

Paper Edit Nov

by Margareta Rahayuningsih

Submission date: 08-Nov-2019 03:45PM (UTC+0700)

Submission ID: 1209676723

File name: M Rahayuningsih_paper_edit1.doc (120K)

Word count: 2030

Character count: 11153

Species richness and feeding guilds of birds in Ngesrepbalong Village, Mount Ungaran Central Java

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Abstract— Mount Ungaran on Central Java Indonesia was established as a Important Bird is Area (IBA), have a various bird habitat kind as an area of food resources provider, sheltering, and also for breeding. The objective of the study was to analysis the species richness and feeding guild of birds in Mount Ungaran. The study was conducted on Ngesrepbalong Village to determine the species richness and feeding guilds of bird especially in settlements, tea plantations and mixed forests. The study have been done on January to August 2018. The point count method was used for bird data and direct observation technique (by binoculars and camera) was used in documentation of bird species. The result showed a total of 77 bird species that belong to 37 families, 13 order were recorded. The feeding guild of birds result that most of birds species belong to insectivore (51.94%) and followed by fruit-eating birds (22.07%).

Index Terms—Feeding guild, Mount Ungaran, species richness

I. INTRODUCTION

Mount Ungaran is one of the remaining protected forest areas in Central Java [1]. Mount Ungaran is administratively between two districts, Semarang Regency and Kendal Regency with an area of around 5500 ha. Most of the Mount Ungaran area is managed under the Perum Perhutani office, North Kedu KPH. Include protected forest (2670.25 ha), production forest (622.33 ha), and limited production forest (618.93 ha). While the conservation area, the Gebugan Nature Preserve, covers only 1.8 ha and is managed under the BKSDA (Natural Resources Conservation Center) of the Central Java. Mount Ungaran has a higher of biodiversity, including flora and fauna [2]. Mount Ungaran has been designated as an Important Bird Area (IBA), especially in Central Java. One of the status determinations is based on the records of bird species that are protected, such as Javanese Hawk Eagle (*Nisaetus bartelsi*), *Ictinaetus malayensis* (Indiana Black Eagle), bido, and Wreathed hornbill (*Rhinoceros undulatus*) [3]. The conditions of various types of ecosystems on Mount Ungaran also make this area as a suitable habitat for various birds species. The guild is a group of bird species

that utilize the same resource and in the same way [4]. Observation of the composition of guilds in an area is very well used as an indicator. Ecological characteristics in birds such as the type of feed can be used as bioindicators of environmental disturbances by examining their responses to disturbances [5] [6]. An environment with a large number of guilds must be able to provide for the minimum needs of its constituent species. This is realized by providing opportunities to choose suitable habitats, or providing complex habitats that allow for the separation of niches [7]. All these habitats have different characteristics and landscape which sustain different food sources and thus attract different bird feeding guilds. Feeding guild is a useful tool for examining changes in bird communities because variations in feeding guilds are largely determined by the habitat structure and food availability [8]. Ngesrepbalong village is one of the entrance areas in the Mount Ungaran area. Ngesrepbalong village is used as one of the hiking trails to the summit of Mount Ungaran, tea plantation, Lawe waterfall attractions and even animal and plant hunters on Mount Ungaran. The transfer of functions of natural forest land in this area by planting coffee plants is likely to disrupt bird habitat so that it will affect the availability of bird feed. So that more studies are needed regarding to the diversity of birds based on feeding guilds in the area of Mount Ungaran, especially in Ngesrepbalong Village.

II. METHOD

A. Location and time

The research was carried out in the Gunung Ungaran area, Kendal regency, Central Java with an altitude of 900 - 1390 masl with three different habitat in Ngesrepbalong Village, Limbangan District Kendal District, there were tea plantation, secondary forest and settlement. The study was conducted in January 2018 - August 2018 with four repetitions of bird observations in each habitat.

B. Procedure

Retrieval method of bird observation data in each type of observation habitat using the Count Point method. Next is identifying the guild category of bird feeding on Mount

Ungaran based on its main of feed. Classification of bird feeding guild on Mount Ungaran. feeding guild soecies based on Field Guide of Bird in Sumatera, Java, and Kalimantan [9], and supported by knowledge about the ecology of bird species on Mount Ungaran. The next step is to compile a table of lists of each

I. RESULT AND DISCUSSION

The result of bird species richness showed total of 77 species of birds was recorded in the Ngesrepbalong Village of Mount Ungaran, a species of bird belonging to 37 families of 13 orders. From 77 species of birds are grouped into 11 category of feeding guild (Table 1).

Table 1 Clasification of feeding guild category

No	Guild category
1	Aerial Insectivore (AEI)
2	Carnivore (CA)
3	Carnivore – Insectivore (CA IN)
4	Fly Catching Insectivore (FCI)
5	Seed Eater (SE)
6	Omnivore (OM)
7	Arboreal Frugivore (AF)
8	Shrub Foliage Gleaning Insectivore (SF GI)
9	Nectarivore – Insectivore (NE IN)
10	Frugivore – Insectivore (FRU IN)
11	Insectivore – Frugivore (IN FRU)

The bird species richness in Ngesrepbalong Village, Gunung Ungaran area is dominated by insectivorous birds as the main food (40 species or 51.94%). Based on feeding guild category (Table 2) , insectivorous birds are the most dominant group. Fly Catching Insectivore birds or

insectivorous birds while floating with the most species (15 species or 19.48%). The next dominant category is fruit eaters or frugivore with the most dominant group namely frugivore-insectivores or fruit and insect eaters (14 species or 18.18%).

Tabel 2. Feeding guild of bird species on Mount Ungaran

Guild category	Species		
AEI n = 7; 9,09%	<i>Collocalia linchi</i>	<i>Aerodramus vulcanorum</i>	
	<i>Hirundo tahitica</i>	<i>Hirundapus caudacutus</i>	
	<i>Apus nipalensis</i>	<i>Hemiprocne longipennis</i>	
	<i>Aerodramus maximus</i>		
CA n = 4; 5,19%	<i>Elanus caeruleus</i>	<i>Pernis ruficollis</i>	
	<i>Nisaetus bartelsi</i>	<i>Myophonus caeruleus</i>	
CA IN n = 6; 7,79%	<i>Halcyon cyaniventris</i>	<i>Egretta garzetta</i>	
	<i>Todirhampus chloris</i>	<i>Hydromis guajanus</i>	
	<i>Spilornis cheela</i>	<i>Bubulcus coromandus</i>	
FCI n = 15; 19,48%	<i>Surmiculus lugubris</i>	<i>Eurystomus orientalis</i>	<i>Orthotomus ruficeps</i>
	<i>Phaenicophaeus curvirostris</i>	<i>Hemipus hirundinaceus</i>	<i>Phaenicophaeus javanicus</i>
	<i>Lanius schach</i>	<i>Muscicapa sibirica</i>	<i>Cacomantis someratti</i>
	<i>Psilopogon australis</i>	<i>Cacomantis sepulcralis</i>	<i>Pericrocotus flammeus</i>
	<i>Psaltria exilis</i>	<i>Orthotomus sepium</i>	

SF GI n = 10; 12,98%	<i>Enicurus leschenaultia</i>	<i>Turnix sylvaticus</i>	
	<i>Cyanoderma melanotorax</i>	<i>Orthotomus sutorius</i>	
	<i>Pellorneum capistratum</i>	<i>Napothera epilepidota</i>	
	<i>Brachypteryx leucophrys</i>	<i>Pnoepyga pusilla</i>	
	<i>Alcippe pyrrhoptera</i>	<i>Sitta azurea</i>	
SE n = 3; 3,86%	<i>Lonchura leucogastroides</i>		
	<i>Passer montanus</i>		
	<i>Streptopelia chinensis</i>		
OM n = 1; 1,29%	<i>Gallus varius</i>		
AF n = 4; 5,19%	<i>Loriculus pussilus</i>	<i>Treron vernans</i>	
	<i>Treron griseicauda</i>	<i>Macropygia unchall</i>	
NE IN n = 3; 3,86%	<i>Cimyrus ornatus</i>		
	<i>Anthreptes malacencis</i>		
	<i>Arachnothera affinis</i>		
FRU IN n = 14; 18,18%	<i>Pycnonotus aurigaster</i>	<i>Rhyticeros undulates</i>	<i>Pycnonotus analis</i>
	<i>Prionochilus percussus</i>	<i>Psilopogon armillaris</i>	<i>Megalaima australis</i>
	<i>Dicaeum trigonostigma</i>	<i>Pycnonotus bimaculatus</i>	<i>Macropygia ruficeps</i>
	<i>Zosterops mountanus</i>	<i>Pycnonotus simplex</i>	<i>Ixos virescens</i>
	<i>Psilopogon javensis</i>	<i>Pycnonotus plumosus</i>	
	<i>Zosterops melamurus</i>	<i>Turdinus sepiarius</i>	
	<i>Dicaeum trochileum</i>	<i>Alphoixus bres</i>	
	<i>Megalurus palustris</i>	<i>Aegithina tiphia</i>	
	<i>Chloropsis cochinchinensis</i>	<i>Picoides moluccensis</i>	

Notes: n = Total Spesies

The existence of the Mount Ungaran area as a protected forest as a source of bird feed in its natural habitat. The variety of habitat types in a region within a certain period of time has the opportunity to have a high wealth of animal species in it. This is because habitat plays a role as a provider of sufficient resources, especially as a place to find

food, breed, and take refuge [10]. With diverse vegetation, birds will get a greater choice of feeding type [11] that causes more diverse grouping of feed not only carnivore or insectivore but birds can play a dual role. So that it causes more diverse category of feeding not only carnivore or insectivore but birds can play a dual role as insectivore carnivore (invertebrate and vertebrate eater).

The most dominant group of insectivorous birds is 40 species or 51.94%. The high type of insectivorous can be caused by the high insect population in the area. The nature of insects that like to hide in some parts of a tree can be a selective factor in the process of speciation techniques looking for bird feed. Most bird species that inhabit forests are indeed insectivores, or make insects an alternative source of feed. This is because birds have specialized in choosing foods that contain high energy, fat or protein, such as grains, insects, nectar and fish [5].

The second dominant category is the frugivore with 15 species or 19.84%. This is due to the availability of fruit in the forest which is sufficient to cause the number of fruit-eating birds to dominate. The species of birds that

I. CONCLUSION

Total of 77 species were found in the Ngesrepbalong Village of Mount Ungaran, Central Java, these species were grouped in 11 category of feeding guild and of the most dominant feeding guilds, which were insectivorous birds.

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have a low number are the nectar-eating groups, which are 3 species or 3.86%, this is due to the lack of flowering plants which causes less interest in nectar-eating birds. According to [9] to present nectar-eating birds it is necessary to select plants based on their flowering time in order to provide nectar throughout the year.

Eating grains or seed eater and carnivore have a small amount. Grain-eating birds are often found in open areas, such as settlements or rice fields. Meat-eating birds rely heavily on primary rainforests, large trees for nesting and nesting are important components for birds of prey [12]. This causes a small number of birds of prey.

The dominance of insectivorous birds was also recorded in bird communities on P. Java [13][14]. Most birds are insectivorous or make insects their main food.

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