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Understanding Bird Preference on Agroforestry System: Is There a Potential Case for Birdwatching Development?

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Abstract

The main objective of this study is to understand the bird preference on the different types of agroforestry management and the implication on the development of birdwatching as a potential ecotourism. The study was conducted at the agroforestry area of Gubugklakah Village, Malang Regency, East Java Province, Indonesia, from May to November 2016. Five observation sites were chosen: 1) agroforestry developed by ethno-conserving system; 2) agroforestry close to the national park; 3) agroforestry; 4) conventional agriculture area; and 5) houses area. Point Count was applied in this study by determining 5 sampling sites that separated 100-150 m. Survey was conducted once a week and observed every 15 minutes from 6.00 to 9.00 am. The species of bird that observed and heard were noted, identified and result of the field identification was stored in field book. The result shows that the highest Importance Value Index (IVI) was presented by Cave swiftlet and some species that specialized in farmland. Agroforestry area was showing more potential as the birdwatching spot compared to conventional agriculture area and houses area. In addition, agroforestry area showing a high Value of Interest (VOI) that represented a nativity on the birds settler and made it to be the suitable area for birdwatching activities.

Keywords: agroforestry, birdwatching, management, preference.

INTRODUCTION

Birdwatching is one of the most developed ecotourism activity in the world. It is the second popular outdoor tourism in USA that has an amazing development and unexpectedly contributes a great potential for the national economic development. The average revenue generated from birdwatching tourism reaches more than 50.000 USD per year [1]. In addition, other sector, such as transportation, is also predicted to be affected by this activity by reaching 7.6 billion USD. The annual economic benefit of five major birding locations in USA is estimated to reach up to 2.4-40 million USD [2]. Birdwatching could also escalate the species value, as estimated by Munn [3] that each of macaw bird in south Peru could obtain 22.500 to 165.000 USD for its lifetime. In addition, birdwatching offers profitable results both in the conservation and people perspective towards the birds. However, the utilization of bird diversity through birdwatching tourism is still not well-implemented in Indonesia compared to hunting and trading activities as a long term utilization that is not conservative. These facts urge the bird diversity in Indonesia to be a permanent extinction for a long term period [4].

On the other hand, the expansion of urban and agriculture area in Indonesia by forest clearing is directly threaten the birds, including its diversity [5], regeneration, feed availability, and daily activities [6,7]. The agroforestry system has long been known as an original Indonesian agriculture that concerned and emphasized the continuity of agriculture and forestry aspects. According to economical view, agroforestry system is firm, easy to adapt with the nature, competitive, and provides 80% of village revenue [8]. Agroforestry system has better conservation impact on the fauna diversity compared to agriculture system and monoculture forestry. As the multi-habitat landscape, agroforestry plays an important role on mini-ecosystem for some fauna, such as mammals, birds, reptiles, and invertebrates [8]. As much as 60% of bird species with various ecosystem role lives on the agroforestry area [9]. Moreover, there is an interesting tendency in which the birds prefer to live on the transition region between farmland and primary forest as illustrated by agroforestry, compared to other area, such as monoculture forest and active farmland [10,11].

The vegetation planted in agroforestry area consists of herbaceous plants and trees [9] that affected the diversity and visiting time of the

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birds [12]. We estimated that agroforestry system would provide habitat that is more dynamic than other artificial habitat, such as conventional agriculture or forest. An understanding on the distribution and variation of bird species is very important on supporting and developing birdwatching as one of the potential ecotourism, also maintaining the continuity of agroforestry system. Therefore, the main objective of this study is to reveal the bird preference based on agroforestry management and the implication on the potential development of birdwatching.

RESEARCH METHOD

Study Area

Research area was located at the agroforestry area on Gubugklakah village (7'21'-7'31' south latitude and 110'10'-111'40' east longitude), Malang regency, East Java province, Indonesia. Study was conducted on May to November, 2016. Five observation sites were chosen to represent three different habitats, including agroforestry, houses area, and conventional agriculture area. All site research was located in village managed by PT. Perhutani Persero in cooperation with local people. The determination of agroforestry area was based on 3 criteria: 1) Sacred by the local people (agroforestry developed by ethno-conserving system); 2) Located on the edge of national park; 3) Managed regularly. As comparison, we also observed two locations that represented non-agroforestry management: 1) Conventional agriculture area; and 2) Houses area. Conventional agriculture area was mainly planted by monoculture sugar cane plantations, while houses area was consisted of houses located in the same area (Fig. 1). Management area was illustrated by the classification into 4 vegetation types (Table1).

Table 1. Percentage of Vegetation Coverage on 5 Study Sites in Gubugklakah

Classification	Study Sites				
	1	2	3	4	5
Seedling h: 0-1.5 m	60%	40%	45%	70%	40%
Sapling h:≥1.5 d: 10 cm	25%	45%	35%	10%	30%
Pole d: 10-20 cm	15%	10%	15%	5%	5%
Tree d: >20 cm	0%	5%	5%	15%	25%

Notes: h= height; d= diameter; 1= conventional agriculture; 2= houses area; 3= agroforestry developed by ethno-conserving system; 4= agroforestry; 5= forest-near-agroforestry.

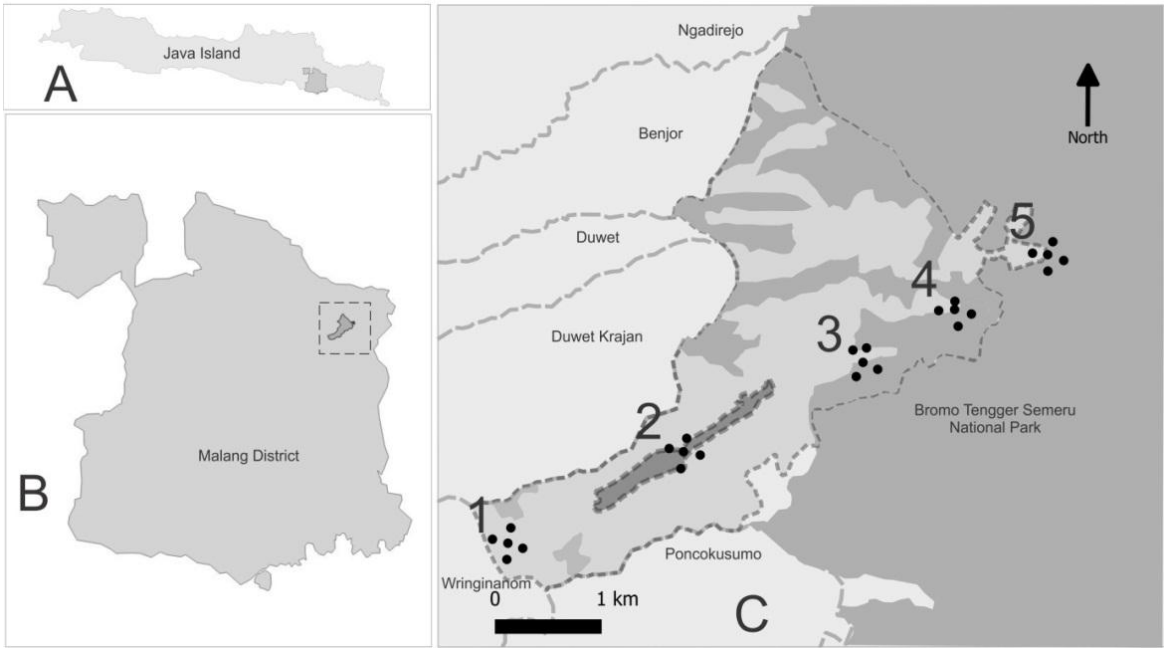

Figure 1. Map of Study Area in Gubugklakah

Description: Black circles show the site points. Number shows classification of sites. A= Java Island, one of Indonesian Archipelago; B= Malang District; C= Gubugklakah (grey and dashed line) with villages and forest around it; 1= Conventional agriculture (light grey); 2= Houses (dark grey and dashed line); 3= Agroforestry with ethno-conserving system; 4= Agroforestry; 5=Forest-near-agroforest. All dark grey inside the Gubugklakah border indicates agroforestry system. Land use and borders were based on Spatial Development Plans map 2016, Office of Public Works and Area Spatial, Malang Regency.

Bird Survey and Vegetation Approach

We applied curve point method on this study. Each survey location was selected 5 point sites (r=20 m) and separated 100-150 m between each point. Survey was conducted once a week for 15 minutes started from 06.00-09.00 am as the most active time for the bird activities, in May 2016 until January 2017 [13]. We recorded all birds that were observed or heard on each site. We avoided working during rainy, cloudy, windy, or foggy situation. Birds that have no contact with the vegetation on the Point Count, but observed during the survey, were classified as Flying Through (FT) and Flying Over (FO). We used Nikon Aculon A30 8x25 binoculars to identify the bird species, digital camera Canon EOS 1100 D + 300 mm Canon lens to take the pictures, and Sony ICD-PX40 digital recorder to record the bird voice. We confirmed the bird voice by replaying and comparing the voice with the online database (http://xeno-canto.org).

Bird was observed on the multiple type-vegetation. We classified the vegetation type that covered each site. Multiple type model on vegetation was estimated by: 1) Occupancy-classification, defined as possibilities for some certain species to live in each vegetation; and 2) Role of use, defined as possibilities for some species that was affected by specific plants.

Data Analysis

Total bird and bird species were analyzed descriptively by using Ms. Excel 2007 to formulize Importance Value Index (IVI). We evaluated the diversity and bird preference by using PAST software. Preference value for three study sites (conventional agriculture, houses, and agroforestry) was obtained by using bi plot analysis. We also designed the bird community as farmland and forest specialist according to the literature. Species that used to live in the forest (more than 50% of its lifetime) was categorized as forest bird. While species that used to live on the open vegetation (more than 50% of its lifetime), such as grass, agriculture area, and houses area, was categorized as farmland bird. Species that lives equally in two habitats, both in the forest and in the farmland, was categorized as generalist. The habitat type and tropic category were analyzed descriptively using Ms. Excel 2007.

We designed the bird community that represented in Value of Interest (VOI) as the birdwatching object with some certain range value (maximum value was 5). The valuation was formed by adding 1 point for each species that met the criteria as follows: 1) law protection [14]; 2) IUCN conservation status was categorized as threatened (Vulnerable, Endangered, Critically Endangered), or Near Threatened [15]; 3) CITES status [16]; 4) endemic in Indonesia [17]; and 5) value of the frequency of attendance. We classified the VOI in 5 ranges = A(4-5); B(3-3.9); C(2-2.9); D(1-1.9), and E(0-0.9). We projected that the high VOI would represent an interesting object for birdwatching tourism that developed in agroforestry system.

RESULT AND DISCUSSION

Bird Observation

We recorded 3783 individual consisted of 67 species, 35 families, and 25 sampling sites. As much as 39% species from total species included as general classification in its vertical distribution. The result represented that most of observed birds could adapt with the wide range of habitat conditions. On the other hand, 16% species from total species lives on seedling-sapling habitat. This species often found on farmland, houses, and agroforestry. As much as 11% species lives on big trees, where it only found in agroforestry and forest. The high value was represented in Fly-over category (approximately 34%), including swiftlet and migratory birds (i.e. Sparrowhawk). Both of them fly in flocks. Sparrowhawk (Chinese Sparrowhawk *Accipiter soloensis* and Japanese Sparrowhawk *Accipiter gularis*) is an annual winter visitor [16]. Besides, Accipitridae was observed at FO condition, flew around in circles following the geothermal flow (soaring) [18].

Cave Swiftlet *Callocalia linchi* has the highest Important Value Index (IVI), 0.32 (Fig. 2). The result demonstrated that Cave Swiftlet takes an important role on the ecosystem of agroforestry in Gubugklakah. Cave Swiftlet usually forms flock, and often lives with other sympatric species. They usually visit the figs trees that fruitting [19]. Swiftlet still flies during the rain; this makes them different with other birds. In fact, rain would trigger insects to fly from the leaves of *Ficus* sp., and make Cave Swiftlet to be more concentrated [20]. During the bright weather, Cave Swiftlet flies low in circles within the open space above the agroforestry.

Sooty-headed bulbul *Pycnonotus aurigaster* was ranked on the second place for IVI (0.25). Most of their lives are spent in the agroforestry area [21]. Therefore, we estimated that Sooty-headed bulbul has adapted well with the availability of food in agroforestry area.

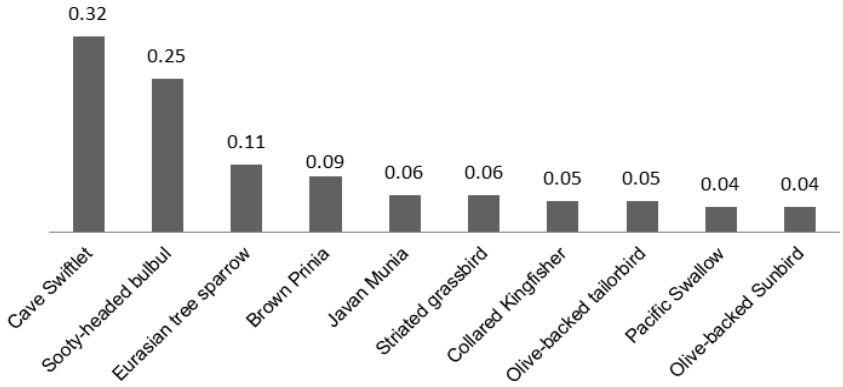

Figure 2. The Ten Highest IVI, Species IVI vary in 67 species (see Supplementary 1)

Thus, it was supported by its classification as omnivorous that has a wide range of food, including fruits and insects [17]. The beak is adapted to hunt insects from perch and the behavior to form flock makes them potential on controlling agricultural pest. *Pycnonotus aurigaster* is adapted to hunt in a flock that supported by vocal communication [20].

The fourth place of IVI rank was occupied by Brown Prinia *Prinia polychroa*, approximately 0.09. They belong to insectivores that lived in agricultural area [17]. On the other hand, the observation result shows a high IVI on Eurasian tree sparrow, a cosmopolitan species that adapted to live in human houses [17]. The other birds, such as Javan Munia, Striated Grassbird, Collared Kingfisher, Olive-backed Tailorbird, and Olive-backed sunbird, are easy to be found on the open space area, agriculture, and houses area. Another species, Pacific swallow, is recorded to be found in a large flock during the rainy season [17].

Bird's Preference

The observation shows that houses and agroforestry area have a high preference value for some certain species (Fig. 3). The houses area was inhabited by the population of Erasian tree sparrow *Passer montanus* that is known to be easily adapted with the human food [17]. Cave swiftlet is usually found in a large flock in the open space, such as conventional agriculture area and agroforestry area that applying ethnic conservation system. The basic of ethnic-conserving system is sacred concept that respecting a tree (*Ficus* sp.) and graveyard area. Moreover, sacred area has long been known to take an important part on conserving the biodiversity around the world [22], and indirectly conserved the high diversity of birds.

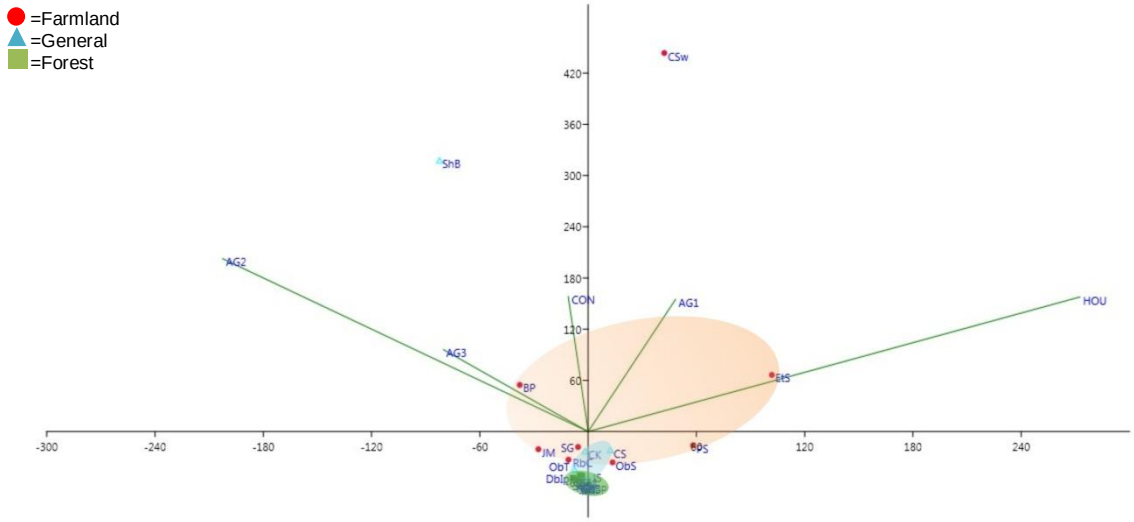

Figure 3. Biplot analysis bird number by point count versus 5 study sites

Description: Study sites are CON= conventional agriculture; HOU= houses; AG1= agroforestry with ethno-conserving system; AG2= agroforestry area; AG3=forest-near-agroforestry. Bird species are represented by their species code (see Supplementary 1).

Conventional agriculture and agroforestry area were mostly visited by farmland birds that hunting insects, such as Sooty-headed Bulbul and Brown Prinia. Interestingly, the preference result illustrated that agroforestry area close to forest was usually visited by several species of birds with different habitat specialization, including farmland, forest, and general (Fig. 4 & 5).

The management area plays an important role on the habitat preference of birds on Gubugklakah. According to Figure 4, almost all area supported the habitat expansion of farmland birds, although forest and generalist birds also found on those area. The fact that the agroforestry area close to natural forest was significantly affected the presence of three species of birds (specialized on the farmland, forest, and generalist), although the number of birds were higher in the agroforestry and other open space area. This presented the quality of bird that visited the agroforestry near the natural forest is much higher compared to the quantity itself. A significant improvement was occurred on the diversity of birds that presence in those area. In fact, the high diversity of bird is supported by the contrast of the habitat between natural forest and agroforestry area. On the other side, agroforestry system that applying ethno-conserving system represented less habitat contrast between figs tree and the agroforestry area. The facts show that contrast of habitat gives a significant effect on the intensity of vegetation and diversity [12,23].

Land Management and Birdwatching Potential

The development of birdwatching has to pay attention on the presence of native species that becomes a key character of an area [24]. Despite the fact that the area management by human is greatly affected the habitats of birds.

Agricultural intensification and settlement area play an important role in threatening the bird diversity in Indonesia [25]. The possibilities of conservation approach need to be considered by policy makers in order to maintain the existence of wild region. Several researchers already proposed some strategies to reduce the effect of agricultural expansion against wild region [23].

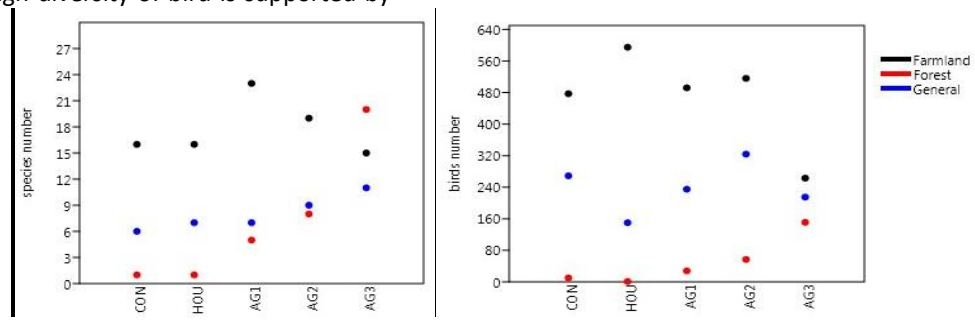

Figure 4. Species and Birds Number in Scatter Plot among 5 Study Sites

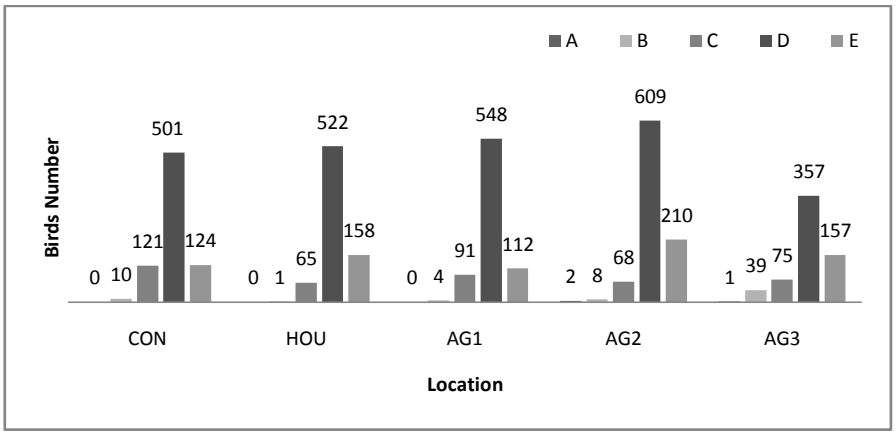

Figure 5. Variation in Bird Number among Study Sites and Classification Number Based on Value of Interest (VOI), a Multi Scale Law Protection, Threatened Status, CITES, Endemicity, and Frequency

Description: Habitat types of study sites included conventional agriculture (CON), houses (HOU), agroforestry with ethno-conservingsystem (AG1), agroforestry (AG2), and forest-near-agroforestry (AG3). A(4-5); B(3-3.9); C(2-2.9); D(1-1.9), and E(0-0.9).

Traditional agroforestry system is a way to reduce the threat on the wildlife. Perennials combined with the short-term corps provide a suitable habitat for birds to do various activities, such as breeding, nesting, and hunting [8,20,26]. Nevertheless, the important value of birds that lives in agroforestry area has a potential to increase more, especially if it supported by birdwatching ecotourism. However, the development of birdwatching needs to be supported by in-depth approach towards the potential sites and native species.

The in-depth approach can be reached from the development on the concept of management and conservation [26]. In line with our study, we suggest the provision of guidance contains of bird classification and some potential spots as a guide on identifying the birds during the activity of birdwatching. A high Value of Interest (VOI), ranging from 2 to 2.9 (C), on conventional agriculture and houses area is caused by the raptor migration track that crossing those area.

Migration track crossed by Chinese Sparrowhawk and Japan Sparrowhawk is very interesting to be observed during the migration season [17]. During those special migration seasons, the bird observers could watch hundreds of eagle in the same time. That view is supported by the area condition that is more open than the agroforestry area. Agroforestry area generally has higher VOI than two other areas. In contrary with the conventional agriculture and houses area, agroforestry area has more species and higher number of birds that belong as native species. It is important to notice that case in order to maximize and develop the potential of birdwatching area that does not affected by the migration season. According to figure 4, the habitat contrast between natural forest and agroforestry invites more native birds to live in those area, such as Javan Hawk Eagle *Nisaetus bartelsi* that is endemic to Java. Agroforestry area combines the perennial habitat that tend to shade and consists of vegetables [12].The high tree is suitable for Javan Hawk Eagle to perch and hunt its prey, such as rodentia among the vegetable farm.

Although it only has fewer quantity compares to other agroforestry area, it has a balance B and C, and also A criteria of VOI, that represented its capability on supporting the life of native species.

Agroforestry area, both ethnic-conserving and conventional system has a high VOI. It indicates that the location is potential to be developed as birdwatching sites. More importantly, the location has unique characters that enable the presence of native birds in a high quantity.

Although we do not discuss the detail of conventional agriculture, but agroforestry system is proven to protect more native biodiversity than the conventional system [9]. Our study provides important information about agroforesty system that could support the birdwatching opportunity. Therefore, conserving the agroforestry area is more recommended than broadening the area of conventional agriculture, because it could complement the needed between human and nature, including crops and wildlife. Management system is considered to be focused on conserving some specific habitats to maintain the dynamic and position of the species as the potential development of the local area.

CONCLUSION

Importance Value Index is relatively high on the Cave swiftlet and some species of birds that specialized on farmland. Preference value shows a different result for different species of birds and there is a trend that indicates the same habitat (agroforestry). Agroforestry area is more potential as an object of birdwatching compared to conventional agriculture and houses area. The interesting part of conventional agriculture and houses area is its role as an annual migration track. The high balance of VOI value in agroforestry area near the natural forest indicates that this region is recommended as a spot for birdwatching, due to the native birds.

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Supplementary 1. Detail Information of Bird Species

No	Famili	English	Scientific	Code	Total in 5 location	Law[1]	IUCN[2]	CITES[3]	Endemic[4]	Frequency	VOI	INP
1	Accipitridae	Black Eagle	*Ictinaetus malaiensis*	BE	21	1.2	LC	2		1	1	0.035854
2	Accipitridae	Chinese Sparrowhawk	*Accipiter soloensis*	CS	86	1.2	LC	2		0.4	0.4	0.034854
3	Accipitridae	Crested serpent eagle	*Spilornis cheela*	CsE	13	1.2	LC	2		0.6	0.6	0.021618
4	Accipitridae	Japanese sparrowhawk	*Accipiter gularis*	JS	15	1.2	LC	2		0.4	0.4	0.016086
5	Accipitridae	Crested honey buzzard	*Pernis ptilorhynchus*	ChB	7	1.2	LC	2		0.4	0.4	0.013972
6	Accipitridae	Javan-hawk Eagle	*Nisaetus bartelsi*	JhE	3	1.2	EN	2	Java	0.4	0.4	0.012914
7	Aegithinidae	Common Iora	*Aegithina tiphia*	CI	5		LC			0.2	0.2	0.007382
8	Alcedinidae	Collared Kingfisher	*Todiramphus chloris*	CK	85	2	LC			1	1	0.052772
9	Apodidae	Cave Swiftlet	*Collocalia linchi*	CSw	1110		LC			1	1	0.323721
10	Apodidae	Pacific swift	*Apus pacificus*	PS	11		LC			0.6	0.6	0.02109
11	Apodidae	Edible-nest Swiftlet	*Aerodramus fuciphagus*	EnS	3		LC			0.2	0.2	0.006854
12	Campephagidae	Small Minivet	*Pericrocotus cinnamomeus*	SmM	48		LC			0.6	0.6	0.03087
13	Campephagidae	Sunda Minivet	*Pericrocotus miniatus*	SM	23		LC		Sumatra & Java	0.4	0.4	0.018201
14	Campephagidae	Pied triller	*Lalage nigra*	PT	12		LC			0.4	0.4	0.015293
15	Campephagidae	Sunda Cuckoshrike	*Coracina larvata*	SC	22		LC			0.2	0.2	0.011876
16	Cettidae	Mountain Tailorbird	*Phyllergates cuculatus*	MT	1		LC			0.2	0.2	0.006325
17	Cisticolidae	Brown Prinia	*Prinia poluchroa*	BP	233		LC			0.8	0.8	0.085834
18	Cisticolidae	Olive-backed tailorbird	*Orthotomus sepium*	ObT	62		LC		Java&Bali	1	1	0.046692
19	Cisticolidae	Common Tailorbird	*Orthotomus sutorius*	CT	10		LC			0.8	0.8	0.026886
20	Cisticolidae	Bar-winged Prinia	*Prinia familiaris*	BwP	4		LC		Indonesia	0.4	0.4	0.013179
21	Cisticolidae	Plain prinia	*Prinia inornata*	PP	8		LC			0.2	0.2	0.008175
22	Columbidae	Spotted Dove	*Spilopelia chinensis*	SD	41		LC			0.8	0.8	0.03508
23	Columbidae	Ruddy Cuckoo-dove	*Macropygia emiliana*	RCd	9		LC			0.6	0.6	0.020561
24	Columbidae	Pink-headed fruit dove	*Ptilinopus porphyreus*	PhFd	9		LC		Indonesia	0.4	0.4	0.0145
25	Columbidae	Grey-cheeked Green-pigeon	*Treron griseicauda*	GcGP	2		LC			0.2	0.2	0.006589
26	Columbidae	Dark-backed Imperial Pigeon	*Ducula lacernulata*	DbIp	1		LC		Indonesia	0.2	0.2	0.006325
27	Cuculidae	Rusty-breasted cuckoo	*Cacomantis sepulcralis*	RbC	36		LC			1	1	0.039819

No	Famili	English	Scientific	Code	Total in 5 location	Law[1]	IUCN[2]	CITES[3]	Endemic[4]	Frequency	VOI	INP
28	Cuculidae	Plaintive cuckoo	*Cacomantis merulinus*	PC	21		LC			1	1	0.035854
29	Cuculidae	Chestnut-breasted malkoha	*Phaenicophaeus curvirostris*	CbM	3		LC			0.4	0.4	0.012914
30	Cuculidae	Oriental Cuckoo	*Cuculus saturatus*	OC	12		LC			0.2	0.2	0.009233
31	Dicaeidae	Scarlet-headed flowerpecker	*Dicaeum trochileum*	ShF	9		LC		Indonesia	0.4	0.4	0.0145
32	Dicaeidae	Blood-breasted Flowerpecker	*Dicaeum sanguinolentum*	BbF	8		LC		Indonesia	0.4	0.4	0.014236
33	Dicruridae	Ashy Drongo	*Dicrurus leucophaeus*	AD	1		LC			0.2	0.2	0.006325
34	Estrildidae	Javan Munia	*Lonchura leucogastroides*	JM	95		LC		Indonesia	1	1	0.055415
35	Estrildidae	Scally-breasted Munia	*Lonchura punctulata*	SbM	8		LC			0.2	0.2	0.008175
36	Hirundinidae	Pacific Swallow	*Hirundo tahitica*	PS	99		LC			0.6	0.6	0.044352
37	Hirundinidae	Striated Swallow	*Hirundo striolata*	SS	48		LC			0.4	0.4	0.02481
38	Hirundinidae	Barn Swallow	*Hirundo rustica*	BS	4		LC			0.2	0.2	0.007118
39	Laniidae	Long-tailed Shrike	*Lanius schach*	LtS	16		LC			0.6	0.6	0.022411
40	Locustellidae	Striated grassbird	*Megalurus palustris*	SG	94		LC			1	1	0.055151
41	Megalaimidae	Flame-fronted barbet	*Psilopogon armillaris*	FfB	69		LC		Indonesia	0.4	0.4	0.030361
42	Megalaimidae	Black -banded Barbet	*Psilopogon javensis*	BbB	37	1.2	NT		Java & Bali	0.4	0.4	0.021902
43	Megalaimidae	Coppersmith Barbet	*Psilopogon haemacephalus*	CB	5		LC			0.2	0.2	0.007382
44	Muscicapidae	Lesser Shortwing	*Brachypteryx leucophrys*	LS	47		LC			0.6	0.6	0.030606
45	Muscicapidae	Sunda Forktail	*Enicurus velatus*	SF	12		LC		Indonesia	0.6	0.6	0.021354
46	Muscicapidae	Javan whistling thrush	*Myophonus glaucinus*	JwT	6		LC		Java & Bali	0.2	0.2	0.007647
47	Muscicapidae	Little pied flycatcher	*Ficedula westermanni*	LpF	4		LC			0.2	0.2	0.007118
48	Muscicapidae	Snowy-browed flycatcher	*Ficedula hyperythra*	SbF	2		LC			0.2	0.2	0.006589
49	Nectariniidae	Olive-backed Sunbird	*Cinnyris jugularis*	ObS	53	1.2	LC			1	1	0.044313
50	Nectariniidae	Streaky-breasted spiderhunter	*Arachnothera affinis*	SbS	1	1.2	LC			0.2	0.2	0.006325
51	Paridae	Great Tit	*Parus major*	GT	22		LC			0.6	0.6	0.023997
52	Passeridae	Eurasian tree sparrow	*Passer montanus*	EtS	284		LC			1	1	0.105376
53	Pellorneidae	Horsfield's Babbler	*Malacocincla sepiaria*	HB	2		LC			0.2	0.2	0.006589
54	Phasianidae	Green junglefowl	*Gallus varius*	GJ	5		LC		Indonesia	0.6	0.6	0.019504

No	Famili	English	Scientific	Code	Total in 5 location	Law[1]	IUCN[2]	CITES[3]	Endemic[4]	Frequency	VOI	INP
55	Phylloscopidae	Mountain Leaf Warbler	*Phylloscopus trivirgatus*	MlW	20		LC			0.2	0.2	0.011347
56	Picidae	Fulvous-breasted Woodpecker	*Dendrocopos macei*	FbW	23		LC			1	1	0.036383
57	Pittidae	Banded Pitta	*Hydrornis guajana*	BP	1	1.2	LC	2	Indonesia	0.2	0.2	0.006325
58	Podargidae	Javan Frogmouth	*Batrachostomus javensis*	JF	1		LC			0.2	0.2	0.006325
59	Psittacullidae	Yellow-throated hanging parrot	*Loriculus pusillus*	YtHp	3		NT	2	Java & Bali	0.4	0.4	0.012914
60	Pycnonotidae	Sooty-headed bulbul	*Pycnonotus aurigaster*	ShB	820		LC			1	1	0.247062
61	Pycnonotidae	Yellow-vented Bulbul	*Pycnonotus goiavier*	YvB	41		LC			0.6	0.6	0.02902
62	Sittidae	Blue Nuthach	*Sitta azurea*	BN	2		LC			0.2	0.2	0.006589
63	Strigidae	Sunda-scops Owl	*Otus lempiji*	SsO	2		LC	2		0.4	0.4	0.01265
64	Sturnidae	Short-tailed Starling	*Aplonis minor*	StS	13		LC			0.2	0.2	0.009497
65	Timallidae	Crescent-chested Babbler	*Stachyris melanothorax*	CcB	4	1.2	LC		Indonesia	0.4	0.4	0.013179
66	Turdidae	Scally Thrush	*Zoothera dauma*	ST	2		LC			0.2	0.2	0.006589
67	Turnicidae	Barred Buttonquail	*Turnix suscitator*	BB	2		LC			0.4	0.4	0.01265
68	Zosteropidae	Oriental white-eye	*Zosterops palpebrosus*	Owe	2		LC			0.2	0.2	0.006589

Notes: [1]Law [14], [2]IUCN status [15] [3]CITES status [16], [4]Endemic status [17].