

# Local champion from bird poacher to protector: A case from the Sahendaruman landscape Sangihe Island, North Sulawesi, Indonesia

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**Abstract.** The Seriwang Sangihe, also known as the Cerulean Flycatcher (*Eutrichomyias rowleyi*), once thought to have vanished forever from the wilds of North Sulawesi's Sahendaruman forest, has defied the odds. A groundbreaking population survey in 1998 revealed a flicker of hope, confirming the existence of this elusive bird with an estimated population of just 19 to 35 individuals. A subsequent population estimation in 2014 showed that the population had grown to 34–150 individuals. And in this study the estimated population of seriwang sangihe shows a positive trend, it is known that around 48-188 adult individuals live in the valleys of Mount Sahendaruman in 2021. The Sahendaruman forest is also home to around 10 other endangered species and conserving these endemic and endangered species requires the initiative and involvement of local residents. We believe that those who take the initiative to conserve endangered species and their habitats can influence the local community's perspective and awareness of the ecological importance of their area, foster a sense of stewardship, and effectively manage conservation initiatives. This study aims to identify the criteria that define a local champion and how they influence care and awareness. To achieve this, we assessed local champion activities and conducted a descriptive analysis. This study found that a local champion is influenced by five key criteria: pioneering, partiality, a caring attitude, consistency, and quality of leadership. The results also highlighted the importance of traditional knowledge in species management and conservation efforts. The researchers recommended that traditional knowledge utilized by local champions be incorporated into conservation agendas. They also suggested that the character of local champions can serve as a role model for new conservation initiatives and commitments in Indonesia. Additionally, we argue that recognition and support for local champions are essential.

## 1 Introduction

Conservation activities often inspire people to change their perspectives and actions, particularly regarding land management and the protection of animals and plants. These shifts are influenced by factors such as incentives, the need for conservation benefits, and empathy.

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Cognitive aspects promoting conservation actions significantly enhance conservation success [1].

Individuals like bird hunters or illegal loggers can become advocates for species conservation and forest protection. That transformation may happen over varying timeframes and be driven by financial incentives or other motivations [2]. Involvement from local and traditional communities can also play a crucial role in shifting these attitudes [3,4].

Area-based conservation faces significant challenges in practice, including tenure issues, land ownership disputes, and conflicts over management between local communities and the government. Research shows that community-managed forests often outperform protected areas, exhibiting lower annual deforestation rates and less variability in forest cover loss (Porter-Bolland et al., 2012).

The transformation of attitudes toward conservation is evident on the Sangihe Islands, which are home to rich endemic biodiversity. This small island, surrounded by the Sulawesi Sea and the Pacific Ocean, serves as a crucial habitat for bird speciation and a migratory bridge for birds from the northern hemisphere. Mount Sahendaruman is a key area for various endemic bird species but faces significant threats, particularly from mining [5]. However, even so, there are still people around the area, both in the community and individually, who have good thoughts to find conservation solutions [6].

This area is the habitat of the endemic bird *Eutrichomyias rowleyi*. Sangihe has been designated as an Endemic Bird Area (EBA), Important Bird and Biodiversity Areas (IBA), and Key Biodiversity Area (KBA). EBAs are regions that have two or more restricted-range bird species, defined as species with a breeding range of no more than 50,000 km<sup>2</sup> [7] Meanwhile, IBAs are internationally recognized sites for the conservation of birds and biodiversity, providing essential benefits to people, such as food, raw materials, water, and flood protection [8–10]. Since the late 1970s, over 12,000 IBAs have been identified across nearly all countries and territories worldwide, covering both terrestrial and marine environments [11]. KBAs are regions of high value for biodiversity, encompassing not only threatened species but also critical habitats. Unlike IBAs, which focus primarily on birds, KBAs are well-defined sites that play a crucial role in maintaining the diverse species and ecosystems that contribute to the rich tapestry of life on Earth. The designation of IBAs has directly contributed to the establishment of hundreds of protected areas [10] and plays a significant role in addressing environmental challenges such as habitat loss and climate change [12].

Mount Sahendaruman is the only area on Sangihe Island with natural forests, making it home to many unique animals, including birds not found elsewhere on the island [13]. A biodiversity survey conducted by Burung Indonesia and its partners from January to August 2020 identified various protected, endemic, and endangered species in the Mount Sahendaruman Protected Forest Area, including 17 bird species, 7 mammal species, and 2 reptile species [14];Burung Indonesia, 2022).

Every plant and animal species plays a unique role in the ecosystem, contributing to a complex web of interdependent relationships that remain largely unexplored. Changes in one species can affect others, but these roles are not always irreplaceable. Ecosystems exhibit resilience, enabling them to adapt to disturbances [15]. Biodiversity functions not only at the species level but also as an interconnected system that provides essential natural services. Thus, while concerns about declining species populations are valid, conservation and sustainable management must address all ecosystem components rather than focusing solely on individual species [16,17].

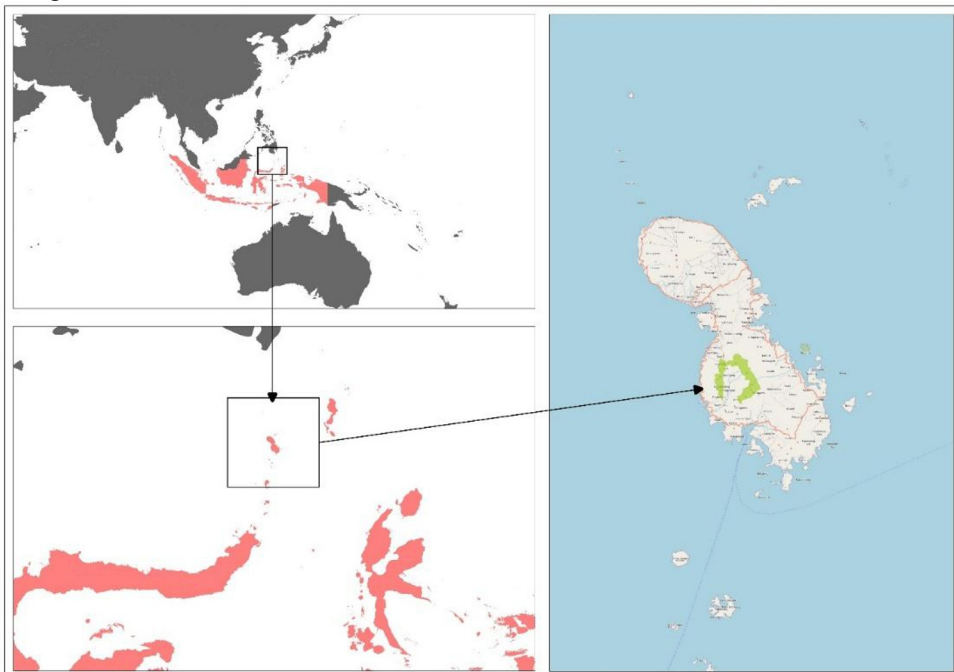
The reduction in biodiversity is largely driven by alterations in habitat and environmental conditions. Biodiversity continues to face increasing pressure through various means, including unsustainable hunting, exploitation, and harvesting, as well as land conversion,

unregulated development patterns, landscape alterations, and the deterioration of habitat quality [18].

A healthy forest ecosystem on Mount Sahendaruman is certainly able to support the productivity of various superior agricultural commodities such as sago, coconut, cloves, and nutmeg. However, the expansion of agricultural land has also led to the conversion of certain areas within the Mount Sahendaruman protected forest [19]. The conversion of land for commodity development has severely impacted the forest, leaving less than 500 hectares intact. The degradation of Mount Sahendaruman's forests not only threatens its rich biodiversity but also endangers the livelihoods of thousands of people in 22 surrounding villages [13]. The Sahendaruman landscape, which serves as a crucial provider of natural services, particularly as a primary source of clean water, has been significantly disrupted. Additionally, the loss of forest cover increases the region's vulnerability to floods and landslides [19,20].

## 2 Method

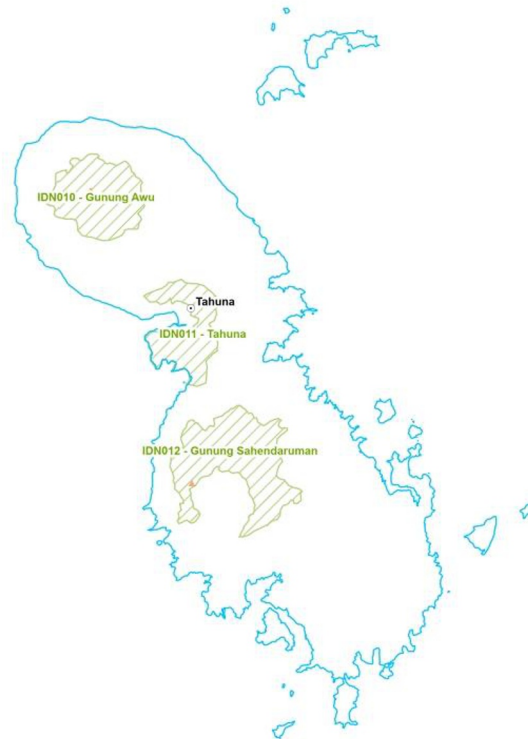
This research was conducted in January 2024 in Sangihe Islands Regency, a cluster of islands located at the northern tip of North Sulawesi Province, Indonesia. The regency covers a total land area of 736.98 km<sup>2</sup> and sea waters spanning 11,126.61 km<sup>2</sup>, directly bordering the waters of the Philippines. It comprises 105 small and very small islands, of which 26 are inhabited, while 79 remain uninhabited [21]. The research location is illustrated in the map image shown in Figure 1.



**Fig. 1.** Image of the position of the research location in Indonesia

The method used in this study is based on direct observation of characters by living with them and studying their daily behavior. In addition, interviews with several community leaders were also conducted to triangulate the data. This research explores the factors influencing initiatives and positive behaviors that support bird species conservation and habitat preservation on Mount Sahendaruman. Changes in social behavior are determined by

an individual's social relationships and their adaptation to the social system, culture, and unique context [22,23]. These three contexts are personality-driven and self-oriented behavior; behaviors that are driven by social roles and are community-oriented; culture-driven behavior oriented to a system of norms and values [24]. Ultimately, this study aims to identify the dominant factors shaping the behavior of individuals recognized as conservation figures or champions. Once these influencing factors are identified, they will be analyzed and narratively described [25,26].



**Fig. 2.** Location An important habitat for endemic and rare birds in the habitat of Mount Sahendaruman.

### 3 Result and Discussion

#### 3.1 Biodiversity, forests and people in Sangihe

Biodiversity holds significant value for society. Forests are considered the "most important land" for people's lives [27]. The species that are considered most important are woody and fruitful trees, as they are the pillars of life and the hope of society [28]. Forests hold biodiversity which is very meaningful to the people of Sangihe. The community has utilized forests and their biodiversity for generations [29]. Biodiversity is considered the source of life for the community [30]. Forests and everything contained in them are very important aspects for the survival of the community [31]. For example, in Ulung Peliang Village, in the past, there were two main types of plants that became a symbol of the life of the Ulung Peliang community, namely coconut (*bango*) and sago (*baru*). These two types of plants are considered the most meritorious and important for people's lives. According to interview,

sago (*baru*) was the main source of food for parents in the past, and coconut (*bango*) was the economic source of the community. However, this symbol is gradually fading, as sago is no longer the staple food of the community. Moreover, economic sources have diversified, including cloves, nutmeg, and other types of crops.

Trees are one of the most important aspects of people's lives. Since birth, society has been related and related to trees. When a baby is born, parents will usually plant a tree as a reminder and marker of their child's age. Trees that are common or recommended to be planted are coconut trees or sago. Even so, it is also possible to plant other types of trees, such as nutmeg, cloves, or fruit trees such as mangoes and durian. When a child grows up, the child's age can be seen and compared to the tree planted at birth. "This child's age is the same as the coconut next to the house." Not only as a reminder or marker, parents also raise their hopes when planting trees for their children. The usual prayer is said: "may this child and tree flourish and give good fortune." Not only as a marker and reminder, the tree is also used as a medium to convey prayers and hopes. When a child or baby is sick, parents usually plant trees to cure children's diseases.

### 3.2 Birds and cultural poetry

The elders in Sangihe use culture as a means to pass down knowledge and a deep appreciation for nature conservation. One such method is through Sasambo verses and lyrics. Sasambo, one of the oldest forms of oral literature in Sangihe and even Talaud, has been taught from generation to generation. One of the sasambo poems that is usually chanted when planting rice reads, "*Taku yuri sitegi, finepe nemoso bine*. Literally this verse means, "I tell the tegi bird, the fine bird that throws away the seeds. According to the elders, the tegi bird is a batik-colored, brown-gray bird that comes every year when the South wind blows around November-December. Similar to the tegi bird, the fine bird is also a bird that is present every year. Both birds will return to their origin when the north winds blow around March-April. The elders believe that the old generation in the past probably often saw and paid attention to this bird in the forest or in the garden when planting rice. In the verse of sasambo that is chanted, it has the meaning and hope that the bird will throw away and bring damaged rice seeds on its way home to the North. This is aimed at making the rice planted bear fruit well. The time of rice planting does coincide with the return of this annual bird to the north, which is around April. After being identified together, the tegi bird in question is the Grey-faced Buzzard (*Butastur indicus*) while the fine bird is the Chinese Sparrowhawk (*Accipiter soloensis*). These two birds are migratory birds from the north. Based on the interview elder community added that traditional people used to be very close to nature. They pay attention to the surrounding nature and insert it into sasambo verses as an expression of prayer and hope.

Through this sasambo poem, we can see how close the community is to nature and its biodiversity. The community studies the annual migration cycle of migratory birds, and their role as agricultural pest controllers.

Unlike cultural people, Mr. Bu Niu called as local champion together with researchers studied the ecological habits of animals in nature. Mr. Bu' Niu believes that all animals have their own role in nature, therefore they are all interrelated and need to be protected. If most people in her village consider squirrels and rats as pests, Bu' Niu can firmly explain their function: For example, squirrels, according to Mr. Bu Niu, squirrels have a function as a food of caterpillars and insects on trees. "*Squirrels are also friends of niu birds (Eutrichomyias rowleyi). Usually where there are squirrels, it is always followed by niu birds. Squirrels usually dismantle weathered tree branches and eat insects or caterpillars inside, and niu birds take the food that squirrels dismantle. If the squirrel is hunted, the niu bird must be lonely,*" said Mr. Bu' Niu. Squirrels are considered pests because they often eat fruits such as

langsar. However, according to Mr. Bu' Niu, *"squirrels also don't eat much, only one or two, so there is no need to be afraid. Unless squirrels come with sacks, they are considered pests."*

### 3.3 Profile and social character of Bu' Niu in the history of preservation and conservation

Bu' Niu, whose full name is Anius Dadoali, is a guide on Mount Sahendaruman. His name began to be known since 1998, as the person who succeeded in rediscovering the Seriwang Sangahe bird which has been considered extinct for more than 1 century. His name was then immortalized as the local name of the Cerulean Flycatcher bird (*Eutrichomyias rowleyi*), namely the Niu Bird.

Bu' Niu is deeply familiar with the intricacies of Mount Sahendaruman. From a young age, he accompanied his father, a respected hunter with extensive knowledge of the forest's history and locations. This wisdom was passed down to Bu' Niu, who followed in his father's footsteps and became a skilled hunter himself. His expertise in hunting and understanding of the forest's conditions have made him a sought-after guide for researchers.

Bu' Niu believes that hunting is a major contributor to the extinction of birds and animals. He used various tools for hunting, including spears, chopsticks, nets, snares, catapults, and tree sap. At that time, Ulung Peliang Village was still heavily forested, but poor road access made fishing difficult. As a result, many villagers resorted to hunting wild boars, cuscus, birds, bats, and other animals to meet their food needs. *"In the past, if you saw a bird on a tree, you would immediately grab chopsticks. Who is the best at basumpit"*, said Bu' Niu

Poaching increased in 1984. At that time, there was an ethnic Chinese who came to the village and brought an air rifle. Seeing this air rifle, many people are interested and buy it for hunting. The decrease in the animal population is actually felt by Bu' Niu. The wild boar is no longer seen either it is extinct or there may still be one or two in the forest, but no one has ever seen it again. In addition, in the past, the Elegant Imperial Pigeon bird (*Ducula concinna*) was also found in many trees in front of his house. Now, to see the bird had to go deep into the forest.

In addition to hunting, deforestation is a significant factor in the decline of bird populations. *"If we cut down the trees where they feed, they will definitely move,"* Bu' Niu explained succinctly. Deforestation has become a pressing issue in the village. Previously, the community resisted acknowledging the boundaries of protected forest areas, as many gardens were inadvertently included within them. Bu' Niu himself once overlooked the importance of trees. For instance, when he successfully shot a cuscus from a tree, the animal often remained attached by its tail. Rather than climbing the tall tree to retrieve it, Bu' Niu would frequently cut down the tree to make the process easier.

Currently, Bu' Niu admits that he has never cut down trees in the protected forest again. To meet the needs of her boards, Mr. Bu' Niu diligently planted trees in her garden outside the protected forest area. Even now, Mr. Bu' Niu has just planted a nantu tree, for her grandson if he wants to build a house.

*"Since joining researchers from the UK in 1996, I stopped hunting. Unfortunately it has been more than 20 years since I became a hunter. Many birds and other animals have entered my stomach,"* Bu' Niu recalled.

Since the arrival of researchers from England, Bu' Niu and her father have stopped being hunters. Even his father got rid of all the hunting equipment in his house. Bu' Niu admitted that he is currently very fond of birds. His love for birds began to grow while walking in the forest, accompanying researchers. Bu' Niu is often told about the importance of birds and other animals in nature. *"From observation walks, resting in camps, while drinking coffee, usually researchers give us understanding,"* said Bu' Niu. *Every morning when I wake up, while sitting, drinking coffee on the terrace of the house, there is the sound of birds,*

*occasionally there are squirrels, then at night there are otters, it turns out to make me happy. Since then, I have decided to keep birds in nature," said Bu' Niu.*

### **3.4 Site-level conservation efforts**

Bu' Niu has not only given up hunting but is also actively engaged in efforts to protect wildlife and their habitats within the Sahendaruman Landscape. Since 2018, he has been working with Burung Indonesia to implement community-based conservation initiatives in 22 villages surrounding Mount Sahendaruman Preparation of Village Nature Conservation Agreement (KEPAK)

The activity began by conducting a participatory biodiversity study. Communities with various participatory methods study related to what biodiversity exists in their villages, and how they are managed from the past to the present.

Through participatory land use mapping, the community assesses how land is utilized within their village. This approach enables them to gain a comprehensive understanding of their surroundings, recognizing both the area's potential and the challenges it encounters. Through participatory mapping, the community then learns several things, including:

1. That there is a protected forest area in his village
2. There are mixed gardens and community-owned agriculture in protected forest areas
3. There are areas that have a protective function and must be maintained for their function and sustainability such as springs, river flows, undangeng (natural forests), sacred places, etc.
4. There are several types of endemic and protected animals including birds, mammals and others.

The community then began to consider whether land management has been appropriate and whether it can guarantee the well-being of future generations. The results of their study and reflection on their area were then compiled into a Village Nature Conservation Agreement (KEPAK).

In protected areas, the community has committed to maintaining and ensuring their function for environmental sustainability. These areas include protected forests and designated conservation zones, such as natural forests (*undangeng*), rivers and riverbanks, springs, and animal habitats. Beyond protecting these areas from destruction, the community has also agreed to restore forests and habitats in several locations considered important, such as animal habitats, abandoned gardens, and areas affected by natural disasters. In utilization areas, the community is allowed to manage and use the land to meet economic needs, such as establishing gardens and practicing sustainable farming techniques, including permaculture agriculture. However, the community has agreed to discontinue the traditional farming system and instead manage the existing land according to their needs.

Community gardens located within protected forest areas have been designated as managed spaces under the Social Forestry Scheme. This scheme is expected to serve as a solution that allows for controlled management and utilization in accordance with applicable regulations. Through this land-use agreement, the community can maximize the potential of their village while ensuring the sustainability of the forest. By practicing sustainable gardening, the community maintains the forest's ecological function. Like a protective fence, the forest safeguards community gardens by providing essential resources such as water and serving as a habitat for animals that help control pests.

#### **3.4.1 Permaculture and agroforestry**

The practice of shifting cultivation is still commonly found in villages around Sahendaruman. Due to a lack of knowledge about soil fertility and pest management, many people prefer to

establish gardens deep within the forest. Although these locations are far from settlements, clearing fields in the forest is considered more effective because they require minimal maintenance. After clearing the land and planting seedlings, people only need to tend to the fields once or twice a month. Until harvest time arrives, there is no need for frequent watering or fertilization, as the forest soil is perceived as naturally fertile. However, this shifting farming practice poses a significant threat to the surrounding biodiversity. Land clearing often involves cutting down trees that serve as habitats for various animal species, leading to habitat destruction and ecological imbalance.

One of the main challenges in achieving ecosystem sustainability is the high reliance on unsustainable natural resource use. Forest clearing for plantations, land burning, and excessive use of chemicals are among the most common causes of ecosystem degradation. Additionally, the extensive exploitation of natural resources often yields suboptimal results. Limited access to knowledge, skills, and facilities for implementing productive yet sustainable resource management further exacerbates these issues.

To address this, Burung Indonesia collaborates with local communities to preserve the remaining forest cover by preventing further destruction and promoting alternative livelihoods that support economic well-being. Permaculture agriculture and agroforestry serve as viable alternatives, enabling communities to manage land in both settlements and forest areas in an ecologically sustainable manner.

### 3.4.2 *Animal and habitat monitoring and survey*

Since 1996, Bu' Niu has been involved in nature and wildlife monitoring activities. However, his efforts became more intensive after he rediscovered the Seriwang Sangihe bird (*Eutrichomyias rowleyi*) while accompanying a joint research team, including students from the United Kingdom, Jon Riley and Jim Wardill, as well as students from Manado. The Seriwang Sangihe, classified as a critically endangered bird, had an estimated population of only 19 to 145 adult individuals at that time. After Jon Riley and Jim Wardill's research was completed, Bu' Niu became the go-to guide for researchers and bird watchers seeking the Seriwang Sangihe. His experience working alongside foreign researchers allowed him to gain valuable knowledge about simple data collection methods, including bird and mammal tracking and vegetation analysis.

Together with his comrade Weasley Pangimangen from Lelipang Village, Bu' Niu conducted independent surveys and recorded bird vocalizations in Sahendaruman using an audio recorder. The duo explored 48 valleys within and beyond the caldera of Mount Sahendaruman, identifying only 23 as confirmed habitats for the Seriwang Sangihe.

Since 2018 until now, Bu' Niu has also been actively involved in animal monitoring, nature services, and habitat restoration. Based on the results of the 2021 survey, it is currently known that in the protected forest area of Mount Sahendurman there are 10 species of endemic birds. The estimated population of seriwang sangihe shows a positive trend, it is known that around 48-188 adult individuals live in the valleys of Mount Sahendaruman. There was an increase although not significant which was influenced by many factors. This certainly includes Bu' Niu's contribution which has been consistent for more than 20 years in preserving this bird. He has even given up his land of about 2 ha outside the protected forest area as a habitat for animals and a water provider for the continuity of the community gardens whose land is in the area.

### 3.4.3 *Restoration: habitat restoration*

Based on the results of participatory mapping conducted in 2019, there is an area of 78.80 hectares in the Mount Sahendaruman Protected Forest area which is physically in the form



of expanses of shrubs and agricultural land. Most forest areas that have been degraded into secondary forests, shrubs, and gardens need to be gradually restored to their original ecological function. However, this process is challenging because the land has already been occupied and utilized by the community. This situation is inconsistent with the area's designated status as a forest, which has been cleared and repurposed. To restore its ecological function and support biodiversity conservation, restoration efforts must be carried out systematically.

Restoration is the process of rehabilitating degraded forests by improving both biological components (flora and fauna) and non-biological elements (such as soil, climate, and topography). Burung Indonesia promotes biodiversity by encouraging communities to optimize tree growth space through reforestation efforts. The key objectives of restoration include enhancing food availability and habitat quality for endemic wildlife, improving hydrological functions and soil erosion control, boosting forest productivity, strengthening local community participation in forest management, and increasing the economic value of forests through non-timber forest products (NTFP).

### **3.5 Local champion**

From the results of the search for social characters owned by a character named Bu' Niu, this character has a social character that is relevant to the local champion character. Behavior of a local champion influenced by five criteria, namely pioneering, partiality, caring attitude, consistency, and quality of leadership. Apart from that, several efforts have been made by Anius Dadoali to protect birds and their habitats, including:

1. Be a part of nature conservation group,
2. Actively involved in restoration activities,
3. Regularly monitor birds and forests,
4. Reprimand people who carry out hunting activities,
5. Practice organic and agroforest gardening patterns,
6. Engage in public discussions and provide inspiration for youth
7. Allow some of the land to no longer be cultivated to be used as animal habitat and water catchment

The efforts that have been made include 5 criteria for local champions, including

#### **3.5.1 Pioneering (inovative)**

Developing new ideas and solutions is essential. To prevent poaching, Mr. Bu' Niu has introduced an alternative solution—promoting wildlife in non-exploitative ways. He actively works as a guide in the Sahendaruman landscape, leading animal photography tours, birdwatching excursions, and research expeditions. Mr. Bu' Niu does not work alone; he involves her family and neighbors, inviting them to assist when guiding visitors. His expertise in navigating the forest and locating wildlife is utilized to help tourists and researchers observe animals in their natural habitat.

#### **2.5.2 Caring**

One of the reasons Bu' Niu has been active in nature conservation efforts is the flash flood disaster in 2001, during which he lost six members of her family. He does not want others to experience the same loss and suffering he endured. As part of his efforts, he works to prevent floods and landslides or at least minimize their impact. His deep concern for others has driven him to remain consistently committed to conservation efforts in his village.

### 3.5.3 *Good attitude*

Currently, Bu' Niu is quite famous and has a regular subscription as a guide in the Sahendaruman landscape. Even so, Bu' Niu didn't want to take advantage of himself. Bu Niu always involves his community to jointly feel the benefits, especially the economic benefits. Community welfare is one of Mr. Bu' Niu's concerns. Whenever there are guests, Bu Niu always engages the community/group members to get involved as porters, cooks, drivers, and other jobs needed in the forest. In addition, every time a guest comes, Mr. Bu' Niu sets aside some of her money to give to the group's treasury. Although there are no rules governing levies and cash payments, Mr. Bu'Niu routinely gives them for the sake of the sustainability of her group.

### 3.5.4 *Consistency*

Since 1996, Bu Niu has consistently played her role not only as a forest guide but also as a nature conservationist. He remains committed to not clearing land for farming within the forest, refrains from cutting down trees, and actively protects wildlife and their habitats from the threats of poaching and illegal logging.

### 3.5.5 *Quality of leadership*

Before inspiring many people, Bu' Niu had succeeded in inspiring her son Alfret Dadoali. Bu Niu began to involve Alfret since childhood in every activity accompanying tourists and researchers in the forest. Mr. Bu'Niu inherited her knowledge about animals and forests as well as the spirit of conservation since Alfert was in elementary school. This has yielded results, currently Alfret is actively accompanying and replacing Mr. Bu' Niu as a forest guide. Currently, Bu Niu is actively motivating the younger generation as a resource person in talk show forums, video documentaries, news, etc.

This story has similarities with the story in Gorontalo, where there is a change in behavior from a hunter to an animal protector, they are Ardin Mokodompit and Basri Lamasese. Ardin Mokodompit is a former bird hunter from Gorontalo, Indonesia. Initially, he hunted birds for consumption and entertainment. However, after being embraced by Bogani Nani Wartabone National Park (TNBNW), he realized the importance of protecting these birds. Now, Ardin is a member of Masyarakat Mitra Polhut (MMP) and an ecotourism tour guide. He has even documented around 79 bird species in the national park area. Basri Lamasese is a former maleo hunter in North Sulawesi. He and his friends established a forest farmer group to protect Maleo birds. They managed to build a simple hatchery for this bird, which is an endemic and endangered species (SIEJ, 2022).

In summary, the stories of Bu' Niu, Ardin Mokodompit, and Basri Lamasese serve as powerful examples of how individual transformations can lead to significant community-wide changes in behavior toward wildlife conservation. Their journeys underscore the necessity of integrating personal experiences, community involvement, education, leadership, and long-term commitment into conservation strategies. As these champions continue to inspire others, they contribute to a broader movement that emphasizes the importance of protecting our natural heritage for future generations. Through their efforts, they not only safeguard endangered species but also promote a sustainable relationship between humans and the environment, demonstrating that conservation is not just a responsibility but a shared journey towards a healthier planet.

### 3.6 Impact and influence

The five criterias which mentioned above is also influenced by the direct impact from forest services experienced by Anius Dadoali.

- The supply of water, air and a good microclimate is felt directly by him. Nutmeg, coconut, fruits, and tubers in his garden can be harvested periodically.
- Additionally, he gains economic benefits from working as a nature guide and bird watcher. Anius Dadoali has consistently been a nature observation guide since 1996.

Bu' Niu has significantly influenced community behavior by serving as a role model for change. His transformation from a hunter to a conservationist encourages others to rethink their practices and adopt more sustainable lifestyles. Through his collaboration with researchers, he organizes workshops and educational programs that raise awareness about biodiversity and environmental conservation, leading to more informed community members.

He actively involves local residents in hands-on conservation activities, such as birdwatching tours and habitat restoration projects, fostering a sense of collective responsibility and engagement in environmental stewardship. Additionally, Bu' Niu promotes sustainable agricultural techniques, such as permaculture, encouraging community members to adopt practices that are less harmful to the environment.

Moreover, by addressing environmental challenges like deforestation, Bu' Niu helps the community develop resilience, ensuring they can adapt to changes and protect their resources. His mentorship of young people, including his own son, instills values of environmental stewardship in the next generation, ensuring a long-term commitment to conservation.

Community involvement in planning, implementation, and monitoring agreements is key to the success of community-based conservation efforts. The community plays a central role in preserving the natural environment of their village.

The results of spatial analysis and health monitoring indicate positive impacts from community-based conservation actions. The forest cover within the administrative boundaries of 10 villages in Sahendaruman remained stable and showed an increasing trend from 2018 to 2023. In 2023, the forest cover reached 1,772.82 hectares, an increase from 1,529.22 hectares in 2018. This data is based on spatial analysis from three sources: Landsat-8 satellite imagery, forest cover data from the Ministry of Environment and Forestry, and participatory mapping conducted by Burung Indonesia. In addition, since 2018, community-led restoration projects have reforested 78.8 hectares, improving habitat connectivity for key bird species.

The results of biodiversity monitoring conducted from October 2022 to November 2023 indicate that the population of priority species remains stable and shows signs of increasing. For example, the Cerulean Flycatcher population is estimated at 48–188 individuals, with a potential upward trend, while the Sangihe Whistler (*Coracornis sangirensis*) population remains stable at 28–110 individuals. The team also documented the latest records of Cerulean Flycatcher nest distribution at 21 locations in 2023. The benefits of improved land management are also being felt by the community. Through the practice of permaculture farming in home gardens, some community members no longer need to purchase certain kitchen staples such as vegetables, chili, and tomatoes. In addition to personal consumption, some individuals have begun selling their home garden harvests, providing an additional source of household income.

## 4 Conclusion

The narrative of biodiversity, forests, and community life in Sangihe exemplifies the profound interconnection between nature and human well-being. The positive impacts of

community-based conservation actions, as evidenced by the increasing forest cover and stable bird populations, highlight the effectiveness of local engagement in environmental stewardship. Bu' Niu's journey from hunter to conservationist embodies the transformative potential of education and awareness in fostering sustainable practices. His leadership and commitment to protecting wildlife and their habitats have inspired not only his family but also the broader community.

As communities adopt sustainable agricultural practices like permaculture and actively participate in habitat restoration, they enhance both ecological balance and their own livelihoods. The ongoing collaboration with organizations like Burung Indonesia further strengthens these efforts, ensuring that the rich biodiversity of Sangihe is preserved for future generations. Ultimately, the collective actions of individuals and communities serve as a powerful reminder of the vital role that local knowledge and cultural heritage play in conservation efforts.

We recommend integrating local champions into national conservation planning through training programs, financial incentives, and legal recognition.

This study focused on a single individual; future research should explore multiple local champions to generalize findings.

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