Distribution of Diurnal Bird in Pine Forests and Citrus Orchard in Bedengan, Selorejo Village, Malang

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Abstract

Selorejo village located in the district of Dau, Malang regency, is a village that has a lot of potential for nature tourism. Selorejo village in the region of Malang the north, to the village of Gading Kulon as boundary north, Tegalweru village as the East boundary, and the boundary south is the Petung Sewu village. One potential place for tourism is Bedengan. A location which has a camping ground yet around the site are some kind variety of vegetation types like pine forests and citrus groves dominated by local residents. The purpose of this research is to determine distribution spatial and temporal diurnal birds in Bedengan and to found bird in citrus orchards and pine forests. This research was conducted in May-October 2015. The Methods is the point count method that have been modified, the method of observation the birds, and data analysis include F (frequency), K (Density), FR (Relative Frequencies), KR (Relative Density), Important Value Index (IVI), temporal using Microsoft Office Excel 2007 software and Spatial design of birds using Photoshop. From the results obtained, At pine forest land is dominated by Glossy swiftlet (Collocalia esculenta). On citrus orchard land dominated by Sooty-headed bulbul (Pycnonotus aurigaster), some birds in pine forests often conducting activities in the air like a Glossy swiftlet (Collocalia esculenta). Heading like Spotted dove (Streptopelia chinensis), sooty-headed bulbul (Pycnonotus aurigaster), Rusty-breasted cuckoo (Cacomantis sepulcralis). At branching like Olive-backed tailorbird (Orthotomus sepium), Javan kingfisher (Halcyon cyanoventris), Eurasian tree sparrow (Passer montanus). Whereas birds in the orange orchard did activity in the Air like Glossy swiftlet (Collocalia esculenta). On Heading like sooty-headed bulbul (Pycnonotus aurigaster) and Eurasian tree sparrow (Passer montanus). The results showed that on the morning the dominate in citrus orchard is Glossy swiftlet followed by the Sooty-headed bulbul and Javan kingfisher which the pine forest is Sooty-headed bulbul followed by Glossy swiftlet and the Eurasian tree sparrow. At noon that dominate in orange orchard is Glossy swiftlet followed by the Sooty-headed bulbul and Spotted dove while the pine forests dominates by the Sooty-headed bulbul followed by Glossy swiftlet and Olive-backed tailorbird. In the afternoon which dominates the citrus orchard is Glossy swiftlet while the dominate in pine forest is Glossy swiftlet followed by Javan kingfisher and Sooty-headed bulbul.

Keywords: Bedengan; distribution; diurnal bird

1. Introduction

Selorejo village located in the district of Dau, Malang regency, is a village that has a lot of potential for nature tourism. Selorejo village in the region of Malang the north, to the village of Gading Kulon as boundary north, Tegalweru village as the East boundary, and the boundary south is the Petung Sewu village. One potential place for tourism is Bedengan. A location which has a camping ground yet around the site are some kind variety of vegetation types like pine forests and citrus groves dominated by local residents.

Pine forest is a kind of trees that grow tall tightly with high-pitched trees. A very important one for the habitat of the fauna around. Habitat is an area that consists of various components, both physical and abiotic are one unit and used as a place to live and breed wildlife. Habitat can simply define as a place of bird’s life. In principle, the birds need a place to find food, shelter, breed and play. Places that provide circumstances in accordance with the interests of the above referred to the habitat, because habitat is an important part of the distribution and the number of birds. Habitat also serves as a place to hide from an enemy that will attack and harass [1].

Bird has long been used as an indicator species to identify conservation areas for the birds can live in all habitats around the world, it is relatively easy to identify, sensitive to environmental changes, distribution data is relatively well known and documented. In an area, the habitat is an important part for the distribution and the number of birds. The growth of the human population with a wide range of activities has led to a decline in bird populations and many of them are threatened with extinction [2].

Based on the description above it seems appropriate to study the distribution of diurnal birds in the orange orchard and pine forests in Bedengan, Malang to determine distribution spatial and temporal diurnal birds in Bedengan and to found bird in citrus orchards and pine forests.
2. Material and Methods

2.1. Time and observation location

Bedengan is located in Selorejo Village, Dau District, Malang. The location is in the West Malang approximately 25 km from the City Centre. Bedengan has a variety of vegetation including pine forests and citrus orchard. Data were collected from May to October 2015.

![Figure 1. Map of Bedengan (Google Map, 2015)](image1)

2.2. Procedure

The data about Distribution of Spatial and Temporal can be obtained by using the point count method which has been modified from [3]. Technical point count done in the following way: Observations were made on two habitat types, namely pine forests and citrus orchard. The data need to be recorded is bird species found there and how many the individu of the bird. Observations conducted in the morning starting at 6:00 to 9:00 a.m, at 09:00 noon until 15:00 a.m and in the afternoon hours of 15:00 to 6:00 p.m. Observations done with 3 repetitions in a pine forest and 3 times in the citrus orchard.

Observations methods is direct observation by observed morphology and documented using the camera, then described from the shape of the body, the beak form, the shape of the foot, iris color, feather color, behavior and habitat in the observation sheet and compared to the book identification. Then the indirect method is to record the sound of birds is heard and identified. Then inserted into the observation sheet. Data analysis was done by F, K, FR, KR, Importance Value Index (IVI), Shannon-Wiener index (H). Compilation of data by using software Microsoft Office Excel 2007 to determine the diversity of birds in both lands. The analysis distribution using Microsoft Office Excel 2007 software and design using Microsoft Office Word 2007.

![Figure 2. Bird’s observation place](image2)
3. Results and Discussion

3.1. Bird diversity

Birds have been found and identified is eight species, it is Glossy swiftlet (*Collocalia esculenta*), Spotted dove (*Streptopelia chinensis*), Olive-backed tailorbird (*Orthotomus sepium*), Javan kingfisher (*Halcyon cyanoventris*), Sooty-headed bulbul (*Pycnonotus aurigaster*), Eurasian tree sparrow (*Passer montanus*), Green junglefowl (*Gallus varius*) and Rusty-breasted cuckoo (*Cacomantis sepulcralis*) in pine forest while on land citrus orchard discovered three species, namely Glossy swiftlet (*Collocalia esculenta*), Sooty-headed bulbul (*Pycnonotus aurigaster*), and Eurasian tree sparrow (*Passer montanus*). At pine forest land is dominated by Glossy swiftlet (*Collocalia esculenta*). On citrus orchard land dominated by Sooty-headed bulbul (*Pycnonotus aurigaster*).

Table 1. Bird Diversity in Bedengan, Malang

<table>
<thead>
<tr>
<th>Indonesia Name</th>
<th>Scientific Name</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walet sapi</td>
<td>Glossy swiftlet (<em>Collocalia esculenta</em>)</td>
<td>Least Concern</td>
</tr>
<tr>
<td>Tekukur Bisa</td>
<td>Spotted dove (<em>Streptopelia chinensis</em>)</td>
<td>Least Concern</td>
</tr>
<tr>
<td>Cinenen Jawa</td>
<td>Olive-backed tailorbird (<em>Orthotomus sepium</em>)</td>
<td>Least Concern</td>
</tr>
<tr>
<td>Cekakak Jawa</td>
<td>Javan kingfisher (<em>Halcyon cyanoventris</em>)</td>
<td>Least Concern</td>
</tr>
<tr>
<td>Cucak Kutulang</td>
<td>Sooty-headed bulbul (<em>Pycnonotus aurigaster</em>)</td>
<td>Least Concern</td>
</tr>
<tr>
<td>Burung Gereja Erasia</td>
<td>Eurasian tree sparrow (<em>Passer montanus</em>)</td>
<td>Least Concern</td>
</tr>
<tr>
<td>Ayam Hutan Hijau</td>
<td>Green junglefowl (<em>Gallus varius</em>)</td>
<td>Least Concern</td>
</tr>
<tr>
<td>Wiwik Uncuing</td>
<td>Rusty-breasted cuckoo (<em>Cacomantis sepulcralis</em>)</td>
<td>Least Concern</td>
</tr>
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</table>

This benefits the farmers because the birds also prey on a variety of insects, worms and various other small animals that become pests. Sooty-headed bulbul (*Pycnonotus aurigaster*) frequently visited places open, roadside, garden, yard, scrub and secondary forest, up to a height of about 1,600 m above sea level. Often, too, found living wild in the garden and home pages in urban areas. Sooty-headed bulbul is often said, evidence of human activity. Glossy swiftlet fly in groups, irregular. They are not strong enough to fly far away. Usually flying low just spinning near the surface of the ground or river for bathing and drinking. When foraging, often circling the big trees and tall that many insects, especially small wasps [4].

3.2. Spatial and temporal distribution

Observations (Fig. 4) indicate that some birds in pine forests often conducting activities in the air like a Glossy swiftlet (*Collocalia esculenta*). Heading like Spotted dove (*Streptopelia chinensis*), sooty-headed bulbul (*Pycnonotus aurigaster*), Rusty-breasted cuckoo (*Cacomantis sepulcralis*). At branching like Olive-backed tailorbird (*Orthotomus sepium*). Javan kingfisher (*Halcyon cyanoventris*), Eurasian tree sparrow (*Passer montanus*). Whereas birds in the orange orchard did activity in the Air like Glossy swiftlet (*Collocalia esculenta*). On Heading like sooty-headed bulbul (*Pycnonotus aurigaster*) and Eurasian tree sparrow (*Passer montanus*). Some birds in the citrus orchard tend to avoid the area because Citrus orchard in Bedengan still using the conventional system so that the suspected influence of pesticides. According to [5], pesticide indirectly influence the reproduction of birds and declining productivity because of the bird in the egg shells damaged by pesticides.
Trees provide resources for bird life that provide a source of food and shelter as fundamental to survival. The more diverse habitat structure (diversity of plants and vegetation structure), the greater the diversity of wildlife [6]. Habitat which has a diverse type of vegetation that would provide more types of feed, so the choice of food for birds will be more. The discovery of bird species are very closely linked to habitat conditions. Creatures will choose a habitat that has an abundance of resources for survival, otherwise rarely or never found in a less favorable environment for them.

This shows that trees or plants are a very important habitat for birds. Generally, bird habitat is an area that has a composition of plants in it. Plant used by birds as habitat for nesting, shelter, feeding, breeding and other activities. Groups of different vegetation will show the diversity of different birds. The activity of birds found in the Pine Forest and Citrus Orchard much done on the good tree canopy from the branching up to the tree tops. There are many bird's nest in the tree canopy among branches compactus. In this case the tree acts as a cover/shelter from the weather and predators, nesting, playing, singing and resting [7]. But also found birds nesting in the tree canopy, but also active in the ground for foraging and searching for nest material. According to [8], insect found in pine forests...
are Diptera, Scarabaeidae, Formicidae, Isoptera, Orthoptera and Hemiptera, while according to [9], found insects in citrus orchards is Arachnidae, Coccinellidae, Chrysopidae and Hymenoptera.

Figure 6. Important value index at pine forest and citrus orchard in the morning

Figure 7. Important value index at pine forest and garden citrus in the daylight

Figure 8. Important value index at pine forest and citrus orchard in the afternoon

The results showed that on the morning the dominate in citrus orchard is Glossy swiftlet followed by the Sooty-headed bulbul and Javan kingfisher while the pine forest is Sooty-headed bulbul followed by Glossy swiftlet and the Eurasian tree sparrow. At noon that dominate in orange orchard is Glossy swiftlet followed by the Sooty-headed bulbul and Spotted dove while the pine forests dominates by the Sooty-headed bulbul followed by Glossy swiftlet and Olive-backed tailorbird. In the afternoon which dominates the citrus orchard is Glossy swiftlet while the dominate in pine forest is Glossy swiftlet followed by Javan kingfisher and Sooty-headed bulbul. According to [1], the activity of birds in search of food more done in the morning, between 5 to 9 a.m and in the afternoon at 3 until 6 p.m in the same time to perform activities in the next day.
References