

Perception and Participation of Women in Conservation and Ecotourism of *Bird Watching* in Kwau and Syoubri Villages

Lince Baransano^{1,2*}, Mega Atria², Ludia Wambrau⁴, Ezrom Batorinding², Charlie D. Heatubun^{2,3}

¹Department of Biology, Faculty of Mathematic and Natural Sciences, Universitas Indonesia Kampus UI Depok, Depok 16424, Indonesia

²Badan Research and Inovasi Daerah Provinsi Papua Barat, Kantor Gubernur Papua Barat, Arfai-Distrik Manokwari 98315, Indonesia

³Faculty of Forestry, Universitas Papua, Kampus Amban Manokwari, Amban 98314, Indonesia

⁴Faculty of Agriculture, Universitas Papua, Kampus Amban Manokwari, Amban 98314, Indonesia

Received: March 7, 2025

Revised: April 27, 2025

Accepted: May 25, 2025

Published: May 31, 2025

Corresponding Author:

Lince Baransano

lincebaransano141@gmail.com

DOI: [10.29303/jppipa.v11i5.10820](https://doi.org/10.29303/jppipa.v11i5.10820)

© 2025 The Authors. This open access article is distributed under a (CC-BY License)



Abstract: Kwau and Syoubri Villages in the Arfak Mountains are areas with Bird watching ecotourism. Women in these villages are often involved in ecotourism activities. This study aims to find out the perception and participation of women and their roles in ecotourism and conservation in Kwau and Syoubri Villages, as well as to find out the local knowledge and forms of activities and their application. The research was done in October–November 2023 in Kwau and Syoubri Villages, Manokwari Regency. The respondents were 40 women from each Kwau and Syoubri villages. Data was collected by filling out questionnaires and interviews, then the data was analyzed qualitatively and presented in the form of descriptive statistics. The measurement uses the Likert Scale method and participation rate. Women of Kwau and Syoubri Villages have a very good perception of Birdwatching, ecotourism, and conservation efforts. In the development and management of ecotourism and conservation, women in Kwau Village have a better perception than women in Syoubri Village, who have a neutral perception. The level of female participation in Kwau and Syoubri Villages is low. Women in Kwau Village have participated in the therapy stage such as running programs that support ecotourism and conservation activities. The participation rate of women in Syoubri Village at the manipulation stage is only listening to ecotourism programs and activities, but not being involved, and only partially at the therapy stage. Ecotourism management in Kwau Village is carried out based on the local communities, hence all communities benefit and participate at a certain stage. On the other hand, in Syoubri Village, it is only managed by individual ecotourism managers, and not all communities are involved. Therefore, most women are not directly involved. This research can contribute in terms of scientific information to strengthen ecotourism-based science learning and bird observation conservation.

Keywords: Bird watching, Conservation; Ecotourism; Igya Ser Hanjop; Women's Perception and Participation

Introduction

The Strategic Area of Mahkota Permata Tanah Papua Province (MPTP) is a strategic area created by the West Papua Provincial Government in 2019 to support the government's commitment to implement the 14 points of the Manokwari Declaration related to the

implementation of sustainable development consisting of protected or conservation areas, buffer areas, and areas that have become settlements with protection, biodiversity, and cultural functions to support development initiatives sustainable (Cámara-Leret et al., 2019).

How to Cite:

Baransano, L., Atria, M., Wambrau, L., Batorinding, E., & Heatubun, C. D. (2025). Perception and Participation of Women in Conservation and Ecotourism of Bird Watching in Kwau and Syoubri Villages. *Jurnal Penelitian Pendidikan IPA*, 11(5), 467–480. <https://doi.org/10.29303/jppipa.v11i5.10820>

The MPTP area includes four districts, namely South Manokwari Regency, Teluk Bintuni Regency, Tambrauw Regency, and Arfak Mountains Regency, which consist of several regions, namely protected or conservation areas, buffer areas, and areas that have become settlements. The MPTP area, which is a conservation area, has the potential to be developed as an ecotourism area (Hadadi et al., 2019; Rumbiak & Mambai, 2019).

One of the areas that has carried out conservation and ecotourism functions in the MPTP Area is Kwau and Syoubri Villages in Mokwam District, Manokwari Regency, which is located in the Arfak Mountainous Area. Ecotourism activities in these two villages are in the form of attractions to observe endemic birds in the mountains. All conservation and ecotourism activities can be enjoyed while observing smart bird attractions. Specifically for ecotourism activities, bird observation in the two villages was guided by two men as ecotourism guides, namely Mr. Zeth Wonggor in Syoubri Village and Hans Mandacan in Kwau Village.

Conservation and management of Bird watching ecotourism in Kwau and Syoubri villages is still simple. In these two villages, ecotourism is managed by the community itself without other parties from outside and with very simple ecotourism services by combining local culture. This ecotourism potential has an attraction for tourists, so it must be preserved and passed on to future generations. In addition, the community implements *Igya Ser Hanjop conservation* as local wisdom in the form of regional zoning for agriculture and its utilization.

The participation of community members in decision-making and the implementation of activities in a business can affect the sustainability of a business. The participation of local communities as indigenous peoples is very important in the sustainable management of natural resources, with their local wisdom and the use of ecotourism in their areas (Harizon et al., 2020). The current condition shows that some women are involved in ecotourism activities, however, women are less involved in decision-making and more in carrying out gardening activities, namely 70% of women in Kampung Kwau gardening (Biophysical Profile of Kampung Mokwam, 2021). Several studies report that women are an important part of conservation (Amir et al., 2021; CIFOR, 2013; Indriatmoko et al., 2007; Pelani et al., 2019; Setyowati & Adi, 2008; Zona et al., 2023). Studies or research on the perception and participation of archaic women in conservation and ecotourism need to be carried out. This is because women have an important role in the transfer of knowledge to the current and future generations.

Women's perception and participation in conservation and ecotourism greatly affect the sustainability of these activities. Several studies report

that women in each region have different perceptions and levels of participation in conservation (Amir et al., 2021; CIFOR, 2013; Indriatmoko et al., 2007; Pelani et al., 2019; Setyowati & Adi, 2008; Zona et al., 2023). In addition, women's participation in sustainable agriculture in the Arfak Mountains is quite high; most of the agricultural activities are carried out by women, ranging from land preparation, planting, maintenance, harvesting, and marketing, and Arfak women play an important role in the transfer of local knowledge to ensure sustainable agriculture (Indrawati et al., 2022; Situmorang, 2013; Toansiba et al., 2021).

However, research on the perception and participation of Arfak women in conservation and ecotourism has never been conducted in Kwau and Syoubri Villages, even though women have a role and participation in conservation and environmental management activities. This research focuses on women because management activities carried out by women are often at a certain stage the role and participation of women are not paid attention to or not involved (Olalekan et al., 2019; Pratisti et al., 2012; Zona et al., 2023), even though women have several roles in their lives, as wives, mothers and children, in addition to that in the family environment (domestic roles), namely wives, household managers, mothers (descendants and child educators), additional breadwinners, and as community members (Asmaya, 2020; Handayani, 2017; Lestari, 2016).

The role of women in Kwau and Syoubri Villages will be reviewed in terms of Arfak Women's perception and participation in conservation and ecotourism activities. In general, the research aimed to find out the perception and participation of women and their role in ecotourism and conservation in Kwau and Syoubri villages, as well as to know local knowledge and forms of activities and their application.

Method

This research was carried out in October – November 2023 in Kwau and Syoubri Villages, Mokwam District, Manokwari Regency. The technique for determining respondents uses the purposive sampling method, which is the selection of samples based on certain criteria, determined by consideration of representativeness, in this case considerations of gender, age, occupation, and also through consideration of conditions in the field.

The respondents were adults, according to the age of adulthood determined based on the World Health Organization (WHO) 15 – 64 years old, but in this study, it was taken up to the age of 70 years because it was considered that it could still provide information. Female respondents from Kampung Kwau and Syoubri

with a total of 80 female respondents based on the slovin formula from a total population of 119 people. In addition to adult female respondents, other key informants were two adult men as ecotourism managers in Kwau Village and Syoubri Village, one Kwau Village Secretary, Syoubri Village Officials, and two church leaders.

The method used in this study is a survey and participatory method (Sauini et al., 2020) using interview and questionnaire tools. The researcher surveyed the research location and community activities. At the beginning of data collection, the researcher was involved in carrying out religious activities and cultivating with the community. The description of the study focuses on women's perception and participation in conservation and ecotourism. Perception and participation data were analyzed qualitatively and presented in the form of descriptive statistics. The analysis of perception data uses a Likert scale based on the criteria for measuring the total score and the participation data is assessed based on the level of participation of eight participation scales based on 8 stages, namely manipulation, therapy, notification, consultation, entrapment, partnership, delegation of power, and community control (Arnstein, 2007).

Result and Discussion

Ecotourism and Conservation in Kwau and Syoubri Villages

Ecotourism and conservation activities in Kampung Kwau and Syoubri are in the form of endemic to the Arfak Mountains bird watching attractions. In order to get information, the researcher obtained data on species that carry out attractions, including the Namdur Polos bird (*Amblyornis inornatus*), which is referred to a smart bird as this bird has a unique behavior to collect and arrange grains and garbage, to make the nest looks beautiful and attracts female namdur to visit. In addition, this bird can imitate the sounds of humans, animals, and even vehicles.

There is a Cendrawasih Parotia Arfak (*Parotia sefilata*) that show dance attractions, such as ballet and spreads its wings and rotates its body to the right and left. Other species with unique chirping and color are Rattan Split Bird of Paradise (*Cicinnurus magnificus*), Kurikuri Crescent Beaked Bird of Paradise (*Epimachus fastuosus*), Vogelkop Super Bird of Paradise (*Laphorina niedda*), Black Sickbill (*Epimachus fastosus*), Feline owl-nightjar (*Aegotheles insignis*). All of these species have IUCN Least Concern (LC) conservation status. Furthermore, there are also bird-winged butterflies (Ornithoptera) (Arisa & de Fretes, 2023; Sapary et al., 2017; Tuharea et al., 2017). This activity is the main attraction and destination for domestic and foreign tourists who visit the two villages during the peak

season from July to October, and the non-peak season from March-June.

The observational results show that a series of ecotourism activities starts from the ordering process to implementation. Bird watching ecotourism in Kwau Village is managed by Hans Mandacan, who manages the process from ordering and arranging a schedule, and coordinates with the village head and church administrators for the division of work tasks, as long as there are tourists. The income from these activities will be paid by Hans to the community on duty in the range of Rp. 200,000/person/day, and also buy necessities in the homestay. On the other hand, the accommodation money and levy will be kept by the village treasurer, who will distribute them to the elderly and school children at the end of the year in the amount of Rp. 1,000,000, - / person. Meanwhile, in Syoubri village, it is managed by Zeth Wonggor, but it is different from Kwau Village because not all of the communities are involved in the ecotourism.

The booking process in Kampung Kwau done through Facebook, then communicate via WhatsApp and email to arrange an agreement of the price and visiting schedule according to the package of 6 nights and 7 days for 5 tourists for Rp 88,000,000, these include shuttle car (returned) and facilities in Manokwari, Airport to Kwau, mobilization while in the village, porter, guide locality, accommodation, contributions, foods and drinks, security while in the forest, and bird watching. When tourists make an order, it is accompanied by payment, so that the ecotourism manager, together with the village government, arrange the community (adjusted schedule division) to work when tourists come, so that all people are involved, including women.

Tourists will start the ecotourism activities from 06.00 am because the location is quite far and not in one place. There is a bird observation location close to the homestay, about ± 1 km away, that can be reached on foot, while the farthest, 15 km from the homestay, is by car and then by foot to the bird observation location. Only the guide already knows the location in a certain forest for tourists to watch the smart bird attraction. Specifically, bird observation ecotourism activities in the two villages are guided by men as ecotourism guides, Zeth Wonggor in Syoubri Village and Hans Mandacan in Kwau Village, who initially carried out hunting activities, but after meeting tourists since 1992, switched to tour guides of smart bird watching attractions.

There are also waterfalls, mountain climbing tours (tracking), tours exploring tropical forests, tours to learn butterfly breeding, and agrotourism, fruit, vegetable, and flower tourism (Sonbait et al., 2018). Mountain climbing tours can be done by tourists when they are going to see the smart bird attractions. Then,

agrotourism of vegetables and flowers is only found in Kampung Kwau, while in Kampung Syoubri, it is not available. Butterfly captivity is found in Mokwam Village, which is between Kwau and Syoubri Villages. In addition, there is an Arfak traditional dance attraction by the community when welcoming tourists to visit this village, and a traditional house known as the thousand-foot house, because it consists of many pillars (Sapary et al., 2017). There is also a giant banana endemic to Papua (*Musa ingens*) which reaches a height of 10-15 meters. This potential is what attracts tourists to visit Kwau and Syoubri Villages as ecotourism and conservation sites.

The ecotourism increases awareness of the communities in both villages to protect the environment and the surrounding forests, and even protects the bird species by not hunting and littering. Especially in Kampung Kwau, the income from ecotourism activities is well managed, hence the community can receive these results. When tourists come, women who work in the homestays to cook and dance receive payment of Rp. 200,000/day. In addition, some women knitted bags

(*noken*) will be sold at a price range of Rp. 200,000 – Rp. 300,000, per unit- and sell garden products that will be purchased by ecotourism managers. These activities will improve the welfare of women and the community. This is in line with the definition of ecotourism as a form of tourism trip to natural areas that is carried out with the aim of conserving the environment and preserving the prosperous life of the local community, combining various ecological potentials, the uniqueness of the ecosystem and the culture of the local community to be used as a comparative advantage and educational value for the local community itself and visitors/tourists (Kaharuddin et al., 2020; Yeblo et al., 2015).

Women's Perception in the Utilization and Management of Kwau and Syoubri Villages as Ecotourism and Conservation Areas

Perception is what affects attitudes, and attitudes will determine behavior. Women's perception of tourist visits to Kwau and Syoubri Villages as ecotourism and conservation areas can be seen in Table 1.

Table 1. Women's Perception of Tourist Visits to Kwau and Syoubri Villages as Ecotourism and Conservation Areas

Criteria	Weight Value	Respondents	Percentage %	TxPn
Kwau				
Very Good	5	40	100%	200
Quite Good	4	0	0	
Neutral	3	0	0	
Poor	2	0	0	
Very Bad	1	0	0	
Total		40	100	200
Syoubri				
Very Good	5	40	100%	200
Quite Good	4	0	0	
Neutral	3	0	0	
Poor	2	0	0	
Very Bad	1	0	0	
Total		40	100	200

Table 1 shows that 100% of respondents in Kwau and Syoubri Villages have a very good perception of tourist visits to the two villages, with a total score of 200, with the measurement category considered very good. Women in these two villages have directly seen and known ecotourism activities, both domestic and foreign tourists who always come to visit the two villages during the tourist season and the non-tourist season to do bird watching. Women in both villages support these activities, therefore, these women have a very good perception. This is in line with Wambrauw et al (2023), who reported that the people of Kambala Village and Yarona Kaimana have a good perception of mangrove

forest ecotourism. In addition, the study by Aspuan & Nugraha (2022) reported that the knowledge and perception of the people of North Tugu Village towards the Telaga Warna Nature Tourism Park can be categorized into high knowledge and good understanding.

The researcher wants to know women 's perceptions of ecotourism and conservation for today's life and sustainability for future generations, as well as their perceptions of the benefits of ecotourism and conservation activities in today's life and for the future, which can be seen in Table 2.

Table 2. Women's Perception of Ecotourism and Conservation for Today's Life and Sustainability for Future Generations

Criteria	Weight Value	Respondents	Percentage %	TxPn
Kwau				
Very Good	5	35	87,50%	175
Quite Good	4	5	12,50%	20
Neutral	3	0	0	
Poor	2	0	0	
Very Bad	1	0	0	
Total		40	100	195
Syoubri				
Very Good	5	38	95%	190
Quite Good	4	2	5%	8
Neutral	3	0	0	
Poor	2	0	0	
Very Bad	1	0	0	
Total		40	100	198

Table 2 shows that most of the women in Kwau (87.50%) and Syoubri (95%) villages have a very good perception of ecotourism and conservation for life today and sustainability for future generations. Some other respondents have a good perception of Kampung Kwau (12.50%) and Kampung Syoubri (5%). The total score was 195 for Kwau Village and 198 for Syoubri Village. If viewed based on the criteria, women in the two villages have a very good perception of the benefits of ecotourism and conservation for their current lives and future generations.

Kwau and Syoubri Villages are part of the MPTP, so that the potential for ecotourism and conservation that has been running so far can be managed properly for sustainability. Women in Kwau and Syoubri Villages feel the impact of protecting the forests for ecotourism and conservation activities. This can be seen from the response of women to ecotourism activities, in which women and the community in Kwau Village in general understand that they earn money because of the ecotourism of the smart bird. Therefore, the potential of ecotourism that exists today must be maintained for the sustainability of welfare for future generations. Women have a very good perception because ecotourism has provided good benefits, and even the existing potency is maintained and managed by the community.

This is in line with the definition of ecotourism as the main form of sustainable tourism with attractive features for tourists, which is managed with a conservation-based approach and considers environmental, cultural, social, and economic impact concerns, as well as ensuring sustainability and welfare for local communities (Fandeli, 2000; Ionel, 2019). West Papua Province has made efforts to realize what is aspired to be a sustainable province, one of which is through the 2018 International Conference on Biodiversity, Ecotourism, and Creative Economy (ICBE), which led to the Manokwari declaration which generally

contains a commitment to sustainable development goals.

Women in Kwau and Syoubri Villages have an awareness that forests are a habitat for several smart birds as well as a variety of flora and fauna, as well as provide benefits for their daily lives as well as for the sustainability of future generations. According to the world tourism organization at the United Nations The World Tourism Organization (UNWTO), the principle of tourism sustainability refers to the environmental, economic, and socio-cultural aspects of tourism development, and the appropriate balance to ensure long-term sustainability with the optimal use of environmental resources as a key element, maintaining ecological processes, helping to preserve biodiversity as a heritage. The forest for the Arfak people is a 'living kitchen/mother' that provides food, as a place to live, a place to forage, a place to play and a place to learn so that the forest and the community are inseparable (Salosa et al., 2014). In exploring women's perceptions of cleanliness, beauty, and safety of villages in supporting ecotourism can be seen in Table 3.

In Table 3, all residents in Kwau Village (100%) have a very good perception of the cleanliness, beauty, and safety of the village in supporting ecotourism with a total score of 200. Meanwhile, in Syoubri Village, as many as 35% of female respondents have a neutral perception, quite good as 32.50% of respondents, very good 30%, and poor as much as 2.50% about the cleanliness, beauty and safety of the village in supporting ecotourism, the total score in this question is 154. This can be seen with the condition of the village, as there is no plastic waste thrown carelessly or seen along the road.

Every yard of the residents' house has cultivated ornamental plants, containing various types of flowers such as Begonia (*Begonia* spp), Gladiolus (*Gladiolus* spp.) which has yellow, orange, and pink flowers, Kastuba

(*Euphorbia pulcherrima*), Mayana/Miana (*Coleus benth*), Aster (*Callistephus chinensis*) which has pink, white, and yellow flowers, red rose (*Rosa* sp), Daffodils (*Amaryllidaceae* spp.) which have dark red and white flowers, Gerbera (*Gerbera jamesonii*), Dahlia (*Dahlia* sp.) which has yellow flowers, Orchids (*Dendrobium* sp.), Cana (*Canna indica*), and others.

The community is very supportive of security in this village. This is in line with the conservation goal of ensuring the preservation of a quality environment, which takes into account aesthetic needs by ensuring sustainable, beneficial biodiversity as well as maintaining natural habitats (Butarbutar, 2021; Olalekan et al., 2019).

Table 3. Women's Perception of Village Cleanliness, Beauty and Safety in Supporting Ecotourism

Criteria	Weight Value	Respondents	Percentage %	TxPn
Kwau				
Very Good	5	40	100%	200
Quite Good	4	0	0	
Neutral	3	0	0	
Poor	2	0	0	
Very Bad	1	0	0	
Total		40	100	200
Syoubri				
Very Good	5	12	30%	60
Quite Good	4	13	32,50%	52
Neutral	3	14	35%	42
Poor	2	1	2,50%	2
Very Bad	1	0	0	0
Total		40	100	154

In addition, the village head in Kwau always motivates the community to plant ornamental plants in the yard, church yard and along the roads in the village. This can be seen from the awareness of women to carry out these activities. In addition, the female teachers also directed the students to plant ornamental plants in the school yard. This activity is part of strengthening literacy through Natural Sciences (IPA) subjects as an effort to increase students' understanding and awareness of the environment and the relationship of sustainability from maintaining and arranging the environment to be good. In the study Palupi et al., (2024) reported that students who have a good understanding of ecological literacy will apply good attitudes and skills in protecting the environment. Strengthening the ecological literacy of the community in the village can be reached the community through the students' understanding at school.

Women take part in community service/village cleaning activities, which are routinely carried out once a month. From the information obtained by researchers in the field, the community participated in empowerment activities by the Manokwari Regency Agriculture Office for the development of floricultural plants (ornamental plants) that have the potential to grow around Kwau Village, which aims to increase community skills in cultivating ornamental plants so that they can be managed independently to improve the family economy.

Women in Kwau Village are used to planting and caring for ornamental plants in their yards as part of conservation activities. Based on the information obtained by the researcher, women understand conservation to protect existing forests, animals, and plants with efforts such as not cutting down trees carelessly, not littering, not hunting, and not doing activities in the smart bird attraction area. Women in these two villages both carry out gardening activities with the *Igya Ser Hanjop* conservation pattern.

This is in line with Saini et al. (2019) who revealed that Indian women have a very good role in conservation because they perform rituals with certain plants directly, and Indian women have taken care of plants as a form of conservation. Indian women dominate as wild plant gatherers, home gardeners, plant keepers and biodiversity keepers.

In addition, the Olalekan et al (2019) Study shows that women in Nigeria have an important role and active involvement in conservation and environmental management activities. Meanwhile, based on the criteria of women, Syoubri Village has a different perception from Kwau Village, which is quite good for the cleanliness, beauty, and safety of the village in supporting ecotourism. This can also be seen with the condition of Kampung Syoubri, which has not been well organized in terms of cleaning the village and its surroundings. In the yard of the house, ornamental plants are rarely found as found in Kampung Kwau so that this affects women's perception of the cleanliness,

beauty and security of the village. However, the security in Syoubri village is very guaranteed for tourists like Kwau village.

The researcher obtained information on women's perceptions of ecotourism activities in improving the family economy in Kwau and Syoubri Villages, which can be seen in Table 4.

Table 4. Women's Perception of Ecotourism Activities in Improving Family Economy

Criteria	Weight Value	Respondents	Percentage %	TxPn
Kwau				
Very Good	5	26	65%	130
Quite Good	4	12	30%	48
Neutral	3	2	5%	6
Poor	2			
Very Bad	1			
Total		40	100	184
Syoubri				
Very Good	5	0	0	
Quite Good	4	2	5%	8
Neutral	3	23	57,50%	69
Poor	2	15	37,50%	30
Very Bad	1			
Total		40	100	107

The data in Table 4 shows that as many as 65% of respondents in Kampung Kwau answered very good, 30% quite good, and 5% chose neutral. In Syoubri Village, 57.50% chose neutral, 37.50% answered less, and only 5% answered quite well. The total score based on the measurement criteria, namely Kwau Village, is 184, which means it is very good, while Syoubri Village has a score of 107, which is a neutral criterion. This total score shows that women in Kwau and Syoubri villages have different perceptions of ecotourism activities in improving the family/community economy.

This is different because women in Kampung Kwau women are involved in ecotourism activities such as cooking in homestays, knitting noken, dancing and garden products are sold to homestays to be processed as food menus so that women earn income from ecotourism activities. This is like in Kampung Baho North Sulawesi, where there has been an increase in community income since the existence of ecotourism activities (Manahampi et al., 2015). In addition, Papuan women are able to play a role in improving the family economy, in reproductive roles (domestic), productive roles (public), and social roles in society (Hardiningtyas, 2016; Marrit, 2016; Melianti & Wibowo, 2019).

In ecotourism activities, men are usually scheduled by ecotourism managers to become *porters*, even help become guides to provide new jobs for the community. This is in line with the Butarbutar study (2021) which reported that the involvement of local communities in ecotourism increases capacity and employment opportunities for the community. In Kampung Kwau for the average income from ecotourism visits, before the

tourist season the average is around 100-120 million per month.

On the other hand, income during the tourist season is between 500 – 800 million per month, where in a month there are 3-4 visits with an average stay of 4-6 days per visit, which will be paid to ecotourism managers to be regulated. After the visit of tourists, all those on duty will be paid wages according to the work done, while other income from ecotourism will be kept by the treasurer. At the end of the year, all income for the year will be calculated with all communities and parents to be distributed according to the existing amount. This is what helps improve the economy of the community in the village. Syoubri Village is different because the management is done individually, and not all communities are involved. Income from ecotourism activities is not mentioned, so that women have a neutral attitude based on measurements according to the score criteria in this study on the benefits of ecotourism to improve the family economy. Even though Syoubri Village developed the potential of *Birdwatching* earlier, but in community organization there are differences with Kwau Village.

Women's perception of local community-based ecotourism management. Based on Table 5 in Kwau Village, 50% of respondents voted moderately agree, 40% strongly agree, and 10% neutral, while in Syoubri Village, 25% of respondents answered that they quite agreed, 50% chose neutral, as many as 22.50% of respondents chose not to agree and only 2.5% of respondents answered that they strongly disagree with the perception of ecotourism management and community-based conservation. The total score based on

the criteria for measuring perception of local community-based management in Kwau Village is 172, which means very good, while Syoubri Village has a

total score of 119 which is a neutral category. The total score of Kampung Kwau is higher than that of Kampung Syoubri.

Table 5. Women's Perception of Local Community-Based Ecotourism Management

Criteria	Weight Value	Respondents	Percentage %	TxPn
Kwau				
Very Good	5	16	40%	80
Quite Good	4	20	50%	80
Neutral	3	4	10%	12
Poor	2			
Very Bad	1			
Total		40	100	172
Syoubri				
Very Good	5			
Quite Good	4	10	25%	40
Neutral	3	20	50%	60
Poor	2	9	22,50%	18
Very Bad	1	1	2,50%	1
Total		40	100	119

In Kwau Village, ecotourism is managed by Mr. Hans Mandacan, who was previously a *guide* with good English and communicates with tourists by himself. Ecotourism managers, together with village heads and Church leaders, decide together regarding the development of ecotourism in community-based villages. Ecotourism managers always ensure that people in the village are included and must get economic benefits by arranging schedules and dividing work. Currently, tourism management in Kampung Kwau is managed independently by the local community, ranging from picking up and dropping off domestic and foreign tourists from the airport to Kampung Kwau, lodging facilities at the Papua Lorikeet guest house, to observing birdwatching attractions. Local community-based ecotourism management is very important because ecotourism arises from the initiative of local communities in sustainable natural resource management with their local wisdom and the use of ecotourism in their regions (Harizon et al., 2020; Oktami et al., 2018).

Community-based tourism, or known as Community Based Tourism (CBT), is tourism that makes the community play an important and most important role in tourism development (Rahadi et al., 2021). The involvement of local communities in ecotourism management is very important because ecotourism initiatives come from local communities, where the ecotourism potential is located (Oktami et al., 2018). Syoubri is different because the management of ecotourism is done individually, thus, all communities are often less involved. This affects the perception of women in Syoubri Village towards ecotourism

management and conservation based on local communities.

Women's Perception of Igya Ser Hanjop, Forms of Activities and Application

In the concept of *Igya Ser Hanjop*, the researcher explored information on how the knowledge and skills possessed by the community in Kwau and Syoubri Villages in land use related to land limitations and processing activities carried out with the transfer field system, and whether it is still carried out today. The measure of women's perception in both villages can be seen in Table 5. Based on the table, the respondents in Kwau Village are 87.5% and Syoubri Village is 85%, both villages are very good, while as many as 2.50% each choose neutral. Respondents in Kampung Kwau answered quite well at 10% and Kampung Syoubri at 12.50%. The total score based on the criteria for measuring women's perception of the concept of *Igya Ser Hanjop* is in Kampung Kwau 194 and Kampung Syoubri 193, with their respective categories being very good. Respondents in Kwau and Syoubri Villages have a very good perception of *Igya Ser Hanjop* because, until now, the community is still applying the concept of *Igya Ser Hanjop* as their local wisdom, in the form of zoning the area for agriculture and its use. In Kwau and Syoubri Villages, which are still carrying out conservation practices in utilizing land for gardening and other activities, the concept of *igya ser hanjop* is recognized as a heritage. This is in line with the results of a study by Purbokurniawan et al., (2019) who reported that the concept of *Igya Ser Hanjop* is part of the local wisdom of the Arfak tribal people in using land for agricultural

activities and nature conservation. In managing their natural resources, the Arfak people classify areas into four types, namely ampiabea (humid area), nuhim (between hot and cold), reshim (tidal area), and mukti (coastal). This concept by the Arfak people is called the Igya Ser Hanjop concept (P. Laksono et al., 2001). In the

Hatam language, Igya Ser Hanjop comes from the words igya = standing, ser = guarding, and hanjop = boundary which can be translated as "standing guarding the boundary" (Hastanti & Yeny, 2009; Purbokurniawan et al., 2019).

Tabel 6. Women's Perceptions of Igya Ser Hanjop as the Conservation Practice

Criteria	Weight Value	Respondents	Percentage %	TxPn
Kwau				
Very Good	5	35	87,5	175
Quite Good	4	4	10%	16
Neutral	3	1	2.50%	3
Poor	2			
Very Bad	1			
Total		40	100	194
Syoubri				
Very Good	5	34	85%	170
Quite Good	4	5	12.50%	20
Neutral	3	1	2,50%	3
Poor	2			
Very Bad	1			
Total		40	100	193

Hastanti and Yeny (2009) said that the process of conservation and utilization of biological resources in a forest area refers to the concept of Igya Ser Hanjop. The excessive use of plants and animals from within the forest, even in the part of the forest that can be used and managed freely, is also avoided with the concept of Igya Ser Hanjop. This goes back to forest consider as a mother, so that if it is used excessively, it can interfere with the benefits of forests in providing "milk" according to the Arfak people (P. M. Laksono & Cendrawasih, 2001; Salosa et al., 2014). Gardening activities carried out by women also apply the concept of Igya Ser Hanjop in utilizing land, so they know the location that must be used for gardening. The selection of land or location of the garden is based on the concept of Igya Ser Hanjop which is local wisdom that has been inherited from previous generations (Salosa et al., 2014; Toansiba et al., 2021). Therefore, women in the two villages have a very good perception of Igya Ser Hanjop as a conservation and limit for gardening.

In addition, the Arfak people who live in Kwau and Syoubri Villages are Arfak natives from the Hatam-Moile sub-tribe as is typical of the Arfak tribe people who live on the move, participating in gathering and hunting activities in their clan's customary territory. The main livelihood of the residents is farmers in fields/gardens with a shifting farming system, in addition, the community also carries out hunting/gathering activities (Biophysical Profile of Mokwam Village). The community already knows the boundaries of the area for hunting and does not carry

out gardening activities or cut down trees freely in places that have been the boundaries for generations. In the Arfak mountainous area, especially in the Hatam sub-tribe community, the forest area used by the community with the concept of Igya Ser Hanjop is divided into susti, bahamti, nimahamti and tumti with the independence of the community to maintain and cultivate their forest area, especially to become a source of food, building materials, medicines and others (P. Laksono et al., 2001; Salosa et al., 2011).

Forest areas mainly provide animal protein that can be obtained by the community by snaring or planned shooting, but there are also those that happen by chance. In addition to concocting types of vegetables, people consume game animals in the form of couscous, birds, pigs and others to meet the needs of animal protein (Salosa et al., 2014). Before the people in these two villages knew the world of ecotourism, hunting activities were often carried out by men. However, after ecotourism and domestic and foreign tourist visits, people began to realize the importance of protecting forests and not hunting around smart bird habitat areas, because forests and ecotourism provide economic benefits for the community. Birds are no longer a hunting destination, because they have been protected by the community itself. In terms of land use, the community gardens in the Sustu area while Bahamti has no activities such as gardening, hunting and gathering.

Women's Participation in Ecotourism and Birdwatching Conservation in Kwau and Syoubri

In Kwau Village, as many as 95% of respondents had participated in the therapy stage, namely women only running programs that support ecotourism and conservation activities, such as knitting bags, cooking at

homestays, when there are tourist visits, then as traditional dancers, and cleaning the village. Women's participation in Kwau Village and Syoubri Village, based on stages and indicators of participation in ecotourism and conservation, can be seen in Table 7.

Table 7. Women's Participation in Ecotourism and Birdwatching Conservation in the Crown of the Gems of Papua

Phase	Indicator	Kwau		Syoubri		Total
		R*	%	R*	%	
Manipulation	Women only hear about ecotourism programs and activities but are not involved			30	75%	
Therapy	Women carry out ecotourism and conservation activities but the goal is to prepare	38	95%	10	25%	
Announcement	Women are present, see, pay attention to ideas and voluntarily carry out programs in the village	2	5%			
Consultation	Women are present to give advice and make decisions in a meeting or deliberation					
Placation	Women's ideas are accepted but not necessarily implemented. Inappropriate advice is ignored					40
Partnership	Women are invited and involved in implementing the program					
Delegation of Power	Women as agents of change, have the same power as the government, men in social groups and can analyze problems themselves					
Community Control	Women are already able to manage social organizations and control, build programs independently, solve problems, lead programs or be completely controlled by women					

Catatan : R* = Female respondents

In the village, only 5% of respondents are at the announcement stage, namely, women are present, see, pay attention to ideas, and voluntarily carry out programs in the village. Women at this stage are women who work as clergy and as female figures. In Kwau Village, women who are clergy and female leaders are given the opportunity to attend, but are not given space to speak, because it has become a tradition at meetings or deliberations, decisions, and ideas are conveyed by men so that women are only present, see and follow what is decided.

In contrast, as many as 75% of women in Syoubri Village are at the manipulation stage, namely, women only hear about ecotourism programs and activities but are not involved, while as many as 25% are at the therapy stage. Women's participation in Kampung Syoubri is different because ecotourism management in Kampung Kwau is regulated by involving the community, so that all communities carry out their roles at a certain stage. In Syoubri Village, it is only managed by Ecotourism managers and not all communities are involved, so most women are not directly involved.

Participation is the participation of individuals or the community in the process of decision-making activities to obtain the results of the planned activities to

run optimally. Community participation in the form of work, consultation, communication, collaboration with the process of identifying problems and potentials that exist in the community, selection and decision-making about alternative solutions to deal with problems, implementation of efforts to overcome problems, and community involvement in the process of evaluating changes that occur (Dijkers, 2010; Mustanir et al., 2017; Sloane et al., 2022).

At other stages, there is no women's participation because, in general, in every meeting or deliberation in the two villages, women are rarely or not involved. Those who provide advice and make decisions are men who hold a position or are considered to have an important role. Women will follow every direction or something that has become a common decision. For example, the concept of local conservation, Igya Ser Hanjop, which is local wisdom and has been inherited from previous generations to the present, all adult women know the concept.

However, Isecheno women in Kenya empower and educate women to become community leaders in environmental education and cultural preservation, economic empowerment for women. Isecheno women collaborate in an activity to advance themselves economically, including environmental conservation,

such as beekeeping and the development of tree nurseries (Barry, 2012). However, women have obstacles in time and motivation (Kaeser et al., 2016). Although women's involvement in conservation development is influenced by women's perceptions (Haria et al., 2022), in this study, women's participation is low, but women's perceptions are very good.

Conclusion

Women in Kampung Kwau and Kampung Syoubri have a very good perception of the use and management as ecotourism and conservation areas. Women in these two villages have a very good perception of Igya Ser Hanjop as a local conservationist and carry out the practice. Based on the Arnstein category, the level of female participation in Kampung Kwau and Kampung Syoubri is included in the low participation. Women in Kwau Village have participated in the therapy stage, such as only run programs that support ecotourism and conservation activities, such as knitting bags, cooking duties at homestays, as dancers in performing regional dances, working in homestays, planting ornamental plants in the yard. Meanwhile, in Syoubri Village, women's participation in the manipulation stage is only listening to ecotourism programs and activities, but not being involved, only partially at the therapy stage. In this study, women's participation is low, but women's perception is very good.

Ecotourism management in Kampung Kwau is based on the local community so that all communities benefit and participate at a certain stage, namely in participating in deliberations, as well as the division of tasks such as being a guide, porter, cooking, performing dances and garden products are purchased for food supplies at homestays so that all people in Kampung Kwau benefit from ecotourism activities.

In Syoubri Village, ecotourism management is only managed by ecotourism managers, not all communities are involved, so most women are not directly involved. Women apply the concept of Igya Ser Hanjop as a form of local knowledge in gardening activities and land use. It is necessary to conduct further studies or research to obtain comprehensive information as a basis for considering the sustainable management and development of the Crown Jewel of Papua Land area and increasing women's participation in ecotourism and conservation activities. The results of this study can contribute in terms of scientific information to strengthen ecotourism-based science learning and bird observation conservation.

Acknowledgments

The authors express their appreciation to the West Papua Provincial Government through the Regional Research and

Innovation Agency (BRIDA) of West Papua Province for funding this study through the collaboration program between BRIDA and the Biology Study Program, Faculty of Mathematics and Natural Sciences, University of Indonesia. We extend our gratitude to the communities of Kampung Kwau and Syoubri for their participation in this research. Their valuable insights and local knowledge have greatly enriched our study. Finally, we sincerely thank all individuals and institutions who have contributed in various aspects of this research. We hope that the findings of this study will contribute to the development of ecotourism and conservation efforts in support of the Crown Jewel of Papua region.

Author Contributions

All authors contributed equally to the writing of this.

Funding

This research did not receive external funding.

Conflicts of Interest

Declare All authors declare that they have no conflict of interest related to this research.

References

- Amir, A., Maturbongs, M. R., & Samusamu, A. S. (2021). Eksistensi perempuan pesisir marind imbuti pada rehabilitasi hutan mangrove di pantai payum Kabupaten Merauke. *Jurnal Kebijakan Perikanan Indonesia*, 13(2), 103-110. <https://doi.org/http://dx.doi.org/10.15578/jkpi.13.2.2021.103-110>
- Arisa, & de Fretes, Y. (2023). Hans Mandacan: 15 tahun jalani ekowisata birdwatching berbasis masyarakat. *Kasuari Inovasi*, 118-125. <https://www.risetinovasilitbangpb.com/wp-content/uploads/flipbook/43/flipBook.html>
- Arnstein, S. R. (2007). A ladder of citizen participation. *Journal of the American Institute of Planners*, 35(4), 216-224. <https://doi.org/10.1080/01944366908977225>
- Asmaya, E. (2020). Peran perempuan dalam dakwah keluarga. *Yinyang: Jurnal Studi Islam Gender Dan Anak*, 15(2), 279-296. <https://doi.org/10.24090/yinyang.v15i2.3901>
- Aspuan, A., & Nugraha, R. N. (2022). Persepsi masyarakat terhadap pengelolaan taman wisata alam telaga warna Kabupaten Bogor Provinsi Jawa Barat. *Jurnal Inovasi Penelitian*, 3(6), 6593-6598. <https://ejournal.stpmataram.ac.id/JIP/article/view/2117>
- Barry, K. S. (2012). *Women empowerment and community development through ecotourism*. Capstone Collection; SIT Graduate Institute. <https://digitalcollections.sit.edu/capstones/2579/>
- Butarbutar, R. R. (2021). Ekowisata dalam Perspektif Ekologi dan Konservasi. In N. Rismawati (Ed.), *CV Widina Media Utama*. CV Widina Media Utama.

- Cámara-Leret, R., Schuiteman, A., Utteridge, T., Bramley, G., Deverell, R., Fisher, L. A., McLeod, J., Hannah, L., Roehrdanz, P., Laman, T. G., Scholes, E., De Fretes, Y., & Heatubun, C. (2019). The Manokwari Declaration: Challenges ahead in conserving 70% of Tanah Papua's forests. *Forest and Society*, 3(1), 148–151. <https://doi.org/10.24259/fs.v3i1.6067>
- CIFOR. (2013). *Hutan dan jender: Apa yang perlu diketahui oleh para pembuat kebijakan*. Cifor-Icraf.Org. https://www.cifor-icraf.org/publications/pdf_files/factsheet/4179-factsheet.pdf
- Dijkers, M. P. (2010). Issues in the conceptualization and measurement of participation: an overview. *Archives of Physical Medicine and Rehabilitation*, 91(9), S5–S16. <https://doi.org/10.1016/j.apmr.2009.10.036>
- Fandeli, C. (2000). *Pengertian dan konsep dasar ekowisata*. Fakultas Kehutanan UGM. <https://l1nq.com/ZvUUD>
- Hadadi, O. H., Estradivari, H. C., Amkieltiela, Rumbiak, W., & Rosswiadji, T. A. Y. S. (2019). Perception and participation of women in conservation and ecotourism of bird watching in Kwau and Syoubri. *Multidisciplinary Output Research For Actual and International Issue* (MORFAI). <https://radjapublika.com/index.php/MORFAI/article/view/2566>
- Handayani, T. S. (2017). *Konsep dan Teknik Penelitian Gender*. UMMPress.
- Hardiningtyas, uji R. (2016). Resistansi perempuan papua di lingkungannya dalam roman isinga karya Dorothea Rosa Herliany. *Aksara*, 28(2), 143–153. <https://doi.org/http://dx.doi.org/10.29255/aksara.v28i2.127.143-153>
- Haria, N. G., Arieta, S., & Sadam, S. (2022). The effect of women's perceptions on women's participation in mangrove conservation supervised by carbonethics foundation in Dompok Island, Riau Island Province, Indonesia. *Jurnal Archipelago*, 1(1), 49–62. <https://doi.org/10.69853/ja.v1i1.3>
- Harizon, H., Hertati, R., & Kholis, M. N. (2020). Tingkat partisipasi masyarakat terhadap suaka perikanan (reservat) Lubuk Kasai Perairan Batang Pelepat Kabupaten Bungo Provinsi Jambi. *SEMAH Jurnal Pengelolaan Sumberdaya Perairan*, 4(1). <https://doi.org/10.36355/semahjps.v4i1.337>
- Hastanti, B. W., & Yeny, I. (2009). Strategi pengelolaan cagar alam pegunungan arfak menurut kearifan lokal masyarakat arfak di Manokwari Papua Barat. *Info Sosial Dan Ekonomi Kehutanan*, 9(1–4), 19–36.
- Indrawati, Sumarno, Kusuma, Z., & Raharjo, B. T. (2022). Tipologi kebun campuran petani tradisional hatam di Pegunungan Arfak. *Jurnal Triton*, 13(1), 109–125. <https://doi.org/10.47687/jt.v13i1.256>
- Indriatmoko, Y., Yuliani, E. L., Tarigan, Y., Gaban, F., Maulana, F., Munggoro, D. W., Lopulalan, D., & Adnan, H. (2007). *Dari desa ke desa: dinamika gender dan pengelolaan kekayaan alam*. Center for International Forestry Research (CIFOR). <https://doi.org/10.17528/cifor/002214>
- Ionel, M. (2019). Ecotourism and its importance on the tourism market. *"Ovidius" University Annals, Economic Sciences Series*, XIX(2), 300–305. <https://ideas.repec.org/a/ovi/oviste/vxixy2019i2p300-305.html>
- Kaesar, A. S., Willcox, A. S., & Panti, N. C. (2016). Attitudes and perceived barriers to women participating in a proposed community-based conservation programme in Belize. *Oryx*, 52(1), 89–97. <https://doi.org/10.1017/S0030605316000715>
- Kaharuddin, K., Pudyatmoko, S., Fandeli, C., & Martani, W. (2020). Partisipasi masyarakat lokal dalam pengembangan ekowisata. *Jurnal Ilmu Kehutanan*, 14(1), 42–54. <https://doi.org/10.22146/jik.57462>
- Laksono, P. M., & Cendrawasih, Y. B. L. B. (2001). *Igya ser Hanjop: Masyarakat Arfak dan Konsep Konservasi*. Pusat Studi Asia Pasifik, Universitas Gadjah Mada.
- Laksono, P., Rianty, A., Hendrijani, A., Gunawan, M. A., & Mansoara, N. (2001). *Igya Ser Hanjop: Masyarakat Arfak dan Konsep Konservasi*. Pusat Studi Asia Pasifik, Universitas Gadjah Mada.
- Lestari, D. (2016). Eksistensi perempuan dalam keluarga (kajian peran perempuan sebagai jantung pendidikan anak). *Muwazah*, 8(2), 258–267. <https://doi.org/10.28918/muwazah.v8i2.760>
- Manahampi, R. M., Rengkung, L. R., Rori, Y. P. I., & Timban, J. F. J. (2015). Peranan ekowisata bagi kesejahteraan masyarakat baho kecamatan likupang barat. *Agri-Sosioekonomi*, 11(3A), 1–8. <https://doi.org/10.35791/agrsosek.11.3A.2015.10181>
- Marrit, E. L. (2016). Noken dan perempuan Papua: Analisis wacana gender dan ideologi. *Melanesia Jurnal Ilmiah Kajian Bahasa Dan Sastra*, 1(1), 33–42. <https://doi.org/http://dx.doi.org/10.30862/jm.v1i1.736>
- Melianti, E., & Wibowo, A. M. (2019). Peran perempuan papua dalam peningkatan ekonomi keluarga di Kelurahan Wonosari Jaya distrik wania (nilai budaya dan potensinya sebagai sumber pembelajaran IPS SMP). *Gulawentah: Jurnal Studi Sosial*, 4(2), 78–84. <https://doi.org/10.25273/gulawentah.v4i2.5523>
- Mustanir, A., Barisan, B., & Hamid, H. (2017). Participatory rural appraisal as the participatory planning method of development planning. *Indonesian Association for Public Administration (IAPA) International Conference Towards Open Government: Finding the Whole Government Approach*. <https://shorturl.at/6AUAh>

- Oktami, E. A., Sunarminto, T., & Arief, H. (2018). *Partisipasi masyarakat dalam pengembangan ekowisata taman hutan raya Ir H Djuanda* [IPB University]. <https://repository.ipb.ac.id/handle/123456789/93502>
- Olalekan, R. M., Monsurat, S. R., Emmanuel, O. O., Tolulope, S. J., Modupe, O., Olalekan, A. S., & Christianah, M. B. (2019). Women role in environmental conservation and development in Nigeria. *Ecology & Conservation Science*, 1(2). <https://doi.org/10.2139/ssrn.3425832>
- Palupi, D., Sarwanto, S., & Karsono, K. (2024). The Implementation of Ecological Literacy Learning for Students of Elementary School. *Social, Humanities, and Educational Studies (SHES): Conference Series*, 7(1), 62-70. <http://dx.doi.org/10.20961/shes.v7i1.84275>
- Pelani, H., Yulia, Y., & Madiang, B. (2019). Pendampingan peningkatan pengetahuan konservasi sumber daya ikan kepada perempuan di Kecamatan Mangarabombang Kabupaten Takalar. *Sainsmat : Jurnal Ilmiah Ilmu Pengetahuan Alam*, 8(2), 1-18. <https://doi.org/10.35580/sainsmat82107142019>
- Pratisti, C., Saksono, H., & Suadi, S. (2012). Partisipasi perempuan dalam konservasi mangrove di desa Pasar Banggi Kabupaten Rembang. *Journal of Fisheries Sciences*, 14(1), 32-44. <https://doi.org/https://doi.org/10.22146/jfs.9047>
- Purbokurniawan, P., Kubangun, S. H., Noya, A. I., & Widiastuti, N. (2019). Zona pemanfaatan lahan pertanian "igya ser hanjob" di sekitar Danau Anggi Pegunungan Arfak, Papua Barat. *Mewujudkan Ketahanan Pangan Nasional Dengan Zonasi Lahan Dan Pemanfaatan Lahan Sub-Optimal*, 473-487.
- Rahadi, I., Nursaly, B. R., Handini, B. S., & Murcahyanto, H. (2021). Penguasaan bahasa Inggris masyarakat dan partisipasinya dalam pengembangan desa wisata. *Journal of Education and Instruction (JOEI)*, 4(2), 486-494. <https://doi.org/10.31539/joeai.v4i2.2827>
- Rumbiak, W., & Mambai, B. (2019). Kawasan mahkota permata tanah Papua. *Kasuari Inovasi*, 40-42. https://balitbangda.papubaratprov.go.id/po-content/uploads/Kasuari_Inovasi_Vol.2.pdf
- Saini, I., Kaushik, P., & Saini, B. L. (2019). Role of indian women in conservation of biodiversity. *International Journal of Current Microbiology and Applied Sciences*, 8(04), 63-68. <https://doi.org/10.20546/ijcmas.2019.804.008>
- Salosa, S. T., Awang, S. A., Suryanto, P., & Purwanto, R. H. (2014). Hutan dalam kehidupan masyarakat hatam di lingkungan cagar alam Pegunungan Arfak. *Jurnal Manusia Dan Lingkungan*, 21(3), 349-355. <https://doi.org/https://doi.org/10.22146/jml.18563>
- Salosa, S. T., Yeny, I., Hastanti, B. W., Nurapriyanto, I., & Maulana, S. (2011). *Kearifan masyarakat adat dalam perspektif penguatan ketahanan pangan di Papua*.
- Sapary, F. E., Rai, I. N., & Sunarta, I. N. (2017). Ecotourism management strategy to support environmental conservation in Mokwam area, Manokwari regency, West Papua. *Ecotrophic : Jurnal Ilmu Lingkungan (Journal of Environmental Science)*, 11(2), 157-165. <https://doi.org/10.24843/EJES.2017.v11.i02.p06>
- Sauini, T., Stern da Fonseca-Kruel, V., Baptistela Yazbek, P., Matta, P., Cassas, F., da Cruz, C., Hortal Pereira Barretto, E., Alice dos Santos, M., Angelica Silva Gomes, M., José Francischetti Garcia, R., Honda, S., Felipe Domingues Passero, L., Esteves Conde, B., & Rodrigues, E. (2020). Participatory methods on the recording of traditional knowledge about medicinal plants in Atlantic forest, Ubatuba, São Paulo, Brazil. *PLOS ONE*, 15(5). <https://doi.org/10.1371/journal.pone.0232288>
- Setyowati, R., & Adi, R. K. (2008). Partisipasi perempuan dalam konservasi lahan di Desa Kalisoro Kecamatan Tawangmangu Kabupaten Karanganyar. *Agritexts: Journal of Agricultural Extension*, 23(1), 22-33. <https://jurnal.uns.ac.id/agritexts/article/view/43577>
- Situmorang, M. N. (2013). *Strategi adaptasi masyarakat arfak dalam pengelolaan dan pemanfaatan sumber daya hutan di cagar alam Pegunungan Arfak*. Universitas Negeri Papua.
- Sloane, M., Moss, E., Awomolo, O., & Forlano, L. (2022). Participation is not a design fix for machine learning. *Equity and Access in Algorithms, Mechanisms, and Optimization*, 1-6. <https://doi.org/10.1145/3551624.3555285>
- Sonbait, L. Y., Mulyadi, & Wambrauw, Y. L. D. (2018). Pengembangan kampung ekowisata dalam mendukung kesejahteraan masyarakat lokal melalui KKN-PPM di kawasan cagar alam pegunungan Arfak. *Jurnal Dinamika Pengabdian*, 4(K), 51-60. <https://doi.org/https://doi.org/10.20956/jdp.v4iK.5434>
- Toansiba, M., Katmo, E. T. R., Krisnawati, K., & Wambrauw, Y. L. D. (2021). Pengelolaan tanah dalam pengetahuan lokal dan praktik pertanian berkelanjutan pada masyarakat Arfak, Papua Barat. *Jurnal Ilmu Pertanian Indonesia*, 26(3), 370-378. <https://doi.org/10.18343/jipi.26.3.370>
- Tuharea, A., Hardjanto, H., & Hero, Y. (2017). Penilaian ekonomi pengelolaan wisata alam di cagar alam Pegunungan Arfak Kabupaten Manokwari, Papua Barat (studi kasus Kampung Kwau Distrik Minyambouw). *Jurnal Penelitian Kehutanan Faloak*, 1(1), 9-20. <https://doi.org/10.20886/jpkf.2017.1.1.9-20>

- Wambrau, L. T., Widati, A. W., & Yuminarti, U. (2023). Persepsi masyarakat terhadap pemanfaatan dan pengelolaan hutan mangrove di kampung Kambala dan Yarona Distrik Buruway Kabupaten Kaimana. *Igya Ser Hanjop: Jurnal Pembangunan Berkelanjutan*, 5(2), 87-101. <https://doi.org/10.47039/ish.5.2023.87-101>
- Yeblo, M., Kiroh, H. J., Nangoy, M. J., & Rawung, V. R. W. (2015). Studi beberapa faktor pendukung pengembangan ekowisata berbasis fauna endemik di hutan Sawinggrai Kecamatan Miosmansar Kabupaten Kepulauan Raja Ampat Propinsi Papua Barat. *ZOOTEC*, 35(2), 210-224. <https://doi.org/10.35792/zot.35.2.2015.7843>
- Zona, K. S., Ismail, K., Amrivo, V., & Sari, T. E. Y. (2023). Partisipasi dan peranan perempuan dalam kegiatan konservasi. *Agronimal: Jurnal Ilmiah Pertanian Dan Peternakan*, 1(1), 17-22. <https://tahtamedia.co.id/index.php/agronimal/article/view/181>