

Chapter 10

Indigenous Bird Ecotourism in Halmahera Island, Indonesia



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Abstract Bird watching hobbyists will often go to great lengths to observe wild birds around the world, traveling to tropical rainforests, beaches, and even mountains. As birds may serve as cultural symbols in which their songs and other sounds are important in various activities, local communities can use a cultural approach to protect birds in close proximity. The results of this study show that endemic bird species are used as cultural symbols by indigenous people on the Indonesian island of Halmahera, a tourist destination for local and foreign visitors. The study used a random survey method which involved interviewing farmers in four regions: Loloda Kepulauan, Maba, Buli, and Wangongira, as well as research respondents residing in forest fringes around the village. Interviews were conducted in local languages. The research findings reveal that the endemic birds most sought after by photographers and tourists belong to eight families: *Paradisaeidae*, *Alcedinidae*, *Pittidae*, *Rallidae*, *Megapodiidae*, *Columbidae*, *Aegothelidae*, and *Meliphagidae*. Furthermore, this study demonstrates how indigenous knowledge can be used to protect local birds by making a species a cultural symbol. These results emphasize the importance of building partnerships with indigenous communities and will hopefully encourage government programs to increase the role of local communities in biodiversity conservation. An ecotourism approach based on indigenous

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knowledge is the key to sustainable development as it combines ecological, economic, and cultural dimensions. Finally, the involvement of women in ecotourism may be especially important, based on the evidence that women play a significant role in conservation activities in our study communities.

Keywords Ecotourism · Indigenous · Birds · Culture

10.1 Introduction

Reckless behaviors of tourists towards birds has can drastically alter species' natural behavior (Hakim 2017; Wolf et al. 2019). However, properly managed bird watching offers one of the most positive incentives for protected areas in highly biodiverse regions of the world: the potential to improve both the local economies and foreign exchange in the tourism sector (Steven and Jones 2014). In cases where bird watching tours do not systematically influence the ecological conditions of these species in natural habitats, continuous bird watching is likely to influence the species' behavior. Therefore, understanding the indigenous community's knowledge in conserving birds is necessary and crucial information for tourists. This study aims to demonstrate the importance of a cultural approach to bird conservation, as bird watchers, photographers, and other tourists visiting Halmahera Island, Indonesia, may be unfamiliar with this framework.

The main goal of bird watching is typically to observe birds in their natural habitat. In pursuit of this goal, it is extremely important that tourists do not harm or endanger the birds. According to bird data in Indonesia, 1769, 1771, and 1777 species were found in 2017, 2018, and 2019, respectively. Meanwhile, in 2020, Indonesian birds released the latest data on bird status, 1794 species. Biodiversity in the form of Indonesian bird species is bound to have both positive and negative impacts on ecology. In addition, bird watching is a thriving specialty market, as Europeans are increasingly attracted to the diversity of these species, with a variety of beautiful body colors, in a wide variety of habitats, from beaches to mountains.

Furthermore, interest in tourism in the wild continues to increase, and people with the hoppy always look for opportunities to see birds in the wild. However, the knowledge of tourists on native birds and community culture in traditional bird conservation needs to be known from an early age, to ensure the existence of tourists does not interfere with bird activity in natural habitats. This requires tourists' knowledge about native birds on Halmahera Island as well as the knowledge of indigenous communities in using birds as cultural symbols. Therefore, in this paper, information about bird species on Halmahera Island as a tourist destination as well as knowledge of indigenous communities in bird conservation based on local culture are provided.



Fig. 10.1 The study area

10.2 Methods

10.2.1 Research Location

The selected study area was Halmahera Island, Indonesia (Fig. 10.1), the largest of the Maluku Islands, with a land area of 17,780 km². This is a tropical area with an average annual temperature of 23–31°C and an average humidity of 60–90%. The survey was conducted in the western, eastern, northern, central, and southern parts of Halmahera Island. Here, 90% of the community lives in coastal areas and works as farmers cultivating rice fields near the primary forest’s edge.

10.3 Interview

Villages’ local farmers were targeted as respondents for this study as they have a better understanding of the environment’s characteristics, especially bird habitats in rural forests. Random visits were made to farmers in four areas on Halmahera Island, with a focus on those living near the forest’s edge. Interviews were conducted in local languages for better understanding, and questions were asked thrice to ensure the validity of the respondents’ answers. Out of the 44 residents visited at the time of data collection, 36 respondents (27 female and 9 male) agreed to

Table 10.1 The distribution of respondents based on study area

Village	Gender		No. of persons	Percentage
	Male	Female		
Loloda Kepulauan	2	14	16	44.44
Maba	2	4	6	16.67
Buli	2	6	8	22.22
Wangongira	3	3	6	16.67
	9	27	36	100.00

participate and provide information (Table 10.1). During the interviews, participants were asked about the types of birds often observed by local and foreign tourists. Additionally, participants were also asked about local knowledge in the practice of conserving native birds within the village forest.

10.3.1 Data Collection

The main fieldwork was conducted by the authors from March to December 2020. Data collection included participant observation, semi-structured interviews, and household surveys (Mann 2016). The interviews were conducted from afternoon until evening, after farmers came home from the gardens. These interviews took place in houses near gardens when available, at which point bird species around the gardens and forests were observed. Recording tools and transcript books of field notes were used to record all information from the local community. Bird species data were identified using the *Burungnesia* Indonesia application, as well as <https://www.burung.org/> and <https://www.iucnredlist.org/> for endemic and endangered taxa, respectively. The data were then transferred to a computer device for analysis.

10.3.2 Data Analysis

This study used a qualitative thematic data analysis (Chiwanga and Mkiramweni 2019). The meaning of each wild bird species' sound is explained using the knowledge of indigenous communities. Thus, each species is assessed according to the importance attributed by respondents and does not depend on the researcher's judgement.

10.4 Analisis Data

10.5 Results

10.5.1 Endemic Bird Species as Tourist Destinations on Halmahera Island

The endemic birds on Halmahera Island, Indonesia, that are most sought after by photographers and tourists belong to eight families: *Paradisaeidae*, *Alcedinidae*, *Pittidae*, *Rallidae*, *Megapodiidae*, *Columbidae*, *Aegothelidae*, and *Meliphagidae* (Figs. 10.2, 10.3, 10.4, 10.5, 10.6, 10.7, and 10.8).

10.5.1.1 Types of Birds in *Paradisaeidae* Family

Wallace's standardwing (Indonesian name, *Bidadari Halmahera*; scientific name, *Semioptera wallacii* (G. R. Gray, 1859)) is a bird-of-paradise belonging to the *Cendrawasih* family. This species can be observed at the following locations: Tayawi and Ake Jawi Resorts in Aketajawe Lolobata National Park, Foli Village, Wasile District, East Halmahera, Weda Resort in Kobe Village, Central Halmahera, and Pasir Putih in the West Halmahera Regency. Another bird from the same family, the paradise crow (Indonesian name, *Cendrawasih*; scientific name *Lycocorax pyrrhopterus* (Bonaparte, 1850)) is also found on the island. It is common in all forest and plantation areas within Halmahera. Importantly, cendrawasih found on Halmahera Island differ slightly in appearance from those found on Obi Island.



Fig. 10.2 (a) *Semioptera wallacii* (G. R. Gray, 1859) (Wallace's standardwings Bird of Paradise), (b) *Lycocorax pyrrhopterus*. (Bonaparte, 1850)



Fig. 10.3 (a) *Todiramphus diops* (Temminck, 1824), (b) *Todiramphus funebris* (Bonaparte, 1850), (c) *Tanysiptera galatea* (G. R. Gray, 1859), (d) *Ceyx azureus* (Latham, 1801), (e) *Ceyx azureus* (Latham, 1801)



Fig. 10.4 (a) *Pitta maxima* (S. Muller & Schlegel, 1845), (b) *Erythropitta erythrogaster ruviventris*. (Heine, 1860)



Fig. 10.5 *Habroptila wallacii*. (Gray, 1860)



Fig. 10.6 *Habroptila wallacii*. (Gray, 1860)

10.5.1.2 Types of Birds in Alcedinidae Family

The blue-and-white kingfisher (Indonesian name, *Cekakak biru-putih*; scientific name, *Todiramphus diops* (Temminck, 1824)) is endemic to the North Maluku. After it rains, this bird can often be observed perching on dry branches or on electrical cables on the highway.

The Sombre kingfisher (Indonesian name, *Cekakak murung*; scientific name, *Todiramphus funebris* (Bonaparte, 1850)) is typically found in one or more pairs. This species is rarely seen, which makes it especially sought after by bird watchers.



Fig. 10.7 *Ptilinopus monacha*. (Temminck, 1824)



Fig. 10.8 *Aegotheles crinifrons*. (Bonaparte, 1850)

In contrast to the Sombre kingfisher, the common paradise kingfisher (Indonesian name, *Cekakak-pita*; scientific name, *Tanysiptera galatea* (G. R. Gray, 1859) is frequently seen in Halmahera. Although it is not an endemic species, documentation of this racket-tailed bird is still in great demand by bird watchers and photographers. The bird is most easily found in the Aketajawe Lolobata National Park, Ake Jawi Resort, Maluku, North Maluku, and Papua.

The azure kingfisher (Indonesian name, *Raja-udang Biru-langit*; scientific name, *Ceyx azureus* (Latham, 1801)) is highly sensitive to human presence and is therefore only distributed throughout the North Maluku and Papua. However, it is very easily

found in small, unspoiled rivers within the Ake Jawi Resort area of Aketajawe Lolobata National Park.

The Halmahera dwarf kingfisher, also known as the variable dwarf kingfisher (Indonesian name, *Udang-merah kerdil*; scientific name, *Ceyx Lepidus* (Temminck, 1836)), is often found in small rivers or other wetlands on the island of Halmahera, in Ternate, or throughout the North Maluku. Despite its very small size, the species is easily found at Resort Ake Jawi, where it is a favorite of wildlife photographers.

10.5.1.3 Types of Birds in the Pittidae Family

The ivory-breasted pitta (Indonesian name, *Paok Halmahera*; scientific name, *Pitta maxima* (S. Muller & Schlegel, 1845)) is scattered throughout the Halmahera Forest. The species has a distinct sound that is very easy to hear; however, it can be difficult to spot this bird due to its sensitivity to human presence. For this reason, it is highly desired by bird watchers and photographers. Places like Ake Jawi Resort at Aketajawe Lolobata National Park have created observation areas to spot these birds. The largest Paok species is often captured with camouflage nets, which means watchers and photographers are unable to see the birds' activity.

The north Moluccan pitta (Indonesian name, *Paok mopo Maluku Utara*; scientific name, *Erythropitta erythrogaster ruviventris* (Heine, 1860)) is another highly sought after by bird watchers often found in Ake Jawi Resort, Weda Resort, and Sidangoli.

10.5.1.4 Types of Birds in Rallidae Family

The drummer rail (Indonesian name, *Mandar gendang*; scientific name, *Habroptila wallacii* (Gray, 1860)) is perhaps the most difficult to find by bird watchers and photographers because of its vulnerable status (cite IUCN status). This ground bird is found at Ake Jawi Resort at Aketajawe Lolobata National Park, Halmahera Island.

10.5.1.5 Types of Birds in Megapodiidae Family

The Moluccan scrubfowl (Indonesian name, *Gosong Maluku*; scientific name, *Eulipoa wallacii* (Gray, 1860)) can be seen in Simao Village, Galela, North Halmahera Regency. This area is a common tourist destination for observing endemic birds of Maluku and North Maluku. The birds are typically seen at night, as they spend the daytime hours laying eggs together on the black sand beach (communal nesters).

10.5.1.6 Types of Birds in Columbidae Family

The blue-capped fruit dove (Indonesian name, *Walik topi biru*; scientific name, *Ptilinopus monacha* (Temminck, 1824)) is the smallest walik bird of the dove-pigeon family (the *Columbidae* family) in the North Maluku. It is often found throughout the North Maluku, especially in tree canopies with small fruit (e.g., banyan trees).

10.5.1.7 Types of Birds in Aegothelidae Family

Halmahera is the only place in Indonesia where the *Aegothelidae* family is found. One species belonging to this family, the Moluccan owlet-nightjar (Indonesian name, *Atoku Maluku*; scientific name, *Aegotheles crinifrons* (Bonaparte, 1850)), is a crepuscular bird endemic to Halmahera. Our findings suggest that this species is not typically of high priority to bird watchers despite its uniqueness and endemic status. The face of the Moluccan owlet-nightjar resembles that of frogmouths from the *Podargidae* family, which is scattered throughout Indonesia and often found at night in the Paruh Bengkulu Sanctuary, Ake Jawi Resort, and forest areas in Halmahera.

10.5.1.8 Types of Birds in Meliphagidae Family (Fig. 10.9)

The white-streaked friarbird, also known as the Halmahera friarbird (Indonesian name, *Cikukua Halmahera*; scientific name, *Melitograis gilolensis* (Bonaparte, 1850)), is spread across the islands of Halmahera, Morotai, Kasiruta, and Bacan. This species is very rarely found by tourists, which may add to its desirability.

10.5.1.9 Types of Birds in the Psittaculidae Family

The gathering lorry (Indonesian name, *Nuri Ternate*; scientific name, *Lorius gar-rulous* (Linnaeus, 1758)) is an endemic bird found in the North Maluku province. The species is found on the Halmahera, Widi, and Ternate Islands, where it can be detected by its loud voice and tendency to fly in groups (Fig. 10.10).



Fig. 10.9 *Melitograis gilolensis*. (Bonaparte, 1850)



Fig. 10.10 *Lorius garrulous*. (Linnaeus, 1758)



Fig. 10.11 (a) Symbol of the Loloda Sultanate (b) *Cacatua alba*. (Müller, 1776)

10.5.2 Indigenous Knowledge in Cultural-Based Bird Conservation

Bird sounds have a cultural meaning which can influence the conservation of bird species. Local people often catch and care for birds with loud sounds and “crooked” beaks. For instance, the white cockatoo (*Cacatua alba*) (Müller, 1776) (Fig. 10.11) is a species endemic to Halmahera that functions as a cultural symbol in the Loloda sultanate of the North Maluku province. Several other types of birds are also used by the local community as indicators during life activities, where bird sounds have both the cultural and ecological significance. Table 10.2 presents the cultural and/or ecological meanings of various bird sounds according to Halmahera indigenous knowledge.

Returning to example of the white cockatoo (*Cacatua alba*), people in the Loloda sultanate of Halmahera Island made this bird a cultural symbol because it is respected as a sacred animal. Its white and clean feathers are believed to be a symbol of holiness, thereby requiring protection is under the concept of *ngara mabeno*. Etymologically, the *ngara mabeno* translates to “door wall” (*ngara* = door, *mabeno* = wall). This term refers to protection by all indigenous peoples under the Loloda Sultanate. Meanwhile, Limau Tolimadu is Mount Loloda as a habitat for birds requiring protection. In addition to being a sacred animal, the white cockatoo is believed to be a bearer of good news. This philosophy is a common meaning symbolized by the White Cockatoo with the local name *Gatala Bobudo*, and this brings public order implemented as *Adat se-Atorang*. The topknot on the bird symbolizes the leader and people. In this study, there were no prohibitions or customary laws used as guidelines, in the community’s social life.

Table 10.2 The meaning of the sound/song from the types of birds, based on a cultural approach

Family	Scientific name	English	Indonesian name	Meaning of bird sounds	Conservation status	IUCN red list of threatened species
Alcedinidae	<i>Alcedo azurea</i> (Latham, 1801)	Azure Kingfisher	<i>Raja Udang Biru-Langit</i>	To the Maba community in the eastern part of Halmahera Island, the sound of this bird signals the presence of a predator around the garden, such as an eagle, that threatens to catch the community's chickens	Not protected	Least concern (LC)
	<i>Tanyiptera galatea</i> (Gray, 1859)	Common Paradise-Kingfisher	<i>Cekakak pitta biasa</i>	This bird's sound is a sign that the rain has stopped	Not protected	Least concern (LC)
	<i>Todiramphus funebris</i> (Bonaparte, 1850)	Sombre Kingfisher	<i>Cekakak murung</i>	This bird's sound is a sign that the rain has stopped	Not protected	Least concern (LC)
	<i>Todiramphus diops</i> (Lesson, 1827)	Blue-and-white Kingfisher	<i>Cekakak biru putih</i>	This bird's sound is a sign that the rain has stopped	Not protected	Vulnerable (VU)
	<i>Ceyx azureus</i> (Latham, 1801)	Azure Kingfisher	<i>Raja-udang biru-langit</i>	This bird's sound is a sign that the rain has stopped	Not protected	Least concern (LC)
Cacatuidae	<i>Cacatua alba</i> (Müller, 1776)	White Cockatoo	<i>Kakatua Putih**</i>	This bird's sound serves as an alarm to wake the farmers	Protected	Endangered (EN)

(continued)

Table 10.2 (continued)

Family	Scientific name	English	Indonesian name	Meaning of bird sounds	Conservation status	IUCN red list of threatened species
Columbidae	<i>Ptilinopus monachal</i> (Temminck, 1824)	Blue-capped Fruit-Dove	<i>Walik topi biru*</i>	To the people in the central part of Halmahera Island, the sound of this bird represents wild animals	Not protected	Near threatened (NT)
Megapodiidae	<i>Habroptila wallacii</i> (Gray, 1860)	Moluccan Scrubfowl	<i>Gosong Maluku**</i>	This bird's sound signifies hard work	Protected	Vulnerable (VU)
Meliphagidae	<i>Melitograis gilolensis</i> (Bonaparte, 1850)	White-streaked Friarbird	<i>Cikukua Halmahera</i>	To the Tobelo ethnic community in the northern part of Halmahera Island, the sound of this bird indicates sunny weather	Not protected	Least concern (LC)
Paradisaeidae	<i>Semioptera wallacii</i> (Gould, 1859)	Standardwing paradise	<i>Burung Bidadari</i>	This bird's sound is a sign that it is time to work in the garden	Protected	Least concern (LC)
	<i>Lycocorax pyrrhopterus</i> (Bonaparte, 1850)	Halmahera Paradise-crow	<i>Cendrawasih gagak</i>	This bird's sound serves as an alarm in the morning	Protected	Least concern (LC)

(continued)

Table 10.2 (continued)

Family	Scientific name	English	Indonesian name	Meaning of bird sounds	Conservation status	IUCN red list of threatened species
Pittidae	<i>Pitta Maxima</i> (Müller & Schlegel, 1845)	Ivory-breasted Pitta	<i>Paok Halmahera</i>	This bird's sound is an alarm in the morning	Protected	Least Concern (LC)
	<i>Erythropitta erythrogaster ruviventris</i> (Bonaparte, 1854)	Halmahera Red-bellied Pitta	<i>Paok mopo Maluku utara</i>	This bird's sound conveys two messages: that it is time to worship or that one should not be allowed to go to sea	Not protected	Least Concern (LC)
Psittaculidae	<i>Lorius garrulus garrulus</i> (Linnaeus, 1758)	Chattering Lory (nominate)	<i>Nuri Ternate**</i>	This bird's sound signifies the ripeness of fruit in the garden	Protected	Vulnerable (VU)
Rallidae	<i>Habroptila wallacii</i> (Gray, GR, 1861)	Drummer Rail	<i>Mandar Gendang</i>	This bird's sound serves as an alarm to wake up farmers	Protected	Vulnerable (VU)

*consumed

**maintained & traded

10.6 Discussion

Birds on the Halmahera Island have become objects of ecotourism and important cultural indicators for indigenous people. In this study, local community members, especially women, are interested in developing ecotourism to fulfill the needs of families. According to Tran and Walter (2014), the complexity of integrating gender perspectives into community-based ecotourism provides positive benefits for local women such as women provide home stay services, make local souvenirs for tourists, and become guides. Furthermore, birds are ecologically linked to cultural values and therefore attract numerous tourists. Bird watching tourism can help promote bird conservation and can foster connections between individuals, groups, and the environment (Chiwanga and Mkiramweni 2019). Thus, the combination of indigenous and scientific knowledge helps effective conservation of biodiversity (Su et al. 2020).

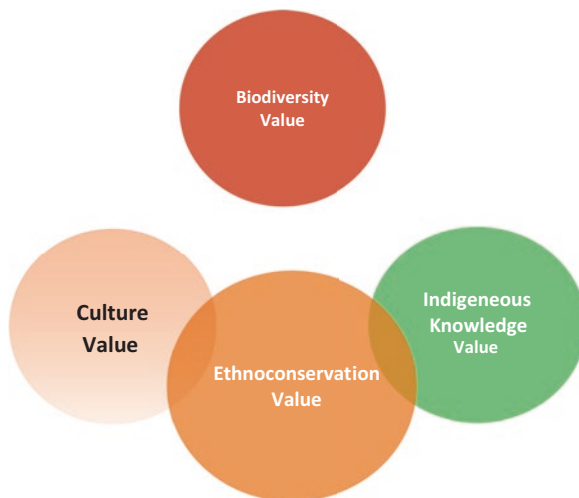
Properly managed bird watching tourism also has a positive impact on protected areas in many of the world's most diverse regions, which is why it is often considered to be a sustainable tourism activity (Steven and Jones 2014). To ensure that bird watching tourism remains sustainable, future wildlife tourism ought to improve management through establishing guidelines to minimize impacts, enforcing those guidelines for all visitors and tour guides, promoting long-term wildlife monitoring and research programs, and improving education opportunities for visitors (D'Amico and M. 2017).

Bird watching tourism is one of the most popular nature-based tourism activities and, therefore, has a lot of potential to benefit those involved. Thus, maximizing the potential for management by local communities helps to empower indigenous people (Markwell 2018). The ecotourism program also maintains the natural environment's principles of local empowerment and sustainable management. Therefore, this program has the potential to benefit local communities, biodiversity, as well as visitors (Nuckel 2019). A study by Park et al. (2019) showed tourism objects, for instance, natural attractions of wild animals, natural scenery, and culture of the local community are objects for tourists visiting an area. Ecotourism increases the income of local villagers' and makes management more effective with an indigenous cultural approach (Walter 2020). Furthermore, community-based ecotourism development in the regions maximizes socioeconomic benefits and protects the both environmental and cultural resources (Zuniga 2019). Additionally, strategy development helps to promote bird-based tourism in order to increase community incomes at the local level (Maldonado et al. 2018; Stronza et al. 2019; Harbor and Hunt 2021). The prospect of developing cultural-based ecotourism is therefore the key to improving the community's economy at the village level. However, there is a need to provide tourists with knowledge of wild animal behavior to ensure that visitors are careful in ecotourism areas.

However, traveling by entering the forest needs to be accompanied by a guide and a map of a forest area that is safe to visit, because certain animals can harm visitors, such as bees, ants, plant species that have leaf structures that itch to the touch, and other wild animals. A safe forest map is the key in visiting the tourist forest area.

Threats to natural tourism attractions, such as wild birds, must be considered. For instance, improper behavior by tourists—such as disrespect towards birds and ecotourism managers, violations of the indigenous community's ethical code, or even recklessness—could be cause for concern (Maccarthy and Mary 2020). Ecotourism programs need to emphasize all the aspects of people's welfare to ensure active participation of local communities (Kibria et al. 2020). In addition, increasing tourism in sensitive natural areas without proper planning and management threatens the ecosystem and the local culture's integrity (Idris et al. 2019). According to Balasubramaniam et al. (2020), anthropogenic factors influence wildlife behavior; the "ethnoconservation" approach is therefore used as an effort to anticipate threats of indigenous knowledge loss in bird conservation. Ethnoconservation refers to the process of utilizing, protecting, managing, and preserving wisdom, by a certain community or ethnic group, through a cultural or religious approach. The method is

Fig. 10.12 Ethnoconservation values in the ecotourism development



practiced from generation to generation using customary rules, rather than carried out sustainably through the process of family and community education (Tamalene and Almudhar 2017). Figure 10.12 shows the three important values in ethnoconservation concept: biodiversity values, cultural values, and indigenous knowledge values.

The six benefits of ethnoconservation are: (1) Maintaining food stability and wildlife activities in rural areas of certain ethnic groups, (2) Maintaining good relations with the natural and social environment, (3) Minimizing large-scale damage to biodiversity, (4) Creating local laws obeyed by community-related to natural resource conservation, and (5) educating the community, especially the younger generation, to keep protecting the surroundings and serving as the model of hidden curriculum.

In conclusion, this study shows endemic birds on the Halmahera Island have ecological and cultural importance shaped by the Ngora Ma Beno concept. Incorporating this indigenous knowledge creates an approach to bird conservation in which each species' sounds/chants are culturally significant and, therefore, have implications for the birds' ecology. Local people have an important role in protecting biodiversity, especially birds believed to be cultural symbols. Thus, a conservation-based indigenous knowledge approach plays an important role in educating local people, creating a sense of belonging, and enhancing local people's pride in changing behavior and protecting birds. The factors helping species to become recognized and appreciated are not only ecological but also social, personal, cultural, emotional, and economic (Aiyadurai and Banerjee 2020). In addition, tourism increases capacity building in remote communities, which often coincides with opportunities for residents to be trained as guides by international bird conservation organizations in order to promote sustainable tourism (Biggs et al. 2011). Therefore, the integration of ecotourism and cultural tourism is crucial (Harbor and Hunt 2021). Finally, these findings also show that bird ecotourism

increases women's role in sustainable bird conservation, as women are typically the managers of ecotourism in the village. Therefore, local women need to be more involved in ecotourism management. This research recommends formation of pro-conservation women's groups in villages, by governments in various countries, as an important part of minimizing bird poaching. Village-based bird conservation practices that maximize the role of women are bound to be a special attraction for ecotourism benefits.

Acknowledgements The authors are grateful to the informants and village heads in the study areas for granting permission to conduct this research.

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