



Students' Perception of Avitourism Potential in the Vegetated Area of Universitas Andalas

Ibrahim Fauzi¹, Rihadatul Aisyah¹, Negi Alfajri¹, Muhammad Nazri Janra^{1*}

¹*Department of Biology, Faculty of Mathematics and Natural Sciences, Universitas Andalas*

Jl. Kampus Unand Limau Manis, Pauh, Padang, Sumatera Barat 25163, Indonesia

Email: mnjanra@sci.unand.ac.id

**Corresponding Author*

Abstract

This study evaluated the potential of avitourism in the vegetated areas of Universitas Andalas, West Sumatra, through a two-day birdwatching simulation and campus community perception survey. The simulation was conducted on 7–8 December 2024 at three campus sites using casual birdwatching techniques combined with digiscoping to document bird diversity. In total, 26 species representing 25 genera, 19 families, and 7 orders were recorded. These included five Near Threatened species, one species listed in CITES Appendix II, four nationally protected species, one Indonesian endemic *Prinia familiaris*, and two migrants. Passeriformes was the dominant taxon, highlighting their ecological diversity and their appeal to tourists. An online survey of 44 student respondents showed that 91% had a basic understanding of ecotourism, 95% supported avitourism, and 50% expressed a willingness to pay for avitourism services. Bird aesthetics assessment identified *Hemiprocne longipennis* and *Eurylaimus ochromalus* as the most attractive species for birdwatching. At the same time, feather coloration, vocalizations, behavior, and morphology were considered aesthetic aspects of birdwatching. These results demonstrated that the vegetated area at Universitas Andalas has potential for avitourism initiatives, integrated with biodiversity conservation, to empower environmental education while engaging surrounding communities in conservation-oriented activities that benefit both people and nature.

Keywords: Avitourism, Bird diversity, Conservation, Universitas Andalas, Vegetation

Submitted: 25 December 2025; Revised: 12 June 2026; Accepted: 20 June 2026

Introduction

The Introduction provides a comprehensive overview of avian diversity in Indonesia and the concept of avitourism. However, it is largely descriptive and does not clearly articulate the scientific gap or novelty of the present study. The transition from general avitourism concepts to the specific research problem at Universitas Andalas is relatively gradual and could be more focused. From the standpoint of its bird diversity, Indonesia has been ranked as the fourth richest country in the world after Brazil, Peru, and Colombia (Ibrahim *et al.*, 2023). This situation results from the optimum condition of its tropical environment for being laid in the equatorial region. Recent inventory on Indonesian avian diversity in 2024 increased the total species to 1,836, of which 10 species are new to the list. If it is looked through the viewpoint of endemism, Indonesia is in the

top position globally with 542 endemic bird species (29.5% of the total country species). The rapid dynamics in bird taxonomy play a major role in entangling Indonesian bird diversity, which potentially reveals and increases the wealth of species checklist in this country in the near future (Sukmantoro *et al.*, 2007).

Bird diversity has many benefits, including its role in ecotourism, where nature conservation and community awareness of natural biodiversity can be improved. Ecotourism activity positively contributes to this situation through the implementation of a citizen science project that involves people in collecting biodiversity data and monitoring bird migration patterns and populations. Ecotourism also gives benefits to the local economy, enhances an eco-friendly attitude in the community through donations to conservation projects, and community involvement in

Copyright© 2026. Ibrahim Fauzi, Rihadatul Aisyah, Negi Alfajri, Muhammad Nazri Janra



This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License

How to Cite: Fauzi, I., Aisyah, R., Alfajri, N., & Janra, M. N. (2026). Students' Perception of Avitourism Potential in the Vegetated Area of Universitas Andalas. *Biota: Jurnal Ilmiah Ilmu-Ilmu Hayati*, 11(2), 198-210.

conservation activities. All of these strengthen ecological awareness and, at the same time, promote environmental sustainability; hence, ecotourism plays a significant part in supporting global conservation (Randler & Marx, 2022). Avitourism, a branch of ecotourism with a focus on birdwatching activity in its natural habitats, has become a popular nature tourism destination nowadays. Avitourism emphasizes a journey to nature to sightsee new bird species along with their natural habitats (Nismara *et al.*, 2025).

Avitourism plays an important role in conserving birds and habitats by providing income to the local community and raising community awareness toward the importance of conserved biodiversity and habitats (Valerience *et al.*, 2022). Previous study showed that avitourism contributed directly to the conservation of rare and threatened bird species by creating economic incentives for the protection of birds' habitats through the active participation of the local community (Jien *et al.*, 2021). In addition, avitourism encourages the creation of more effective conservation policy through the cooperation of government, non-government organizations, and the private sector. Avitourism should be wisely managed to evade any negative impact on the ecosystem and bird species, especially those arising from habitat disruption and overtourism (Stronza *et al.*, 2019). Research in the educational forest of Sebelas Maret University, for example, shows that campus areas can serve as potential locations for avitourism as well as a means of education and bird conservation (Aditya *et al.*, 2020).

Universitas Andalas campus complex (UACC) is situated on the hilly terrain of Limau Manis village and encompasses approximately 500 ha of area; this area is suitable for a birdwatching site. More than 30% of its area (160 ha) is categorized as old-secondary or primary hilly rainforest and harbors more than 160 bird species (Janra, 2019). Previous study at Medicinal Garden (Kebun Tanaman Obat or KTO) and Biodiversity Park of Universitas Andalas, parts of UACC that vegetated, recorded 71 bird species of 29 families and 10 orders (Sukmawati, 2010). Another recent study on birds at three different habitats in UACC observed 418 bird individuals, which

were later identified into 38 species of 20 families and 7 orders; 21 species were observed from the vegetated area (Dewangga & Janra, 2024). Considering the growing recognition of avitourism as both a conservation tool and an alternative tourism sector (Iswardaru *et al.*, 2023), campus areas with high biodiversity, such as Universitas Andalas Campus Complex (UACC), represent an important study site. The presence of diverse bird species and the interaction with surrounding communities provide a valuable opportunity to evaluate the ecological and social dimensions of avitourism. Therefore, this study aims to explore the potential of UACC for avitourism development by applying birdwatching activity, involving the campus community to give valuation on bird aesthetics, and consumers' perception of the campus-based avitourism. Previous studies in Indonesia did not use consumers' perception in determining the value of bird diversity; instead, they used the authors' judgment only.

Methods

Time and Location of Study

Birdwatching was conducted on 7–8 December 2024 at the vegetated area of Universitas Andalas (Figure 1a) to simulate an avitourism activity, which usually takes place during weekend days. The vegetated area comprises the Medicinal Garden (Kebun Tanaman Obat or KTO) and Biodiversity Park (BP), which comprises a total area of 100,000 m² (GPS coordinates 0°54'23"S, 100°27'47"E, 245–275 m elevation). This area has dense and varied vegetation (Figure 1b), dominated by Mahagoni *Swietenia mahagoni*, figs *Ficus* spp., Macaranga *Macaranga* spp., and fern *Asplenium nidus* (Fauzi *et al.*, pers. obs.). A network of concrete patches has been constructed within it that can be used as a walking path, which is seldom frequented by the bypassers. Moreover, this area also has tributaries and streams that are essential for supporting the diversity of wildlife. The combination of the complex vegetation structure of tropical hilly rainforest, wildlife biodiversity, environmental conditions, and birdwatching infrastructures creates potential for the development of an avitourism-based education and conservation site.

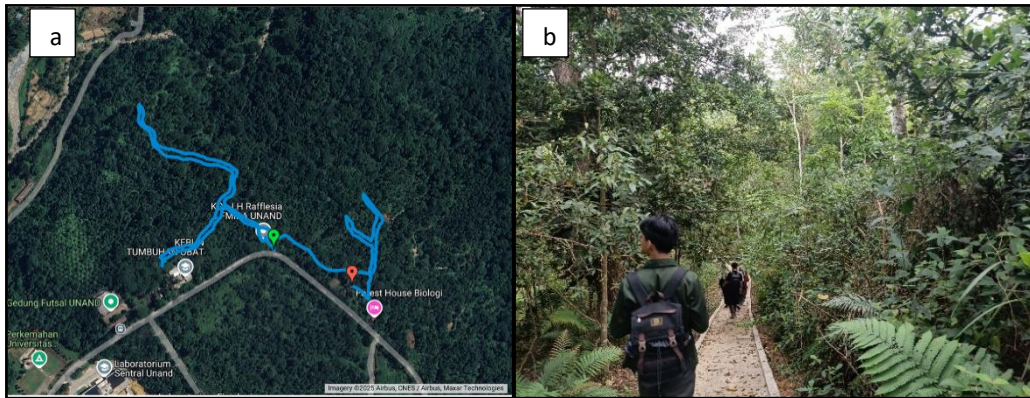


Figure 1. Study site: (a) Observation route where casual birdwatching technique is indicated with a blue line (Google Maps 2025), (b) Habitat and birdwatching infrastructure in the observation site

Work Procedure

It used direct observation on birds through casual birdwatching technique applied while walking through concrete pathways within the study site; the digiscoping technique to photograph any observed bird species was also used with assistance from Nikon CoolPix P900 (close-up one-shot mode). This approach is thought to resemble a birdwatching activity in an avitourism scheme: casual, relaxed, and short-term. With this arrangement, the difference in birdwatching skill among observers can be minimized, while the use of a camera in birdwatching also helps ensure species identification. This situation is perceived as similar to the actual avitourism situation, where there is variability of birdwatching skills and ability among the birding enthusiasts. Observation was effectively conducted within the two days of fieldwork, between 07.00 and 11.00 in the morning. Species identification followed the proper guidance for birds in this region (MacKinnon *et al.*, 2010; Eaton *et al.*, 2021). Data from fieldwork, both species list and visual documentation, were then used to elaborate an online survey to investigate the interest of the community toward avitourism. The online survey inquired about people's insight regarding avitourism and their evaluation of the aesthetics of birds recorded at the study site. The aesthetics survey deployed a 1-5 scale, where 1 indicates 'the least interesting' bird species, up to 5, which signifies 'the most interesting' one. Most respondents of the online survey were university students, predominantly within the age range of 20–25 years, and considered a relevant group as they represent a young, educated demographic with

potential interest and awareness toward avitourism and conservation. Questionnaire material was previously validated using a preliminary panel that consisted of first-year students to eliminate any ambiguity or complex sentences. When applying the questionnaire, the author emphasized that any personal information that was pertinent to the respondents would be kept anonymous; hence, this ensured their sincerity in responding to the questionnaire.

Data Analysis

This study used descriptive analysis to explain the results. Upon identification, all bird species were then grouped into a table pertaining to their taxonomy (families, orders), conservation status, and other relevant information. The conservation status refers to the IUCN Red List (2025), trading status according to CITES (2025), national conservation status (Law No.5 Year 1990, Government Regulation No 7 & 8 Year 1999, and The Regulation of the Minister of Environment and Forestry No. 106 Year 2018), along with endemism and migration status (Sukmantoro *et al.*, 2007). The data from the online survey were also descriptively analyzed. For open questions related to the knowledge on ecotourism and avitourism, categories were established to identify the tendency of respondents' answers. Closed-ended questions were analyzed by quantifying how many respondents selected each option. Bird aesthetics were rated using a 1–5 Likert scale (1 = least interesting; 5 = most interesting). The simple mean score for each species was used to see the weight of each category, following common approaches in ecotourism and

birdwatching research (Tan *et al.*, 2024). These findings were then presented using tables, graphs, and charts.

Result and Discussion

Birds Sighted during Avitourism Simulation

After conducting a two-day avitourism simulation in the vegetated area of Andalas University, a total of 26 bird species were recorded. These species represent 25 genera, 19 families, and 7 orders. Details of the species observed are presented in Table 1.

The conservation status of bird species, as assigned by the IUCN Red List, provides an important reference for assessing the level of threats faced by the species globally. Encouragingly, most species recorded in Table

1 are categorized as Least Concern, indicating stable populations without significant global threats. Table 1 also highlights the presence of species with notable endemism, distribution, and migration status; all are important conservation indications as well as attractive points for birdwatching in avitourism. For example, the Indonesian endemic *Prinia familiaris*, which may face extinction risk from its limited distribution, can be a birdwatching attraction for people from abroad. Bird diversity, predominated by Passeriformes, in the vegetated areas of Universitas Andalas enhances the ecological and tourism value of this site. Their diverse songs, behaviors, and other unique traits offer significant appeal for birdwatching enthusiasts.

Table 1. Details on bird species recorded from the vegetated area in Universitas Andalas

Taxonomy	Vernacular Name		Status				
			IUCN	CITES	Law	Endemicity	Migrant
Columbiformes							
Columbidae							
<i>Treron vernans</i>	Pink-necked Pigeon	Green-	LC	-	-	-	-
<i>Macropygia unchall</i>	Barred Cuckoo-Dove*		LC	-	-	-	-
<i>Geopelia striata</i>	Zebra Dove		LC	-	-	-	-
<i>Chalcophaps indica</i>	Grey-capped Dove*	Emerald	LC	-	-	-	-
Psittaciformes							
Psittacidae							
<i>Loriculus galgulus</i>	Blue-crowned parrot	Hanging-	LC	II	RM	-	-
Cuculiformes							
Cuculidae							
<i>Surniculus lugubris</i>	Square-tailed cuckoo*	Drongo-	LC	-	-	-	-
Caprimulgiformes							
Apodidae							
<i>Collocalia esculenta</i>	Glossy Swiftlet		LC	-	-	-	-
Hemiprocnidae							
<i>Hemiprocne longipennis</i>	Grey-rumped Treeswift		LC	-	-	-	-
Coraciiformes							
Meropidae							
<i>Merops viridis</i>	Blue-throated Bee-eater*		LC	-	-	-	M
Piciformes							
Capitonidae							
<i>Psilopogon mystacophanos</i>	Red-throated Barbet		NT	-	RM	-	-
Picidae							
<i>Picus puniceus</i>	Crimson-winged Woodpecker*		LC	-	-	-	-
Passeriformes							
Eurylaimidae							

Table 1. Continued

Taxonomy	Vernacular Name	Status				
		IUCN	CITES	Law	Endemicity	Migrant
<i>Eurylaimus ochromalus</i>	Black-and-yellow Broadbill*	NT	-	-	-	-
Campephagidae						
<i>Hemipus hirundinaceus</i>	Black-winged Flycatcher-Shrike*	LC	-	-	-	-
Aegithinidae						
<i>Aegithina tiphia</i>	Common Iora*	LC	-	-	-	-
<i>Aegithina viridissima</i>	Green Iora	NT	-	-	-	-
Pycnonotidae						
<i>Pycnonotus goiavier</i>	Yellow-vented Bulbul	LC	-	-	-	-
Laniidae						
	Tiger Shrike*	LC	-	-	-	M
Timaliidae						
<i>Mixornis gularis</i>	Pin-striped Tit-babbler*	LC	-	-	-	-
<i>Macronus ptilosus</i>	Fluffy-backed Tit-Babbler	NT	-	-	-	-
Cisticolidae						
<i>Prinia familiaris</i>	Bar-winged Prinia	NT	-	-	E	-
Dicaeidae						
<i>Prionochilus percussus</i>	Crimson-breasted Flowerpecker	LC	-	-	-	-
<i>Dicaeum trigonostigma</i>	Orange-bellied Flowerpecker*	LC	-	-	-	-
Nectariniidae						
<i>Antheptes malacensis</i>	Brown-throated Sunbird	LC	-	UU&GR	-	-
<i>Arachnothera longirostra</i>	Little Spiderhunter	LC	-	UU&GR	-	-
Estrildidae						
<i>Lonchura striata</i>	White-rumped Munia	LC	-	-	-	-
Sturnidae						
<i>Aplonis panayensis</i>	Asian Glossy Starling	LC	-	-	-	-

Remarks: LC (Least Concern), NT (Near Threatened), II (Appendix II CITES), Law (Law No.5 Year 1990 – “UU”, Governmental Regulation No.7&8 Year 1999 – “GR”, The Regulation of Ministerial of Environment and Forestry No. 106 Year 2018 – “RM”), E (endemic in Indonesia), M (migrant)

The 26 bird species recorded in this study (Table 1) represent about 15.8% of total bird species ever documented from the surrounding area of Universitas Andalas campus, further hinting at the ecological potential and representativeness of this campus for avitourism (Janra, 2019). The 160 bird species recorded from the Universitas Andalas area are accumulated from various observations dated back to around three decades ago; hence, the observation of 26 species within two days of birdwatching is considerable (Janra, 2019). There are eleven species that were not recorded in the most recent study at the same vegetated area (Sukmawati, 2010) and marked with asterisks (*) in Table 1. It has been an established consensus that an area with at least 15 wildlife (e.g., birds) species recorded can be

considered to have potential for being an ecotourism spot (Fandeli, 2000). Casual observations along available routes at the vegetated area of Universitas Andalas (i.e., concrete pathways), combined with digiscoping or other birdwatching techniques, are effective enough to detect various bird species. In many cases, the addition of new species to the bird inventory in Universitas Andalas comes from such observation. Moreover, the use of the digiscoping technique enables better documentation on small-sized or canopy-dwelling birds, which are often difficult to observe with binoculars alone. When appropriately applied, this technique produces high-quality images that are advantageous for future analyses and references, in addition to its portability and storage practicability; some

results are shown in Figure 4a-f (Gaglio *et al.*, 2017).

Some species recorded in the study area hold particular conservation and legal protection status, which can strengthen their attractiveness for avitourism. For example, the Red-throated Barbet *Psilopogon mystacophanos* and Black-and-yellow Broadbill *Eurylaimus ochromalus* (Figure 4b) are categorized as Near Threatened, indicating their populations are vulnerable to decline due to habitat degradation, human exploitation, or environmental change (Ohee *et al.*, 2021). In addition, the Blue-crowned Hanging-parrot *Loriculus galgulus* is listed in CITES Appendix II, meaning international trade is only allowed under strict quota and control to prevent pressure on wild populations (Haryoko *et al.*, 2020). The presence of species with such international recognition enhances their value as flagship species for birdwatching activities. On the national level, the Blue-crowned Hanging-parrot and Red-throated Barbet are protected under the Regulation of the Minister of Environment and Forest No.106 Year 2018, while the Brown-throated Sunbird *Anthreptes malacensis* and Little Spiderhunter *Arachnothera longirostra* are safeguarded by Governmental Regulation No.7 Year 1999. These legal protections not only help secure the species from illegal hunting and trading but also create an added value for avitourism, as birdwatchers often seek opportunities to observe species that are both unique and officially recognized as conservation priorities.

The Indonesian endemic is the Bar-winged Prinia *Prinia familiaris*. The limited distribution of these birds implies the limitedness of their population and, on the other hand, also signifies their vulnerability against disadvantageous factors such as environmental changes, habitat degradation, and deforestation (IUCN Red List, 2025). Blue-throated Bee-eater *Merops viridis* is an example of a global species, as it is distributed beyond Indonesian territory and temporarily exists in Indonesia during its migrational journey. Despite having a wide global distribution, migrant species still face threats from any unfavorable conditions that occur either in their breeding ground, stopover spots, or at their wintering ground. All these facts explain the need also to include both

limited distribution bird species and migrant ones into the conservation scheme, to maintain the sustainability of their future population (Haryoko *et al.*, 2020).

Overall, Passeriformes was the most dominant order recorded in this study. Passerines are globally common due to several ecological advantages, including their ability to occupy highly diverse habitats ranging from mangroves to deserts, their morphological adaptations such as short legs with anisodactyl feet that allow efficient perching, and their capacity to produce complex vocalizations that function in communication and mate attraction (Alim *et al.*, 2020; Mubarrok & Ambarwati, 2019). These characteristics not only make them ecologically successful but also increase their attractiveness for avitourism, as their vocal and behavioral diversity provides engaging experiences for birdwatchers. The predominance of passerine species recorded at Universitas Andalas suggests that the campus vegetation supports a structurally and functionally diverse bird community. This diversity highlights both the ecological significance of the area and its potential to be developed as an avitourism destination. Thus, the avifauna documented here reflects not only the conservation value of the campus but also its role as a promising site for integrating biodiversity protection with educational and tourism-based initiatives.

Potential of Avitourism in the Vegetated Area of Universitas Andalas

A total of 44 respondents participated in the online survey, with female respondents outnumbering male respondents at a ratio of 4:1, which might potentially lead to some gender-bias tendency. In terms of comprehension of ecotourism, the analysis shows that 24 respondents (55%) demonstrated a full understanding and were able to describe the concept clearly, 16 respondents (36%) had a basic understanding, and only 4 respondents (9%) showed very limited knowledge of the concept (Figure 2a). This relatively high level of comprehension may be related to the fact that most respondents (61%) had previously participated in ecotourism activities (Figure 2b).

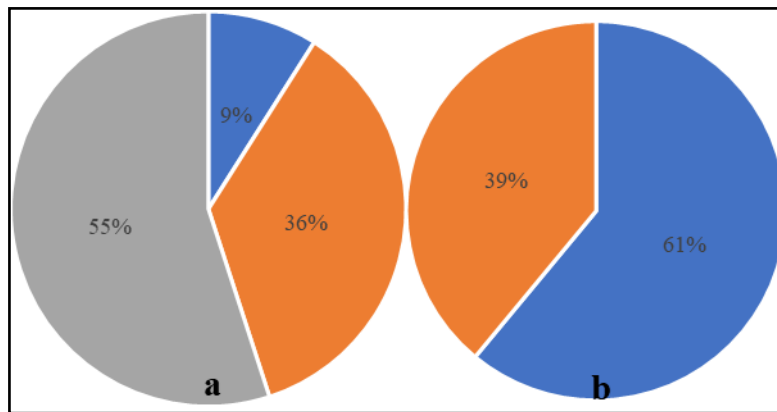


Figure 2. (a) Respondents' comprehension of ecotourism: fully understand (grey), basic understanding (orange), least understand (blue); (b) The involvement of respondents in ecotourism activity: ever involved (blue), never involved (orange).

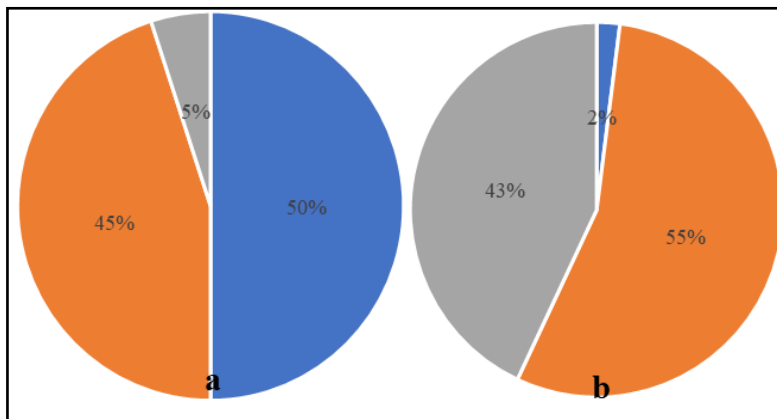


Figure 3. (a) Willingness to pay for avitourism service: agree (blue), uncertain (orange), disagree (grey); (b) Potential of birds as ecotourism attraction: potential (orange), highly potential (grey), not potential (blue)

Based on the online survey, half of the respondents (50%) indicated their willingness to pay for avitourism services whenever available, while nearly half (45%) expressed uncertainty, and only a small proportion (5%) disagreed with the idea (Figure 3a). This finding is consistent with the strong support for birds to be designated as the main attraction in ecotourism development within the vegetated area of Universitas Andalas, where 43% of respondents were very supportive and 55% supportive, thus reflecting an overall positive

perception toward birds as a tourism potential (Figure 3b). In contrast, only 2% of respondents disagreed, suggesting that resistance to this idea is very minimal compared to the overwhelming support shown by the majority.

To assess how respondents perceive the beauty of bird species in the vegetated area of Universitas Andalas, an evaluation of their aesthetic value was conducted, in part with the questionnaire survey. The summarized results are presented in Table 2 below.

Table 2. The aesthetics of birds at the vegetated area in Universitas Andalas according to the respondents of online survey

Taxonomy	Vernacular Name	Aesthetic Value				
		1	2	3	4	5
Columbiformes						
Columbidae						
<i>Treron vernans</i>	Pink-necked Green-Pigeon	0%	0%	11%	34%	<u>55%</u>
<i>Macropygia unchall</i>	Barred Cuckoo-Dove	0%	14%	<u>48%</u>	27%	11%
<i>Geopelia striata</i>	Zebra Dove	2%	11%	<u>55%</u>	30%	2%
<i>Chalcophaps indica</i>	Grey-capped Emerald Dove	0%	5%	9%	<u>57%</u>	30%

Table 2. Continued

Taxonomy	Vernacular Name	Aesthetic Value				
		1	2	3	4	5
Psittaciformes						
Psittacidae						
<i>Loriculus galgulus</i>	Blue-crowned Hanging-parrot	0%	0%	11%	25%	<u>64%</u>
Cuculiformes						
Cuculidae						
<i>Surniculus lugubris</i>	Square-tailed Drongo-cuckoo	5%	14%	<u>43%</u>	25%	14%
Caprimulgiformes						
Apodidae						
<i>Collocalia esculenta</i>	Glossy Swiftlet	5%	27%	<u>41%</u>	20%	7%
Hemiprocnidae						
<i>Hemiprocne longipennis</i>	Grey-rumped Treeswift	5%	0%	2%	9%	<u>84%</u>
Coraciiformes						
Meropidae						
<i>Merops viridis</i>	Blue-throated Bee-eater	0%	2%	11%	20%	<u>66%</u>
Piciformes						
Capitonidae						
<i>Psilopogon mystacophanos</i>	Red-throated Barbet	0%	0%	5%	34%	<u>61%</u>
Picidae						
<i>Picus puniceus</i>	Crimson-winged Woodpecker	0%	0%	9%	18%	<u>73%</u>
Passeriformes						
Eurylaimidae						
<i>Eurylaimus ochromalus</i>	Black-and-yellow Broadbill	0%	0%	0%	20%	<u>80%</u>
Campephagidae						
<i>Hemipus hirundinaceus</i>	Black-winged Flycatcher-Shrike	0%	2%	36%	<u>45%</u>	16%
Aegithinidae						
<i>Aegithina tiphia</i>	Common Iora	0%	5%	23%	<u>43%</u>	30%
<i>Aegithina viridissima</i>	Green Iora	0%	2%	7%	<u>57%</u>	34%
Pycnonotidae						
<i>Pycnonotus goiavier</i>	Yellow-vented Bulbul	0%	16%	34%	<u>45%</u>	5%
Laniidae						
<i>Lanius tigrinus</i>	Tiger Shrike	9%	16%	<u>59%</u>	9%	7%
Timaliidae						
<i>Mixornis gularis</i>	Pin-striped Tit-babbler	2%	16%	<u>50%</u>	32%	0%
<i>Macronus ptilosus</i>	Fluffy-backed Tit-Babbler	2%	9%	<u>45%</u>	34%	9%
Sylviidae						
<i>Prinia familiaris</i>	Bar-winged Prinia	5%	18%	<u>36%</u>	32%	9%
Dicaeidae						
<i>Prionochilus percussus</i>	Crimson-breasted Flowerpecker	2%	2%	11%	<u>57%</u>	27%
<i>Dicaeum trigonostigma</i>	Orange-bellied Flowerpecker	0%	0%	23%	<u>48%</u>	30%
Nectariniidae						
<i>Anthreptes malacensis</i>	Brown-throated Sunbird	0%	0%	14%	34%	<u>52%</u>
<i>Arachnothera longirostra</i>	Little Spiderhunter	2%	2%	16%	<u>41%</u>	39%
Estrildidae						
<i>Lonchura striata</i>	White-rumped Munia	7%	18%	<u>59%</u>	11%	5%
Sturnidae						
<i>Aplonis panayensis</i>	Asian Glossy Starling	0%	11%	30%	<u>41%</u>	18%
Total		0	0	9	9	8

Remark: Underlined value is the score assigned to the species based on the majority choice by respondents



Figure 4. Some species with significant aesthetic score: (a) Grey-rumped Treeswift *Hemiprocne longipennis*, (b) Black-and-yellow Broadbill *Eurylaimus ochromalus*, (c) Green Iora *Aegithina viridissima*, (d) Zebra Dove *Geopelia striata*, (e) Tiger Shrike *Lanius tigrinus*, and (f) White-rumped Munia *Lonchura striata*.

A total of 17 bird species were categorized as highly aesthetic by the respondents, consisting of 8 species with a score of 5 and 9 species with a score of 4 (Table 2). The most notable species were Grey-rumped Treeswift *Hemiprocne longipennis* with 84% and Black-and-yellow Broadbill *Eurylaimus ochromalus* with 80% (both with Score 5), while the Green Iora *Aegithina viridissima* reached 57% in Score 4 (Table 2; Figure 4a–c). Meanwhile, species with Score 3 represented moderate attractiveness, generally characterized by less conspicuous coloration and a more neutral appearance, such as Zebra Dove *Geopelia striata* (55%) and Striped Tit-Babbler *Mixornis gularis* (50%). In contrast, birds that received Scores 1 and 2 were considered to have the lowest aesthetic appeal.

Although no species was predominantly placed in these categories, several respondents still assigned such scores, as shown in White-rumped Munia *Lonchura striata*, 18% in Score 2, and Tiger Shrike *Lanius tigrinus*, 9% in Score 2 (Figure 4e–f).

The survey revealed that feather coloration was the most influential aspect in determining the aesthetic value of birds, receiving the highest number of votes (39 votes). This was followed by a bird sound (29 votes), which also plays a strong role in shaping public perception. Meanwhile, behavior (22 votes) and morphology (18 votes) were considered less dominant, suggesting that visual and auditory traits are prioritized over other characteristics when assessing the aesthetic appeal of bird species (Figure 5).

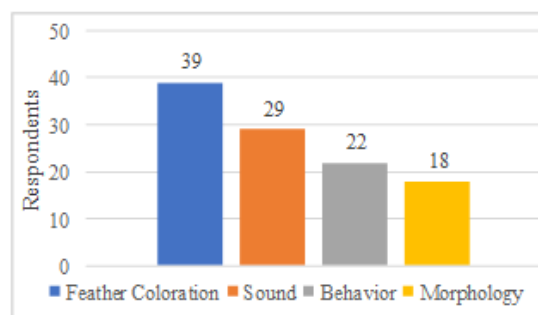


Figure 5. Valuation on aesthetic aspects of birds: feather coloration (blue), sound (orange), behavior (grey), morphology (yellow).

Avitourism involving university students is highly feasible when supported by positive ecological attitudes and interest in nature-based activities (Sánchez-Torres *et al.*, 2025). Such involvement enhances conservation awareness and eco-entrepreneurship through collaboration with local communities and stakeholders, while also supporting project-based learning in ecology and environmental conservation (Davidson *et al.*, 2024; Budiyo *et al.*, 2020). It may further contribute to women's empowerment through roles in guiding, education, and conservation advocacy (Seipalla *et al.*, 2020). Participation is shaped by education, economic potential, and access to information (Rohman *et al.*, 2016), and at Universitas Andalas, the Biology Department provides a strong foundation for developing bird-based ecotourism that benefits both conservation and local economies (Schwoerer & Dawson, 2022). Thus, awareness campaigns and integrated promotion strategies are essential to reduce resistance and strengthen biodiversity conservation efforts (Nismara *et al.*, 2025).

In avitourism, preferences for certain bird species are often driven by their visual appeal (Table 2, Figure 5), which strongly captures the attention of the enthusiasts (Santangeli *et al.*, 2023). Black-and-yellow Broadbill *Eurylaimus ochromalus* (Figure 4b) is a quite appealing bird with contrasting body feathers in addition to its broad bluish bill, compensating for its elusive and secretive nature. In contrast, the Zebra Dove *Geopelia striata* (Figure 4d) exhibits distinctive dark stripes across its greyish-brown plumage, creating a modest appearance in both rural and urban habitats (Cahyani *et al.*, 2022). Unlike many species, the Zebra Dove frequently inhabits human-modified environments, which increases its visibility and familiarity to local communities. This familiarity is reinforced by its ecological role as a seed grazer, linking its presence directly to human landscapes. Another instance, the Striped Tit-Babbler *Mixornis gularis*, with its fine feather stripes and less vivid coloration, draws attention through its dynamic behavior and characteristic vocalizations. Although both species are relatively inconspicuous in coloration, they are well recognized due to their ecological functions as seed dispersers and insectivores, hence retain potential as birdwatching objects

along with many other colorful and attractive species (Ardianto *et al.*, 2022). Despite specific birding aspects sought by birdwatching enthusiasts, any bird should have a certain prominent character that makes it attractive.

Bird behavior encompasses a wide range of activities, from grooming and foraging to complex social interactions (Kamaluddin *et al.*, 2019), which are best appreciated through sustained birdwatching experience rather than single visits that often allow only basic species identification. In contrast, morphological traits were considered less influential in our survey (18 votes; Figure 5), as they require deeper anatomical and taxonomic understanding, although they still contribute to avitourism by enhancing visual, auditory, and educational appreciation of bird diversity. More broadly, bird diversity represents a significant opportunity for ecotourism development, as birds contribute not only to landscape aesthetics but also to ecological functions and environmental education, while global avitourism continues to grow by generating income, employment, and supporting local livelihoods (NABCI, 2025). Its appeal further lies in the integration of coloration, vocalization, behavior, and morphology, which collectively enhance visitor experience while supporting biodiversity conservation (Mubarik *et al.*, 2020).

Recognizing the unique ecological and cultural values of each species is essential for strengthening conservation initiatives through the avitourism scheme. Such values can serve as flagship elements that highlight the importance of biodiversity to governments, local stakeholders, and the wider public (Nikijuluw, 2019). Effective conservation must therefore integrate sustainability, restoration, and revitalization strategies, with equal attention to both tangible and intangible aspects of the environment. These efforts are best achieved through education, advocacy, and participatory approaches that actively involve local communities (Rachman, 2012).

Conclusions and recommendations

This study successfully simulated a short-time avitourism activity within the campus area, emphasizing the potential of the vegetated area of Universitas Andalas as a conservation-based avitourism destination. Recorded bird species during this simulation

reflected the high ecological and aesthetic value of this area, especially those species with conservation, endemic, or migrant status, which in turn can be used as a modality for birdwatching activity in avitourism. The online survey added a positive perception from respondents toward avitourism activity in this area. Despite the limitation of respondents in the online survey (lack of male respondents and respondents from different age levels), the study contributes to the scientific world as it provides baseline data regarding bird diversity, as well as the evaluation of the implementation of campus-based avitourism in the future. Future studies should involve more respondent categories, a prolonged time for birdwatching simulation, as well as other factors that influenced the implementation of the avitourism scheme.

References

- Aditya, A., Sugiyarto, S., Sunarto, S., Masyithoh, G., & Nayasilana, I. N. (2020). The diversity of birds and attractive birds as avitourism objects in Gunung Bromo University Forest, Central Java. *Zoo Indonesia*, 29(1), 54–66. <https://doi.org/10.52508/zi.v29i1.3980>
- Alim, S., Eddy, S., & Mutiara, D. (2020). Karakteristik dan deskripsi ordo Passeriformes di Jalan Seniman Amri Yahya Jakabaring, Palembang. *Indobiosains*, 2(4), 36–43. <https://doi.org/10.31851/indobiosains.v2i4.4586>
- Ardianto, A., Baskoro, K., & Rahadian, R. (2022). Kelimpahan, persebaran populasi, preferensi pakan dan ketersediaan tumbuhan pakan burung bondol (*Lonchura spp.*) di Kota Semarang.
- Budiyanto, M. A. K., Hadi, S., Aminah, T., & Husamah, H. (2020). Ecotourism-based learning models in efforts to implement effective learning: A conceptual research. *Prisma Sains*, 8(2), 69–78. <https://doi.org/10.33394/j-ps.v8i2.3234>
- Cahyani, A. R., Khalifah, I., Anilah, N. G., Chaerunisa, R., & Wahyuni, I. (2022). Keanekaragaman aves di hutan kota Serang, Banten. *Bioma: Jurnal Biologi dan Pembelajaran Biologi*, 7(2), 145–159. <https://doi.org/10.32528/bioma.v7i2.7274>
- Convention on International Trade in Endangered Species of Wild Fauna and Flora. (2025). CITES <https://checklist.cites.org> appendices.
- Davidson, C., Ghezzi, S., & McCoy, D. (2024). Ecotourism in higher education: A model in interdisciplinary program design. In *Advances in the study of entrepreneurship, innovation, and economic growth* (Vol. 30, pp. 5–20). Emerald Publishing.
- Dewangga, S. A., & Janra, N. M. (2024). Inventory and ecology of avifauna in Universitas Andalas campus complex, Indonesia. *Aceh Journal of Animal Science*, 9(3): 81–88. <https://doi.org/10.13170/ajas.9.3.37539>
- Eaton, J. A., van Balen, B., Brickle, N. W., & Rheindt, F. E. (2021). *Birds of the Indonesian archipelago: Greater Sunda and Wallacea*. Lynx Edicions.
- Fandeli, C. (2000). Pengertian dan konsep dasar ekowisata. *Society*, 6, 1–14.
- Gaglio, D., Cook, T. R., Connan, M., Ryan, P. G., & Sherley, R. B. (2017). Dietary studies in birds: Testing a non-invasive method using digital photography in seabirds. *Methods in Ecology and Evolution*, 8(2), 214–222. <https://doi.org/10.1111/2041-210X.12643>
- Haryoko, T., Johnson, O., Brady, M. L., Shakya, S. B., Irham, M., Yohanna, Y., Ritonga, R. P., Prawiradilaga, D. M., & Sheldon, F. H. (2020). Recent Ornithological Expeditions To Siberut Island, Mt. Talamau and Rimbo Panti Nature Reserve, Sumatra, Indonesia. *Treubia*, 47(1), 13–38. <https://doi.org/10.14203/treubia.v47i1.3839>
- Ibrahim, M., Husain, I. H., & Langaru, T. P. (2023). Biodiversity of migrant birds in the Limboto Lake region, Gorontalo Province. *Jurnal Biologi Tropis*, 23(3), 282–289. <https://doi.org/10.29303/jbt.v23i3.5246>
- International Union for Conservation of Nature. (2025). The IUCN Red List of threatened species. <https://www.iucn.org>
- Iswandaru, D., Hariyono, & Rohman, F. (2023). Birding and avitourism: Potential analysis of birds in the buffer villages around conservation areas. *Jurnal Sylva Lestari*, 11(2), 247–269. <https://doi.org/10.23960/jsl.v11i2.681>
- Janra, M. N. (2019). Birding backyard: Birdwatching in Andalas University. In *IOP Conference Series: Earth and Environmental Science* (Vol. 327, Article 012020).

- Jien, L. T., Abdul-Halim, N. S., Hasmi, N. A., & Norazlimi, N. A. (2021). Potential of avitourism in Tanjung Laboh, Johor. In IOP Conference Series: Earth and Environmental Science (Vol. 736, Article 012015). IOP Publishing.
- Kamaluddin, A., Winarno, G. W., Dewi, B. D., & Harianto, S. H. (2019). Keanekaragaman jenis burung untuk mendukung kegiatan ekowisata birdwatching di Pusat Latihan Gajah Taman Nasional Way Kambas. *Jurnal Hutan Tropis*, 7(3), 283-292. <https://doi.org/10.20527/jht.v7i3.7582>
- Lukman Mubarik, A., Aditya, A., Mayrendra, C. T., Latianto, A., Prasetyo, Y. E., Sukma, R. N., Alifah, E. N., Latifah, T. N., Kusuma, S. P., & Al Karim, Y. R. (2020). Keanekaragaman burung sebagai potensi pengembangan avitourism di objek wisata Girimanik. *Biotropika*, 8(3), 152-162. <https://doi.org/10.21776/ub.biotropika.2020.008.03.03>
- MacKinnon, J., Phillips, K., & van Ballen, B. (2010). *Burung-burung di Sumatera, Jawa, Bali, dan Kalimantan: (termasuk Sabah, Serawak, dan Brunei Darussalam)* (LIPI). Puslitbang Biologi Lipi.
- Mubarrok, M. M., & Ambarwati, R. (2019). Keanekaragaman burung di kawasan hutan mangrove Banyuurip, Kecamatan Ujungpangkah, Kabupaten Gresik.
- Nikijuluw, V. P. H. (2019). Biodiversity conservation of coastal fish of Indonesia. *Jurnal Iktiologi Indonesia*, 18(3), 285-296. <https://doi.org/10.32491/jii.v18i3.382>
- Nismara, M. I., Oktovianus, & Sitanggang, I. V. A. (2025). Assessing the Ecotourism Potential of Birdwatching in Tebet Eco Park, an Urban Green Space in South Jakarta, Indonesia. *Journal of Tourism Sustainability*, 5(3), 20-27. <https://doi.org/10.35313/jtospolban.v5i3.170>
- North American Bird Conservation Initiative. (2025). State of the birds report. <https://www.stateofthebirds.org>
- Ohee, H. L., Supriatna, J., & de Fretes, Y. (2021). Pendekatan baru dalam penilaian status konservasi dan penerapannya pada ikan pelangi endemik Papua. *Iktiologi Indonesia*, 113-126. <https://doi.org/10.47039/ish.3.2021.113-126>
- Rachman, M. (2012). Konservasi nilai dan warisan budaya. *Indonesian Journal of Conservation*, 1(1), 30-39. <https://doi.org/10.15294/ijc.v1i1.2062>
- Randler, C., & Marx, N. (2022). Initial involvement into birding: Triggers, gender, and decade effects—A mixed-methods study. *Humanities and Social Sciences Communications*, 9, Article 62. <https://doi.org/10.1057/s41599-022-01062-2>
- Rohman, F., Ghofar, A., & Saputra, S. W. (2016). Partisipasi masyarakat dalam pengembangan kawasan ekowisata di Desa Bedono, Kabupaten Demak. *Management of Aquatic Resources Journal*, 5(2), 61-69. <https://doi.org/10.14710/marj.v5i2.11647>
- Sánchez-Torres, J. A., Hernández Fernández, Y. L., & Perlaza Lopera, C. (2025). Factors influencing university students in conducting ecotourism. *Journal of Tourism Futures*, 11(1), 82-95. <https://doi.org/10.1108/JTF-09-2020-0139>
- Santangeli, A., Haukka, A., Morris, W., Arkkila, S., Delhey, K., Kempenaers, B., Valcu, M., Dale, J., Lehtikoinen, A., & Mammola, S. (2023). What drives our aesthetic attraction to birds? *NPJ Biodiversity*, 2, Article 26. <https://doi.org/10.1038/s44185-023-00026-2>
- Schwoerer, T., & Dawson, N. G. (2022). Small sight—Big might: Economic impact of bird tourism shows opportunities for rural communities and biodiversity conservation. *PloS one*, 17(7), e0268594.
- Seipalla, B., Latupapua, L., & Lellooltery, H. (2020). Kajian potensi ekowisata di Desa Liliboy, Kecamatan Leihitu Barat, Kabupaten Maluku Tengah. 8(3), 280-290. <https://doi.org/10.20527/jht.v8i3.9627>
- Sukmantoro, W., Irham, M., Novarino, W., Hasudungan, F., Kemp, N., & Muchtar, M. (2007). Daftar burung Indonesia No. 2. Indonesian Ornithologists' Union.
- Sukmawati, S. (2010). Jenis-jenis burung di kawasan Kebun Tanaman Obat Farmasi (KTOF) dan Arboretum Kebun Raya Universitas Andalas [Skripsi, Universitas Andalas].
- Stronza, A. L., Hunt, C. A., & Fitzgerald, L. A. (2019). *Annual Review of Environment and Resources Ecotourism for Conservation?* <https://doi.org/10.1146/annurev-environ-101718>

- Tan, H. C., Loo, E. P. L., & Hong, K. T. (2024). Evaluating factors influencing visit intention towards birding tourism: An extended theory of planned behaviour perspective. *Journal of Ecotourism*. <https://doi.org/10.1080/14724049.2024.2435296>
- Valeriance, N, W, I., Norazlimi, N. A., Sa'ed, M, I, M. (2022). The Diversity and Potential of Avitourism in Peat Swamp Ecosystem of Ayer Hitam Utara Forest Reserve, Johor. *Journal of Sustainable Natural Resources*, 3(1), 73-84. <https://publisher.uthm.edu.my/ojs/index.php/jsunr/article/view/10595>