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Credit: Photo by Konservasi Kakatua, Indonesia
Caption: A Huaulu man wears the traditional red headcloth (*kain berang*) with the *puheliam* feather accessory during the sacred Cidaku ritual in Seram Island, Indonesia. Faced with the decline of the endangered Salmon-crested Cockatoo, the Huaulu community is redefining conservation by adapting this centuries-old tradition to use moulted feathers. This powerful act of symbolic substitution preserves both their biocultural heritage and the species they revere.

Credit of this image: Konservasi Kakatua, Indonesia

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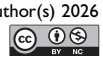
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Sacred Rituals and Endangered Birds: A Biocultural Approach to Cockatoo Conservation on Seram Island, Indonesia

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Abstract

The Huaulu tribe of Seram Island, Maluku, maintains the sacred *Cidaku* ritual, in which young men traditionally prove their passage to adulthood by hunting the Endangered Salmon-crested Cockatoo (*Cacatua moluccensis*) for its prized crest feathers. This dramatic intersection of cultural identity and conservation law has sparked conflict between Indigenous customs and national wildlife protection mandates. Drawing on ethnographic fieldwork, including participant observation, in-depth interviews, and questionnaires, this study facilitated a solution that respects both cultural heritage and species survival. Our results led to the formal adoption of a conservation agreement based on symbolic substitution that now allows the use of molted cockatoo feathers from rescue centers and zoos in *Cidaku* ceremonies, thereby reducing hunting pressure without erasing tradition. This approach is reinforced by reviving traditional management systems like resource-use taboos (*seli kaitahu*) and formalizing customary laws (*pamali*) against commercial wildlife trade. This work validates a biocultural approach, demonstrating that honoring Indigenous values is not a barrier, but rather the most effective pathway to creating resonant and sustainable biodiversity conservation in local communities. Video abstract: https://youtu.be/NlRis1g6NaY.

Keywords

conservation conflict, community-based conservation, customary law, Huaulu tribe, Salmon-crested Cockatoo

Introduction

For one of the oldest Indigenous tribes in Seram—the Huaulu people of the island's interior—the forest is not a passive resource but a realm of animate, powerful beings with whom they share complex reciprocal relationships (Valeri 2000; Salhuteru 2011). Central to this worldview is the practice of hunting, which transcends subsistence to become a foundational pillar of social identity, spirituality, and cosmic balance. As the seminal ethnographic work of Valerio Valeri demonstrates (Valeri 1990, 1994, 2000), for the Huaulu, hunting is a form of sacred exchange, where the taking of a wild animal's life is a dangerous act that must be ritually justified and reciprocated to appease powerful forest spirits (called *kaitahuupuem* by the Huaulu tribe). This act of "hunting as sacrifice" acknowledges that wild animals are imbued with a sacredness that makes their consumption permissible only through careful negotiation with the non-human powers that protect them (Valeri 1994; Kaartinen 2015).

This intricate relationship is epitomized in the *Cidaku* ritual, a sacred rite of passage marking a boy's transition to adulthood. Historically, the *Cidaku* and its associated *kahua* feast were connected to head-taking (Valeri 1990), the ultimate form of sacrificial offering in which a hunted human victim was presented to the "lords of the house" (*lumaupuem*). Following the colonial and missionary suppression of head-taking in the early 20th century (Ellen 2002), this practice evolved. This trajectory mirrors cultural shifts across the archipelago, such as among the Dayak of Kalimantan (Puri 2001) or communities in Sumba (De Raedt and Hoskins 1996), where the prohibition of ritual violence often led to substitution by animal sacrifices. Consequently, the ritual hunt for symbolically potent wild animals became the central requirement. Among the Huaulu,

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one of the main targets was the Salmon-crested Cockatoo (*Cacatua moluccensis*), whose feathers are also required for the ceremonial head-dress (*puheliam*). This substitution, a pattern observed among neighboring peoples like the Nuaulu (Ellen 2002), demonstrates a long history of cultural adaptation while preserving the core spiritual logic of the ritual: proving manhood through a dangerous and spiritually charged hunt.

Today, the transfer of human sacrifice to endemic and protected animals poses new challenges. There is a direct conflict with national and international conservation mandates. The Salmon-crested Cockatoo is classified as Endangered (EN) on the IUCN Red List (BirdLife International, 2024), and its populations have declined sharply, mainly due to high demand from the illegal wildlife trade (Nandika et al. 2021). However, to combat this decline, Indonesian law (KLHK Ministerial Regulation No. 106 of 2018) enforces a national protection status on the species. This legal framework strictly prohibits any form of capture, possession, or killing of the bird, regardless of whether the intent is commercial or ceremonial. This creates significant friction between the state and the Huaulu: the community is caught in a legal framework designed to stop wildlife trafficking, yet strictly enforcing this law risks erasing a ritual practice essential to their spiritual meaning and cultural identity (Nandika and Agustina 2023).

Birds are important components of forest ecosystems: they control balance by their presence at different heights, habitat types, and the consumption of various food types (Mackinnon, Phillips, and Balen 1998). Bird diversity is a strong indicator of overall ecosystem health, as birds are also sensitive to environmental changes (Mekonen 2017). A diverse bird community suggests a healthy habitat, while the decline of certain species signals broader ecological threats. The Salmon-crested Cockatoo exemplifies this issue. This once-widespread species now faces local extinction on several islands and saw a sharp population decline of approximately 20–40% in the 1990s (BirdLife International, 2024). The decline of the cockatoo populations is an apparent result of high demand from the wildlife market, primarily, in addition to the negative impacts of logging and agriculture, a trend that may lead to its extinction (Nandika et al. 2021). Today, its main populations only survive in the Manusela National Park, Seram Island.

Birds also provide benefits to local communities as symbols, crafts, pets, and food items (Supriyadi, Soetarto, and Dharmawan 2008; Syafina et al. 2020). In some cases, there is a harmonious relationship between birds and the local communities in occupying the same habitat, but there are also significant friction, conflict, and controversy (Wyndham et al. 2014; Pires et al. 2021). Market surveys indicate that birds are the most frequently traded taxonomic group in Indonesia's commercial wildlife markets, outnumbering mammals and reptiles (Burung Indonesia 2007). Beyond the pet trade, several species are also traded specifically for use as medicinal and ritual ingredients (Shepherd 2006). Research on the illegal wildlife trade in Maluku by the Natural Resources Conservation Agency (BKSDA) reveals a stark prevalence of avian trafficking. They found that 84% of all wildlife individuals confiscated or rescued in 2018 were birds (Setiyani and Ahmadi 2020). Of this avian total, 96% were parrots, the vast majority of which (90%) were seized directly from illegal traders rather than voluntarily handed over. The uncontrolled exploitation of birds by humans has already impacted many bird species and natural habitats (Adelina, Harianto, and Nurcahyani 2016; Nandika et al. 2021).

This study enters into this complex intersection of cultural continuity, ecological crisis, and legal conflict, engaging with the growing field of biocultural conservation (Maffi and Woodley 2010; Sterling et al. 2017). We move beyond a simple conservation intervention to address a specific ethnobiological question: Through what mechanisms of symbolic substitution and biocultural negotiation can the integrity of a sacred ritual be preserved when its central material element—the hunting of an endangered species—is legally and ecologically constrained? By engaging with the ethnographic context of Huaulu human–environment relations, we explored how the core values of the *Cidaku* ritual evolve through culturally negotiated adaptation. Our aim is to contribute to the ethnobiological literature by illustrating how a holistic and collaborative approach—one that respects history, local knowledge, and the symbolic weight of tradition—can align the preservation of biodiversity with the resilience of Indigenous identity.

Materials and Methods

Study Site and Species

The research was conducted by local researchers in two distinct phases (March–November 2019 and July 2024–May 2025). The extended interruption between these phases was due to the COVID-19 pandemic, which caused a halt in project funding and imposed global travel restrictions. The research was conducted within the Huaulu tribe in the northern part of Seram Island, Central Maluku (2°59′28.33″S and 129° 21′8.47″E). The local community in Huaulu cultivates cloves, nutmeg, durian, cacao, and coffee. The Huaulu tribe is located at the foot of Mount Binaya in the buffer zone of the Manusela National Park (Figure 1), which was established by the Decree of the Minister of Forestry No. 281/Kpts-VI/1997, on May 23, 1997, with an area of 189,000 ha. It covers approximately 11% of Seram Island and is in its center, containing a high diversity and endemic species (Nandika and Agustina 2020). The Huaulu tribe is one of the oldest tribes on Seram; they still maintain their ancestral rituals, and their buildings are made of natural materials like bamboo, forest wood, sago, and roots (Valeri 2000).

The Salmon-crested Cockatoo (*Cacatua moluccensis*) is an endemic species to Maluku, currently classified as Endangered (EN) on the IUCN Red List (IUCN, 2025), and listed as CITES Appendix I species (CITES, 2025), thereby prohibiting commercial international trade in wild specimens.

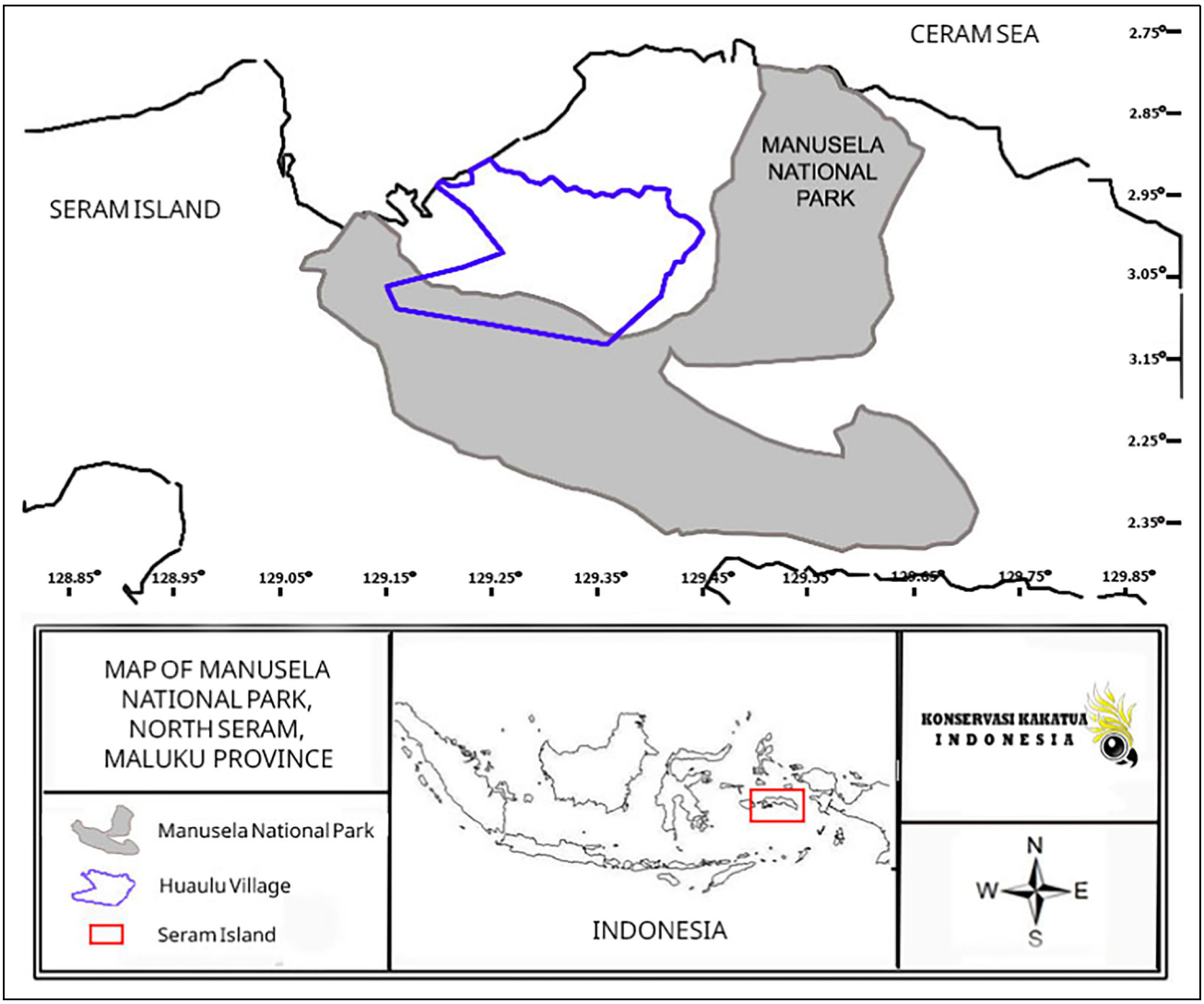

Figure 1. Map of the study area showing the location of the Huaulu traditional land (circled area in the middle) in North Seram, Indonesia. The area is adjacent to the buffer zone of Manusela National Park (grey-filled larger area).

Its distribution previously covered four satellite islands of Seram, but it has since been declared extinct on Haruku, Saparua, and Nusa Laut islands. The remaining population density of this species at Manusela National Park, Seram, in 2020 was only 10.79 individuals/km^2 (Nandika and Agustina 2020, 2023).

Data Collection

Since the first sampling period in 2019, a collaboration was established between the Perkumpulan Konservasi Kakatua Indonesia, a non-governmental organization focused on cockatoo conservation, and the Huaulu tribe of Seram Island. Data for this research were collected through multiple methods, which included direct observations, in-depth interviews, questionnaires, a review of relevant documents, and engagement with social media platforms. To facilitate comprehensive documentation, we utilized photography equipment (Nikon Prosumer P900 and P1000 cameras). Additional tools included a tripod for stability during filming, a wireless microphone to ensure clear audio capture during interviews, a portable projector for presentations, a bluetooth speaker for sound amplification, a Garmin GPS for accurate location tracking, and data sheets to systematically record our observations.

Primary data were collected using descriptive qualitative approaches during in-depth interviews and face-to-face communications with 10 informants. The data collected focused on local wisdom and traditional tribal customs related to wild animals. We gathered narratives of struggles, changes, and hopes from key informants through in-depth interviews (Miller et al. 2019; Nugi and Whitmore 2019). These conversations provided detailed insights into the background and dynamics of the complex phenomena under study. By capturing each informant's unique story, we were able to document a rich

diversity of perspectives, values, and social contexts, particularly in relation to cockatoos.

The key informants for in-depth interviews (n = 10) were purposively selected to encompass a diverse array of community voices with expert knowledge of Huaulu history and customs. The selection criteria focused on individuals holding official traditional roles, including the tribe's head (*tetua adat*), the head of local lands (*raja tanah*), and customary security guards (*kewang*), as well as other influential figures such as recognized local champions, community leaders, and the local state military official (*Babinsa*). To triangulate this local data and gain an external perspective on the socio-legal context, we also formally interviewed a sociologist and an anthropologist from Pattimura University, Kota Ambon, Indonesia.

In addition to the interviews, questionnaires (n = 43) were distributed to assess and record the social conditions of the Huaulu community. The sample size of the respondents was based on the total number of households in the Huaulu tribe at the time of the survey, providing a comprehensive community snapshot. This quantitative data helped us filter and classify broader social and economic information relevant to our study.

Secondary data were also integral to our research methodology. We gathered articles, social media posts, scholarly reports, and other documentation focused on the Huaulu tribe and the trade of cockatoos in Seram. An online search, particularly on eBay, was also conducted to gather data on the trade of cockatoo feathers not specifically related to the Huaulu tribe. This secondary data complemented our primary findings, providing a broader context for the conservation challenges and local practices under investigation. By triangulating multiple data sources, we reinforced the robustness of our analysis, ensuring a comprehensive understanding of the intersection between local customs and conservation needs within the framework of cockatoo conservation efforts (Miller et al. 2019; Atoussi et al. 2020; Assou et al. 2021).

Data Analysis

We employed narrative analysis, an approach that interprets and categorizes stories to uncover underlying patterns and meanings (Smith and Sparkes 2009). The primary goal was to understand each informant's experiences and perspectives regarding the phenomenon under study. Through this analysis, we were able to explore the rich backgrounds and complex dynamics present in the data. By examining each narrative in detail, we captured the distinctive perspectives, values, and social contexts of the informants, particularly as these relate to the cockatoos' existence within the Huaulu tribe.

We started our analysis by focusing on the stories themselves, approaching our role both as story analysts and as storytellers. This dual perspective allowed us to shift between examining narratives critically and retelling them creatively, depending on the purpose at hand. As story analysts, we treated narratives as objects of study, scrutinizing their structure and meaning to construct an abstract understanding of the collected tales (Assou et al. 2021). Conversely, when adopting the storyteller's stance, our analysis became inseparable from the narrative itself, presenting informants' experiences in a form that reads more like a story. In this mode, we aimed to preserve the authenticity of the stories, avoiding translation into purely theoretical language (Nugi and Whitmore 2019). Instead, we presented the narratives as both theory and analysis, recasting our data so that the story itself embodies the theoretical insights we wish to convey, particularly regarding the experiences of key informants in the Huaulu tribe (Valeri 1994). Local nomenclature in Huaulu is indicated with italics.

Focus Group Discussions and Consensus Building

To move beyond observation toward intervention, this study employed a participatory action research approach. Following the initial surveys, we facilitated a series of focus group discussions to co-design a conservation solution. Participants included traditional elders, chiefs, active hunters, and representatives from BKSDA Maluku and the Manusela National Park.

The specific purpose of these focus group discussions was twofold: (1) to validate the cultural acceptability of using molted feathers (symbolic substitution) as proposed in preliminary interviews; and (2) to negotiate the terms of a formal agreement between the tribe and the government. These sessions provided a space for transdisciplinary dialogue, bridging indigenous customary law (*adat*) with state conservation mandates. The consensus reached during these discussions formed the basis of the formal conservation agreement, with human-centered design to create strategies that meet both conservation needs and provide benefits for the community.

Results

The Social Culture of the Huaulu Tribe

Socio-economic profile of respondent data collected from 43 questionnaires provided a demographic profile of the Huaulu community. Of the respondents, 80% (n = 34) were male and 20% (n = 9) were female. The sample was representative across a wide range of age groups: 20% of 21–30 years old, 20% of 31–40 years old, 44% of 41–50 years old, 12% of 51–60 years old, and 4% older than 60 years. The majority of respondents were married (84.2%). Regarding education levels, the questionnaire data indicated that the dominant level was Elementary School (47.4%) and only 5.3% had attained a Bachelor's degree. The main livelihood reported was farming (83.3%), followed by civil service (8.35%), and other roles (e.g., teacher, shopkeeper, guide, or unemployed). Regarding income, the data indicates that economic resources are limited, with over 86% of respondents earning 1,000,000 IDR per month (approx. 65 USD) or less.

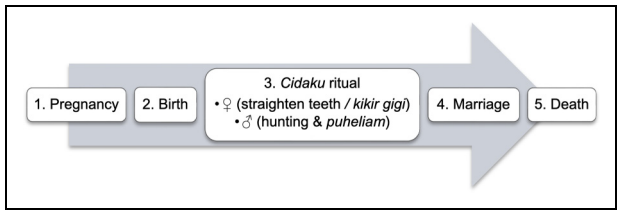

Figure 2. The five key life-cycle rituals observed by the Huaulu tribe spanning from pregnancy (→) to death (Fahham 2016). The *Cidaku* ritual, which marks the male transition to adulthood through a traditional hunting expedition, is the primary focus of this study. The corresponding female rite of passage involves teeth straightening.

Customs and Beliefs of the Huaulu Tribe

Local knowledge and in-depth interviews with key informants confirmed that the Salmon-crested Cockatoo is known locally in the Huaulu language as *lakam*. Its prized pink crest feather, central to the *Cidaku* ritual, is called *horam*. According to tribal elders, the *lakam* is not just another forest bird (*manu*); it holds a unique symbolic status. Informants explained that the bird's life cycle is seen as a model for human maturation, as young cockatoos, upon reaching maturity, leave their parents to establish their own territory.

Interviews further revealed an internal distinction between two groups: "Old Huaulu" (*Huaulu lama*) and "New Huaulu" (*Huaulu baru*). Observation confirmed that the Old Huaulu community has not adopted a religion officially recognized by the Indonesian government and continues to adhere to ancestral beliefs. They do not permit modern physical development, such as roads or permanent houses, within their traditional village. Consequently, informants noted that individuals who adopted a recognized religion and desired permanent housing moved outside the traditional area, forming what is now known as "New Huaulu," a village that is open to technology. Discussions with traditional leaders confirmed that the Huaulu people believe they are the first descendants of Mount Binaiya (*Pina iya*) and Mount Murkele, both located within Manusela National Park. The tribe observes five key rituals related to pregnancy, birth, the transition from adolescence to adulthood (*Cidaku/Puheli*), marriage, and death (Figure 2).

According to the *tetua adat* (elders), the *Cidaku* ritual is the most significant for young men (15–20 years old), as it signifies their readiness for adulthood. Participatory observation showed that in the traditional *Cidaku* ritual, boys wear a red cloth tied around their head (*kain berang*) with accessories (*puheliam*) made from the crest feathers of Salmon-crested Cockatoos (Figure 3). Customary rules state that families performing these rituals are required to hunt wild animals to provide food for guests, as the Huaulu tribe does not consume livestock. It was observed that for a week before the ritual, the boys cannot bath nor leave their house and must wear underwear made of bark.

The Symbolic and Historical Context of the Cidaku Ritual

Interviews established that the Salmon-crested Cockatoo (*lakam*) is a sacred and important species in the life of adult Huaulu males and the community. Its pink crest feather (*horam*) is an adapted part of their ceremony but, according to tradition, cannot be replaced by anything other than a human head. Key informants categorized using the cockatoo in the ceremony has the following symbolism:

1. The white feathers of the cockatoo symbolize the existence of a sacred life, one that values peace, togetherness, and a distinctive way of living.
2. The cockatoo's erect pink crest, the *horam*, represents great strength and courage, inspired by the bird's bold and defiant posture when its crest stands upright.

The Cidaku Ritual With and Without the Cockatoo Feathers

Based on interviews regarding customary law, in Huaulu tradition, a boy's eligibility for the *Cidaku* ritual is determined not by his age alone, but also by his body language, which must indicate his worthiness to be entrusted with adult responsibilities. The typical age for this transition is between 12 and 17 years. Observation of the process confirmed that the ceremony is held in two steps: the collective *Cidaku* and the family *Cidaku*, with several requirements:

1. The *Cidaku* ceremony is carried out consciously through a highly disciplined and systematic process based on the birth order of the boys in a family. If a family has six sons, the *Cidaku* ritual begins with the oldest and proceeds sequentially.
2. Two siblings can perform the ritual together, but the pinning of the feather symbols (*puheliam*) starts with the oldest sibling.
3. The *Cidaku* ritual cannot be performed more than once a year within the same family.
4. Interviews clarified that collective *Cidaku* and family *Cidaku* have different roles. The feather accessory (*puheliam*) is required only for the collective *Cidaku* ritual, and it must be made from the crest feathers (*horam*) of two cockatoos for each young person. According to community elders, this number is symbolic, representing a pair, loyalty, and the formation of a new family. This explanation is based on their observation that the cockatoo is a monogamous species that pairs for life; however, pairs are not systematically hunted. For the family *Cidaku*, the use of *horam* is not mandatory.

Likewise, informants noted that deer are needed for their meat and skins, which are used to make *tifa* (a traditional

Figure 3. The central role of the Salmon-crested Cockatoo (*Cacatua moluccensis*) in Huaulu culture and conservation conflict. (A) Huaulu man wearing the traditional red headcloth (*kain berang*) and feather accessory (*puheliam*), a symbol of adulthood bestowed during the *Cidaku* ritual. (B) Salmon-crested Cockatoo held in a cage. (Photo credit: Perkumpulan Konservasi Kakatua Indonesia).

musical instrument), which must be new. Hunting for the *Cidaku* ritual is expected to be successful. Direct observation confirmed that the collective *Cidaku* is always accompanied by a traditional and magic ritual to summon ancestral spirits. This means all requirements must be fulfilled correctly, including the *puheliam*, the *cakalele* singing and dancing, and the

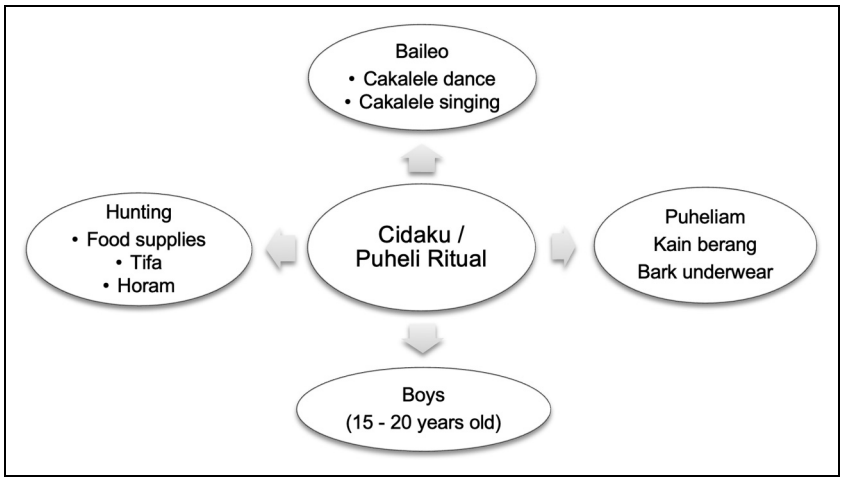

Figure 4. Requirements for the *Cidaku/Puheli* rituals of the Huaulu community.

proper provision of all food. Key informants listed the important aspects of the collective *Cidaku* include (Figure 4):

1. The *Baileo*, a large traditional house used for rituals, is believed to have the capacity to accommodate everyone, regardless of their number. The community intentionally refrains from mentioning the specific magic spell associated with this ability, which they believe ensures all can be included.
2. Food supplies are always sufficient, and it is customary for invited outsiders to return home with sacks of provisions. This generosity was evident during the collective *Cidaku* tradition carried out in August–September 2019 for six boys. Again, community members refused to reveal the magic spell used for this purpose.
3. Throughout the month-long ritual, the community experiences great happiness and feels a profound connection with their ancestors. The *cakalele* dance is performed, accompanied by prayers that the boys will grow into a generation committed to maintaining the existence of the Huaulu tribe, regardless of future changes.

Figure 5. Molted crest feathers from the Salmon-crested Cockatoo (*Cacatua moluccensis*). These feathers were collected from an avian rehabilitation center and provided by BKSDA Maluku as a sustainable, non-lethal alternative to hunting for use in the *Cidaku* traditional ceremony, in accordance with the 2019 conservation agreement. (Photo credit: Perkumpulan Konservasi Kakatua Indonesia).

Community Adaptation and the Sanctification of Molted Feathers

Elders confirmed that as long as the feathers were "real" (from the Salmon-crested Cockatoo), they satisfied the cosmological requirements of the *Cidaku*. This consensus was operationalized into a formal customary agreement, facilitated by the research team. On October 19, 2019, the agreement was signed by the Head of Huaulu village (Rifai Puraratuhu) and witnessed by the Head of the Manusela National Park and the Head of BKSDA Maluku and members of the Huaulu community. It was further acknowledged and approved by the Director of KSDAE – Ministry of Forestry. This document formally codified the substitution: allowing the tribe access to molted feathers from rehabilitation centers in exchange for a cessation of hunting wild cockatoos.

Records from BKSDA Maluku show that on September 9, 2024, approximately 50 molted feathers of the Salmon-crested Cockatoo were collected by BKSDA Maluku for the *Cidaku* ceremony (Figure 5). Another 400 molted feathers were donated to the village from zoos and rescue centers on April 30, 2026. A letter authorizing the collection of molted

Figure 6. Traditional feather accessories (*puheliam*) collected from the Huaulu community for preservation and future use. These items are stored in the *Baileo* (traditional house) and represent a community-led effort to reuse ceremonial regalia, thereby reducing future demand for new cockatoo feathers. The feathers are stored in a dry box to avoid pests and fungus. (Photo credit: Perkumpulan Konservasi Kakatua Indonesia).

feathers from rehabilitation/rescue centers, breeding centers, and zoos was issued by the Ministry of Forestry (Nota Dinas Number: ND. 215/M/KKHSG/PSG1/KSA.2/10/2024).

Between May 12 and 15, 2025, field researchers observed that feather accessories (*puheliam*) were collected from the Huaulu community for preservation (Figure 6). A total of six *puheliam* were gathered and are now stored in a dry box inside the *Baileo* for future use.

Interviews with community members revealed a shift in perspective regarding the source of the *horam*. While the "Old Huaulu" faction initially expressed concern that using molted feathers might diminish the male bravery and "fighting spirit" required for livelihood survival associated with the hunt, a consensus emerged during the focus group discussions (Figure 7A). Elders emphasized that the philosophical potency of the ritual resides in the process of becoming an adult who possesses both resilience and honesty while rejecting falsehoods. They clarified that the *puheliam* symbolizes this integrity, provided the feathers themselves are "authentic" and not synthetic. Younger men expressed relief at this adaptation, and many noted that the scarcity of wild cockatoos had made the traditional requirement nearly impossible to fulfill, often delaying their initiation rites.

Online Trade

Online market surveys revealed that Salmon-crested Cockatoo feathers were also found to be valuable in international trade. Based on data collected from July to December 2024 on the eBay marketplace, sellers listed individual feathers for a high price, approximately 1.30 USD per feather (Figure 7B). The items were offered with international shipping from the USA. Following a report made to eBay as part of this research, these listings were removed.

Efforts to implement the 2019 agreement have continued, with a focus on promoting the use of molted feathers and supporting cockatoo population stability by eliminating hunting. A conservation strategy was developed during a workshop held from November 3–6, 2024. Attendance logs indicated strong enthusiasm of the Huaulu community was evident: although only 15 people were invited, 43 attended. During these sessions, participants actively engaged in the dialogue, sharing their aspirations and collaborations to define the practical steps for the agreement's success.

When discussed during community interviews, the commercialization of the cockatoos was met with strong disapproval. Huaulu informants drew a sharp distinction between their ritual use of the bird, which is governed by strict taboos and spiritual exchange, and the "theft" committed by commercial poachers. Several respondents identified the external wildlife trade as the primary cause of the "silence in the forest" (population decline), which has forced them to rely on the feather bank. This creates a sense of injustice among the tribe, as they feel their cultural survival is being compromised by the economic greed of outsiders. Crucially, they expressed frustration at being scapegoated as a cause of the cockatoo's decline, arguing that they are unfairly blamed for a crisis driven primarily by the external pet trade.

Discussion

This study addressed the critical conflict between the conservation of the Endangered Salmon-crested Cockatoo and the deeply embedded cultural traditions of the Huaulu people. The principal finding of our research is that this conflict, while

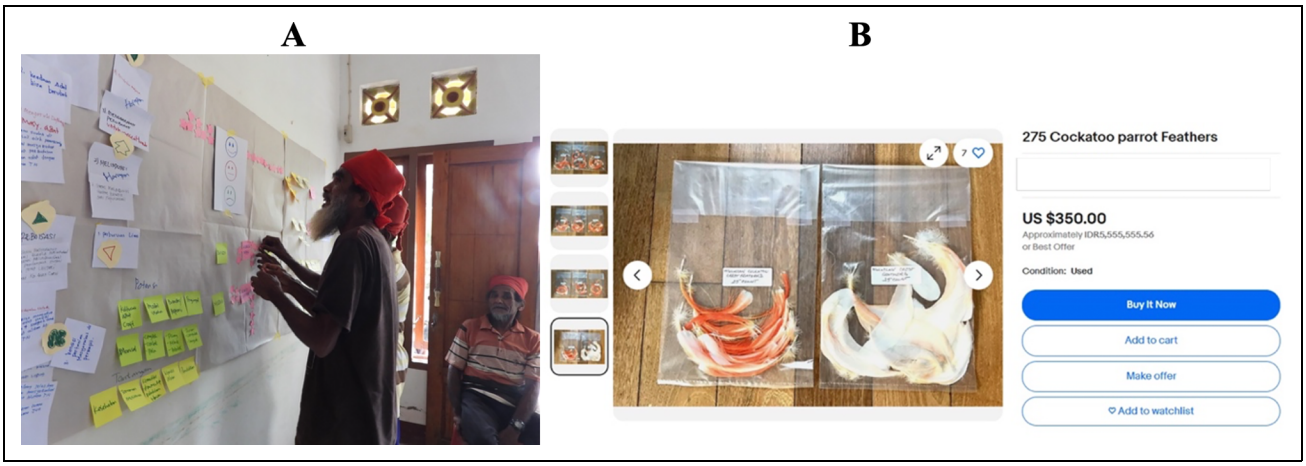

Figure 7. Contrasting drivers of cockatoo conservation: international trade pressure versus local community engagement. (A) Members of the Huaulu community participating in a focus group discussion during a conservation strategy workshop in November 2024, demonstrating strong local commitment to protecting the species. (Photo credit: Perkumpulan Konservasi Kakatua Indonesia). (B) Screenshot from an eBay listing in December 2024, showing Salmon-crested Cockatoo (*Cacatua moluccensis*) feathers offered for sale internationally from the USA.

significant, is not intractable. We propose that through a participatory, culturally sensitive approach, it is possible to establish a successful conservation intervention—the substitution of hunted feathers with sustainably sourced molted feathers. While the long-term acceptability of this substitution requires ongoing monitoring, the community's formal adoption of the agreement suggests it has the potential to preserve the integrity of the sacred *Cidaku* ritual while eliminating the need to hunt an endangered species. The broader significance of this work is its exploration of a community-based conservation model, suggesting that respecting and integrating local wisdom is not an obstacle to conservation, but rather the most effective pathway to achieving it. In the following sections, we analyze the cultural logic underpinning the ritual, the socio-legal conflict it causes, and the broader ethnobiological implications of our proposed biocultural solution.

The Cultural Logic of the Cidaku Ritual

To understand the impact of conservation restrictions, we must first situate the ritual within the specific Huaulu worldview. The Huaulu Indigenous people believe they are the direct descendants of Mount Binaiya (*Pina iya*) and Mount Murkele. Consequently, the hunting tradition is not merely a means of fulfilling food requirements; it is deeply intertwined with the community's identity. Hunting is a sign of their heritage and a way to receive power from their ancestors (Valeri 2000). This practice is also closely linked to self-esteem and honor (Valeri 1994). The loss of this tradition would diminish their cultural heritage and be regarded as a source of shame within the community.

Our study reveals that this process of adaptation is not a closed chapter of history, but an ongoing negotiation. While previous literature documented the initial shift from head-taking to hunting wildlife (Valeri 1994; Ellen 2002), our findings document a second critical evolution: the decoupling of the sacred object from the act of predation itself. By accepting molted feathers, the community is demonstrating a capacity for biocultural resilience: maintaining the symbolic core of the ritual while navigating modern ecological constraints. This suggests that for the contemporary Huaulu, the efficacy of the *Cidaku* relies less on the violence of the hunt and more on maintaining a tangible connection to their ancestral landscape, particularly Mount Binaiya. By utilizing "authentic" feathers, they preserve their spiritual interaction with nature and the inherent potency of the species, even without the kill.

The philosophy of the ritual is symbolized by the crest feather (*horam*) and draws on the life of the Salmon-crested Cockatoo, which, upon reaching maturity, leaves its parents and establishes its own territory (Forshaw 2006), symbolizing independence and readiness for adult responsibilities. This act of independence is the core philosophy embodied by the *horam* feather in the *Cidaku* ritual. Wearing the cockatoo's crest feather signifies a boy's readiness to uphold the values and existence of the Huaulu people. Specifically, the white feathers symbolize their style of speaking, patterns of thought, and daily practices, reflecting a harmonious and unified community. Meanwhile, the *horam* represents strength: this physical display is a response to discomfort or threat and serves as a symbol of an adult male's defense of his purity, self-respect, and vigilance, powerfully affirming his presence and resilience.

The Conflict: Biocultural Traditions Versus National Law

This deep cultural logic creates a conflict with modern legal frameworks. For the Huaulu, all wild animals are imbued

with sacredness and are protected by nonhuman, occult forces (Valeri 1994). Therefore, the act of hunting is a 'sacrilegious act' that makes the hunter vulnerable to retaliation and must be legitimized through ritual offerings, most notably the head of the hunted animal, to the "lords of the forest" (*kaitahuu-puem*). This contrasts sharply with other Indonesian traditions. Birds hold unique value and sacredness for various ethnic groups in Indonesia. In Javanese culture, keeping birds as pets can be a status symbol of stability and success (Metz and Nursahid 2004). In contrast to this tradition of captivity for status, the Huaulu community maintains a strict taboo against raising animals for food.

Pamali or taboos are unwritten customary rules that regulate the lives of the people of Seram (Syarubany et al., 2021). As a form of local wisdom, they have derived from traditional knowledge and become part of Indonesia's cultural identity (Widiastuti 2015). Taboos are created by a society based on its collective experiences and are codified as prohibitions. They have existed since ancient times, are widely applied by communities in Indonesia, and act as rules that regulate patterns of community life outside of formal religion (Dewantara and Nurgiansah 2021*a*, 2021*b*). Based on the Huaulu's *pamali*, meat must always be wild, one way or another, acquired through predation (Valeri 1994). Valeri (1994) also explained that one cannot even laugh in the presence of fresh meat (*ayoku holuholuam*), as the animal's spirit is still present in it. Animals that have been kept as pets can only be sold.

This worldview clashes with the conservation status of some species. Given the low socio-economic status of the region, it is understandable that many people in Seram view birds as a source of quick and easy income rather than solely as spiritual entities (Setiyani and Ahmadi 2020; Nandika et al. 2021). The socio-economic status of a country can determine the severity of anthropogenic threats affecting the species living there (Olah et al. 2016). While economic opportunism exists, for the Huaulu, this is layered upon a much deeper cultural logic in which hunting is a sacred act of exchange with powerful forest spirits (Valeri 1994).

Several native species in Indonesia have been protected by Law No. 5 of 1990 concerning the conservation of biological natural resources and their ecosystems (Sahusilawane and Latupapua 2023). Its implementation is regulated by the KLHK Ministerial Regulation No. 106 of 2018. The wild animals reportedly used by Indigenous people during *Cidaku* ceremonies include the cockatoo, cuscus, cassowary, pig, and deer (Fahham 2016). This creates a dilemma: prioritizing Indigenous traditions can conflict with wildlife conservation, yet eradicating such customs risks erasing tribal identity.

Symbolic Substitution and Adaptive Management

This legal dilemma is further mediated by the community's own local ecological knowledge. Informants explained that they are acutely aware of the cockatoo's scarcity, noting it is "very difficult to find and hear the voice of the cockatoo" in recent years. In response, a form of local wisdom has been enacted: the community now often postpones the large-scale collective *Cidaku* (which requires *horam*) and favors smaller, family-based *Cidaku* rituals, which do not have this requirement. This adaptive capacity is rooted in the broader regional practice of *seli kaitahu* (or forest *sasi*), a form of customary law in Seram that imposes periodic bans on harvesting specific resources to allow populations to recover (Sasaoka 2003). This aligns with previous observations that a core premise of all Huaulu predatory activities is a covenant with animal spirits not to "take too much of any living thing," lest the species cease to be available (Valeri 1990, 2000).

A similar coming-of-age ceremony involving mass hunting exists among the Nuaulu, another ancient tribe located in southern Seram (Fahham 2016). The Nuaulu also hunt various kinds of animals when sacrificial items are necessary, for example, when building a ritual house (*Baileo*) in the village (Ellen 2002). The Huaulu community was forced to find an alternative that satisfied the same core ritual logic. The Salmon-crested Cockatoo was not a random choice. It was selected because: it was already considered a sacred and symbolically potent species; its life cycle (leaving the nest to live independently) provided a direct philosophical analogy for the maturation of a young man; and as a "wild" and challenging animal to hunt, it preserved the essential ritual element of a dangerous, spiritual quest.

To alleviate hunting pressure on the protected cockatoo species, we employed a biocultural approach (Gavin et al. 2015; Sterling et al. 2017) that leverages the community's capacity for adaptation. The underlying mechanism that made this change culturally acceptable was a symbolic substitution. The substitution of molted feathers for a hunted cockatoo is not a simple one-to-one replacement. The physical ordeal of the hunt, the direct engagement with forest spirits, the acquisition of forest knowledge, and the demonstration of courage in a dangerous, spiritually charged encounter are all central to the ritual's meaning. Valeri (1994) notes that for the Huaulu, a premise of the hunt is the reciprocity between predator and prey, where the struggle "may always be resolved in the animal's favor." By removing this element of struggle and risk, the intervention undoubtedly transforms the symbolic experience. Our findings suggest the community is navigating this transformation by shifting the focus from the ordeal of the hunt to the sacredness and preservation of the ceremonial objects (*puheliam*) themselves, creating new forms of cultural value.

Broader Implications and Risks

This study supports the argument for integrating biocultural diversity into conservation strategies (Maffi and Woodley 2010). To address these challenges, solutions like Human-Centered Design can help create strategies that meet both conservation and community needs. For example, research on the use of Pesquet's Parrot (*Psittrichas fulgidus*) feathers in Papua New Guinea found that instead of continually harvesting

new feathers for traditional headdresses, focusing on prolonging the lifespan of existing headdresses offers a more sustainable approach that respects cultural traditions while reducing pressure on wild populations (Nugi and Whitmore 2019). Similarly, in Bolivia, the Alternative Feather Programme for the Blue-throated Macaw (*Ara glaucogularis*) introduced artificial feathers for Indigenous headdresses, successfully protecting the species while supporting local customs (Hughes 2023).

In the present study, the Huaulu tribe has adopted practices to preserve both their customs and the cockatoo population. The community's adoption of naturally shed (molted) feathers represents a modern articulation of the traditional principle of renunciation that underpins Huaulu sacrifice. Just as a hunter historically renounced the meat of his own kill or offered the animal's head back to the forest spirits to legitimize consumption (Valeri 1994), the community now renounces the act of killing the cockatoo to legitimize the continuation of the *Cidaku* ritual itself. Furthermore, by storing and reusing the feather accessories (*puheliam*), they render these objects more sacred, aligning conservation goals with their own cultural logic.

However, it is crucial to acknowledge that threatened wildlife can have a higher commercial value on the illegal market (Pires and Clarke 2011). Parrots (Psittaciformes) are heavily sought after in the legal and illegal domestic wildlife trade in Indonesia (Pires et al. 2021). As we have shown in this study, feathers are highly valued in the international online marketplaces already. By publicly highlighting the sacred and essential nature of the cockatoo feathers, even in a conservation context, there is a risk of inadvertently increasing their perceived economic value to outsiders. This could incentivize illegal trapping and hunting to supply a new black market for these birds and their feathers, especially given the socio-economic pressures in the region (Pires et al. 2021). Therefore, any such program must be paired with robust monitoring and the formalization of local taboos against all forms of commercial trade.

Conclusion

This research demonstrates that a century-old Indigenous ritual reliant on an endangered species can be reconciled with modern conservation mandates, provided the intervention is grounded in cultural logic rather than external coercion. We conclude that sustainable coexistence is achievable through three key ethnobiological mechanisms.

First, this study validates symbolic substitution as a potent tool for conservation. The Huaulu community's acceptance of a "feather bank" proves that ritual efficacy does not necessarily depend on the act of predation but can be maintained through the spiritual authenticity of the object itself. This finding suggests that cultural traditions are not static barriers to biodiversity protection, but fluid systems capable of decoupling material extraction from spiritual meaning.

Second, our findings underscore that conservation governance must align with Indigenous epistemologies. We found that bureaucratic agreements alone are insufficient. Sustainable behavioral change requires that new norms be co-constructed and transmitted through oral customary law (*adat*). This highlights a broader lesson for biocultural strategies: interventions are most effective when they utilize existing modes of knowledge transmission rather than imposing foreign legal structures.

Finally, the revitalization of the forest taboo (*seli kaitahu*) confirms that cultural resilience is a prerequisite for ecological recovery. By codifying existing taboos against commercial trade, the community demonstrated that indigenous values are the most effective enforcement mechanism against wildlife trafficking. Ultimately, saving the Salmon-crested Cockatoo requires saving the culture that respects it, not by freezing it in the past, but by supporting its evolution.

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Ethical Considerations

This research was conducted in full compliance with the ethical guidelines set by the Universitas Gadjah Mada, Indonesia, and the International Society of Ethnobiology Code of Ethics. Approval for the study was granted by the Universitas Gadjah Mada (Permit No. 6666/UN1/FBI/PS/PT.01.04/2024) and the Agency for National and Political Unity (Badan Kesatuan Bangsa dan Politik) of Maluku Province, Indonesia (Permit No. 000.9.2/510). Before conducting interviews, the objectives and procedures of the study were explained

to the Huaulu tribal leadership and all potential participants. All individuals who took part in this study did so voluntarily, and written informed consent was obtained from each participant. To protect their identities, all collected data were anonymized prior to analysis. The research protocol was designed as a collaborative partnership and was culturally sensitive, ensuring that the benefits of the research were communicated to the community. Critically, to address concerns about representation and to ensure our findings were accurate and respectful, drafts of the manuscript and our interpretations were shared with community leaders for their review and feedback. Furthermore, all procedures involving wildlife were reviewed and approved by the Animal Care and Use Ethics Committee at the National Research and Innovation Agency of Indonesia (Permit No. 154/KE.02/SK/06/2024) and the Animal Ethics Office at The Australian National University (Permit No. A/2023/324).

Consent to Participate

After we explained the research in a comprehensive way, all participants provided written informed consent to voluntarily participate in our interviews. We anonymized all responses during the analyses. Participants were informed that the article will be available to anyone with an internet connection.

Consent for Publication

All participants provided written informed consent prior to participating. Written informed consent was obtained from the individuals for the publication of any potentially identifiable images or data included in this article.

Author Contributions

D.A., D.N. conceived the idea and collected data; D.A., D.N., G.O. designed research; D.A. performed analyses; D.A., D.N., G.O. drafted the manuscript, and all authors revised the final manuscript.

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The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Data Availability Statement

In accordance with our ethics approval and to ensure participant confidentiality, the raw datasets generated during this study (including interview recordings and full transcripts) are not publicly available. Anonymized data that support the findings of this study are available from the corresponding author upon reasonable request.

References

Adelina, M., S. P. Harianto, and N. Nurcahyani. 2016. "Keanekaragaman Jenis Burung di Hutan Rakyat Pekon Kelungu Kecamatan Kota Agung Kabupaten Tanggamus." *Jurnal Sylva Lestari* 4 (2): 51–60. https://doi.org/10.23960/jsl2451-60.

Assou, D., A. Elwin, J. Norrey, E. Coulthard, D. Megson, D. Ronfot, M. Auliya, G. H. Segniagbeto, R. O. Martin, and N. D'Cruze. 2021. "Trade in African Grey Parrots for Belief-Based use: Insights from West Africa's Largest Traditional Medicine Market." *Frontiers in Ecology and Evolution* 9: 612355. https://doi.org/10.3389/fevo.2021.612355.

Atoussi, S., D. Bergin, I. Razkallah, V. Nijman, M. Bara, Z. Bouslama, and M. Houhamdi. 2020. "The Trade in the Endangered African Grey Parrot *Psittacus Erithacus* and the Timneh Parrot *Psittacus Timneh* in Algeria." *Ostrich* 91: 214–220. https://doi.org/10.2989/00306525.2020.1763492.

BirdLife International. 2024. "Species factsheet: Salmon-crested Cockatoo *Cacatua moluccensis*." Accessed 23 June 2026. https://datazone.birdlife.org/species/factsheet/salmon-crested-cockatoo-cacatua-moluccensis.

Burung Indonesia. 2007. *Ringkasan Data Hasil Survey Mengenai Bird Keeping. Pertemuan Koordinasi Birdlife Indonesia - Departemen Kehutanan, 1-13. Jakarta 29 Maret 2007*. Jakarta, Indonesia: Depertemen Kehutanan.

CITES. 2025. "Appendices I, II and III." https://cites.org.

De Raedt, J., and J. Hoskins. 1996. *Headhunting and the social imagination in Southeast Asia*. California, USA: Stanford University Press.

Dewantara, J. A., and T. H. Nurgiansah. 2021a. "Building Tolerance Attitudes of PPKN Students Through Multicultural Education Courses." *Jurnal Etika Demokrasi* 6 (1): 103–115. https://doi.org/10.26618/jed.v6i1.4503.

Dewantara, J. A., and T. H. Nurgiansah. 2021b. "Strengthening Pancasila Values During the Covid-19 Pandemic." *Edukatif: Jurnal Ilmu Pendidikan* 3 (4): 2411–2417. https://doi.org/10.31004/edukatif.v3i4.443.

Ellen, R. 2002. "Nuaulu Head-Taking. Negotiating the Twin Dangers of Presentist and Essentialist Reconstructions." *Social Anthropology* 10 (3): 281–301. https://doi.org/10.1111/j.1469-8676.2002.tb00060.x.

Fahham, A. M. 2016. "Sistem Religi Suku Nuaulu di Pulau Seram Maluku Tengah." *Jurnal Aspirasi* 7 (1): 17–32. https://doi.org/10.46807/aspirasi.v7i1.1277.

Forshaw, J. M. 2006. *Parrots of the world*. New Jersey, USA: Princeton University Press.

Gavin, M. C., J. McCarter, A. Mead, F. Berkes, J. R. Stepp, D. Peterson, and R. Tang. 2015. "Defining Biocultural Approaches to Conservation." *Trends in Ecology & Evolution* 30 (3): 140–145. https://doi.org/10.1016/j.tree.2014.12.005.

Hughes, L. 2023. "Success in the Savannah: Saving the Critically Endangered Blue-throated Macaw." https://www.birdlife.org/news/2023/03/03/success-in-the-savannah-saving-the-critically-endangered-blue-throated-macaw/.

IUCN. 2025. "IUCN Red List for birds. 2025-1." Accessed 05 June 2025. https://www.iucnredlist.org.

Kaartinen, T. 2015. "Boundaries of Humanity: Non-Human Others and Animist Ontology in Eastern Indonesia." In *Animism in Southeast Asia*, edited by Kaj Århem, and Guido Sprenger, 219–235. New York, NY, USA: Routledge.

Mackinnon, J., K. Phillips, and B. V. Balen. 1998. *Burung-burung di Sumatera, Jawa, Bali dan Kalimantan*. Bogor: Birdlife International Indonesia. Programme Puslitbang Biologi LIPI.

Maffi, L., and E. Woodley. 2010. *Biocultural Diversity Conservation: A Global Sourcebook*. New York, NY, USA: Routledge.

Mekonen, S. 2017. "Birds as Biodiversity and Environmental Indicator." *Journal of Natural Sciences Research* 7(21): 28–34. Accessed 23 June 2026. https://iiste.org/Journals/index.php/JNSR/article/view/39931.

Metz, S., and R. Nursahid. 2004. "Trapping and smuggling of Salmon-crested Cockatoo: An undercover investigation in Seram, Indonesia." *PsittaScene* 16: 8–9. Accessed 23 June 2026. https://issuu.com/worldparrottrust/docs/16_4_nov_04.

Miller, A. E., D. Gary, J. Ansyah, N. Sagita, Kartikawati Muflihati, and S. N. Adirahmanta. 2019. "Socioeconomic Characteristics of Songbird Shop Owners in West Kalimantan, Indonesia." *Tropical Conservation Science* 12: 1940082919889510. https://doi.org/10.1177/1940082919889510.

Nandika, D., and D. Agustina. 2020. Survei Populasi Burung Paruh Bengkok Di Taman Nasional Manusela [Report]. Perkumpulan Konservasi Kakatua Indonesia, pp. 37.

Nandika, D., and D. Agustina. 2023. "The current status of Moluccan Cockatoo as umbrella species and conservation efforts on Ambon Island." Final Report. Perkumpulan Konservasi Kakatua Indonesia.

Nandika, D., D. Agustina, R. Heinsohn, and G. Olah. 2021. "Wildlife Trade Influencing Natural Parrot Populations on a Biodiverse Indonesian Island." *Diversity* 13 (10): 483. https://doi.org/10.3390/d13100483.

Nugi, G., and N. Whitmore. 2019. "More Dead Than Alive: Harvest for Ceremonial Headdresses Threatens Pesquet's Parrot in Papua New Guinea." *Emu - Austral Ornithology*, 120: 1–6. https://doi.org/10.1080/01584197.2019.1676162.

Olah, G., S. H. M. Butchart, A. Symes, I. Medina Guzma, R. Cunningham, D. J. Brightsmith, and R. Heinsohn. 2016. "Ecological and Socio-Economic Factors Affecting Extinction Risk in Parrots." *Biodiversity and Conservation* 25: 205–223. https://doi.org/10.1007/s10531-015-1036-z.

Pires, S., and R. V. Clarke. 2011. "Sequential Foraging, Itinerant Fences and Parrot Poaching in Bolivia." *Br. J. Crimin* 51: 314–335. https://doi.org/10.1093/bjc/azq074.

Pires, S. F., G. Olah, D. Nandika, D. Agustina, and R. Heinsohn. 2021. "What Drives the Illegal Parrot Trade? Applying a Criminological Model to Market and Seizure Data in Indonesia." *Biological Conservation* 257: 109098. https://doi.org/10.1016/j.biocon.2021.109098.

Puri, R. K. 2001. *Bulungan ethnobiology handbook*. Bogor: CIFOR.

Sahusilawane, J., and L. Latupapua. 2023. "Konservasi Satwa Liar Berbasis Kearifan Lokal di Negeri Hutumuri Kecamatan Leitimur Selatan Kota Ambon." *Jurnal Inovasi Pengabdian dan Pemberdayaan Masyarakat* 3 (2): 461–468. https://doi.org/10.54082/jippm.171.

Salhuteru, Marlyn. 2011. "Suku Huaulu di Seram Utara." *Kapata Arkeologi* 7 (12): 92–100. https://doi.org/10.24832/kapata.v7i12.160.

Sasaoka, M. 2003. "Customary Forest Resource Management in Seram Island, Central Maluku: The "Seli Kaitahu" System." *Tropics* 12: 247–260. https://doi.org/10.3759/tropics.12.247.

Setiyani, A. D., and M. A. Ahmadi. 2020. "An Overview of Illegal Parrot Trade in Maluku and North Maluku Provinces." *Forest and Society* 4: 48–60. https://doi.org/10.24259/fs.v4i1.7316.

Shepherd, C. R. 2006. "The Bird Trade in Medan, North Sumatra: An Overview." *BirdingASIA* 5: 16–24.

Smith, B., and A. C. Sparkes. 2009. "Narrative Analysis and Sport and Exercise Psychology: Understanding Lives in Diverse Ways." *Psychology of Sport and Exercise* 10 (2): 279–288. https://doi.org/10.1016/j.psychsport.2008.07.012.

Sterling, E. J., C. Filardi, A. Toomey, A. Sigouin, E. Betley, N. Gazit, J. Newell, S., et al. 2017. "Biocultural Approaches to Well-Being and Sustainability Indicators Across Scales." *Nature Ecology & Evolution* 1 (12): 1798–1806. https://doi.org/10.1038/s41559-017-0349-6.

Supriyadi, A., E. Soetarto, and A. H. Dharmawan. 2008. "Analisis Sosio-Ekologi dan Sosio-Budaya Burung Berkicau di Dua Kota di Indonesia: Teladan dari Surabaya dan Yogyakarta Sodality." *Jurnal Sosiologi Pedesaan* 2 (1): 99–120. Accessed 23 June 2026. https://journal.ipb.ac.id/sodality/article/view/5889.

Syafina, N., M. Abdullah, D. Saputri, Safrida, and Syafrianti, (2020). "Studi Etno-Ornitologi dan Identifikasi Kearifan Lokal Masyarakat Dalam Konservasi Burung dan Habitatnya di Kecamatan Peudada Kabupaten Bireuen." *Jurnal Ilmiah Mahasiswa Keguruan dan Ilmu Pendidikan* 5 (4): 21–32

Syarubany, A. H. M., M. P. K. Azzahra, R. S. Rahayu, and S. Prayoga. 2021. "Pengaruh Pamali Sebagai Kearifan Lokal Dalam Mewujudkan Nilai Dan Norma Dalam Kehidupan Sosial Generasi Z." *Jurnal Kewarganegaraan* 5 (2): 570–577. https://doi.org/10.31316/jk.v5i2.1945.

Valeri, V. 1990. "Autonomy and Heteronomy in the Kahua Ritual: A Short Meditation on Huaulu Society." *Bijdragen tot de Taal-, Land-en Volkenkunde* 146 (1ste Afl): 56–73. https://doi.org/10.1163/22134379-90003227.

Valeri, V. 1994. "Wild Victims: Hunting as Sacrifice and Sacrifice as Hunting in Huaulu." *History of Religions* 34 (2): 101–131. https://doi.org/10.1086/463385.

Valeri, V. 2000. *The forest of taboos: Morality, hunting, and identity among the Huaulu of the Moluccas*. Madison, WI, USA: Univ of Wisconsin Press.

Widiastuti, H. 2015. Pamali dalam Kehidupan Masyarakat Kecamatan Cigugur Kabupaten Kuningan (Kajian Semiotik dan Etnopedagogi). 6 (1).

Wyndham, F. S., M. G. Ada, G. G. Andrew, E. P. Karen, F. John, N. David, F. Heidi, and D. H. Josep. 2014. "The Ethno–Ornithology World Archive (Ewa): An Open Science Archive for Biocultural Conservation." *Revista Chilena de Ornitología* 22 (1): 141–146. Accessed 23 June 2026. https://aveschile.cl/wp-content/uploads/2019/04/12.-The-Ethno-ornithology-World-Archive-EWA_-Wyndham-et-al..pdf