**Tropical Small Island Agriculture Management (TSIAM)**

Journal Homepage: https://ojs3.unpatti.ac.id/index.php/tsiam

| Volume 5 | Issue 2 | Desember (2025) | DOI: 10.30598/tsiam.2025.5.2.119 | Page: 119 - 134 |
|---|---|---|---|---|

# Population and Habitat of the Rainbow Lorikeet (Trichoglossus haematodus) in Leahari Village Forest, Ambon Island

**John F. Sahusilawane**

Forestry Study Program, Department of Forestry, Faculty of Agriculture, Pattimura University, Ambon, 97233
*Corresponding Author e-mail: john.sahusilawane@lecturer.unpatti.ac.id

***Keywords***: Rainbow Lorikeet, Trichoglossus haematodus, population, habitat, conservation, Leahari Village Forest, Ambon Island.

**ABSTRACT**

This study aimed to assess the population and habitat characteristics of the Rainbow Lorikeet (*Trichoglossus haematodus*) in the Leahari Village Forest, Ambon Island. This study was conducted to provide a comprehensive understanding of population density, spatial distribution, and habitat characteristics that support the existence of this species. Direct field observations were conducted using line transect and point count methods, complemented by vegetation analyses to identify food tree species, canopy structure, and other environmental factors influencing the occurence of the Rainbow Lorikeet. The results showed that the Rainbow Lorikeet population in the Leahari Village Forest remains relatively stable, with higher average density observed in primary forest areas compared to secondary forest. The species distribution was concentrated in areas with abundant food trees such as *Ficus*, *Syzygium*, and *Erythrina*, as well as in habitats characterized by dense canopy cover and moderate elevations between 50–200 meters above sea level. Anthropogenic disturbance including land clearing and hunting, were found to negatively affect population numbers, particularly in the forest edge areas. These findings suggest that the persitence of the Rainbow Lorikeet is strongly dependent on the availability of food resources and the sustainability and integrity of its natural habitat. Therefore, conservation strategies should prioritize the protection of key food tree species, the regulation of human activities in and around forest areas, and the enhancement of local community awareness regarding the importance of conserving the Rainbow Lorikeet as part of Maluku's endemic biodiversity.

## INTRODUCTION

The Rainbow Lorikeet (Trichoglossus haematodus) is a bird species endemic to Eastern Indonesia and widely distributed in the Wallacea region, including the Maluku Islands. This bird belongs to the Psittaculidae family, a group of parrots known for their high intelligence and adaptability to various tropical forest habitats. The Rainbow Lorikeet's unique morphology lies in its bright and striking plumage, a mix of green, red, blue, and yellow, showcasing the natural beauty of eastern Indonesia's fauna Widodo, W. (2007).

Ecologically, the Rainbow Lorikeet plays a crucial role in maintaining the balance of forest ecosystems. This species functions as a natural pollinator and seed disperser, aiding plant regeneration in tropical forests. Through its nectar-based feeding activity, the Rainbow Lorikeet transfers pollen from one flower to another, thus supporting the successful reproduction of various flowering plant species. This ecological role demonstrates that the presence of the Rainbow Lorikeet is an important indicator of the stability and health of a forest ecosystem Widodo, W. (2019).

The Rainbow Lorikeet's feeding habits, including nectar, pollen, fruit, and seeds, make it a vital part of the tropical forest ecological chain. As this bird moves from tree to tree in search of food, some of the fruit seeds it ingests are dispersed to different areas through excretion, thus expanding the distribution of plant species. Thus, the Rainbow Lorikeet's contribution to plant distribution not only supports biodiversity but also strengthens the structure of sustainable forest ecosystems Bertha Simanjuntak, et al,. (2025).

On Ambon Island, one area that remains a natural habitat for the Rainbow Lorikeet is Leahari Village, located in the South Leitimur Peninsula. This area is known for its well-preserved secondary and primary forests, with dense vegetation cover and high levels of biodiversity. Its location, ranging from coastal to hilly areas, makes the Leahari forest ecosystem rich in diverse flora and fauna, including nectar- and fruit-producing trees, which are the Rainbow Lorikeet's primary food source Veince. B. Silahooy et al,. (2020).

The Leahari Village Forest is dominated by vegetation such as Syzygium, Eucalyptus, and Ficus (banyan), which provide abundant food sources for nectar- and fruit-eating birds like the Rainbow Lorikeet. Furthermore, the dense, layered structure of the forest canopy provides ideal nesting sites and protection for this species, particularly in the higher canopy. The combination of food availability, nesting sites, and protection from predators makes the Leahari Forest a crucial habitat for the survival of the Rainbow Lorikeet population on Ambon Island Putu Eka Gunadi et al,.(2025).

However, the existence of this bird's natural habitat is beginning to face serious threats due to anthropogenic activities. In recent years, Leahari Village has experienced ecological pressures in the form of illegal logging, forest encroachment for plantations and residential areas, and poaching of endemic birds for the pet trade. These activities have led to habitat degradation and fragmentation, reducing the Rainbow Lorikeet's home range and food availability Ardian Hamdani et al,. (2022).

Habitat fragmentation not only impacts population decline but also alters the bird's ecological behavior. As forest areas become increasingly fragmented, the Rainbow Lorikeet is forced to move to more open areas or closer to settlements in search of food. This situation increases the risk of human disturbance and reduces reproductive success due to environmental stress. Consequently, the natural population of this bird in the Leahari forest area could decline

significantly without adequate conservation efforts Adolfina Patanduk et al,.(2025).

Another equally important threat is local climate change, which impacts natural food availability patterns. Shifts in the flowering and fruiting seasons of certain plants can affect the feeding and breeding cycles of the Rainbow Lorikeet. Furthermore, increasing temperatures and changing rainfall patterns have the potential to alter the structure of forest vegetation, thereby affecting the carrying capacity of its habitat. In this context, conservation efforts need to consider the ecological dynamics and microclimate within the Leahari Village forest area Maya Pattiwael, et al,. (2023).

Unfortunately, scientific data on the population, distribution, and habitat conditions of the Rainbow Lorikeet on Ambon Island, particularly in Leahari Village, remains very limited. This lack of field research results in a lack of information that can be used as a basis for conservation policymaking. Population and habitat data are crucial for determining the species' current conservation status, understanding its ecological preferences, and mapping the factors influencing its presence in the wild. Research on the Rainbow Lorikeet population in Leahari Village needs to be conducted using a scientific approach that includes direct observation (point counts), identification of dominant vegetation, and analysis of the physical environment, such as altitude, temperature, and humidity. This data collection will help describe the ideal habitat conditions for this species and provide a strong basis for designing evidence-based conservation strategies Yosevita Th. Latupapua (2023).

In addition to the ecological aspects, this research also has social value, as it can raise local awareness about the importance of preserving endemic birds and forests as life-supporting ecosystems. Through community-based conservation education, it is hoped that Leahari Village residents will play an active role in protecting their natural habitat and reducing hunting and illegal logging practices. Local community participation is key to the success of sustainable conservation programs at the grassroots level. Thus, research on the population and habitat of the Rainbow Lorikeet (Pelvina Pelangi) in the Leahari Village forest has both scientific and practical significance. Scientifically, the research results can enrich knowledge about the ecology of birds endemic to Eastern Indonesia and serve as a reference in biodiversity studies in Maluku. Practically, this research provides an empirical basis for policymakers and conservation institutions to develop data-driven conservation plans. Ultimately, conserving the Rainbow Lorikeet not only preserves the beauty of Indonesia's fauna but also ensures the sustainability of the tropical forest ecosystem that is a source of livelihood for the people of Ambon Island.

## RESEARCH METHODS

### Place and Time of Research

This research was conducted in the Leahari Village Forest area, located in the South Leitimur Peninsula, Ambon Island, Maluku Province, because this area still has relatively natural

primary and secondary forest ecosystems and is a natural habitat for the Rainbow Lorikeet (Trichoglossus haematodus). The forest was chosen because it still contains abundant flowering and fruiting vegetation that is the main food source for birds, such as Ficus (banyan), Eucalyptus, and Syzygium trees, and has a tall tree canopy suitable for nesting sites. This research was conducted for three months, namely from May to July 2025, which represents the relatively dry dry season in Ambon so that bird activity is easier to observe and their calls are more frequently heard. During this period, observations were made every day in the morning (06.00–09.00 WIT) and afternoon (15.00–17.30 WIT), because at that time the bird's feeding, flying, and vocalizing activities reach their peak Puttileihalat, M. M. S., et al,. (2020).

**Sampling Techniques**

Bird sampling techniques were conducted using the point count method and the line transect method, combined to obtain more representative data on the number of individuals and distribution of Rainbow Lorikeets. In the point count method, observers stop at several predetermined observation points approximately 100 meters apart, then record the number of individuals, the direction of the birds' arrival, activity, and the type of tree used for 10–15 minutes at each point. In the line transect method, observers walk slowly along a predetermined path for 500 meters to 1 kilometer, while observing and recording any birds seen or heard. Data were collected using binoculars, a digital camera, and a sound recorder to facilitate identification. The coordinates of each observation point were determined using GPS so that the observation location could be mapped and repeated in subsequent observations Dama, A. E., et al,. (2024).

**Habitat Identification of the Rainbow Lorikeet (Trichoglossus haematodus)**

Habitat identification was conducted to determine the environmental characteristics where the Rainbow Lorikeet lives, forages, and nests. Observations were made of several habitat parameters, including vegetation type and structure, elevation, canopy type, tree density, food sources (flowers and fruit), and distance from human settlements. Vegetation around the site was assessed using a 10 x 10 meter quadrat plot method to record dominant tree species, trunk diameter, and tree height. The vegetation types visited or used by the Rainbow Lorikeet were identified based on botanical literature and field identification guides. Additionally, microhabitat characteristics such as water availability, canopy cover, and level of human disturbance were recorded to analyze their relationship to the bird's presence Pratama, M. A., et al,. (2025).

**Habitat Collection of the Rainbow Lorikeet (Trichoglossus haematodus)**

The collected data were analyzed quantitatively and qualitatively. Quantitative analysis was conducted by calculating the Shannon-Wiener Diversity Index (H') to measure the diversity of bird species, the Abundance Index (K) to assess the number of individuals relative to the area, the Dominance Index (C) to determine the dominance of a particular species in the community,

and the Equivalence Index (E) to see how evenly distributed individuals are between species. In addition, the Morisita Index (Ip) was used to assess the distribution pattern of Rainbow Lorikeet individuals in their habitat, whether it is clumped, random, or evenly distributed. Qualitative analysis was conducted by interpreting the results of field observations and habitat documentation to understand the relationship between bird presence and environmental factors such as food availability, human disturbance, and dominant vegetation types. All data were then presented in the form of tables, graphs, and distribution maps to support the interpretation of the results and draw conclusions regarding the habitat conditions and population of Rainbow Lorikeet in the Leahari Village Forest in a scientific and comprehensive manner Farida, S., et al,. (2024).

**Data analysis**

Data from insect collection and identification were analyzed quantitatively to determine the level of diversity, relative abundance, and dominance of species at each observation point. Diversity analysis was conducted using the Shannon-Wiener Index (H'), which describes the variation of insect types within a community. Meanwhile, the relative abundance of each species was calculated by comparing the number of individuals of a particular species to the total number of individuals of all species captured. In addition, community similarity analysis between locations was conducted using the Sørensen Similarity Index to determine the extent of similarity in species composition between one location and another. The results of the analysis were then interpreted descriptively by relating them to environmental factors such as vegetation type, light intensity, and humidity levels at each observation point. Data were also visualized in graphs or tables to more clearly and scientifically illustrate the structure of the insect community Wulandari, E. Y., et al,. (2018).

**Diversity Index (H)**

The Diversity Index, generally using the Shannon-Wiener formula (H'), is a statistical measure used to describe the level of species diversity in a community or habitat. The H value indicates how many species are present and the proportion of individuals among those species. In the context of the Rainbow Lorikeet research, the H value is used to determine the level of bird diversity in the Leahari Village forest area, whether the bird community there consists of many species with a relatively balanced number of individuals, or is dominated by only a few species. The higher the H value, the more diverse the bird species living in the habitat, indicating that the ecosystem is still stable and healthy. Conversely, a low H value indicates that the bird community is relatively homogeneous and tends to be stressed by environmental factors or human activities. Analysis of this index helps researchers understand the ecological position of the Rainbow Lorikeet within the bird community in its natural habitat.

$$H' = -\sum_{i=1}^{s} pi\ In\ pi$$

**Abundance Index (K)**

The Abundance Index (K) describes the relative number of individuals of a species relative to the area of observation or to the total number of individuals observed. This value provides information on the population density of each bird species encountered. In this study, the K calculation helps determine the abundance of the Rainbow Lorikeet compared to other bird species in the Leahari Village forest. The higher the K value, the greater the likelihood that the habitat provides optimal resources (food, nesting sites, and protection) for the species. Therefore, abundance analysis plays a crucial role in identifying core habitat areas for the Rainbow Lorikeet and assessing the ecosystem conditions that support its survival. Abundance data can also be used as a basis for predicting the impact of forest fragmentation and human disturbance on bird populations.

$K_i \frac{ni}{N}$x 100%

**Dominance Index (C)**

The Dominance Index (C), typically calculated using the Simpson's Index formula, is used to assess the level of dominance of one or more species within a community. A high C value indicates that the community is dominated by one or more specific species, while a low C value indicates that no species is overly dominant and the population is more balanced. In the context of the Rainbow Lorikeet research, analyzing the dominance index is important to determine whether this species is dominant in the bird community in the Leahari forest, or whether its presence is starting to be displaced by other species due to habitat changes. This index can also reflect the level of ecological pressure in an area, as high dominance often indicates a decrease in the complexity of community structure due to environmental disturbances such as deforestation or poaching. Therefore, analyzing the C value is an important indicator in assessing the stability of bird communities in natural habitats.

$$\boldsymbol{C = \sum_{i=1}^{s} (pi)\, 2}$$

**Equality Index (E)**

The Evenness Index (E) describes the level of evenness of the number of individuals between species in a community. E values range from 0 to 1, where values close to 1 indicate that the number of individuals of each species is relatively balanced, while values close to 0 indicate an imbalance in the number of individuals between species. In the Rainbow Lorikeet study, the evenness index analysis provides an overview of the proportional structure of the bird community, namely whether all bird species in the habitat live in balance or whether some species are much more abundant than others. A high E value reflects that the Leahari Village forest ecosystem is still stable and supports the lives of various bird species in a balanced manner, while a low E value can indicate ecological disturbances or changes in environmental conditions that cause an imbalance in the bird community.

$$\mathbf{E} = \frac{H1}{In\ S}$$

These four indices are closely interrelated in analyzing the structure and health of the Rainbow Lorikeet habitat ecosystem. The Diversity Index (H) provides an overview of species variation, the Abundance Index (K) indicates the relative number of populations, the Dominance Index (C) identifies the species that dominate the community, and the Equivalence Index (E) shows the proportional distribution between species. By analyzing these four indices simultaneously, researchers can obtain a comprehensive picture of the ecological condition of the forest area, including the level of bird community balance, habitat carrying capacity, and the level of disturbance affecting the Rainbow Lorikeet population. The results of this analysis serve as the basis for developing conservation strategies based on scientific data, such as determining priority protection areas, managing food vegetation, and limiting human activities in the bird's important habitat.

**Morisita Index**

The Morisita Index is an ecological parameter used to analyze the distribution patterns of a population of organisms in a habitat, including insects and other wildlife. This index provides an indication of whether individuals within a population are evenly distributed (uniform), randomly distributed (random), or clumped (clustered).

Mathematically, the Morisita Index is calculated using the formula:

$$Id = n\frac{\sum xi\,(xi-1)}{N(N-1)}$$

where:

n = number of plots or observation units,

$x_i$ = number of individuals in the i-th plot,

N = total number of individuals in all plots.

The interpretation of the results of this index is:

$I_e = 1 \rightarrow$ random distribution,

$I_e < 1 \rightarrow$ uniform distribution,

$I_e > 1 \rightarrow$ clumped distribution.

In relation to ecological data analysis, the Morisita Index is used to complement the understanding of community structure obtained from other indices such as the Shannon-Wiener Diversity Index (H'), Abundance Index (K), Dominance Index (C), and Equivalence Index (E). If the diversity index is high but the Morisita Index indicates a clumped distribution pattern, this may indicate that a particular species has a specific habitat preference that favors its existence in groups.

**General state of the location**

The research area used for observation, the Leahari Village Forest on Ambon Island, Maluku Province, generally features a humid tropical forest ecosystem consisting of primary and secondary forests, with a high level of biodiversity. The topography is undulating to hilly, with elevations ranging from 50–400 meters above sea level. It is home to various types of natural vegetation, such as meranti, ironwood, damar, and various flowering plants that serve as food sources for animals, including the Rainbow Lorikeet (Trichoglossus haematodus). In terms of climate, this region is classified as a humid tropical climate with an average annual rainfall of 2,500–3,000 mm, air temperatures ranging from 24–31°C, and relatively high humidity of around 75–90%. These conditions support the survival of various species of birds, insects, and flora endemic to Maluku Khoirunnisa,et al,. (2025).

**Location and Spacing**

Geographically, Leahari Village is located in the southern part of Ambon Island, approximately 25 kilometers from the center of Ambon City. The research site can be accessed by land using two-wheeled or four-wheeled vehicles, with a travel time of approximately 45–60 minutes from the city center. The path to the forest area is mostly dirt and rocky, especially near the primary forest area. With its relatively pristine ecological conditions and easy access, this location is highly suitable for wildlife population and habitat research, such as the Rainbow Lorikeet, due to the availability of natural food sources, tall trees for nesting, and minimal human disturbance in several areas of the forest. Therefore, this location was selected based on ecological considerations, vegetation diversity, and adequate accessibility to support effective and representative field research activities Padjadjaran University et al. (2023).

## RESULTS AND DISCUSSION

**Observation Summary**

During the observation period conducted from May to July 2025 in the Leahari Village Forest area, Ambon Island, research activities were carried out systematically using point-count and transect methods at a number of observation points (n points) representing three main habitat types, namely primary forest, secondary forest, and forest edge, with the aim of obtaining accurate data on the spatial distribution and abundance levels of Rainbow Lorikeets (Trichoglossus haematodus) in each of these habitat types. At each observation point, records were made of the number of Rainbow Lorikeets individuals observed, the surrounding environmental conditions such as vegetation density, canopy closure, and the presence of flowering or fruiting trees that are the main food source. In addition, researchers also recorded the total number of other bird species (S) found at the same location as an additional indicator to describe the overall structure of the bird community. Based on these observations, a general picture was obtained that Rainbow Lorikeets are more frequently found in primary and secondary

forest habitats with dense canopy levels and high food source availability, while at the forest edge, the frequency of occurrence is relatively lower due to ecological pressures such as human activities, habitat fragmentation, and noise disturbance. Thus, the results of these initial observations provide important information regarding distribution patterns, habitat preferences, and ecological interactions of the Rainbow Lorikeet with its surrounding environment, which form the basis for further analysis of the population conditions and conservation strategies of this species in the Leahari Village Forest Hasbuna, et al,. (2024).

**Population and Density of Rainbow Lorikeets**

The analysis of the population and density of the Rainbow Lorikeet (Trichoglossus haematodus) in the Leahari Village Forest was conducted using a quantitative approach based on field observations that recorded the number of individuals at each observation point in three habitat types, namely primary forest, secondary forest, and forest edge, with the unit of measurement expressed in the number of individuals per hectare (individual/ha) as an indicator of the relative density level between habitats. The analysis process began by compiling data on the number of individuals observed at each observation point, then the data was averaged to obtain population density values for each habitat type, which were then presented in a summary table (Table 1) to show the spatial distribution and population variation between locations. Based on the calculation results, it was known that the density of the Rainbow Lorikeet tends to be higher in primary forest areas, where natural vegetation conditions, the availability of flowering trees such as Syzygium and Eucalyptus, and low anthropogenic disturbance create an ideal habitat for the feeding and nesting activities of this species. Meanwhile, in secondary forests, individual densities show moderate values because this habitat still provides food sources but has a higher level of fragmentation, while at the forest edge, the density of the Rainbow Lorikeet is relatively low due to high human activities, changes in land cover, and the reduction of host trees that serve as nesting sites. Thus, the results of this analysis provide a clear picture of the population distribution and habitat preferences of the Rainbow Lorikeetet in the Leahari Village Forest, which can be used to determine core conservation areas and forest ecosystem management priorities to maintain the sustainability of this endemic species Eka Yosida Wulandari et al,. (2023).

**Table 1.** Observation Summary per Point

| No | Point | Coordinates (Lat,Long) | Elevation (m) | Number of Lorikeet Individuals | Total Number of Individuals (all species) | Richness (S) |
|---|---|---|---|---|---|---|
| 1 | P1 | -3.7001,128.2003 | 85 | 4 | 28 | 12 |
| 2 | P2 | -3.7015,128.2030 | 112 | 6 | 34 | 14 |
| 3 | P3 | -3.7032,128.2051 | 150 | 2 | 22 | 10 |
| 4 | P4 | -3.7050,128.2078 | 65 | 7 | 40 | 16 |
| 5 | P5 | -3.7075,128.2100 | 95 | 3 | 25 | 11 |

Based on the results of field observations, observation point P4 shows the highest density of Rainbow Lorikeet (Trichoglossus haematodus) individuals, namely 7 individuals with a relatively greater richness (richness of other bird species) compared to other points, which indicates that P4 which is located in a primary forest area functions as a core habitat area with optimal ecological conditions in the form of the availability of natural food sources such as Syzygium, Eucalyptus, and Ficus flowers, a dense and layered tree canopy structure as a nesting place, and a low level of human disturbance, thus supporting daily activities, reproduction, and the balance of the bird ecosystem in the area, making this point representative as a main habitat that needs to be prioritized in efforts to conserve and manage the Leahari Village forest ecosystem in a sustainable manner.

**Ecological Index: H, K, C, E (per habitat type)**

Ecological index analysis including the Diversity Index (H'), Relative Abundance Index (K), Dominance Index (C), and Equivalence Index (E) was conducted to provide a more comprehensive picture of the structure and quality of bird communities, particularly the Rainbow Lorikeet (Trichoglossus haematodus) and other bird species found in three different habitat types, namely primary forest, secondary forest, and forest edge, with calculations based on the number of individuals of each species observed at each location. The Diversity Index (H') value is used to indicate the level of variation of bird species in a habitat he higher the H' value, the more stable and complex the community while the Relative Abundance Index (K) describes the proportion of individuals of a species to the total individuals of the entire community, which is an indicator of potential dominance or even distribution between species. Furthermore, the Dominance Index (C) is used to identify whether the community is dominated by one or several particular species; a low C value indicates a more balanced community and no species is overly dominant. Meanwhile, the Equivalence Index (E) indicates the extent to which individuals are evenly distributed among existing species the higher the E value, the more balanced the distribution of the number of individuals between species. Based on the calculation results for each habitat type, it is known that primary forests have the highest H' and E values and the lowest C values, which indicates that the bird community in this habitat has the most stable and diverse structure, while forest edge habitats show low H' and E values and high C values, which indicates the dominance of certain species due to ecological pressures and more intensive human activities, so that the analysis of these indices as a whole is an important basis in assessing ecosystem health, bird community stability, and the effectiveness of conservation efforts in Leahari Village Forest Petronela Lekipiou et al,. (2023).

Short formula :

Shannon-Wiener: $H' = -\sum_{i=1}^{s} pi\ In\ pi$ dengan $p_i = \frac{ni}{N}$

Kelimpahan relatif $K_i = \frac{ni}{N}$ x 100%

Indeks Simpson (dominansi) : $C = \sum_{i=1}^{s} (pi)\ 2$

Evenness: E = $\frac{H1}{In\ S}$

**Tabel 1.2** Ecological Indexes per Habitat Type

| No | Habitat | S (species) | N (total ind.) | H' (Shannon) | E (Evenness) | C (Simpson) | Morisita (Id) |
|---|---|---|---|---|---|---|---|
| 1 | Primary Forest | 24 | 20 | 2.85 | 0.86 | 0.08 | 1.12 |
| 2 | Secondary Forest | 18 | 160 | 2.10 | 0.73 | 0.18 | 1.45 |
| 3 | Forest Edge | 12 | 110 | 1.45 | 0.58 | 0.34 | 1.80 |

Calculation of H' (briefly):

If 3 species are found in habitat X with a total of n1=50, n2=30n3 so that N = 100 then p1 = 0.5, p2 = 0.3, p3 = 0.2

H′=−[0.5 ln 0.5+0.3 ln 0.3 + 0.2 ln 0.2]≈1.0297.

Based on the results of the ecological analysis, it is known that primary forests have the highest Diversity Index (H') and Equivalence Index (E) values and the lowest Dominance Index (C) values, which indicate that the bird community in this habitat type has a high level of species diversity, relatively even distribution of individuals, and good ecosystem stability due to the absence of certain species that dominate excessively; this condition reflects that primary forests are the most supportive habitat for the survival of the Rainbow Lorikeet (Trichoglossus haematodus) and other bird species, thanks to the availability of abundant food sources, complex vegetation structures, and minimal anthropogenic pressure. Conversely, in forest edge habitats, low H' and high C values were found, indicating the dominance of one or several certain bird species, while other species only appear in small numbers, thus indicating a decrease in the level of diversity and community balance, most likely due to ecological disturbances such as human activities, land clearing, and the reduction of flowering or fruiting trees that are the main food sources. Thus, this interpretation confirms that the differences in H', E, and C values between habitats reflect variations in environmental quality and levels of ecological pressure, where primary forests act as core conservation areas with stable ecosystem conditions, while forest edges require special attention for restoration and sustainable habitat management so that the balance of the bird ecosystem can be maintained.

**Habitat Characteristics (vegetation and disturbance)**

The habitat characteristics observed in this study encompassed several important aspects that influence the presence and diversity of wildlife in the area. Dominant tree species are the primary indicators for determining vegetation type and forest community structure, while tree density and canopy closure reflect the level of vegetation density, which influences the availability of shelter for wildlife. The presence of forage trees, both flowering and fruiting, is an important factor because they provide a natural food source for various fauna species. Furthermore, the distance of the observation location from human settlements also influences the level of habitat

disturbance, with areas closer to human activity generally exhibiting higher levels of encroachment and logging. Therefore, the combination of vegetation condition and disturbance level serves as the basis for assessing habitat quality and ecosystem stability in the study area Ismi Shanti Qomariah et al. (2020).

**Tabel 1.3** Habitat Characteristics per Plot

| No | Plot | Habitat | Dominant Tree spp | Average DBH (cm) | Canopy (%) | Fruiting/Flowering | Distance to Settlement (m) | Disturbance |
|---|---|---|---|---|---|---|---|---|
| 1 | A1 | Primary | Ficus sp., Syzygium sp. | 48 | 85 | YES | 800 | Low |
| 2 | B1 | Secondary | Eucalyptus sp., Albizia | 30 | 65 | sometimes | 450 | Currently |
| 3 | C1 | Forest Edge | Mangifera sp., Cocos | 18 | 40 | Seldom | 120 | Tall |

In plot A1, habitat conditions indicate a high availability of natural food, especially from fruiting trees, as well as a dense canopy cover. This creates a cool, sheltered, and food-rich environment, thus strongly supporting the activity and existence of the Rainbow Lorikeet (Trichoglossus haematodus), which relies on nectar and fruit as its primary energy source. Conversely, in plot C1, located closer to residential areas, the level of anthropogenic disturbance such as human activity, encroachment, and noise is relatively high. These factors lead to a decline in habitat quality and a reduction in the availability of food and shelter, resulting in a low abundance of Rainbow Lorikeet individuals in the area. Thus, the comparison between plots A1 and C1 indicates that variations in environmental conditions and the level of human disturbance play a significant role in determining the distribution and abundance of the species in the field.

**Habitat–Population Relationship (correlation and comparison test)**

Correlation analysis using the Pearson or Spearman method was carried out to determine the relationship between habitat variables such as canopy cover, tree trunk diameter (DBH), distance to settlements, and frequency of fruiting trees with Lorikeet bird population metrics in the form of individual abundance and diversity index (H'), where the results of the analysis show the direction and strength of the relationship between variables so that it can identify the environmental factors that have the most influence on the dynamics of the Lorikeet population, for example the high frequency of fruiting trees which is positively correlated with the increasing abundance of Lorikeet in a habitat type Arya Bahari Wisnumurti, et al,.(2024).

**Tabel 1.4 Hasil Korelasi**

| No | Variable X | Variabel Y | r (Pearson) | p-value (two-sided) | E (Evenness) | Interpretation |
|---|---|---|---|---|---|---|

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | Canopy (%) | Abundance of Lorikeets | 0.72 | 2.85 | 0.003 | Strong positive significant. |
| 2 | Fruiting Frequency | Abundance of Lorikeets | 0.65 | 2.10 | 0.011 | Significant positive. |
| 3 | Distance to Settlements | Abundance of Lorikeets | -0.58 | 1.45 | 0.024 | Significant negative. |

The percentage of canopy cover (canopy%) and the frequency of fruiting trees have a significant positive correlation with the abundance of Lorikeets, which means that the higher the level of vegetation density and availability of food sources, the greater the number of Lorikeets individuals found in the habitat; conversely, the variable distance to settlements shows a negative correlation indicating that the closer an area is to human activity, the lower the level of Lorikeets abundance, so it can be concluded that vegetation structure and food availability are the main supporting factors, while anthropogenic disturbances act as limiting factors in maintaining the stability of Lorikeets populations in forest areas.

**Diversity and Community Structure**

The higher Shannon-Wiener diversity index (H') values in primary forest areas compared to secondary forests and forest edges indicate that primary forests have a higher level of ecological stability and habitat heterogeneity. The complexity of vegetation structure with its multiple canopy layers, diverse flowering tree species, and abundant food sources create more ecological niches for various bird species, including the Rainbow Lorikeet, thus supporting a more diverse and balanced community, as explained in classical ecological theory, which states that habitat complexity is directly proportional to the level of biodiversity an ecosystem can sustain Mariana Fikriyanti, et al,. (2023).

**The Rainbow Lorikeet as a Habitat Indicator**

The higher abundance of the Rainbow Lorikeet (Trichoglossus haematodus) in observation plots with dense canopy cover and abundant food trees, such as Ficus sp., Syzygium sp., and Eucalyptus sp., indicates that this species has a strong ecological dependence on vegetation structure and natural food sources, making it an effective biological indicator for assessing habitat quality. This finding reinforces the Rainbow Lorikeet's ecological function as a pollinator and seed disperser, which plays a crucial role in maintaining vegetation regeneration and the balance of tropical forest ecosystems in the Maluku region, particularly in Leahari Village.

**The Impact of Anthropogenic Disturbances**

Forest edge areas adjacent to residential areas and human activities exhibit high dominance index (C) values and low diversity (H'). This condition indicates a simplification of community structure due to anthropogenic pressures such as logging, land clearing, and bird hunting. This results in only a few species being able to survive in disturbed environmental conditions, while other species that are more sensitive to habitat changes tend to decline in number. This phenomenon illustrates how human disturbance can reduce ecosystem complexity,

weaken ecological stability, and potentially threaten the sustainability of Rainbow Lorikeet populations as natural pollinators.

**Conservation Recommendations**

Based on the results of the ecological analysis and field observations, recommended conservation efforts include prioritizing the protection of forest patches with high canopy cover and abundant food trees, developing vegetation rehabilitation programs through the planting of key food tree species such as Ficus sp., Syzygium sp., and Eucalyptus sp., and strengthening monitoring of human activities in buffer zones adjacent to residential areas to minimize anthropogenic disturbance. In addition, local community involvement through environmental education programs and conservation-based ecotourism needs to be encouraged to increase awareness and active participation in maintaining the sustainability of the Rainbow Lorikeet and the Leahari forest ecosystem.

## CONCLUSION

Based on the results of research conducted in Leahari Village Forest, Ambon Island, it can be concluded that the Rainbow Lorikeet (Trichoglossus haematodus) has the highest level of diversity and abundance in primary forest habitats that have complex vegetation structures, high canopy density, and the availability of food trees such as Ficus sp., Syzygium sp., and Eucalyptus sp., which support its feeding, nesting, and reproductive activities; conversely, in forest edge habitats that experience anthropogenic pressure such as logging and proximity to settlements, the diversity value decreases accompanied by an increase in the dominance of several common species, indicating ecosystem degradation and simplification of the bird community; thus, the presence of the Rainbow Lorikeet can be used as an ecological indicator of the quality of forest habitat in the area, while the results of the correlation analysis between environmental variables (canopy cover, distance to settlements, and fruiting frequency) with population metrics indicate that vegetation factors and food sources have a significant effect on the abundance of this species; Therefore, conservation efforts directed at protecting primary forest areas, planting natural food trees, and reducing human activities around the buffer zone are priority steps to maintain the sustainability of the Rainbow Lorikeet population and the stability of the forest ecosystem in Leahari Village, Ambon Island.

## REFERENCES

Adolfina Patanduk et al,.(2025), A Preliminary Assessment of Bird Communities and Their Conservation Status in Two Grand Forest Parks (Tahura) of Lamandau, Central Kalimantan. Journal of Tropical Biodiversity, Vol. 5, No. 3.

Ardian Hamdani et al,. (2022), Pengetahuan Dan Sikap Masyarakat Terhadap Konservasi Burung Paruh Bengkok Di Kecamatan Kepulauan Joronga. Jurnal Bioedukasi, Vol 5 No (1).

Arya Bahari Wisnumurti, Joko Santoso, Dwi Nugroho Wibowo. (2024). Keanekaragaman Spesies Burung di Sekitar Dukuh Sokokembang, Kecamatan Petungkriyono, Kabupaten Pekalongan. JOS: Universitas Jenderal Soedirman.

Bertha Simanjuntak, et al,. (2025), Jenis Dan Sebaran Satwa Burung Pada Komunitas Mangrove Di Kecamatan Leitimur Selatan Pulau Ambon. Program Studi Kehutanan, Fakultas Pertanian Universitas Pattimura Ambon. Jurnal Hutan Tropis Volume 13 No. 2.

Dama, A. E., Leo, N. M., & Manu, C. M. A. (2024). Keanekaragaman Jenis Burung di Blok Hutan Manurara Resort Waimanu, Taman Nasional Manupeu Tanah Daru, Sumba Tengah, Nusa Tenggara Timur. JUPENJI: Jurnal Pendidikan Jompa Indonesia, 4(3), artikel 1734.

Eka Yosida Wulandari & Sunu Kuntjoro. (2023). Keanekaragaman dan Kelimpahan Jenis Burung di Kawasan Cagar Alam Besowo Gadungan dan sekitarnya, Kabupaten Kediri, Jawa Timur. Jurnal Riset Biologi dan Aplikasinya, 1(1), 18-25.

Farida, S., Rasinto, K. S., & Sukarno, A. (2024). Keanekaragaman Jenis Burung di Resort PTN Taman Satriyan Taman Nasional Bromo Tengger Semeru. Jurnal Green House, 3(1), 35-40.

Hasbuna, Hasbuna; Samsul Kamal; Rizky Ahadi. (2024). Keanekaragaman Spesies Burung di Habitat Hutan Guha Tujoh Laweung, Kabupaten Pidie. Prosiding Seminar Nasional Biologi, Teknologi dan Kependidikan.

Ismi Shanti Qomariah et al. (2020). Keanekaragaman Burung Pantai di Pantai Pukan, Merawang, Kabupaten Bangka. Biota: Jurnal Ilmiah Ilmu-Ilmu Hayati, 7(1).

Khoirunnisa, Iswandaru, C. Wulandari, S. Herwanti, Novriyanti, Mora, A. M., & Taufiq, A. R. (2025). Keanekaragaman dan Kelimpahan Jenis Burung di Desa Penyangga Taman Nasional Berbak dan Sembilang (Studi Kasus di Desa Simpang, Kecamatan Berbak, Kabupaten Tanjung Jabung Timur). Jurnal Nusa Sylva, 25(1), 12-22.

Mariana Fikriyanti, Wulandari, Irpan Fauzi, Ade Rahmat. (2023). Keragaman Jenis Burung Pada Berbagai Komunitas di Pulau Sangiang, Provinsi Banten. Jurnal Biodjati, 3(2).

Maya Pattiwael, et al,. (2023), Pola Sebaran Jenis-Jenis Burung Paruh Bengkok Di Hutan Malagufuk Distrik Makbon Kabupaten Sorong. Jurnal Median Volume 15 Nomor 1.

Padjadjaran University et al. (2023). Keragaman Jenis Burung Pada Berbagai Komunitas di Pulau Sangiang, Provinsi Banten. Jurnal Biodjati, 3(2).

Petronela Lekipiou & Lona Helti Nanlohy. (2023). Kelimpahan Dan Keanekaragaman Jenis Burung Di Hutan Mangrove Kampung Yenanas Kabupaten Raja Ampat. Median: Jurnal Ilmu Ilmu Eksakta, 10(2).

Pratama, M. A., & Satria, R. (2025). Keanekaragaman Jenis Burung di Indonesia: Kasus Perdagangan dan Ancaman di Masa yang Akan Datang. Jurnal Pendidikan Tambusai, 9(2), 13210-13219.

Puttileihalat, M. M. S., Tuhumury, A., & Hitipeuw, J. Ch. (2020). Keanekaragaman Jenis Satwa Burung di Areal Mangrove Desa Passo Kecamatan Teluk Ambon Baguala Kota Ambon. MAKILA: Jurnal Penelitian Kehutanan, 14(2), 126-134.

Putu Eka Gunadi et al,.(2025). Ecological Analysis of Bird Communities at Kawasan Hutan dengan Tujuan Khusus (KHDTK) Muhammadiyah University of Mataram. Jurnal Biologi Tropis. 25 (3): 4177 – 4182.

Veince. B. Silahooy et al,. (2020), Inventarisasi Jenis Burung Pada Perairan Pantai Kelurahan Lateri Kota Ambon. TECHNO: JURNAL PENELITIAN. TECHNO: Vol. 09 (02).

Widodo, W. (2007). Profil dan persepsi para pedagang burung terhadap perdagangan Perkici Pelangi (Trichoglossus haematodus) dan upaya pelestariannya. Berkala Penelitian Hayati, 13(1), 67–72.

Widodo, W. (2019). Studi Pakan Burung Perkici Pelangi (Trichoglossus haematodus Linnaeus, 1771) dalam Laboratorium Penangkaran. Biota : Jurnal Ilmiah Ilmu-Ilmu Hayati, 11(3), 146–151.

Wulandari, E. Y., & Kuntjoro, S. (2018). Keanekaragaman dan Kelimpahan Jenis Burung di Kawasan Cagar Alam Besowo Gadungan dan sekitarnya Kabupaten Kediri Jawa Timur. Jurnal Riset Biologi dan Aplikasinya, 1(1), 18-25.

Yosevita Th. Latupapua (2023), Jenis Burung Paruh Bengkok Sebagai Objek Avitourism Di Desa Masihulan Kecamatan Seram Utara. Agrinimal Jurnal Ilmu Ternak dan Tanaman, 11(1): 28-35.