggabuana Mountains, West Java. This study aims to document bird diversity, taxonomic composition, feeding guild proportions, spatial distribution patterns, and conservation status as basic ecological information to support conservation management, particularly to identify priority habitats for future long-term monitoring efforts.

MATERIALS AND METHODS

Study area

This study was conducted in the Sanggabuana Mountains region, West Java Province, Indonesia, located at coordinates 6°30′29″-6°37′26″S and 107°09′28″-107°19′36″E (Figure 1). The study area encompasses four regencies: Karawang, Purwakarta, Bogor, and Cianjur. The forest area in the Sanggabuana Mountains is managed by Perum Perhutani's West Java and Banten Regional Division (Divre Janten). This forest area is divided into three Forest Management Units (KPH): KPH Purwakarta, KPH Bogor, and KPH Cianjur.

The Sanggabuana Mountains, managed by Perum Perhutani and the Indonesian National Army, rise to approximately 1,300 m above sea level and receive about 2,500 mm of annual rainfall, with temperatures ranging from 15-19°C (minimum) to 29-32.8°C (maximum). The rainy season extends from October to March, while the dry season occurs between April and September. The landscape is dominated by lowland tropical rainforest and lower montane forest. Natural forest with canopy cover exceeding 70% occupies approximately 12,350 ha and remains relatively undisturbed, whereas about 4,150 ha consists of secondary forests, plantations, agricultural land, and fish ponds, reflecting varying degrees of human land-use modification.

Bird survey design

A five-year bird survey, conducted from January 2021 to December 2025 to account for seasonal and annual variations, uses a descriptive survey method to assess bird diversity in the Sanggabuana Mountains. The survey was conducted along forest trails and areas modified by humans throughout the study area. In total, the survey covered 307.2 km of transects over 1,043 days. The survey design consisted of 17 main routes within the forest area and one main route in an area outside the Sanggabuana Mountains (rice fields near the forest edge), supported by 174 additional transects surveyed concurrently; survey routes were selected based on considerations of accessibility and safety (Figure 1). These routes were selected purposively, not randomly based on field accessibility. All routes were revisited three times every six months on different days to minimize temporal bias, resulting in approximately 108 observation sessions annually.

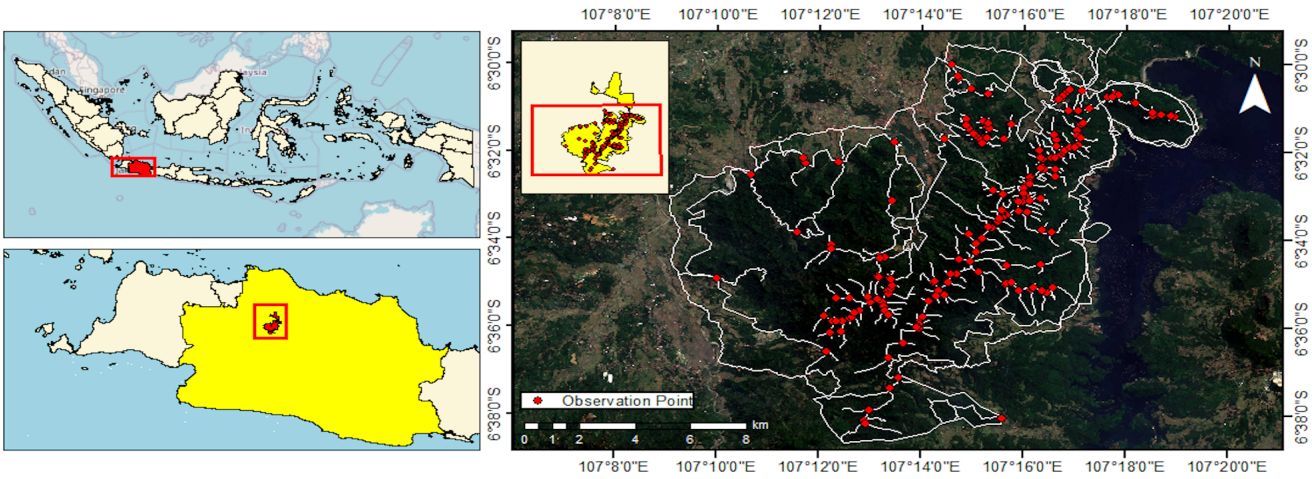

Figure 1. Distribution of bird survey routes and additional transects in the Sanggabuana Mountains, West Java, Indonesia

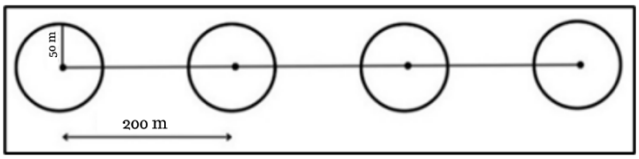

Figure 2. Illustration of the combined line transect and point count method

The bird survey was conducted using a combination of line transect and count point methods (Figure 2), following a commonly used biodiversity inventory protocol to maximize the chances of detecting species along the route. Along the transect, fixed observation points were established at intervals of approximately 200 m. Observations at each point were conducted within a radius of approximately 50 m for a duration of 15 minutes. All bird species detected visually and by sound were recorded during the observation period. Birds detected outside the observation point radius were recorded as supplementary observation data. The sounds of birds were further verified using the Merlin Bird ID application and reference recordings from the Xeno-canto database when necessary. Birds detected outside the observation point radius were recorded as supplementary observation data. To minimize potential bias from repeated detections of the same individuals, species records were based on presence data, in which repeated observations of the same species within a survey point were counted only once during each observation session.

The survey was conducted during four time periods: morning (5:00-9:00 a.m.), afternoon (10:00 a.m.-3:00 p.m.), late afternoon (4:00-6:00 p.m.), and night (7:00-9:00 p.m.). The night survey was designed to observe nocturnal bird groups, such as owls, frogmouths, and nightjars, through visual observation and sound detection. Each observation session followed a predetermined route, with recorded and documented bird species detected. The binoculars used for the survey were Nikon Aculon 40x60. The cameras used included a Nikon D3X with a Nikkor 80-400 mm f/5.6 lens, a Nikon D4 with a Nikkor 200-500 mm f/6.3 lens, and a Nikon Coolpix P1000.

Data analysis

Bird identification and taxonomic composition

Bird species identification was conducted based on morphological characteristics and vocalizations. The identification process followed standard regional field guides and was supported by digital references from the Cornell Lab of Ornithology, including eBird and Merlin Bird ID. Scientific names and taxonomic classifications followed the IOC World Bird List (version 15.2). The collected data were analyzed to determine the number of orders, the number of families, and the most dominant families, thereby elucidating the community structure and taxonomic composition. The family Accipitridae was further classified into resident and migratory groups based on their regional migration status. The migratory routes of raptor species recorded in the Sanggabuana Mountains were mapped using QGIS software. The migration-route information collected from secondary literature data compiled from Bildstein (2018), was not collected through direct tracking during this survey. Taxonomic composition diversity was calculated using the Shannon-Wiener formula and categorized as low ($H'<1$), moderate ($1 \leq H' \leq 3$), and high ($H'>3$) (Magnussen and Boyle 1995).

$$P_i = \frac{number\ of\ species\ per\ order}{total\ number\ of\ species}$$

$$H' = -\Sigma\, P_i \ln P_i$$

Analysis of bird feeding guilds

Bird feeding guilds were classified into five categories (omnivores, insectivores, carnivores, nectarivores, and frugivores) based on dietary ecology information available from the Cornell Lab of Ornithology and various regional ornithological references. Species with mixed diets were grouped based on the most dominant food type reported in the literature. The data were analyzed to determine the number of species in each feeding guild and the percentage of dominant feeding guilds to interpret forest characteristics, fruit vegetation, and food chains. Information on fruit vegetation was obtained from existing Sanggabuana Conservation Foundation metadata compiled prior to this study. These interpretations were used to identify variations in species occurrence across the study area as well as their habitat preferences. The relative proportions of species within each feeding guild were analyzed using several categories: dominant (if the value is >5%), subdominant (if the value is 2-5%), and nondominant (if the value is <5%). These proportion relatives were calculated using the following formula (Cox 1967).

$$PR_{guild} = \frac{number\ of\ species\ wihin\ a\ specific\ guild}{total\ number\ of\ spcies} \times 100\%$$

The location of each bird species sighting was recorded as coordinate data and analyzed spatially using ArcGIS software. The Average Nearest Neighbor (ANN) analysis was used to measure the degree of regularity and clustering in the distribution of each guild in ArcGIS via the Spatial Statistics Tools → Analyzing Patterns → ANN menu. This analysis was used to identify the spatial distribution patterns of each guild: whether they were clustered (if $R<1$), random (if $R=1$), or scattered (if $R>1$). The parameters generated include the Nearest Neighbor Ratio (R), z-score, and p-value to measure the significance level of the resulting spatial distribution patterns. The analysis was based on species observation locations and did not incorporate abundance data.

Proportions of conservation status and biogeographic distribution of birds

Species conservation status refers to the International Union for Conservation of Nature (IUCN) Red List and the Convention on International Trade in Endangered Species (CITES) list. Information regarding the biogeographic distribution of species is obtained from BirdLife International DataZone. The data obtained is analyzed by calculating the number of threatened species and the percentage of

threatened species to determine habitat quality indicators and the basis for conservation recommendations.

RESULTS AND DISCUSSION

Identification and taxonomic composition of birds

A total of 176 bird species were identified, representing 18 orders and 57 families recorded during the study period (Table 1). The order Passeriformes is the most dominant, comprising 100 species across 36 families. Other relatively diverse orders include Piciformes and Accipitriformes (11 species each), Cuculiformes (10 species), and Columbiformes (9 species), while other orders are represented by fewer than 9 species each. The overall taxonomic composition diversity index of 1.78 indicates a moderate level of diversity based on the distribution of species counts across orders.

The number of bird species found in the Sanggabuana Mountains area, indicates a fairly rich species composition. The 176 recorded species represent 34.71% of the total bird species in the Java-Bali region (176 out of 507, according to Sukmantoro et al. 2007), as well as approximately 10.08% of Indonesia's total avifauna (176 out of 1,746, according to Avibase n.d). This proportion indicates that this mountainous region makes a significant contribution to the representation of bird diversity at the regional level, particularly in the Java-Bali region. Nevertheless, taxonomic diversity at the meso-level does not fully reflect the ecological diversity of bird communities because it is based solely on species richness without considering individual abundance. The higher composition diversity of the order Passeriformes compared to other orders reflects a general pattern also found globally. This group of birds is known for its high adaptability to complex environments (Ricklefs 2012; Aryanti et al. 2021).

Furthermore, the presence of forest-dependent species indicates that the Sanggabuana Mountains still retain forested habitat characteristics, despite surrounding areas facing pressure from land-use changes. This suggests that parts of the region remain capable of providing the resources and habitat structures necessary to support the survival of various tropical forest bird communities. These findings are relevant to conservation because the Sanggabuana Mountains region still supports the presence of several taxonomic groups of high conservation value. The presence of certain taxonomic groups, particularly raptors, is linked to the availability of resources that are still preserved within the forested areas (Mosisa 2023). Some of the recorded species include members of the Accipitridae family (Javan hawk-eagle), the Corvidae (Javan green magpie), and the Muscicapidae (Javan blue flycatcher).

In total, 17 species (9.66%) were identified as birds of prey belonging to four families: Accipitridae, Falconidae, Strigidae, and Tytonidae (Table 2). The Accipitridae family had the highest number of species, with 11 species. Thirteen of the recorded species are resident species, including the endemic Javan hawk-eagle (Figure 5.F) of the Accipitridae family, which is recognized as a keystone species in the conservation of Javanese forests (Mahananda et al. 2024). The presence of the Javan hawk-eagle indicates that the Sanggabuana Mountains region still provides habitat and resources for top-level predators within the forest ecosystem and serves as an indicator of ecological condition (O'Bryan et al. 2022). As a top predator, this species plays a vital role in maintaining the balance of the tropical forest ecosystem's structure.

Table 1. Taxonomic species composition recorded in the Sanggabuana Mountains, West Java, Indonesia

Ordo	Number of families	Number of species	Percentage of total number	Taxonomic composition diversity index
Passeriformes	36	100	56.82%	0.3212
Piciformes	2	11	6.25%	0.1733
Accipitriformes	1	11	6.25%	0.1733
Cuculiformes	1	10	5.68%	0.1629
Columbiformes	1	9	5.11%	0.1520
Coraciiformes	1	7	3.98%	0.1283
Strigiformes	2	5	2.84%	0.1012
Charadriiformes	2	3	1.70%	0.0694
Galliformes	1	3	1.70%	0.0694
Bucerotiformes	1	3	1.70%	0.0694
Caprimulgiformes	2	2	1.14%	0.0509
Apodiformes	1	2	1.14%	0.0509
Falconiformes	1	2	1.14%	0.0509
Gruiformes	1	2	1.14%	0.0509
Podargiformes	1	2	1.14%	0.0509
Trogoniformes	1	2	1.14%	0.0509
Pelecaniformes	1	1	0.57%	0.0294
Psittaciformes	1	1	0.57%	0.0294
Total	57	176	100%	1.7844

Migratory species were observed during migration periods or outside the breeding season in specific seasons, comprising four species recorded during the study period. The presence of migratory birds in the Sanggabuana Mountains during the first week to mid-week of October based on opportunistic photographic records (Figure 5.G and 5.H). This period coincides with autumn (September-November), when most of these birds undertake long-distance migrations from their breeding grounds in temperate regions to tropical areas to spend the winter (Min et al. 2021). The presence of four migratory bird species (the short-toed snake eagle, Japanese sparrowhawk, Chinese sparrowhawk, and crested honey buzzard) indicates that the Sanggabuana Mountains serve as a stopover site and temporary habitat within the regional migration network (Figure 3).

The presence of the Japanese and Chinese sparrowhawks is linked to the East Asia-Australia migration route. Both species are forest-dwelling raptors that tend to choose migration routes based on food availability (Figure 3.B) (Lorsunyaluck et al. 2008; Min et al. 2021). Additionally, the presence of the short-toed snake eagle indicates a broader migration pattern extending as far as Africa and South Asia (Figure 3.C). However, the presence of this species in the Sanggabuana Mountains cannot be directly interpreted as a major part of its migration route. According to Rhamadini et al. (2025), this finding is likely related to the species' population originating from East Bali (Figure 3.D), based on distribution records in East Java and Bali.

Meanwhile, the crested honey buzzard is also known to migrate along the East Asia-Australasia Flyway, but it splits into two migratory groups with different destinations: one heading to Southeast Asia and the other to the Indonesian archipelago (Agostini et al. 2012). This species exhibits a distinctive migration pattern characterized by the ability to undertake extensive long-distance ocean crossings, including across the East China Sea. Adult birds generally migrate earlier than juveniles, which travel shorter distances and take more direct routes (Figure 3.B). This difference is influenced by the navigational experience of adult birds, whereas juveniles tend to take longer and more complex routes (Figure 3.A). Additionally, juveniles face a higher risk of migration failure during the return journey due to limited experience during the longer migration (Yamaguchi et al. 2008; Agostini et al. 2012).

Table 2. The composition and residency status of the birds of prey recorded in the study area

Common name	Species	Status
Short-toed snake eagle	*Circaetus gallicus*	Migratory
Japanese sparrowhawk	*Accipiter gularis*	Migratory
Chinese sparrowhawk	*Accipiter soloensis*	Migratory
Crested honey buzzard	*Pernis ptilorhynchus*	Migratory
Changeable hawk-eagle	*Nisaetus cirrhatus*	Resident
Black eagle	*Ictinaetus malaiensis*	Resident
Crested serpent eagle	*Spilornis cheela*	Resident
Black-winged kite	*Elanus caeruleus*	Resident
Javan hawk-eagle	*Nisaetus bartelsi*	Resident
Crested goshawk	*Accipiter trivirgatus*	Resident
Black-thighead falconet	*Microhierax fringillarius*	Resident
Spotted kestrel	*Falco moluccensis*	Resident
Sunda scops owl	*Otus lempiji*	Resident
Reddish scops owl	*Otus rufescens*	Resident
Brown wood owl	*Strix leptogrammica*	Resident
Brown boobook	*Ninox scutulata*	Resident
Barn owl	*Tyto alba*	Resident

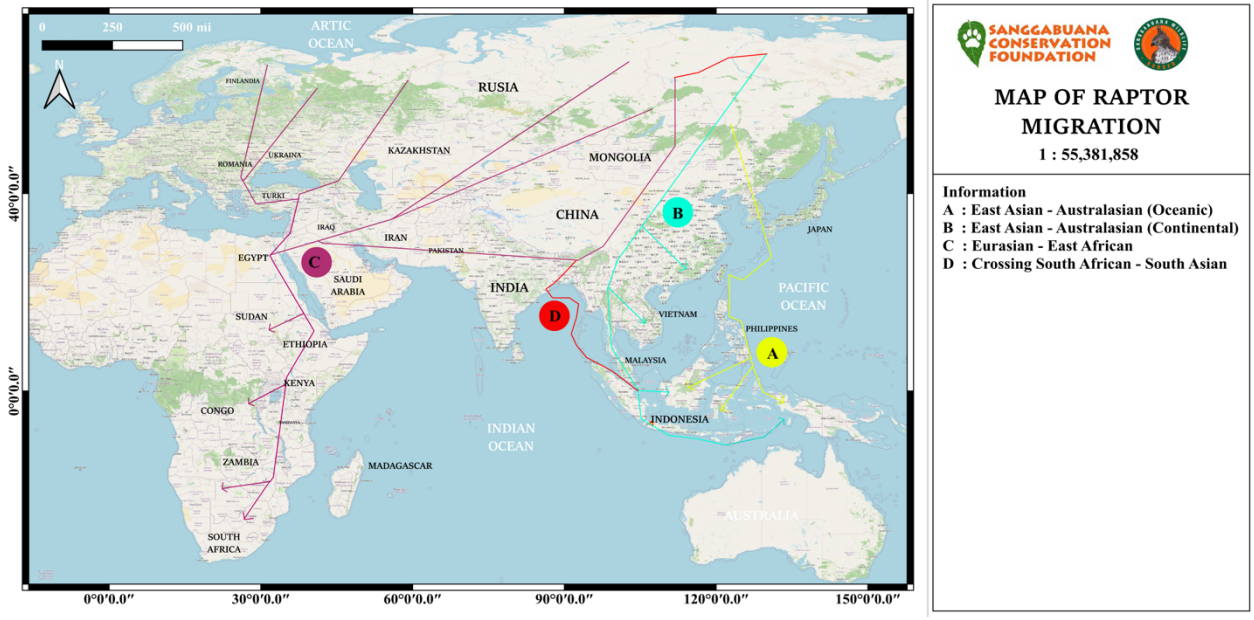

Figure 3. Inferred migratory routes based on published tracking studies (Bildstein 2018). A-B. East Asia-Australia migration routes, C. Migration route of most individuals of *Circaetus gallicus* (Short-toed snake eagle), D. Occasional migration route of *Circaetus gallicus* (Short-toed snake eagle). Base map source: Google Satellite Map (2025), accessed via QGIS 3.28

Discovery of a new species on Java

One of the key findings of this study was the record of a blue-winged pitta in the Sanggabuana Mountains on November 1st, 2022, based on documentation from local residents who found the bird dead after it had collided with a window (Figure 4). This species is categorized as having a 'least concern' conservation status; however, under Regulation No. P.106/MENLHK/SETJEN/KUM.1/12/2018, it is classified as a protected species, and hunting is prohibited (Ministry of Environment and Forestry of the Republic of Indonesia 2023; IUCN 2025). This species is a long-distance migratory bird that breeds on the mainland of Southeast Asia and migrates south during the winter to the Malay Peninsula, Sumatra, and Kalimantan (Yong et al. 2018). Previously, Java was not known as a winter stopover site for this species. However, Java's geographical position between Sumatra and the Lesser Sunda Islands makes it a potential stopover site during migration (Aminuddin et al. 2020). Therefore, this record can be considered a preliminary finding requiring further verification.

Figure 4. A close-up photo of a blue-winged pitta after it collided with a window on the summit of Mount Sanggabuana. Photo courtesy of the Sanggabuana Conservation Foundation (pers. comm. 2022)

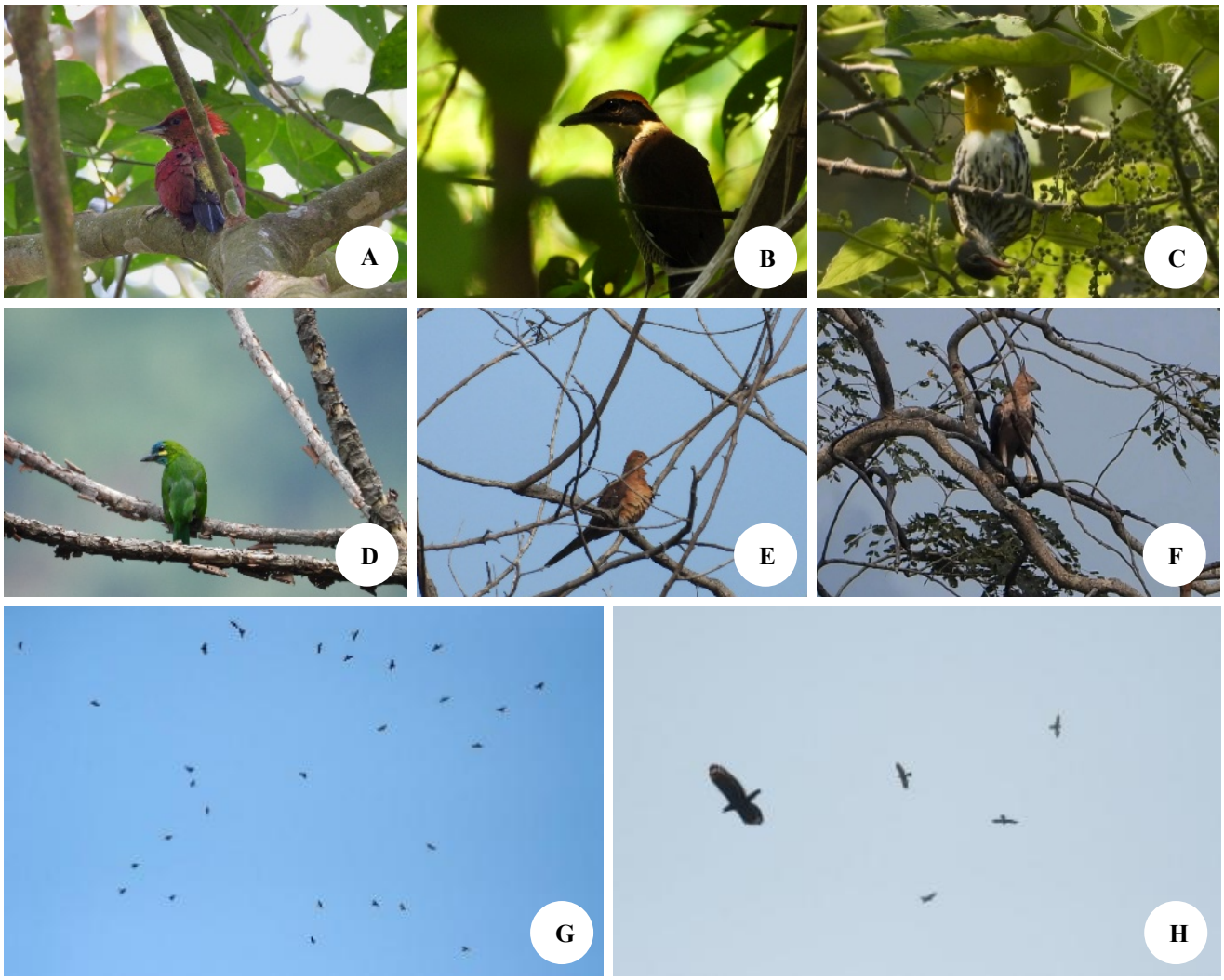

Figure 5. Representative bird species recorded in the Sanggabuana Mountains. A. Red woodpecker, B. Javan banded-pitta, C. Black napped oriole, D. Yellow-eared barbet, E. Barred cuckoo-dove, F. Javan hawk-eagle, G. A flock of Chinese sparrowhawk, H. A flock of crested honey buzzard. Source: Sanggabuana Conservation Foundation

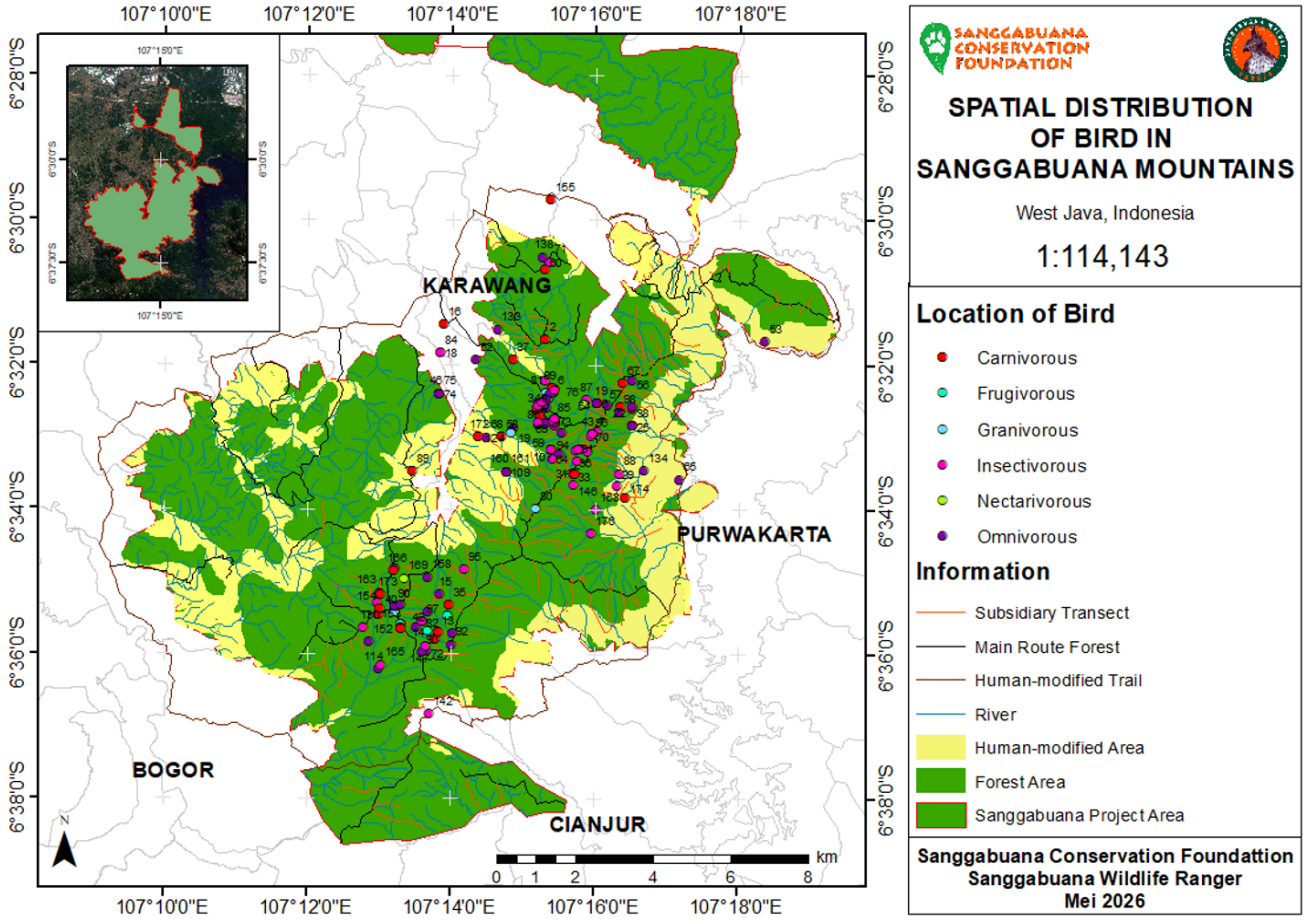

Figure 6. Distribution of bird feeding guilds in the Sanggabuana Mountains, West Java, Indonesia. Base map source: Google Satellite Map (2026) and SCF, accessed via ArcMap 10.8

Table 3. Threatened status of birds in the Sanggabuana Mountains, West Java, Indonesia. Status based on the IUCN Red List categories and the CITES Appendices

IUCN	English name	Scientific name	Families	Appendix	Distribution population			
					Sumt	K	J,B	NTe
CR	Javan blue-banded kingfisher	*Alcedo euryzona*	Alcedinidae	NL		K	J	
	Javan green magpie	*Cissa thalassina*	Corvidae	NL			J	
	Javan blue flycatcher	*Cyornis banyumas*	Muscicapidae	NL			J	
EN	Javan hawk-eagle	*Nisaetus bartelsi*	Accipitridae	II			J	
	Brown-cheeked bulbul	*Alophoixus bres*	Pycnonotidae	NL	Sumt	K	J,B	
	Greater green leafbird	*Chloropsis sonnerati*	Chloropseidae	NL	Sumt	K	J	
	Javan leafbird	*Chloropsis cochinchinensis*	Chloropseidae	NL	Sumt	K	J	
	Chestnut-capped thrush	*Geokichla interpres*	Turdidae	NL	Sumt	K	J	
VU	Rhinoceros hornbill	*Buceros rhinoceros*	Bucerotidae	II	Sumt	K	J	NTe
	Wreathed hornbill	*Rhyticeros undulatus*	Bucerotidae	II	Sumt	K	J	
	Javan cochoa	*Cochoa azurea*	Turdidae	NL			J	
	Ruby-throated bulbul	*Pycnonotus dispar*	Pycnonotidae	NL	Sumt	K	J	
	Javan trogon	*Apalharpactes reinwardtii*	Trogonidae	NL			J	

Note: VU: Vulnerable, EN: Endangered, CR: Critically Endangered, NL: Not Listed in the CITES Appendices, II: CITES, Sumt: Sumatra, K: Kalimantan, J,B: Java and Bali, NTe: Nusa Tenggara

Structure of the bird feeding guild

The omnivorous guild constituted the largest proportion, comprising 60 species or 34.10% of all recorded species in the Sanggabuana Mountains. The insectivorous guild ranks next with 50 species (28.41%), while the carnivorous guild comprises 43 species (24.42%). Meanwhile, the feeding guilds with smaller proportions consist of granivores (11

species; 6.25%), nectarivores (6 species; 3.41%), and frugivores (6 species; 3.41%) (Table S1).

The high relative proportion of omnivorous and insectivorous guild in the Sanggabuana Mountains indicates that this area has a complex habitat and relatively good food availability for the forest bird community. This proportion is consistent with findings frequently reported in studies of tropical forest bird communities. The insectivorous guild employs a fairly diverse range of foraging strategies, making this feeding guild particularly sensitive to habitat disturbances, especially within the genera babbler, flycatcher, and woodpecker (Sastranegara et al. 2020; Sherry 2021). Additionally, insectivorous birds, particularly the Apodidae family (swifts), generally exhibit high sighting frequencies in bird surveys due to their gregarious flight behavior and increased foraging activity in the morning and late afternoon when insect availability is higher (Gray et al. 2007; Levesque et al. 2023). In this study, the insectivorous guild is represented by the red woodpecker (Figure 5.A) and the Javan banded-pitta (Figure 5.B), while the omnivorous guild includes species such as the black-napped oriole (Figure 5.C) and the yellow-eared barbet (Figure 5.D).

The relatively high proportion of carnivores, or predators, may indicate that the trophic structure of the bird community in the Sanggabuana Mountains region remains relatively intact and is capable of supporting ecological interactions at higher trophic levels. Meanwhile, the small proportion of frugivorous and nectarivores guild suggests that this area still provides floral and fruiting plant resources that play a vital role in pollination and seed dispersal. In this study, the frugivorous guild is represented by species such as the barred cuckoo-dove (Figure 5.E). The presence of large frugivorous birds, such as hornbills, is notable because these species typically require extensive foraging ranges. This indicates that parts of the Sanggabuana Mountains ecosystem still retain habitat characteristics suitable for hornbills. Previous studies have reported that hornbills adjust their movement patterns according to variations in fruit availability, such as Ficus (Mariyappan et al. 2023). Previous studies have identified Ficus species as an important food source in tropical forests because their fruiting phenology provides a relatively continuous food supply during periods of general fruit scarcity (Liang et al. 2024).

Based on the results of spatial analysis using the Average Nearest Neighbor (ANN) method, clustering patterns were observed across all bird feeding guilds in the Sanggabuana Mountains, with species numbered according to the numbering in Table S1 (Figure 6). The R value obtained from the analysis was 0.36, with a z-score of -16.088916. An R value less than 1 indicates that the distribution of bird locations forms clusters, while the negative z-score and extremely small p-value indicate that the resulting pattern differs significantly from a random distribution pattern. Additionally, 7 species were found near the human-modified areas of the Sanggabuana Mountains and were included as supplementary data because they were found in rice fields near the forest edge (Figure 2).

The results for each guild reveal differences in distribution patterns that reflect variations in habitat use in this study area, driven by food availability and responses to environmental conditions. The distribution patterns of the carnivorous guild (R: 0.77), insectivorous guild (R: 0.63), and omnivorous guild (R: 0.61) fall under clustered distribution, which may indicate the presence of suitable habitat concentrations, while the distribution patterns of the frugivorous guild (R: 1.09), granivorous guild (R: 1.24), and nectarivores guild (R: 1.05) fall under random distribution, indicating a broader and more heterogeneous level of spatial utilization.

These clustered and random patterns are related to the vegetation composition that dominates the study area, including dominant tree families such as Moraceae, Fabaceae, Myrtaceae, Euphorbiaceae, Lauraceae, Fagaceae, and Poaceae, which include bamboo species. The occurrence of clustered patterns in the diets of insectivores utilizes diverse understory components, such as thickets, bamboo, and secondary vegetation that provide substrates for insect presence, such as leaves and bark. Such structural heterogeneity aligns with previous observations of insectivorous birds in structurally heterogeneous tropical forests (Sherry 2021). The presence of fruit-bearing plant genera such as *Ficus*, *Artocarpus*, *Syzygium*, *Litsea, Garcinia*, and *Castanopsis* provides abundant food sources for frugivorous and omnivorous birds, allowing these feeding guilds to utilize a more diverse range of habitats. Meanwhile, nectarivores birds are associated with flowering understory plant species, including *Etlingera*.

Conservation status

Differences between the IUCN and CITES classifications indicate that conservation challenges in Sanggabuana include habitat-related threats and pressure from the wildlife trade. Based on the total bird species recorded, 13 bird species of conservation concern have been identified, representing three IUCN threat categories: three species classified as Critically Endangered, five species as Endangered, and five species as Vulnerable (Table 3). Most bird species are not listed in CITES; however, three species (Javan hawk-eagle, *Rhinoceros* hornbill, and crowned hornbill) are listed in Table S1, indicating strict regulations on international trade.

Species with a Critically Endangered status have a very limited distribution, primarily in the regions of Kalimantan and Java. This situation is linked to the increasingly limited availability of habitat and the species' high sensitivity to habitat changes and disturbances, meaning that this group is not found in fragmented areas. This indicates low ecological tolerance, consistent with the high risk of extinction faced by these species. Meanwhile, species with an Endangered status have a broader distribution, as they are found in several forest areas across Sumatra, Kalimantan, Java, and Bali. Nevertheless, the presence of these species remains closely tied to forest habitats with relatively intact canopy structures, indicating a high dependence on the quality of such intact canopy structures. In contrast, species with a Vulnerable status are recorded to have a distribution extending as far as the Nusa Tenggara

region. This broader distribution reflects higher ecological flexibility and greater tolerance to variation in habitat conditions compared to the Critically Endangered (CR) and Endangered (EN) groups.

In conclusion, this survey recorded 176 bird species representing 18 orders and 57 families, with moderate diversity and a clustered distribution pattern. Based on relative proportions, omnivorous and insectivorous feeding guilds dominate the Sanggabuana Mountains region, indicating that this area possesses complex forest habitats capable of supporting the persistence of tropical forest bird communities, including endemic species of critical importance for conservation. This study provides one of the first exploratory baseline datasets on five years of bird diversity in the Sanggabuana Mountains and highlights the importance of the ecology of remaining forest habitats in supporting forest-associated bird species and their conservation. Continuous biodiversity monitoring and habitat assessment are essential for improving the understanding of long-term ecological changes in this unprotected mountainous area. These findings can contribute to conservation planning and habitat management in the Sanggabuana Mountains, which are under increasing pressure from land use in West Java, Indonesia.

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Table S1. Checklist of bird species at Sanggabuana Mountains, West Java, Indonesia

Order	Family	Species	English name	IUCN	Feeding guild	Habitat	Distribution population						
							Sumt	K	J/B	NT	M	P	Sul
Accipitriformes	Accipitridae	*Nisaetus bartelsi* (Stresemann, 1924)	Javan hawk-eagle	EN	Carnivorous	F(Core)			J				
		Nisaetus cirrhatus (Gmelin, 1788)	Changeable hawk-eagle	LC	Carnivorous	F(Core)	Sumt	K	J,B				
		Ictinaetus malaiensis (Temminck, 1822)	Black eagle	LC	Carnivorous	F(Core)	Sumt	K	J,B		M		Sul
		Spilornis cheela (Latham, 1790)	Crested serpent eagle	LC	Carnivorous	F(Core)	Sumt	K	J,B				
		Elanus caeruleus (Desfontaines, 1789)	Black-winged kite	LC	Carnivorous	F(Core)	Sumt	K	J,B	NTe		P	Sul
		Circaetus gallicus (Gmelin, 1788)	Short-toed snake-eagle	LC	Carnivorous	F(Core)			J,B	NTe			
		Accipiter gularis (Temminck & Schlegel, 1844)	Japanese sparrowhawk	LC	Carnivorous	F(Core)	Sumt	K	J,B	NTe			Sul
		Accipiter soloensis (Horsfield, 1821)	Chinese sparrowhawk	LC	Carnivorous	F(Core)	Sumt	K	J,B	NTe	M	P	Sul
		Accipiter trivirgatus (Temminck, 1824)	Crested goshawk	LC	Carnivorous	F(Core)	Sumt	K	J,B				
		Pernis ptilorhynchus (Temminck, 1821)	Crested honey buzzard	LC	Carnivorous	F(Core)	Sumt	K	J,B		M		
Apodiformes	Apodidae	*Apus nipalensis* (Hodgson, 1836)	House swift	LC	Insectivorous	F(Core)	Sumt	K	J,B	NTe			Sul
		Collocalia linchi (Horsfield & Moore, 1854)	Cave swiftlet	LC	Insectivorous	F(Core)			J				
Bucerotiformes	Bucerotidae	*Buceros rhinoceros* (Linnaeus, 1758)	Rhinoceros hornbill	VU	Omnivorous	F(Core)	Sumt	K	J				
		Rhyticeros undulatus (Shaw, 1811)	Wreathed hornbill	VU	Omnivorous	F(Core)	Sumt	K	J,B				
		Anthracoceros albirostris (Shaw, 1808)	Oriental pied hornbill	LC	Omnivorous	F(Core)	Sumt	K	J,B				
	Caprimulgidae	*Caprimulgus macrurus* (Horsfield, 1821)	Large-tailed nightjar	LC	Insectivorous	F(Edge)	Sumt	K	J,B	NTe	M	P	
Charadriiformes	Charadriidae	*Anarhynchus alexandrinus* (Linnaeus, 1758)	Kentish plover	LC	Omnivorous	Ag	Sumt	K	J,B				Sul
		Anarhynchus javanicus (Chasen, 1938)	Javan plover	LC	Omnivorous	F(Core)			J,B				
	Turnicidae	*Turnix suscitator* (Gmelin, 1789)	Barred buttonquail	LC	Omnivorous	F(Core)	Sumt		J,B	NTe			Sul
Cuculiformes	Cuculidae	*Centropus bengalensis* (Gmelin, 1788)	Lesser coucal	LC	Carnivorous	F(Core)	Sumt	K	J,B	NTe	M		Sul
		Centropus sinensis (Stephens, 1815)	Greater coucal	LC	Carnivorous	F(Core)	Sumt	K	J,B				
		Zanclostomus javanicus (Horsfield, 1821)	Red-billed malkoha	LC	Omnivorous	F(Core)	Sumt	K	J				
		Phaenicophaeus curvirostris (Shaw, 1810)	Chestnut-breasted malkoha	LC	Insectivorous	F(Core)	Sumt	K	J,B				
		Surniculus lugubris (Horsfield, 1821)	Square-tailed drongo-cuckoo	LC	Insectivorous	F(Core)	Sumt	K	J,B		M		Sul
		Cacomantis merulinus (Scopoli, 1786)	Plaintive cuckoo	LC	Omnivorous	F(Core)	Sumt	K	J,B				Sul
		Cacomantis sonneratii (Latham, 1790)	Banded bay cuckoo	LC	Omnivorous	F(Core)	Sumt	K	J,B				
		Cacomantis variolosus sepulcralis (S. Müller, 1843)	Sahul brush cuckoo	LC	Omnivorous	F(Core)	Sumt	K	J,B	NTe	M	P	Sul
		Cuculus micropterus (Gould, 1837)	India cuckoo	LC	Insectivorous	Ag	Sumt	K	J		M		
		Cuculus saturatus (Blyth, 1843)	Himalaya cuckoo	LC	Insectivorous	F(Core)	Sumt	K	J,B	NTe	M		Sul
Coraciiformes	Alcedinidae	*Halcyon coromanda* (Latham, 1790)	Ruddy kingfisher	LC	Insectivorous	F(Core)	Sumt	K	J		M		Sul
		Todiramphus chloris (Boddaert, 1783)	Collared kingfisher	LC	Insectivorous	F(Core)	Sumt	K	J,B	NTe	M	P	Sul
		Lacedo pulchella (Horsfield, 1821)	Banded kingfisher	LC	Insectivorous	F(Core)	Sumt	K	J				
		Halcyon cyanoventris (Vieillot, 1818)	Javan kingfisher	LC	Insectivorous	F(Core)			J,B				
		Alcedo euryzona (Temminck, 1830)	Javan blue-banded kingfisher	CR	Carnivorous	F(Core)	Sumt	K	J				
		Ceyx erithaca (Linnaeus, 1758)	Black-backed dwarf-kingfisher	NT	Carnivorous	F(Core)	Sumt	K	J				
		Alcedo meninting (Horsfield, 1821)	Blue-eared kingfisher	LC	Carnivorous	F(Core)	Sumt	K	J,B	NTe			Sul
Columbiformes	Columbidae	*Chalcophaps indica* (Linnaeus, 1758)	Common emerald dove	LC	Omnivorous	F(Core)	Sumt	K	J,B	NTe	M	P	Sul
		Macropygia ruficeps (Temminck, 1834)	Little cuckoo-dove	LC	Granivorous	F(Core)	Sumt	K	J,B	NTe			

		Macropygia unchall (Wagler, 1827)	Barred cuckoo-dove	LC	Granivorous	F(Core)	Sumt		J	NTe			
		Treron griseicauda (Bonaparte, 1855)	Grey-cheeked green pigeon	LC	Frugivorous	F(Core)			J,B		M		Sul
		Treron vernans (Linnaeus, 1771)	Pink-necked green pigeon	LC	Frugivorous	F(Core)	Sumt	K	J,B	NTe	M		Sul
		Ptilinopus melanospilus (Salvadori, 1875)	Black-naped fruit dove	LC	Frugivorous	F(Core)	Sumt		J,B	NTe	M		Sul
		Geopelia striata (Linnaeus, 1766)	Zebra dove	LC	Granivorous	F(Core)	Sumt	K	J,B	NTe	M	P	Sul
		Spilopelia chinensis (Scopoli, 1786)	Spotted dove	LC	Frugivorous	F(Core)	Sumt	K	J,B	NTe			
		Streptopelia bitorquata (Temminck, 1809)	Sunda collared dove	LC	Granivorous	F(Core)		K	J,B	NTe			
Falconiformes	Falconidae	*Microhierax fringillarius* (Drapiez, 1824)	Black-thighead falconet	LC	Carnivorous	F(Core)	Sumt	K	J,B				
		Falco moluccensis (Bonaparte, 1850)	Spotted kestrel	LC	Carnivorous	F(Core)			J,B	NTe	M		Sul
Galliformes	Phasianidae	*Gallus gallus* (Linnaeus, 1758)	Red junglefowl	LC	Omnivorous	F(Core)	Sumt		J,B				
		Gallus varius (Shaw, 1798)	Green junglefowl	LC	Omnivorous	Ag			J,B	NTe			
		Arborophila javanica (Gmelin, 1789)	Chestnut-bellied partridge	LC	Omnivorous	F(Core)			J				
Gruiformes	Rallidae	*Amaurornis phoenicurus* (Pennant, 1769)	White-breasted waterhen	LC	Omnivorous	F(Core)	Sumt	K	J,B	NTe	M		Sul
		Gallicrex cinerea (Gmelin, 1789)	Watercock	LC	Omnivorous	Ag	Sumt	K	J,B	NTe			Sul
Passeriformes	Aegithinidae	*Aegithina tiphia* (Linnaeus, 1758)	Common lora	LC	Omnivorous	F(Core)	Sumt	K	J,B				
	Chloropseidae	*Chloropsis sonnerati* (Jardine & Selby, 1827)	Greater green leafbird	EN	Omnivorous	F(Core)	Sumt	K	J				
		Chloropsis cochinchinensis (Gmelin, 1789)	Javan leafbird	EN	Omnivorous	F(Core)	Sumt	K	J				
	Cisticolidae	*Prinia polychroa* (Temminck, 1828)	Brown prinia	LC	Carnivorous	F(Core)			J				
		Prinia flaviventris (Delessert, 1840)	Yellow-bellied prinia	LC	Carnivorous	Ag	Sumt	K	J				
		Prinia inornata (Sykes, 1832)	Plain prinia	LC	Carnivorous	F(Core)			J				
		Prinia familiaris (Horsfield, 1821)	Bar-winged prinia	LC	Carnivorous	F(Core)	Sumt		J,B				
		Orthotomus sutorius (Pennant, 1769)	Common tailorbird	LC	Carnivorous	F(Core)			J				
		Orthotomus sepium (Horsfield, 1821)	Olive-backed tailorbird	LC	Carnivorous	F(Core)			J,B	NTe			
		Orthotomus atrogularis (Temminck, 1836)	Dark-necked tailorbird	LC	Carnivorous	F(Core)	Sumt	K					
		Cisticola juncidis (Rafinesque, 1810)	Zitting cisticola	LC	Insectivorous	F(Core)	Sumt		J,B	NTe	M	P	Sul
	Corvidae	*Crypsirina temia* (Daudin, 1800)	Racket-tailed treepie	LC	Omnivorous	Ag		K	J,B				
		Cissa thalassina (Temminck, 1826)	Javan green magpie	CR	Carnivorous	Ag			J				
		Platylophus galericulatus (Cuvier, 1816)	Crested jayshrike	NT	Carnivorous	F(Core)	Sumt	K	J				
		Corvus macrorhynchos (Wagler, 1827)	Large-billed crow	LC	Omnivorous	F(Core)	Sumt	K	J,B	NTe			
	Campephagidae	*Pericrocotus miniatus* (Temminck, 1822)	Sunda minivet	LC	Insectivorous	F(Core)	Sumt		J,B				
		Pericrocotus speciosus (Latham, 1790)	Scarlet minivet	LC	Insectivorous	F(Core)	Sumt	K	J,B				
		Pericrocotus cinnamomeus (Linnaeus, 1766)	Small minivet	LC	Insectivorous	F(Core)			J,B				
	Dicruridae	*Dicrurus paradiseus* (Linnaeus, 1766)	Greater racket-tailed drongo	LC	Omnivorous	F(Core)	Sumt	K	J,B				
		Dicrurus leucophaeus (Vieillot, 1817)	Ashy drongo	LC	Omnivorous	F(Core)	Sumt	K	J,B	NTe			
	Dicaeidae	*Prionochilus percussus* (Temminck, 1826)	Crimson-breasted flowerpecker	LC	Omnivorous	F(Core)	Sumt	K	J				
		Dicaeum trochileum (Sparrman, 1789)	Scarlet-headed flowerpecker	LC	Omnivorous	F(Core)	Sumt	K	J,B	NTe			
		Dicaeum trigonostigma (Scopoli, 1786)	Orange-bellied flowerpecker	LC	Omnivorous	F(Core)	Sumt	K	J,B				
	Estrildidae	*Lonchura leucogastra* (Blyth, 1846)	White-bellied munia	LC	Granivorous	F(Core)	Sumt		J,B	NTe			
		Lonchura maja (Linnaeus, 1766)	White-headed munia	LC	Granivorous	F(Core)	Sumt		J,B				
		Lonchura punctulata (Linnaeus, 1758)	Scaly-breasted munia	LC	Granivorous	F(Core)	Sumt	K	J,B	NTe	M		Sul
		Erythrura hyperythra (Reichenbach, 1863)	Tawny-breasted parrotfinch	LC	Granivorous	F(Core)		K	J	NTe			Sul
		Lonchura ferruginosa (Sparrman, 1789)	White-capped munia	LC	Granivorous	F(Core)	Sumt		J,B				
	Eurylaimidae	*Eurylaimus javanicus* (Horsfield, 1821)	Banded broadbill	LC	Insectivorous	F(Core)	Sumt	K	J				
	Hirundinidae	*Hirundo javanica* (Sparrman, 1789)	Pacific swallow	LC	Insectivorous	F(Core)	Sumt	K	J,B	NTe	M	P	Sul
		Cecropis daurica (Linnaeus, 1771)	Eastern red-rumped swallow	LC	Insectivorous	Ag	Sumt	K	J,B	NTe		P	

	Hirundo rustica (Linnaeus, 1758)	Barn swallow	LC	Insectivorous	Ag	Sumt	K	J,B	NTe	M	P	Sul
Laniidae	*Lanius schach* (Linnaeus, 1758)	Long-tailed shrike	LC	Insectivorous	F(Core)	Sumt	K	J,B	NTe		P	
	Lanius tigrinus (Drapiez, 1828)	Tiger shrike	LC	Insectivorous	F(Core)	Sumt	K	J,B				Sul
	Lanius cristatus (Linnaeus, 1758)	Brown shrike	LC	Insectivorous	F(Core)	Sumt	K	J,B	NTe		P	
Locustellidae	*Locustella montis* (Hartert, 1896)	Javan bush warbler	LC	Carnivorous	Ag			J,B				
Muscicapidae	*Eumyias indigo* (Horsfield, 1821)	Indigo flycatcher	LC	Omnivorous	F(Core)	Sumt	K	J				
	Enicurus leschenaulti (Vieillot, 1818)	White-crowned forktail	LC	Insectivorous	F(Core)			J,B				
	Brachypteryx leucophris (Temminck, 1828)	Lesser shortwing	LC	Omnivorous	F(Core)	Sumt		J,B	NTe			
	Ficedula westermanni (Sharpe, 1888)	Little pied flycatcher	LC	Omnivorous	F(Core)	Sumt	K	J,B	NTe	M	P	Sul
	Myophonus glaucinus (Temminck, 1823)	Javan whistling thrush	LC	Insectivorous	F(Core)			J,B				
	Myophonus caeruleus (Scopoli, 1786)	Blue whistling thrush	LC	Insectivorous	F(Core)	Sumt		J				
	Enicurus velatus (Temminck, 1822)	Sunda forktail	LC	Insectivorous	F(Core)	Sumt		J				
	Cyornis banyumas (Horsfield, 1821)	Javan blue flycatcher	CR	Insectivorous	F(Core)			J				
	Ficedula zanthopygia (Hay, 1845)	Yellow-rumped flycatcher	LC	Omnivorous	F(Core)	Sumt	K	J,B				
Meropidae	*Merops leschenaulti* (Vieillot, 1817)	Chestnut-headed bee-eater	LC	Carnivorous	F(Core)	Sumt		J,B				
Motacillidae	*Anthus rufulus* (Vieillot, 1818)	Paddyfield pipit	LC	Insectivorous	F(Core)	Sumt	K	J,B	NTe			Sul
Monarchidae	*Hypothymis azurea* (Boddaert, 1783)	Black-naped monarch	LC	Insectivorous	F(Core)	Sumt	K	J,B	NTe			
Nectariniidae	*Chalcoparia singalensis* (Gmelin, 1789)	Ruby-cheeked sunbird	LC	Nectarivorous	F(Core)	Sumt	K	J				
	Leptocoma sperata (Linnaeus, 1766)	Purple-throated sunbird	LC	Nectarivorous	F(Core)	Sumt	K	J				
	Anthreptes malacensis (Scopoli, 1786)	Brown-throated sunbird	LC	Nectarivorous	F(Core)	Sumt	K	J,B	NTe	M		Sul
	Cinnyris jugularis (Linnaeus, 1766)	Garden sunbird	LC	Nectarivorous	F(Edge)	Sumt	K	J,B	NTe	M	P	Sul
	Aethopyga mystacalis (Temminck, 1822)	Javan sunbird	LC	Nectarivorous	F(Core)			J				
	Arachnothera robusta (S. Müller & Schlegel, 1845)	Long-billed spiderhunter	LC	Omnivorous	F(Core)	Sumt	K	J				
	Arachnothera longirostra (Latham, 1790)	Little spiderhunter	LC	Omnivorous	F(Core)	Sumt	K	J,B				
Oriolidae	*Oriolus chinensis* (Linnaeus, 1766)	Black-naped oriole	LC	Omnivorous	F(Core)	Sumt	K	J,B	NTe	M		Sul
	Oriolus xanthonotus (Ramsay, 1880)	Dark-throated oriole	LC	Omnivorous	F(Core)	Sumt	K	J				
Pycnonotidae	*Rubigula dispar* (Horsfield, 1821)	Ruby-throated bulbul	VU	Omnivorous	F(Core)	Sumt	K	J				
	Brachypodius melanocephalos (Temminck, 1822)	Black-headed bulbul	LC	Omnivorous	F(Core)	Sumt	K	J,B				
	Pycnonotus aurigaster (Vieillot, 1818)	Sooty-headed bulbul	LC	Omnivorous	F(Core)			J,B				
	Alophoixus bres (Lesson, 1831)	Brown-cheeked bulbul	EN	Omnivorous	F(Core)	Sumt	K	J,B				
	Pycnonotus goiavier (Scopoli, 1786)	Yellow-vented bulbul	LC	Omnivorous	F(Core)	Sumt	K	J,B	NTe			Sul
	Pycnonotus brunneus (Blyth, 1845)	Asian red-eyed bulbul	LC	Omnivorous	F(Core)	Sumt	K	J				
	Pycnonotus simplex (Lesson, 1839)	Cream-vented bulbul	LC	Omnivorous	F(Core)	Sumt	K	J				
	Ixos virescens (Temminck, 1825)	Javan bulbul	LC	Frugivorous	F(Core)			J				
	Pycnonotus bimaculatus (Horsfield, 1821)	Orange-spotted bulbul	NT	Omnivorous	F(Core)	Sumt		J,B				
Pellorneidae	*Malacocincla sepiaria* (Horsfield, 1821)	Horsfields babbler	LC	Omnivorous	F(Core)	Sumt	K	J,B				
	Pellorneum capistratum (Temminck, 1823)	Javan black-capped babbler	LC	Omnivorous	F(Core)		K	J				
	Pellorneum pyrrogenys (Temminck, 1827)	Temminck's babbler	LC	Omnivorous	F(Core)	Sumt	K	J				
Ploceidae	*Ploceus philippinus* (Linnaeus, 1766)	Baya weaver	LC	Granivorous	F(Core)	Sumt		J,B				
	Ploceus hypoxanthus (Sparrman, 1788)	Asian golden weaver	LC	Granivorous	F(Core)	Sumt		J				
Phylloscopidae	*Phylloscopus grammiceps* (Strickland, 1849)	Sunda warbler	LC	Carnivorous	F(Core)	Sumt		J,B				
	Phylloscopus trivirgatus (Strickland, 1849)	Mountain leaf warbler	LC	Carnivorous	F(Core)	Sumt	K	J,B	NTe			
Pittidae	*Pitta guajana* (Sibley and Monroe, 1990, 1993)	Javan banded pitta	LC	Insectivorous	F(Core)	Sumt	K	J,B				
	Pitta moluccensis (Stasius Müller, 1776)	Blue-winged pitta	LC	Insectivorous	F(Core)	Sumt	K					Sul

	Paridae	*Parus major* (Linnaeus, 1758)	Greater tit	LC	Carnivorous	F(Core)	Sumt	K	J,B	NTe			
	Picidae	*Dinopium javanense* (Ljungh, 1797)	Common flameback	LC	Insectivorous	F(Core)	Sumt	K	J,B				
	Passeridae	*Passer montanus* (Linnaeus, 1758)	Eurasian tree sparrow	LC	Omnivorous	F(Core)	Sumt	K	J,B	NTe	M		Sul
	Pnoepygidae	*Pnoepyga pusilla* (Hodgson, 1845)	Pygmy cupwing	LC	Carnivorous	F(Core)	Sumt		J,B	NTe			
	Rhipiduridae	*Rhipidura javanica* (Sparrman, 1788)	Malaysian pied fantail	LC	Omnivorous	F(Edge)	Sumt	K	J,B	NTe			
		Rhipidura euryura (Müller, 1843)	White-bellied fantail	LC	Omnivorous	Ag			J				
	Sittidae	*Sitta frontalis* (Swainson, 1820)	Velvet-fronted nuthatch	LC	Carnivorous	F(Core)	Sumt	K	J				
		Sitta azurea (Lesson, 1830)	Blue nuthatch	LC	Carnivorous	F(Core)	Sumt		J				
	Sturnidae	*Sturnia sinensis* (Gmelin, 1788)	White-shouldered starling	LC	Omnivorous	F(Core)	Sumt	K	J				
		Scissirostrum dubium (Latham, 1801)	Grosbeak starling	LC	Omnivorous	F(Core)			J				Sul
	Timaliidae	*Mixornis flavicollis* (Bonaparte, 1850)	Grey-cheeked tit-babbler	LC	Carnivorous	F(Core)			J				
		Mixornis bornensis (Bonaparte, 1850)	Bold-striped tit-babbler	LC	Carnivorous	F(Core)		K	J				
		Timalia pileata (Horsfield, 1821)	Chestnut-capped babbler	LC	Insectivorous	F(Core)			J				
		Turdinus macrodactylus (Strickland, 1844)	Large wren babbler	NT	Insectivorous	F(Core)	Sumt		J				
		Cyanoderma melanothorax (Temminck, 1823)	Crescent-chested babbler	LC	Insectivorous	F(Core)			J,B				
		Alcippe pyrrhoptera (Bonaparte, 1850)	Javan fulvetta	LC	Omnivorous	F(Core)			J				
	Turdidae	*Cochoa azurea* (Temminck, 1824)	Javan cochoa	VU	Frugivorous	F(Core)			J				
		Geokichla citrina (Latham, 1790)	Orange-head ed thrush	LC	Insectivorous	F(Core)	Sumt	K	J,B				
		Geokichla interpres (Temminck, 1826)	Chestnut-capped thrush	EN	Insectivorous	F(Core)	Sumt	K	J	NTe			
		Zoothera machiki (Forbes, 1883)	Fawn-breasted thrush	NT	Insectivorous	F(Core)					M		
	Vangidae	*Hemipus hirundinaceus* (Temminck, 1822)	Black-winged flycatcher-shrike	LC	Insectivorous	F(Core)	Sumt	K	J,B				
	Vireonidae	*Pteruthius aenobarbus* (Temminck, 1835)	Trilling shrike-babbler	LC	Omnivorous	F(Core)			J				
	Zosteropidae	*Zosterops palpebrosus* (Temminck, 1824)	Indian white-eye	LC	Omnivorous	F(Core)	Sumt		J,B	NTe			
		Zosterops japonicus (Bonaparte, 1850)	Warbling white-eye	LC	Omnivorous	F(Core)	Sumt		J,B	NTe			
	Cettiidae	*Cettia vulcania* (Blyth, 1870)	Sunda bush warbler	LC	Insectivorous	F(Core)	Sumt	K	J,B	NTe			
		Tesia superciliaris (Bonaparte, 1850)	Javan tesia	LC	Carnivorous	F(Core)			J				
Pelecaniformes	Ardeidae	*Egretta garzetta* (Linnaeus, 1766)	Little egret	LC	Carnivorous	Ag	Sumt	K	J,B	NTe	M	P	Sul
		Ardeola speciosa (Horsfield, 1821)	Javan pond-heron	LC	Carnivorous	Ag	Sumt	K	J,B	NTe			Sul
Piciformes	Megalaimidae	*Psilopogon javensis* (Horsfield, 1821)	Black-banded barbet	LC	Omnivorous	F(Core)			J				
		Psilopogon australis (Horsfield, 1821)	Yellow-eared barbet	LC	Omnivorous	F(Core)	Sumt	K	J,B				
		Psilopogon armillaris (Temminck, 1821)	Flame-fronted barbet	LC	Omnivorous	F(Core)			J,B				
		Psilopogon haemacephalus (Müller, 1776)	Coppersmith barbet	LC	Omnivorous	F(Core)	Sumt		J,B				
		Psilopogon lineatus (Vieillot, 1816)	Lineated barbet	LC	Omnivorous	F(Core)			J,B				
		Psilopogon corvinus (Temminck, 1831)	Brown-throated barbet	LC	Omnivorous	F(Core)			J				
	Picidae	*Yungipicus moluccensis* (Gmelin, 1788)	Sunda pygmy woodpecker	LC	Insectivorous	F(Core)	Sumt	K	J,B	NTe			
		Hemicircus concretus (Temminck, 1821)	Grey-and-buff woodpecker	LC	Insectivorous	F(Core)			J				
		Sasia abnormis (Temminck, 1825)	Rufous piculet	LC	Insectivorous	F(Core)	Sumt	K	J				
		Chrysocolaptes validus (Temminck, 1825)	Orange-backed woodpecker	LC	Insectivorous	F(Core)	Sumt	K	J				
		Dendrocopos analis (Bonaparte, 1850)	Freckle-breasted woodpecker	LC	Carnivorous	F(Core)	Sumt		J,B				
Podargiformes	Podargidae	*Batrachostomus javensis* (Horsfield, 1821)	Javan frogmouth	LC	Insectivorous	F(Core)	Sumt	K	J				
		Batrachostomus cornutus (Temminck, 1822)	Sunda frogmouth	LC	Insectivorous	F(Core)	Sumt	K	J				
Psittaciformes	Psittacidae	*Loriculus pusillus* (Gray, 1859)	Yellow-throated hanging parrot	LC	Nectarivorous	F(Core)			J,B				
Strigiformes	Strigidae	*Otus lempiji* (Horsfield, 1821)	Sunda scops owl	LC	Insectivorous	F(Core)	Sumt	K	J,B				
		Otus rufescens (Horsfield, 1821)	Reddish scops owl	LC	Insectivorous	F(Core)	Sumt	K	J				
		Strix leptogrammica (Temminck, 1832)	Brown wood owl	LC	Carnivorous	Ag	Sumt	K	J				

		Ninox scutulata (Raffles, 1822)	Brown boobook	LC	Carnivorous	F(Core)	Sumt	K	J,B	
	Tytonidae	*Tyto alba* (Scopoli, 1769)	Barn owl	LC	Carnivorous	Ag	Sumt	K	J,B	NTe
Trogoniformes	Trogonidae	*Harpactes oreskios* (Temminck, 1823)	Orange-breasted trogon	LC	Insectivorous	F(Core)	Sumt	K	J	
		Apalharpactes reinwardtii (Temminck, 1822)	Javan trogon	VU	Insectivorous	F(Core)			J	

Note: CR: Critically Endangered; EN: Endangered; VU: Vulnerable; LC: Least Concern; NT: Not Threatened; Sumt: Sumatra; K: Kalimantan; J/B: Java and/or Bali; NTe: Nusa Tenggara; M: Maluku; P: Papua; F(Core): Forest Core; Ag: Agriculture areas