



Exploring the public socio-culture of developing endemic animal based ecotourism supporting the sustainable tourism industrial program at Lembe Island Bitung city, North Sulawesi province of Indonesia

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Abstract

Introduction and aim: Bitung City as one of the cities in North Sulawesi Province, has a relatively rapid development due to the existence of a very strategic seaport. Bitung City is located in the northeast of Minahasa land with its territory consisting of a plain at the foot of Mount Dua Sudara and the Island called Lembeh. North Sulawesi is one of the five super priority provinces for the development of Indonesian National Tourism. The increase in the number of foreign tourists in North Sulawesi in 2018 reached 127,879 visitors dominated by tourists from China and those from domestic tourists reached 1,959,899 visitors. Unfortunately North Sulawesi still lacks new destinations as a form of offering based on the diversity of endemic fauna animals that can be used as a typical North Sulawesi Ecotourism Center, Research Center, Education and Training Center either nationally or internationally. Lembeh Island is estimated to be one of the islands containing various types of endemic flora and fauna animals including rare plants, Celebencis cuscus, Tarsius spectrum, black monkeys (*Black macaca nigra*), Maleo birds and various other endemic animals. These wealthy animals must be managed properly, in a balanced, sustainable and measurable manner becoming a source of regional original income. This study can provide valuable recommendations for the government formulating new policies and regulations of developing endemic animal-based ecotourism supporting the sustainable tourism industrial program.

Method: The method used in this study was the survey method which directly interviews the community with questions that have been prepared in the form of a questionnaire, then the collected data were tabulated and the percentages were calculated.

Results: The natural wealth of both endemic flora and fauna found on Lembeh Island is a factor that is the focus of this study related to the age and gender of the community. These two factors are studied because they are also benchmarks for success in developing sustainable endemic animal-based ecotourism businesses on Lembeh Island, North Sulawesi. The profession of work pursued by this community was a positive support for the development of natural ecotourism in Papusungan Village on Lembeh Island, Bitung City. Efforts were actively contributed through the response, understanding and interest of the local community. Scientific information related to endemic wildlife ecotourism can change the mindset of people who were previously less interested and not interested in endemic wildlife ecotourism into an understanding that can provide economic impacts for the community around the endemic wildlife ecotourism development area on Lembeh Island, Bitung City. The Papusungan village officials and the community must significantly know important information as a supporting force of the endemic wildlife ecotourism development.

Conclusion: The exploration of the public socio-culture of developing endemic animal-based ecotourism reveals a rich supporting of the sustainable tourism industrial program at Lembe Island Bitung city, North Sulawesi province of Indonesia. Key findings from this exploration include the levels of knowledge, understanding, community interest and support from the Papusungan sub-district government of the Lembeh Island area.

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Implications: The implications of these findings for understanding socio cultures are the majority of people in Papusungan Village who are interested in efforts developing ecotourism of endemic animals. Further research needs to be conducted to determine the integrated supporting factors for the minimal tasks of related agencies providing support for the preservation of endemic animals including their carrying capacity for the sustainability of endemic fauna in Lembeh Island.

Keywords : Endemic animals; Ecotourism; Local community socio-culture; Lembeh Island

1. Introduction

Sulawesi Island is the largest island in the Wallacea Region and geographically the most complex because it is home to a mixture of Oriental fauna. Sulawesi Island is the largest island in the Wallacea Region which is an area where various types of endemic fauna evolved. Sulawesi Island has around 127 types of animals consisting of 79 endemic mammals (62%), 328 types of birds with 81 endemic types (25%), 29 types of amphibians with 19 endemic types (66%), and a diversity of other types of animal life in Indonesia. The types of endemic animals that exist are collected in tropical forest ecosystems ranging from coastal ecosystems to mountain ecosystems with a total of 47 types of ecosystems [1].

North Sulawesi has a great diversity of animal species, around 70% of the 114 known animal species are rare and endemic species [2]. Thus, biodiversity management includes, a) maintaining the sustainability of biodiversity, b) preserving the potential of biodiversity so that its availability can be sustainable and c) studying the biodiversity owned in the development of its preservation and utilization [3]. Efforts that can be made to prevent the extinction of endemic fauna/animals are to stop taking wild animals in the forest and efforts to breed animals, stop exploiting endemic animal habitat forests and make alternative efforts by promoting ecotourism efforts based on rare endemic animals [4].

Efforts to display unique endemic animals become a unique ecotourism attraction while maintaining the natural character of an area and its biodiversity, making visitors interested in seeing and enjoying those natural biodiversity [5]. All these efforts are the driving force for tourists who are interested in endemic fauna such as maleo birds [6], *Tarsius spectrum*, hornbills, macaques, sampiri birds, celebensis cuscus, Sulawesi Anoa, babirusa, and other reptiles [7].

This study attempts to explore the nature of local public socio-culture by examining how the process of developing endemic wildlife-based ecotourism in order to support the sustainable tourism industry program on Lembe Island, Bitung City, North Sulawesi Province, Indonesia. By analyzing various aspects of the local community's socio-culture, this exploration aims to highlight the richness of the local community's socio-culture and its significance in shaping the landscape of the process of developing endemic wildlife-based ecotourism supporting the sustainable tourism industry program. Through this exploration, it was expected to deepen the role of the Lembe Island community and its lasting impact on the sustainable tourism industry program in Lembe Island, Bitung City, North Sulawesi Province, Indonesia.

2. Research Methods

2.1. Methods

This research was conducted in Papusungan Village, Lembeh Island, Bitung City from May to September 2024. The research focused on secondary data and primary data from direct interviews with the community in Papusungan Village, Lembeh Island. The method used was a survey or direct observation method in the field through data collection in two ways, namely a) field orientation for approximately one month to find out the situation and conditions in the field of the social culture of the local Lembeh Island community so that researchers are expected to be able to find out all the information related to this research and b) direct interviews with people living around the ecotourism development area in Papusungan Village, Lembeh Island by distributing questionnaires and technically questions were made to the community to fill in themselves without intervention from other parties outside the local community [8].

2.2. Data Collection

The data collected used a random sampling model, namely data collection carried out by recording all information found in the field, especially related to the potential of endemic fauna or animals observed from the times in the morning to evening. Other supporting data or secondary data from agencies related to the village community on Lembeh Island were also used in this study.

2.3. Data analysis

The collected information data was analyzed statistically and presented descriptively through narrative descriptions and explanations of the general description in the results of observations found directly in the field, both conditions seen directly by the research team and the results of interviews with the community of Papusungan Village, Lembeh Island, Bitung City of North Sulawesi province, Indonesia.

3. Results and Discussion

3.1. Profiles of Papusungan Village in Lembeh Island and Bitung City, North Sulawesi

Papusungan Village is located on Lembeh Island, South Lembeh District of Bitung City. This, South Lembeh district has 7 villages including Papusungan Village. The Lembeh Island area is hilly and has green trees in the South Lembeh sub-district, also marked by the Trikora monument, precisely located in the Batu Lubang sub-district, Lembeh Island (Figure 1). In this area there is also a statue of Jesus Bless, precisely in the Pasir Panjang sub-district, all of which are located in the South Lembeh Sub-district. This area has great potential to support the synergy of tourism efforts in developing natural ecotourism and endemic flora and fauna of North Sulawesi that are not found in other provinces. South Lembeh District has a population of 10,665 people. Specifically, Papusungan Village has 2,235 people with an age group of 17 years and over totaling 600 people. The population aged over 75 years was 1,635 people (Bitung City Population and Personnel Planning Service Office, 2020). Lembeh Island is a small island with an area of 50 km² located in Bitung City, North Sulawesi Province. South Lembeh District has an area of 3,163.91 Ha which is divided into 7 villages (Figure 1). The increasing development of tourism in North Sulawesi Province has become a focus of attention of the Central Government so that it has determined 5 super priority provinces in tourism development in Indonesia including North Sulawesi (Figure 1).



Figure 1 Map of Lembeh Island in Bitung City as Destination of the Sustainable Ecotourism Industrial Program in North Sulawesi Province of Indonesia

Batuputih Natural Tourism Park in Bitung is one of the conservation areas formed in providing education, tourism recreation, science and research, and cultural preservation [4]. Diurnal mammals that are protected based on PP7/1999 are including black-mongkey (*Macaca nigra*), Lowland anoa (*Bubalus depressicornis*), Deer (*Cervus timorensis*), babirusa Sulawesi (*Babyrousa babyrousa celebensis*) and bear cuscus (*Ailurops ursinus*). Diurnal birds (*Aves*) that are protected based on PP7/1999 are including Sulawesi mouse eagle (*Spilornis rufipectus*), Sulawesi serpent-eagle (*Loriculus stigmatus*), kingfisher (*Halcyonchloris*), Sulawesi hornbill (*Rhyticeros cassidix*), and Maleo (*Macrocephalon maleo*). Several types of legally protected animals have been bred in the Tandukrusa animal sanctuary in Bitung City, while the wild fauna can be found at the Batuputih Natural Tourism Park in Bitung City as shown in Figure 2.

One of the areas that have a diversity of flora and fauna is found in the Batuputih Natural Tourism Park in Bitung City. Other animal sanctuary is located at Tandukrusa village, district of Aertembaga, Bitung city. There are several types of

protected fauna including the Sulawesi Black Monkey (*Macaca nigra*), Tarsier (*Tarsier spectrum*), Sulawesi Bear Cuscus (*Ailurops ursinus*), and Hornbill (*Rhyticeros cassidix*) in the Batuputih Natural Tourism Park of Bitung city [9].



Figure 2 The potential endemic animals as the objects of ecotourism development in Bitung city, North Sulawesi of Indonesia

The some above animals in Figure 2 were found in the Batuputih Natural Tourism Park of Bitung City. However, those of Lowland anoa, Rusa Sulawesi and Babirusa Sulawesi were found at the animal sanctuary located at Tandukrusa village, district of Aertembaga, Bitung city. The above birds excluding Black hornbill could be found around Lembeh Island of Bitung city.

3.2. Age and Gender of the Community in the Papusungan Village

The natural wealth of both endemic flora and fauna found on Lembeh Island is a factor that is the focus of this study related to the age and gender of the community. These two factors are studied because they are also benchmarks for success in developing sustainable endemic animal-based ecotourism businesses on Lembeh Island, North Sulawesi. The variation in age and gender of the community in Papusungan Village is shown in Figure 3 below.

Age and gender diversity of the community found in Papusungan village as seen in Figure 1, provided its own meaning that the highest age of men in Papusungan village was 39-49 years or 42.22%, while the lowest age of men was 17-27

years or 12.78%. Variations in age and gender were related to development efforts and knowledge in understanding of endemic wildlife ecotourism on Lembeh Island by this community. The distribution indicated that there was a relationship between business factors and both age and gender.

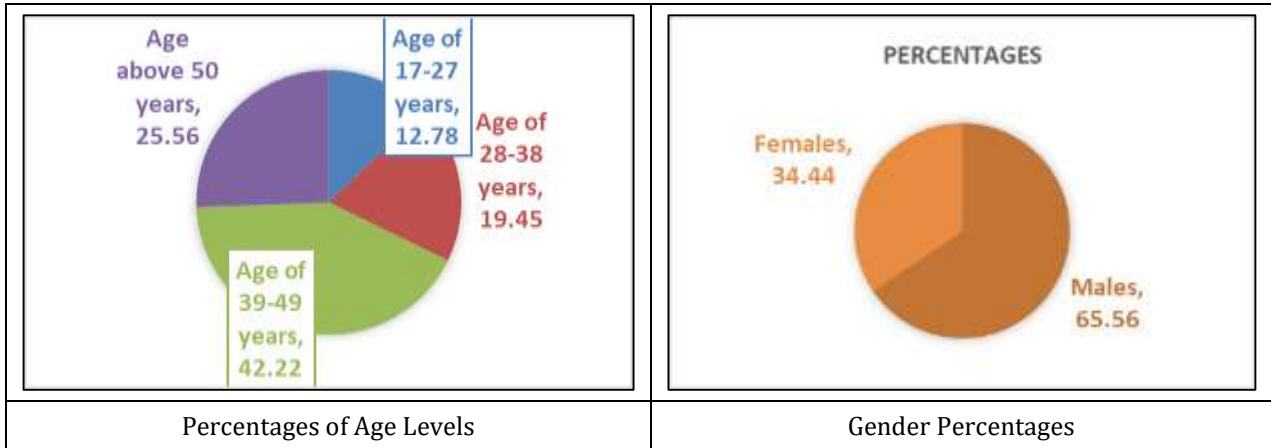


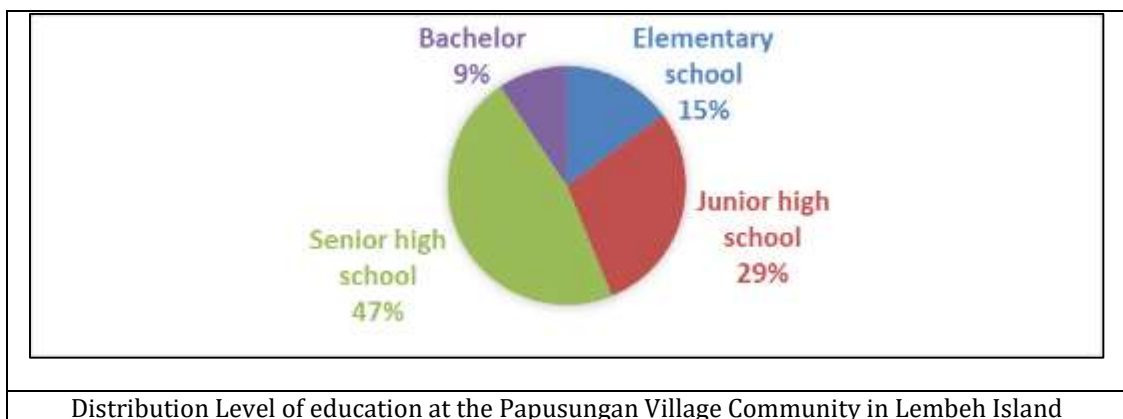
Figure 3 Percentages of Age Levels and Gender in the Papusungan Village, Lembeh Island

The results of discussions with male and female communities generally indicated that they were not yet very confident about efforts to develop endemic wildlife ecotourism on Lembeh Island. This was due to the little information and counseling they received related to the management of endemic wildlife as an attractive ecotourism place in their areas. Although their ages were classified as a productive age for men and women society ranging from 39 to 49 years old, this situation illustrated that there were more men than women societies. The productive age of the community had a significant positive influence on behavioral risk in ecotourism management [10]. Women behave more risk-averse behavior than men in relation to ecotourism development efforts [11]. Therefore, it is necessary to build the confidence of local communities through the introduction of new, structured ecotourism-based businesses, which are unique to the richness of the flora and fauna biodiversity in an area that is managed as a new source of income contributing a positive impact on the local economic community development [12]. The government is also trying to increase local revenue, without ignoring the applicable flora and fauna conservation laws.

3.3. Education Level and Community Labor in the Papusungan Village

The results of the study related to education and work distribution carried out by the people community of Papusungan Village, starting from Elementary School to College level, and the job distribution of community, it varies greatly as can be clearly seen in Figure 4 below.

The results of this study showed that the level of education of the community in Papusungan Village, South Lembeh District was around 84 people (46.67%) with high school education, around 27 people (15%) with elementary school education, around 52 people (28.89%) with junior high school education and around 17 people (9.44%) with bachelor's degree (Figure 4).



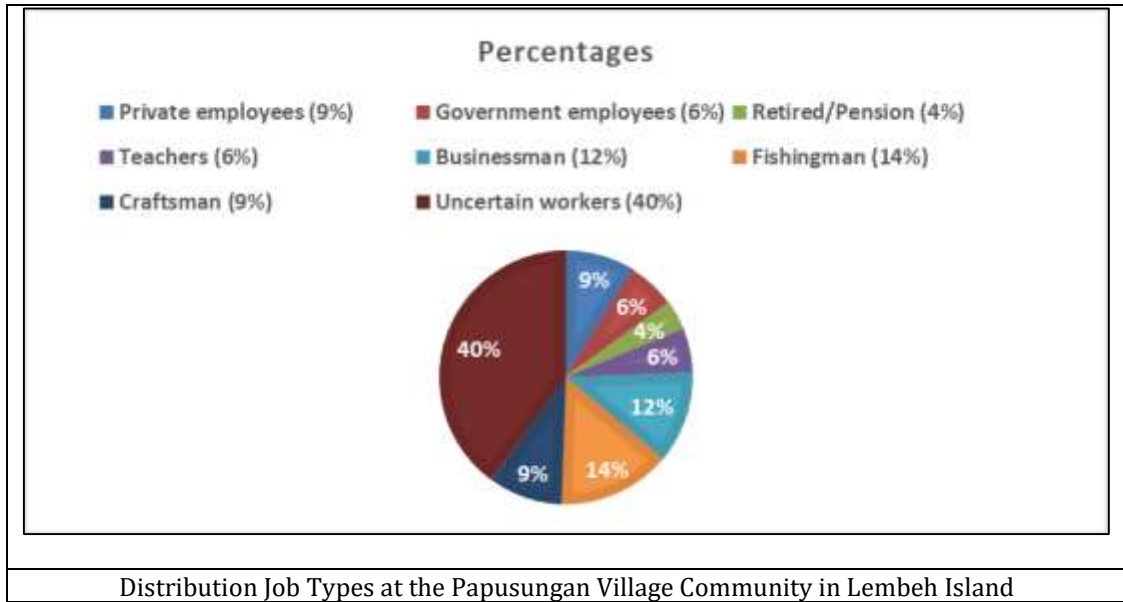


Figure 4 Level of Education and Employment of the Papusungan Village Community in Lembeh Island

The variation in education and employment levels was a factor causing the community's economy to be unstable, so that many parents did not send their children to school to continue their education to a higher level. The level of education was only high school which has a significant impact on efforts to find a more decent job. The results of interviews in the field related to this study showed that around 72 people (40%) of the population were unemployed or had uncertain jobs, both men and women. Low education may lead to limited choices of other employment Opportunity than as farmers or farm laborers to meet daily needs causing those people only utilized the resources around them [13]. If the development of ecotourism business based on endemic animals of North Sulawesi was developed with good collaboration among the government, community, universities and private sector then new job opportunities can be opened providing an impact of improving the family economy development. Activities for the younger generation in the Papusungan Village, Lembeh District would be helped especially in continuing their education and training to a higher level [14].

For family economic assistance, there are quite a lot of the people at Papusungan Village, which were around 26 people (14.44%) want to work as small-scale farmers/livestock breeders. This can be household for the village community, previously receiving support from the Government and the private sector in order to open up employment opportunities in the Lembeh Island area based on the natural potential and typical biodiversity of flora and fauna in North Sulawesi found on Lembeh Island. Ecotourism as a form of business in the natural tourism economy sector was formulated as part of sustainable development [15]. Community-based ecotourism can support and increase local community involvement in terms of planning, implementation and also management of the tourism industry. On the other hand, Papusungan Village can be said to have a very diverse community regarding the types of jobs they do, including 16 people (8.89%) becoming private employees and 11 people (6.11%) working as Civil Servants, Teachers totaling 19 people (5.56%), craftsmen totaling 17 people (9.44%) and entrepreneurs totaling 21 people (11.67%). The profession of work pursued by this community was a positive support for the development of natural ecotourism in Papusungan Village on Lembeh Island, Bitung City. In pursuing the sea motorboat rental business which is in great demand by tourists who want to enjoy the beauty of Lembeh Island beach, closed to the Bitung City seaport is an opportunity to develop job distribution for the community development on Lembeh Island.

3.4. Response of the Papusungan Village Community Regarding North Sulawesi Tourism and Endemic Animal Ecotourism in Lembeh Island

A benchmark for a potential area when used as a new location for the development of natural ecotourism completed by a variety of unique flora and fauna with its own appeal has been explored in the community living in the Lembeh Island area. In its development, efforts were actively contributed through the response, understanding and interest of the local community. The extent to which the response and understanding of the community at Papusungan village, Lembeh Island towards North Sulawesi Nature Tourism and Endemic Animal Ecotourism can be seen in Figure 5 below.

The results of this study show how the community in Papusungan village provides answer choices related to their understanding of tourism in North Sulawesi. This data provides an overview that the community providing answers in

the category of understanding North Sulawesi tourism consisted of 97 people (54.80%) and this opens up insight that the community in Papusungan village, Lembeh Island has information about North Sulawesi tourism being attempted by the North Sulawesi Government to further popularize the tourism potential, attractive for national and international tourists to visit North Sulawesi.

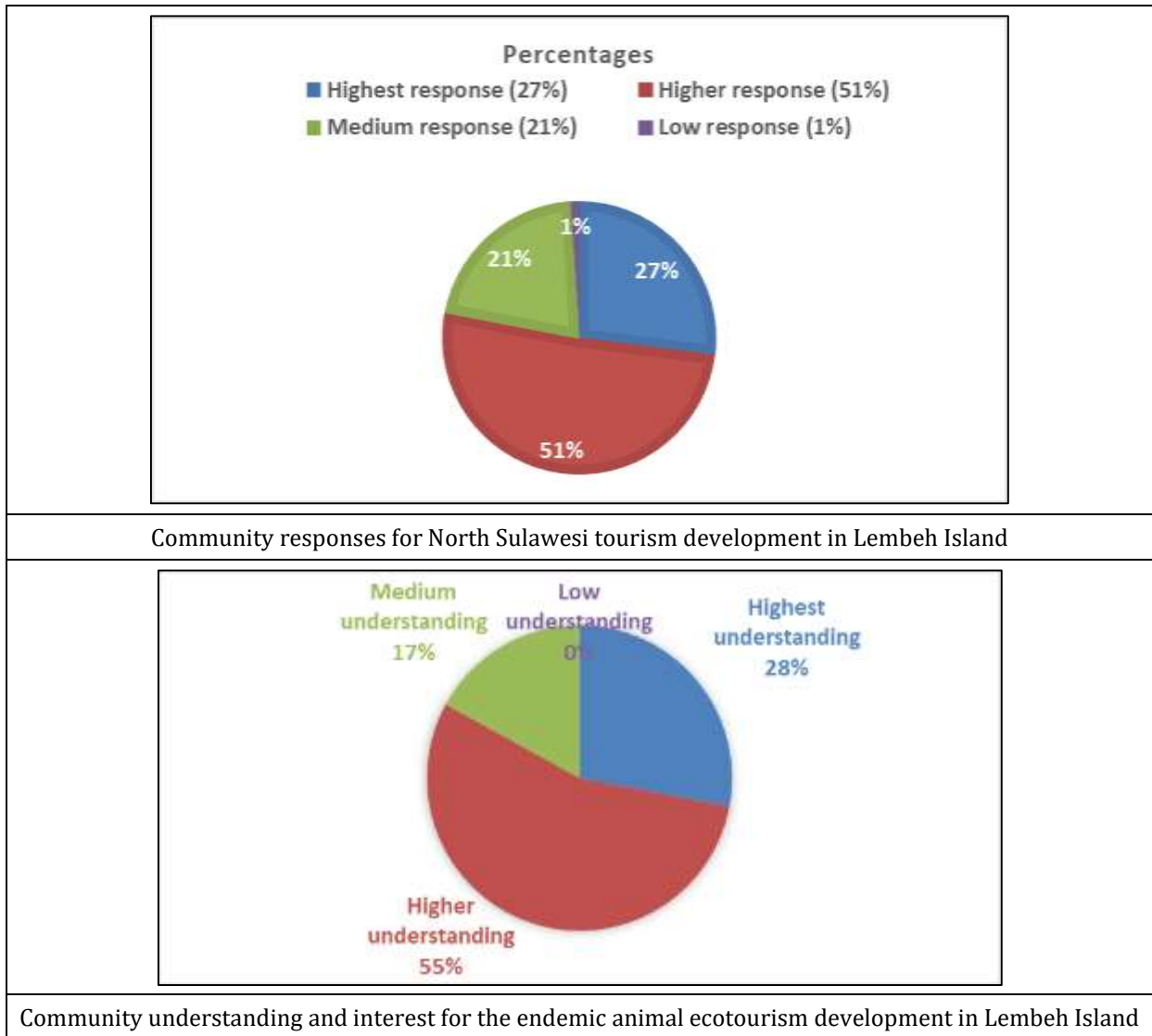


Figure 5 Response and Understanding Levels of Community in the Papusungan Village Related to Ecotourism development involving the Endemic Animals on Lembeh Island

The community really understanding the North Sulawesi tourism was 35 people (27.18%). This showed that some of the people in Papusungan village have a sufficient level of education, namely bachelor's degree. The higher the level of education, the greater the desire to learn and know every new information received and responded to as a provision of knowledge to determine the future steps [16]. The results of this study explain the level of understanding of the Papusungan Village community regarding endemic animals of North Sulawesi, with the highest understanding of 97 people (54.80%), followed by the category of very understanding of 37 people (27.18%) and the lowest understanding of 46 people (17.33%).

Variations in the level of understanding related to ecotourism of endemic wildlife in North Sulawesi were suspected that the level of knowledge of each individual in the community was different and also the uneven distribution of information received by the community from related agencies, either the Government, Universities, NGOs or Research Institutions at the Provincial level. Wild animals in national parks or wildlife sanctuaries and nature reserve tourism parks should not be hunted [16]. The scientific value of endemic wildlife can be used as research objects from various branches of science including ecology, biology, physiology, taxonomy in relation to science. Wildlife has a function as a genetic resource or germplasm that is useful in research [17]. The results of the study in Figure 4, related to the level of

understanding of the Papusungan Village community in the development of endemic wildlife ecotourism in North Sulawesi, really need information from various sources including universities that have studied and researched the lives and behavior of endemic animals found in the Lembeh Island area and its surroundings.

3.5. The impression of economic impact and community interest levels on development of endemic animal ecotourism in Lembeh Island

Raising the natural wealth of North Sulawesi, especially endemic flora and fauna that are not owned by other provinces requires strategic steps to track local communities in the local area to plan the development of ecotourism based on endemic animals. Naturally, the community needs to receive information related to the development of the local area and the impression levels of understanding the positive impact on their economy getting support and interested levels from the community. The data from this study are depicted in Figure 6 below.

The results of the study (Figure 5) showed that the views and thoughts expressed from the answers given by the people of Papusungan Village regarding information on the development of endemic wildlife ecotourism on Lembeh Island, North Sulawesi, gave the impression of 36 people (29%) stated that they were very impressed to often hear that Lembeh Island would be developed into a new ecotourism destination involving the potential of typical North Sulawesi animals, while 85 people (51%) stated that they were more impressed to often hear about the development of Lembeh Island ecotourism. In addition, there were 40 people (16%) stated that they were less impressed to receive information about ecotourism developed on Lembeh Island and around 19 people (4%) stated that they were not impressed to receive information about ecotourism developed on Lembeh Island.

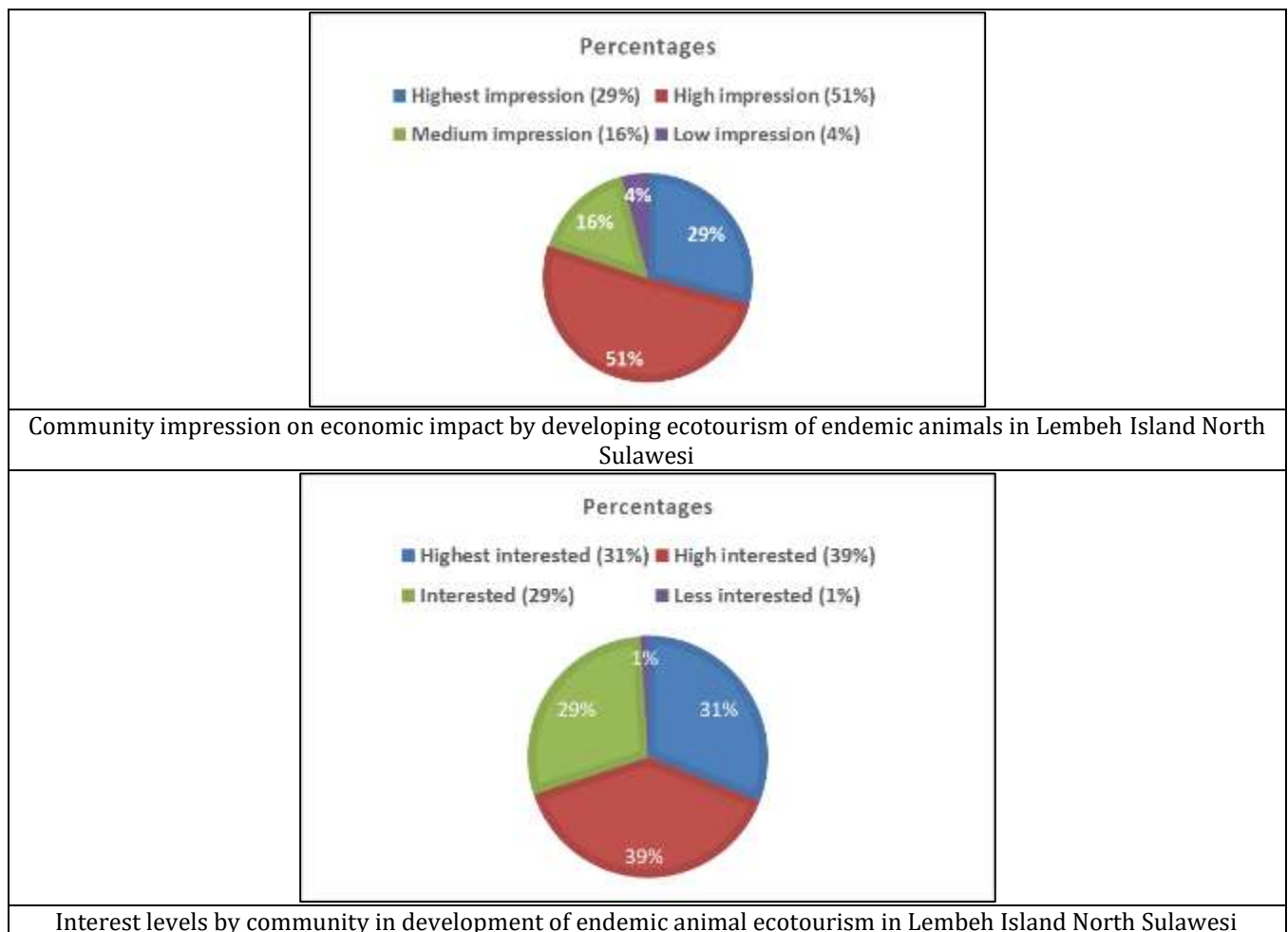


Figure 6 The impression of economic impact and community interest levels on development of endemic animal ecotourism in Lembeh Island

The variety of information obtained from the people of Papusungan Village turned out to be due to one of the factors being the lack of news information that the community received regarding tourism development being planned by the North Sulawesi Provincial Government. This does not provide added value for an area that wants to be developed into

a new tourist destination. Therefore, it is necessary to apply more evenly distributed information from various parties for all areas in North Sulawesi Province. Superior quality human resources is one indicator of success that can be seen from the quality of human resources produced in this case education or work [18].

The interview results also found that people who were in the category of high interest in endemic wildlife ecotourism in North Sulawesi were 66 people (39%) and interested in endemic wildlife model ecotourism were 74 people (29%). People who were at the highest level of being very interested in endemic wildlife ecotourism were 39 people (31%), while only 1 person (1%) was less interested in endemic wildlife model ecotourism. The results of this study, when viewed from the level of community interest, illustrated that there was no common framework of thinking. The scientific information related to endemic wildlife ecotourism can change the mindset of people who were previously less interested and not interested in endemic wildlife ecotourism [19]. The understanding of the people can provide economic impacts for the community around the endemic wildlife ecotourism development area on Lembah Island, Bitung City.

3.6. Support from Village Officials Regarding the Development of Lembah Island Ecotourism

The development of a new area for the Lembah Island Ecotourism destination requires the support of the Pausungan Village officials and devices which are greatly needed by all parties. For this reason, the knowledge levels of the officials regarding the benefits of ecotourism is an attraction to become a driving force for the concept of developing endemic animal ecotourism. From exploring of the driving force of the Pausungan village officials, the results of this study can be seen in Figure 7 below.

The results of the study showed that around 84 officials of the Pausungan Village with a total frequency value of 252 (42%) strongly support the development of endemic animal-based ecotourism in Lembah Island. Officials who stated that they strongly support new destinations with ecotourism were around 81 people strongly supporting a total frequency value of 324 or 53%; on the other hand, there were village officials who were less supportive around 15 people (5%).

It seems that the views of the village officials were not the same and this illustrated that the transformation of the news they receive was uneven. From the results of direct interviews, many people asked for socialization or counseling regarding endemic animals and their management techniques as typical ecotourism fauna [20] that are not found in other provinces in Indonesia. In recent years, the Central Government has recommended North Sulawesi as one of the Super Priority Provinces in Tourism development, but this information news has not been received evenly by the community and Pausungan village officials. This was a factor in village officials from the results of the study reducing the level of knowledge of village officials making it quite varied about supporting tourism development [21, 22]. Therefore, in line with the potential of endemic fauna, it is expected that the Pausungan village officials and the community must significantly know important information as a supporting force.

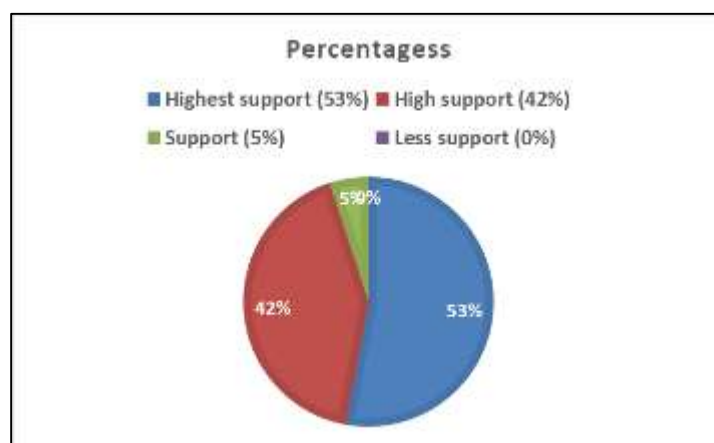


Figure 7 Supporting of the Pausungan village officials regarding Lembah Island ecotourism development

4. Conclusion

The exploration of the public socio-culture of developing endemic animal-based ecotourism reveals a rich supporting of the sustainable tourism industrial program at Lembe Island Bitung city, North Sulawesi province of Indonesia. Key

findings from this exploration include the levels of knowledge, understanding, community interest and support from the Papusungan sub-district government of the Lembeh Island area.

The implications of these findings for understanding socio cultures are the majority of people in Papusungan Village who are understanding, knowing and interested in efforts developing ecotourism of endemic animals. Further research needs to be conducted to determine the integrated supporting factors for the minimal tasks of related agencies providing support for the preservation of endemic animals and their carrying capacity for the sustainability of endemic fauna in Lembeh Island.

Compliance with ethical standards

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Disclosure of conflict of interest

No conflict of interest exists among the Authors.

Statement of informed consent

Informed consent was obtained from individual participants included in the study.

References

- [1] Kiroh , HJ, S. C. Rimbing , RSH Wungow., R. Punu. 2022. Description of Tambun Village community knowledge of ecotourism based on maleo birds (*macrocephalon maleo*) . Zootek Journal Vol 42, No. 2: 416-430. Publisher of the Faculty of Animal Husbandry, Unsrat, Manado.
- [2] Butarbutar RR, Hanny H. Pontororing HH and Baideng EL. 2022. Analysis of Endemic Flora Diversity of North Sulawesi Indonesia as a Potential for Sustainable Ecotourism. Asian Journal of Biology, Vol. 16, Issue 4: 1-8
- [3] Whitten, AJ Mustafa, M and Anderson. 1987. The Ecology of Sulawesi. Gadjah Mada University Press, Yogyakarta.
- [4] Lowing AE, Rimbing SC, Rembet GDG, and Nangoy MJ. Karakteristik sarang Tarsius (*Tarsius spectrum*) di Cagar Alam Tangkoko Bitung Sulawesi Utara. Jurnal Zootek. 2013; 32(5):61-73.
- [5] Joko Tri Haryanto. 2014. Ecotourism Development Model in Supporting Regional Economic Independence (Case Study of the Province of the Capital Region of Yogyakarta. Publisher of Kawistara Journal Vol: 4, No. 3., Page 22.
- [6] Hakim L, Soemarno and Hong SK. 2012. Challenges for conserving biodiversity and developing sustainable island tourism in North Sulawesi Province, Indonesia. Journal of Ecology and Field Biology. 35(2): 61-71.
- [7] Kiroh, HJ, RSH Wungow., MTH Kawatu, PRRI Montong. 2022. Study of the level of community interest in the development of village ecotourism based on endemic animals in the Sea Area of Pineleng District. Zootek Journal Vol.42 No.2, 496-506. Publisher of the Faculty of Animal Husbandry, Unsrat, Manado.
- [8] Heriyanto, NM, R.Garsetiasih, and Pujo Setio. 2008. Population Status and Habitat of Birds in BKPH Bayah. Banten, Center for Forestry Research and Nature Conservation, Bogor.
- [9] Kiroh, HJ, JH Manopo., FSRatulangi., RIngani., M.Rotinsulu. 2022. Study of Ecotourism Development based on Endemic Animals of North Sulawesi in Budo Village, Wori District, North Minahasa Regency. Zootek Journal Vol.42 No.i:113-123. Publisher of the Faculty of Animal Husbandry, Unsrat, Manado.
- [10] Amaefula, C., Okezie, CA, and Majeha, R. 2012. Risk Attitude and Insurance: A Causal Analysis. American Journal of Economics,2(3),26-32. Doi : 10.5923/j.economics : 201203.01.
- [11] Jayathilake, PMB 2013. Gender Effects on Risk Perception and Risk Behavior of Entrepreneurs at SMES in Sri Lanka. Asia Pacific Journal of Marketing and Management Review, 2(2).
- [12] Sumardji, A. Effendy. 2001. Threats and Potential in Conservation of Biological Resources in Times of Crisis. Journal of the Indonesian Wildlife Society, Jakarta.

- [13] Nurlita IW, Mamonto, R. 2012. Community Perceptions of National Parks and Forest Resources: Case Study of Aketajawe Block Aketajawe National Park Loloblat Info Manado Forestry Research Institute, 2 (1): 1.15.
- [14] Trisnawati. E. Natalia, DAR, Ratriningsih., D.Putro, A,R., Wirismoyo, W. Brotoatmodjo, HP, and Arsifa, A. 2019. Community-Based Ecotourism Development Strategy in Rejowinangun Tourism Village. INERSIA. XV(1): 1-11.
- [15] Nugroho. 2015. Ecotourism and Sustainable Development. Yogyakarta: Learning Library.
- [16] Alikodra HS1990. Wildlife Management. Volume 1, Department of Education and Culture. Inter-University Center, Center for Life Sciences.
- [17] Rohmalia. 2022. The Influence of Community Education Level on Village Economic Development in an Islamic Perspective. Thesis, Faculty of Islamic Economics and Business, Raden Intan Islamic University, Lampung.
- [18] Widowati., S and Nadra, NM 2013. Evaluation of the Implementation of Ecotourism Principles and Criteria in the Ijen Crater Nature Tourism Park Area, Banyuwangi. Journal of Social and Humanities 3(3), 312-321.
- [19] Brandt P, Abson DJ, Dellasala DA, Feller R, Von Wehrden H. Multifunctionality and biodiversity: Ecosystem services in temperate rainforests of the Pacific Northwest, USA. Biological Conservation. 2014;169:362-371.
- [20] Sargent RD and Otto SP. The role of local species abundance in the evolution of pollinator attraction in flowering plants. The American Naturalist. 2006;167(1):67-80.
- [21] Hakim L, Soemarno and Hong SK. Challenges for conserving biodiversity and developing sustainable island tourism in North Sulawesi Province, Indonesia. Journal of Ecology and Field Biology. 2012;35(2): 61-71.
- [22] Poli Z, Polii B and Paputungan U. Egg Laying Behavior of Maleo Bird (*Macrocephalon Maleo*) at Muara Pusian Natural Conservation in Bogani Nani Warta-Bone National Park, East Dumoga District of Bolaang Mongondow Regency. Zootec. 2016; 36 (2):289 – 301.