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Bird Community Structure (Avifauna) in The Coastal Forest Area of Baluran National Park

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Abstract

Baluran National Park is a Natural Resources Conservation area. Avifauna is a perfect indicator to determine environmental health and the value of biodiversity as a whole. This study aimed to assess the diversity of avifauna species and their abundance in Baluran National Park. This research using a combination line transect and point count method. The results showed that Baluran National Park has high species diversity. Species found during the study were 36 of 24 families. As many as 11% (4 species) of birds are in a large category, 39% (14 species) in a general category, 19% (7 species) in a frequent category, 6% (2 species) in an uncommon category and 25% (9 species) in a rare category. Based on the research results, it can be concluded that there are various kinds of avifauna in Baluran National Park.

Keywords: Avifauna, Baluran National Park, Diversity, Line Transect, Point Count.

A. Introduction

Baluran National Park is located at the eastern end of the island of Java to the north bounded by the Madura Strait, east by the Bali Strait and south to west bordered by Pandean Hamlet, Wonorejo Village, Bajulmati River, Klokeren River, Karangtekok River and Sumberwaru Village. Geographically this Baluran National Park is located between 70 29'10 "to 7 055'55" LS and 1140 29'20 "to 1140 39'10" East Longitude. Baluran National Park has the potential for high biodiversity in flora, fauna, and the ecosystem, including the beauty of its natural panorama (Alikodra, 2002).

As a conservation area, Baluran National Park has various types of flora and fauna. Besides, the ecosystem has multiple benefits, both tangible (limited scale utilization) and intangible (clean air and natural scenery) (Molles, 2014). Both of these benefits are in the same space and time. We need a form of policy that can regulate the allocation of resources concerning meeting community needs while still paying attention to the environment's carrying capacity and socio-economic aspects of the surrounding community.

Birds are an essential component in the food chain cycle in an area. Birds play a role in helping the process of spreading seeds, helping to pollinate flowers, and as an indicator of

environmental pollution (Howes, 2003). Bird conservation must collect data on the diversity and abundance of birds in certain areas, especially in Baluran National Park, East Java.

According to Peterson (1971), one of the factors that support a bird species' distribution and ability to survive in one area is the variation in morphological characters. Where there is variation in size, coat, beak shape, leg shape, in each species, another factor that determines the diversity of bird species in a habitat is the canopy density. Many bird species will use habitats with a relatively open canopy to carry out their activities, compared to densely closed habitats (Orians, 1969).

Based on the conditions described above, it is necessary to conduct a study of bird diversity based on differences in land use as bird habitat in a conservation area, such as in Baluran National Park to identify bird species in a community or ecosystem and be able to provide an opinion on the relationship. If related to their habitat, bird species in a community or ecosystem can obtain information about the diversity of avifauna species and their abundance in Baluran National Park.

B. Literature Review

1. Avifauna Observation Method

According to Howes (2003), specific methods are needed to make observations in collecting avifauna data. Besides that, preparation is also not required to experience difficulties later when doing field observations. Topographic maps used to assess field conditions and other maps that support avifauna data collection. When studying topographic maps or other supporting maps, things that need be considered are the areas that are usually visited by several avifauna species. In collecting avifauna data, there are many types of survey methods that are commonly carried out, but sometimes it is necessary to combine with other methods.

Each of these methods has advantages and disadvantages, both in terms of time required, area coverage, accuracy, access and logistics mobilization.

2. *Kinds of Avifauna Observation Methods*

Data was collected by collecting data on the types and number of individuals per class, time of encounter, and activity. According to Mustari (2011), three methods are used in the observational study: the point transect, strip transect, and line transect. Point transect is done by determining the observation area, and the observer is stationary at the centre point and determining the radius of the observation. Record the animals found and do the repetition. (Rusmendro, 2009. In-Line Transect, the length of the line used is 1 km. The transect line's width for observation is determined before making the observation and is adjusted to the observation location conditions. In this observation, the track width is 15m. The data collected is based on direct encounters with animals in the observation path's width. Line Transect is the length of the track used is 1 km. The pathwidth is adjusted to the observer's viewing distance. The data collected is based on direct encounters with animals in the observation path's width.

The assumptions used in line transect are 1. Animals and transect lines are located randomly, 2. Animals do not move/move before they are detected; 3. No animal counted twice, 4. An animal or group of animals is different from one another. An animal that flies does not affect the activities of other animals, 5. The response of animal behaviour to the arrival of observers does not change during the census, 6. Habitat is homogeneous; if not homogeneous, stratification can be used (Rusmendro, 2009).

Encounter rates is a direct observation by exploring and counting each individual encountered. This method is suitable for hilly terrain, so it is impossible to use the line transect method. The data obtained were tabulated in a simple abundance sequence scale modified by Lowen et al. (Bibby et al., 2000).

According to Howes (2003), in collecting avifauna data, the most common survey method is a road survey. The main reason is that it is relatively easy and inexpensive to organize to conduct surveys in this way. During the inland survey, two main techniques are used in conducting wetland assessments and shorebird counts. The two processes are:

1. If observations are made along a beach or lake, the best step is to walk along the area's edge, using binoculars to see where the bird concentrations are. If we find the birds' location, we try to count each species' number of individuals. Collecting data using this method is often referred to as the transect method, where a line is used to observe the types of avifauna beside the route.

2. If the above conditions are not possible, then another way is to make observations more freely without causing interference. The ideal location is like a higher area. Statements are made using a binocular or monocular. Using this method, collecting data is often called the point count method, where one or more observation points are selected.

According to Howes (2003), apart from conducting surveys by land, surveys can also be carried out by water. Waterway surveys are possible because Indonesia has a vase area of coast and other wetlands and is sometimes very remote, so it is often impossible to survey by road. On the other hand, if it is surveyed from the air, it will be costly. Water surveys are usually carried out by boat. Apart from being used as transportation, boats can also be used for base camp if the data collection location is far enough and moving around. Sometimes the ship can also be used as a place for observation, although often this is not very adequate, because it causes too much wobble and makes identification difficult.

3. Combination method

This research on the diversity and dominance of avifauna in Baluran National Park, Situbondo, East Java uses a combination method. The combination method used is the line transect and point count methods.

According to Howes (2003), data collection methods can use either of these methods or a combination of modifications to existing methods. These two methods are very appropriate if used in the observation of avifauna in coastal forest locations, because in addition to getting a lot of species diversity found using the line transect method, using the point count method we can get more accurate data because observers can observe and stay longer at the survey location so that the habitat, behaviour, food, sound and oyhers can be clearly identified.

The combined method is expected to obtain representative and accountable results of diversity and dominance of avifauna species based on observation points. It is because bird species have different behavioural adaptations from one another.

C. Methodology

1. Time and Location

The study on bird community structure (Avifauna) was conducted on Saturday, August 8, 2020, at 11.00 in the coastal forest area of Baluran National Park. Precisely in the coastal forest area is located at 1140 27' 24.8 "E and 70 50' 58.7 "S.

Figure 1. Map of the avifauna observation location

2. Procedure

Before starting a bird watching study, it is imperative to prepare survivor equipment such as binocular or monocular binoculars to observe birds high in the trees. A bird identification handbook, and data sheets and sketches to record and describe the morphology of birds observed for identification. After all the equipment is complete, observational studies canbe carried out. In this study, bird watching was carried out using a combination method. The line transect combination method uses a transect along 300 meters with a width of 10 meters. The point calculation technique uses a circle with a radius of 50 meters at four points, namely 0m. , 100m, 200m, and 300m. This point count method prioritizes the observation of birds eating or perching on trees at the observation location. Therefore it is necessary to determine the enforcement of plants in that location by recording the tree species (not forgetting to note the

species of bird species observed). It is done because there is a relationship between birds and the vegetation theyare found, diet, type of food or "nesting" behavior. At each point count point, the observation time is about 30 minutes; this is so that the observation at the surrounding point can be maximized and observe the birds' diet or behaviour so that the data obtained is sufficient for further identification. All bird species observed or whose voices were only heard were identified and counted in each of these point count points.

Not only observing and hearing the sound just like that, in this observational study, variables are also recorded as supporting data, such as behaviour whether flying or perching, behaviour when flying or perching (searching, eating, staying still and so on), standing category when birds are perched. (trees, hang and so on). This data will be perfect if the types of perches are record. After the informationis obtained, it is then entered into the data table. Then, from the bird species and abundance data, ecological indices' values, namely the dominant index and the Shannon-Wiener diversity index, can be found.

After calculating the species dominance index and the Shannon – Wiener index, an analysis of bird species' abundance and diversity was carried out using Canoco software. The work steps of using the software are as follows; first, data is made in Microsoft Excel with columns as species type and rows as transect points. Both copies of the data in the WcanoImp softwareare first save. Third, open the Canoco for Windows software, click on file - a new project, enter the data that has been saved using WcanoImp then click next. When the Type of Analysis box appears, select a linear response model, then click next to finish. The fourth step opens the Canoco Draw software, then click on file - new project. Then enter the result data from the Canoco for Windows software. Once entered, click the create bar on the bar above the program, then select biplots and join plots, click species and samples, the distribution image will appear.

3. Technique of Data Analysis

3.1 Dominance Index

$$Di = (ni / N) \times 100\%$$

Di: species dominance i
ni: number of individual species i
N: total number of individuals of all species

A species can be classified based on Jorgensen dominance criteria with D> 5% dominant, D = 2-5% subdominant, D <5% not dominant from the D value.

3.2 Shannon-Wiener Diversity Index (H ')

$$H' = -\sum \{(ni / N) \times Ln (ni / N)\}$$

H '= Shannon - Wiener diversity index
ni: number of individual species i
N: total number of individuals of all species

D. Findings and Discussion

1. *Findings*

Data analysys was conducted to determine the diversity and dominance values of avifauna species in Baluran National Park, Situbondo, East Java. The vegetation structure is one of the key factors affecting the richness of bird species. Plants' existence is closely related to food availability, nesting sites, protection from predators, and microclimate factors. The loss of plant species diversity is one of the essential elements in reducing bird species' diversity. A variety of plants in a habitat will provide a large feed area. Data analysis in this research on avifauna uses a dominance index and uses the Shannon-Wiener diversity index. Dominance index is an index to determine specific types that dominate a community (Odum, 1994).

1.1 Dominance

Avifauna observations were carried out around Baluran National Park's coastal forests, which were dominated by bang trees and thorny shrubs. The avifauna types included *Pycnonotus aurigaster* (sooty-headed Bulbul), *Anthracoceros albirostris* (white-bellied hornbill), *Hirudo rustica* (asian swallow), *Prinia familiaris* (Javan pheasants), *Dicaeum trochileum*

(Javanese chilli bird), *Hirundo tahitica* (rock/pacific swallow), *Streptopelia chinensis* (turtledove), *Geopelia striata* (Javan turtle bird), *Ducula aenea* (green pergam), *Collocalia linchi* (linchi swallow), *Pycnonotus gonexiavier* (trucukan bird), Halphurea, and *Pycnonotus goensiavier* (cucak bird), *Halphureaucracy* with a total of 60 species encountered. We can see the dominance table from the observation in Figure 5. Based on this figure, the Anthracoceros albirostris species dominated the most. This species was recorded as many as 17 individuals.

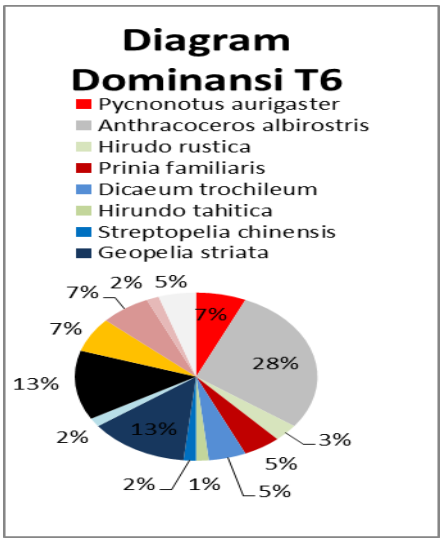

Figure 2. Dominance diagram

Meanwhile, we can see the table of the dominance of species in table 1.

Table 1. Species dominance

No	Species	Indonesian Name	Family	ni	D
1	*Pycnonotus aurigaster*	Cucak Kutilang	Pynonotidae	4	6,666666667
2	*Antjracoceros albirostris*	Kangkareng	Bucerotidae	17	28,33333333
3	*Hirudo rustica*	Layang-layang asia	Hirundinidae	2	3,333333333
4	*Prinia familiaris*	Perenjak Jawa	sylviidae	3	5
5	*Dicaeum trochileum*	Cabai Jawa	Dicaeidae	3	5
6	*Hirundo tahitica*	Layang-layang Batu	Hirundinidae	1	1,666666667
7	*Streptopelia chinensis*	Tekukur Biasa	Columbidae	1	1,666666667
8	*Geopelia striata*	Perkutut Jawa	Columbidae	8	13,33333333
9	*Ducula aenea*	Pergam Hijau	Columbidae	1	1,666666667
10	*Collocalia linchi*	Wallet Linchi	Apodidae	8	13,33333333
11	*Pycnonotus goiavier*	Merbah Cerukcuk	Pycnonotidae	4	6,666666667
12	*Halcyon chloris*	Cekakak Sungai	Alcedinidae	4	6,666666667
13	*Gerygone Sulphurea*	Remetuk Laut	Acanthizidae	1	1,666666667
14	*Alcedo coerulenscens*	Rajaudang Biru	Alcedinidae	3	5
	Jumlah			60	100

1.2 Diversity

Overall, the Baluran National Park landscape can be an area with various types of habitat. Multiple kinds of habitat grouped based on this study show that habitat heterogeneity has a positive relationship with species diversity (Tews et al., 2004). Several types of habitat used as avifauna research location are divided into eight transects: the Bekol-Bama road, acacia forest, monsoon forest, Watching bird trail, coastal forest, and areas in coastal forest. The results of this research on bird diversity in the Bekol-Bama National Park obtained 54 species. Figure 6 shows the comparison of H 'to 8 transects in Baluran National Park.

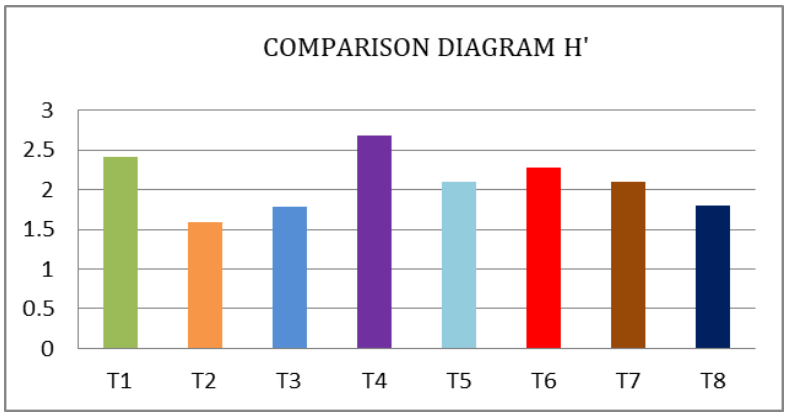

Figure 3. Comparison diagram H '

Figure 3 compares bird diversity levels on transects 1 to 8, is T1 2.406268602: T2 1.586716582: T3 1.785830865: T4 2.6844431: T5 2.103490485: T6 2.271927415: T7 2.092790021: T8 1.802290955.

1.3 Habitat Trend Analysis

In the observation of the avifauna in Baluran National Park, it is divided into eight different transects. Each species has various species from these multiple locations so that each species has a distinct habitat tendency. we can see habitat trends at the observation location in Figure 7. The first transect to transect four is carried out in the savanna area, while transects five to eight are carried out in the bird-watching trail area where the area is a coastal forest area. Each of the different regions has different vegetation. It is what will later affect the types of species that are there.

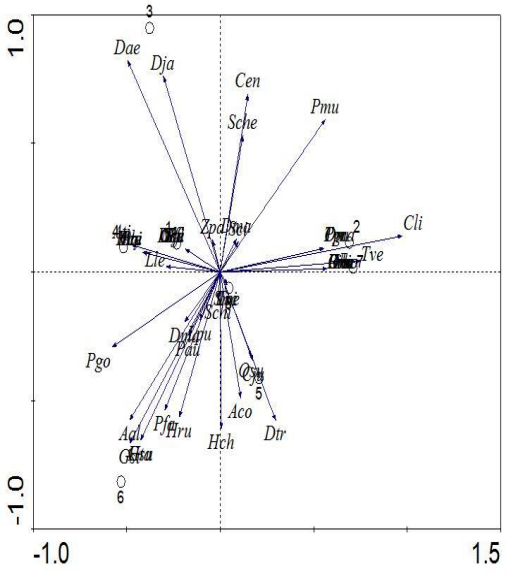

Figure 4. Habitat trends

From Figure 4, it can be seen that the habitat tendency shows that Wallet linchi (*Collocalia linchi*) has a high habitat tendency in each location. It is because the linchi wallet is found in each place both from the savanna area and the bird-watching trail area so that the resulting graph at the second location is very high. We can find this type of wallet linchi along the savanna and coastal forests. This species is found in every transect made in the two locations. We can see a description of the Wallet linchi spesies habitat tendency to be in the savanna. From the savanna location, which is relatively open and there are not a few tall plants, this is why these speciesare often found.

2. Discussion

2.1. Dominance

The pie chart shows this species occupies a percentage of 28%. This species is often found flying above trees and perching on gebang trees. The open vegetation conditions allow this species to occur in large numbers frequently. *Anthracoceros albirostris*, which has the area name Kangkeng, is large (45 cm) and its loud, continuous sound "ayak-yak-yak-yak" will further help

find this bird. Likes to group in several not more than ten individuals in one group. The dominant colour is black with a large yellow horn to the beak; horns' tip has a large black spot. The belly and tail are pure white. Very common in Baluran National Park. They are scattered in coastal forest, highland monsoon forest on Mount Baluran and lowland monsoon forest. It will be easy to find in Bama, Manting, Kelor, Ketokan Kendal, Evergreen, Kali Kepuh, Sambi Kerep, and Pondik Mantri blocks (Ayat, 2015).

Suppose there is the dominance of one avifauna. In that case, it shows that its natural conditions have been disturbed or changed so that only certain species can survive these changes and eventually dominate the area. Avifauna in natural forests has a high diversity of species but a small population. Changes in population size are strongly influenced by changes in food quality and quantity in their habitat. The distribution of avifauna is closely related to the type of vegetation of an area; we can see the diversity of avifauna species from forest use strata. Different kinds of animals in a forest are generally associated with varying levels of the canopy. The vegetation canopy is divided into three groups, where these levels have a significant effect on the feeding behaviour of avifauna. They find that the diversity of avifauna communities is related to the variety of vegetation structures (Hamlis, 2010).

2.2 Diversity

According to Magguran (1988), the level of diversityis influenced by two factors, namely species richness and evenness. Although the number of individuals found on a transect has the highest ranking, the diversity index value is not necessarily the highest. Based on the diagram above, we found the highest number of bird species on transect 4, namely 19 species (13 families). The canopy here is not too closed and open enough. The raptors crossing this area are visible, namely the black eagle (*Ictinaetus malayensis*) and the elangular Bido (*Spilornis cheela*). Apart from the open area, several types of vegetation are found on this transect, mostly consisting of gebang trees, bidara trees and tamarind trees, and several types of shrubs, so that there are many places for the birds to roost. The second-highest number of diversity is bird diversity on transect 1. In this transect, 17 species (12 families)were found.

The third-highest diversity is on transect 6, where 15 bird species from 10 familiesare found. Transect 6 is located in the bird-watching trail area in the coastal forest area of Baluran National Park. The vegetation here is quite dense and consists mostly of gebang and mantingan trees. Besides, there are several types of shrubs. The canopy in this area is slightly closed because of the thick trees. However, it also impacts the number of bird species found. Most of the birds found are perched on branches and in the tree canopy, one of which is the white bellied hornbill (*Anthracoceros albirostris*). The location of the transect which is close to the coast causes several species of waterbirds to be found in this area, namely the river clog (Halcyon chloris, remetuk laut (*Gerygone sulphurea*) and the blue king prawn (*Alcedo coerulenscens*).

On transect 5, the observation location is almost the same as the transect six observation location, namely in the coastal forest bird-watching trail. Still, it does not go too far into the coastal forest. This transect found 12 species of birds from 10 families. The location conditions and vegetation types on this transect are almost the same as those in the transect 6 location, and condition of the cover. One of the diversity of species found in this area is the abundance of food and habitat suitability. Several trees in this area are the home of the caladi ulam (*Dendrocopus macei*) which was observed perching. On transect 7, the observation location is in a coastal forest. Here are found 17 species from 13 families. The diversity is quite large in this area, from water birds such as the buffalo kuntul (*Bubulcus ibis*) to the green peacock (*Pavo muticus*). The vegetation in this coastal forest is quite dense, but there are several open spots. There can be seen birds that are flying clearly, such as hornbills (*Buceros rhinoceros*), golden towers (*Rhyticeros undulates*), and even one type of raptor, the brontok eagle (*Spizaetus cirrhatus*).

In the order of the number of diversity, it was then occupied by transect eight. In these eight transects found 13 species (10 families). The observation location condition is almost the same as transect 7, but it is more into the forest. One difficult species in this area is found here, namely the white starling (*Sturnus melanopterus*). Besides, in areas not covered by a canopy, the bido eagle (*Spilornis cheela*) is seen flying across this coastal forest area. On transect 3, 11 species from 9 families were found. The observation location from transect eight is in monsoon forest. The vegetation is in the form of gebang trees, tamarind trees, and other shrubs. There is also an open area to see the elangular bido (*Spilornis cheela*) and green peacock (Pavo muticus).

We found the least number of spesies on transect 2, namely 13 species (11 families). Habitat conditions in dry grass vegetation and not too many trees are thought to be related to food

resources for birds being very limited. Therefore, there are relatively few birds found in this habitat compared to other habitats.

The difference in the number of bird species found from several transects is thought to be influenced by vegetation conditions. Kurniatun (2013) states that the vegetation structure is one of the keys to bird species richness at the local level. The level of species richness in the four habitat types divided into eight transects in Baluran National Park is different and is influenced by other vegetation conditions.

Six interrelated factors determine the ups and downs of species diversity in a community: time, spatial heterogeneity, competition, predation, environmental stability and productivity (Krebs 1978). According to Alikodra, (1990) in Rusmendro, et al. (2009), the factors that influence the value of H '(diversity) are environmental conditions, the number of species, and the distribution of individuals in each type. Communities that have a high diversity index value have relationships between components in an involved community. However, if the situation is the opposite, community types' diversity is under pressure (Rusmendro et al., 2009). The diversity index proves that the ecological conditions around it fully support the biodiversity in an area. They are starting from the activities of other living things that live side by side, the presence of predators, food availability, and the availability of a safe and comfortable place to live for these birds to breed.

2.3 Habitat Trend Analysis

Adaptation results in certain wildlife settling in an area due to environmental conditions suitable for their lives. In principle, wildlife needs places that can be used to find food, drink, shelter, play and reproduce. Sites that function like this form a unit called a habitat. Habitat is an area that consists of various factors (physiography, vegetation with quality) and is a place for organisms to live. Habitat conditions must cover the extent and quality of life under wildlife demands (Hamzati, 2013).

The environment is different from habitat. A habitat is a place where organisms live. The habitat of organisms can be divided into two, namely terrestrial and aquatic habitats, the environmental conditions of these habitats are different. Environment, habitat and living things will form a system called an ecosystem. In addition to interacting with organisms, environmental components also interact with each other, making it difficult to separate and change them without affecting other parts of the environment (Zoer'aini, 2003). Another opinion says that habitat is an environment with certain conditions in which a species or community lives. A suitable habitat will support the breeding of organisms that live in it usually. Habitat has a specific capacity to support the population growth of an organism. Habitat is an essential part of the distribution and number of birds (Bibby, 2000).

The lower limit of the life requirement is called the minimum point, and the upper limit is called the maximum threshold, between the two ranges. Habitat of living things can be more than one. It is related to resources to meet their daily needs. Different types of habitat for birds are used for foraging, shelter, and breeding (Soemarwoto, 2001).

Each species inhabits a specific geographic area and particular habitats. Birds can occupy a variety of habitat types, both forest and non-forest habitats. Habitat form that is good for the survival of birds is a habitat that can protect from disturbance and provide their living needs. The composition and structure of vegetation also affect the types and numbers of birds in a habitat. Diverse types of plants and ecosystems can better support birds' needs because they have more complete components (Hernowo, 1989). A habitat favoured by one bird species is not necessarily suitable for other bird species' life because basically, each bird species has different habitat preferences (Irwanto, 2006).

The type of vegetation with the form of land cover and the height of a tendency area will influence the types and behaviour of the animals encountered (MacArthur, 1966). The existence of plants is closely related to the amount of food, nesting sites, protection from predators, and micro-climatic factors. In addition, diversity of plant species is an important factor in bird species diversity because various plants in a habitat will provide a broad range of food (Pudyatmoko, 2008).

In Figure 4, Wallet linchi (*Collocalia linchi*)species are often seen flying in groups, but irregularly. This swallow is not strong enough to fly far. Usually, this species flies low just circling and circling large, tall trees in search of food. This wallet prefers areas with water (rivers or lakes), grasslands, and tall and lush trees. Because in places like this, many small insects are food wallets. (Rombang, 1999). Wallet linchi is a bird that is active all day, flying. The relatively open vegetation type makes this bird easy to observe. Baluran National Park has

many cliffs and buffalo areas which Wallet Linchi often uses as nesting sites. Moss nests, grass or other vegetable materials glued together with saliva (Winasiss, 2009).

We can see the forest crow (*Corvus enca*) in the picture of the habitat in the savanna area. From the graph in the figure, it can see a long line between areas two and three. It indicates that the number of species that are often found in this area. Forest crows were found while flying high. This bird is supposed to like in coastal forest habitats, but this species was not found at the time of observation in the area. Forest crows often interact with white-bellied hornbills. This species has a habit of perching in high places and is very sensitive to human presence (Winasiss, 2009).

If seen from Figure 4, we can see this trend that the white bellied hornbill (*Antracoceros albirostris*) has a tendency of habitat in coastal forest areas. It is because, on the sixth transect, we can find namely the bird watching trail area, the coastal forest as many as 17 species. This species can also be found on other transects in the coastal forest. But this species is very rarely found in savanna areas. In Baluran National Park, these species are distributed in coastal forest, highland monsoon forest on Mount Baluran and lowland monsoon forest (Winasiss, 2009). White-bellied hornbills like to group in a number of no more than ten individuals in a group. This species is usually seen on some fruit trees and sleeping trees used by this bird species, for example, Ficus sp. This species is often found in pairs or noisy groups, flapping or sliding between trees (Rusmendro, 2009).

Figure 4 shows that we can seen the habitat trend that the river Cekakak (*Halcyon chloris*) tends in coastal forest habitats. It is because the analysis of the habitat trend image is shown by a long line located at the bottom location, namely on the fifth, sixth, seventh, and eighth transects. In Baluran National Park, this species is often found in habitats, mangrove forests, coastal forests and seasonal forests. Very rarely found in savanna (Winasiss, 2009).

From the habitat trend image, it can be seen that the green Pergam species (*Ducula aenea*) have a reasonably high habitat tendency at the third location. Twenty-four of themwere found, so the resulting graph was very high. The green Pergam has a habit of perching in the afternoon. Meanwhile, this bird flies through the forest and perches to find food in a tall tree canopy in the morning. The green Pergam has an extensive distribution throughout the Baluran National Park area. Along the Batangan-Bekol road, Pondok Mantri, Sambi Kerep, Alas Malang and Merak (Winasiss, 2009).

From the picture of the habitat trend, it can be seen that the Java Chili (*Dicaeum trochileum*) species tends to have a vast habitat. It is because this species is found mostly on the fifth, sixth, and seventh transects, with slightly long lines on these transects. While in the savanna area this species is not found. So it can say that the Javanese Chili species tends habitats in coastal forest areas. The distribution is almost evenly distributed throughout the Baluran National Park area, especially in lowland monsoon forests and coastal forest edges. Cucak kutilang (*Pycnonotus aurigaster*) is evenly distributed in Baluran National Park. Almost all locations are found species of cucak kutilang. Cucak kutilang birds are very active all day long and are noisy, besides that these birds also visit savanna or open areas and forest edges in season. This bird is a bird that eats small fruits and several types of insects. The Cucak kutilang population almost occupies all niches, from the ground floor to tall trees's tops. Besides that, it is also very friendly to human presence (Winasiss, 2009).

Typical Tekukur species (*Streptopelia chinensis*) when viewed from the graph in the habitat trend image, it can be said that this species tends habitat in open areas. This is because almost every observation transect contains birds of this species, although in small numbers (Winasiss, 2009). Apart from the Common Tekukur species, the Merbah cerucuk species (*Pycnonotus goiavier*) also tend to habitats in open areas. Merbah alcoves are very active all day long and enjoy open spaces, scrub, roadsides and secondary forest. These birds often flock, both when looking for food and perching on their own or with other types of merbah, or even with other types of birds (Winasiss, 2009). Compared to other species, the white starling (*Sturnus melanopterus*) species is a bird with a very low habitat tendency in the Baluran National Park area. This is because the line in the habitat trend image for this species is relatively short. This indicates that the population of Starling Putih is very worrying (Winasiss, 2009).

Typical Tekukur species when viewed from the graph in the habitat trend image, it can say that this species has a tendency of habitat in open areas. It is because almost every observation transect contains birds of this species, although in small numbers (Winasiss, 2009). Apart from the Common Tekukur species, the Merbah cerucuk species also tend to habitats in open areas. Merbah alcoves are very active all day long and enjoy open spaces, scrub, roadsides and secondary forest. These birds often flock, both when looking for food and perching on their own

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From Figure 4, we can say the habitat trends that each bird has a different habitat tendency for each species. The composition and structure of vegetation also affect the types and numbers of birds in a habitat. Diverse types of plants and ecosystems can better support birds' needs because they have more complete components (Hernowo, 1989).

So it can say that the vegetation from each location determines the differences of each of these bird species. The graph analysis on the habitat trend image shows that the habitat tendency is in savanna and coastal forest areas. It is indicated by the number of bird species that have this type of movement. Various kinds of bird species can find in the savanna area, such as cucak kutilang, pergam, etc. In the savanna area, there are also many trees which are often made perches for some birds. In addition to these vegetation being used for shelter, foraging for food, they also function as a place for these species' interaction to produce later tillers from these species. This is what can prevent the possibility of extinction of these species.

E. Conclusion

From the research results on six transects in Baluran National Park's coastal forest, 14 different bird specieswere found. The highest dominance rate was Anthracoceros albirostris, with a proportion of 28%. This type of open vegetation is very suitable for this bird's behavior. Anthracoceros albirostris is a bird that often perches on trees. Of all transects, we found the highest diversity of bird species on transect four, and the lowest amount of variety was on transect 2. Species diversity is influenced by vegetation type, therefore causing habitat between one species and another tends to be different.

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