

Literature Analysis on the Bornean Orangutan (*Pongo Pygmaeus*) Conservation Ecotourism in Tanjung Puting National Park, Waringin Barat City, Central Kalimantan

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ABSTRACT

Purpose: The purpose of the study is to analyze the development of orangutans conservation ecotourism in Tanjung Puting National Park based on previous studies.

Research Methods: The methodology used in this study is a literature review approach. Data collection was carried out by collecting data and information in the form of related journals from previous research.

Results and Discussion: Synchronization and collaboration between stakeholders is important in improving the management of TPNP and implementing policies so that they are effective and optimal

Implication: The dynamics of orangutan conservation are not being implemented according to their natural habitat.

Keywords: ecotourism, conservation, Bornean orangutan (*pongo pygmaeus*).

INTRODUCTION

Kotawaringin Barat City is located in the western part of Central Kalimantan Province, with the capital city in Pangkalan Bun. The area of West Kotawaringin Regency is recorded at 10,759 Km² or 6.2% of the total area of Central Kalimantan Province. The topographical conditions of West Kotawaringin City are classified into 4 (four) parts, namely plains, flat waves, and hilly wave areas. The area of West Kotawaringin City around the Kumai, Arut, and Lamandau rivers is easily inundated, swampy and is a deposit area and is organic and acidic. Areas that provide protection for the area below (protected forest) have a slope score, soil type, rainfall > 175; slope > 40% and altitude > 500 m above sea level. Areas that provide protection below, consist of protected forests, peat and water catchment areas, local protected areas. The diversity of mammal species that exist on large islands such as the island of Borneo. This is based on the island biographical theory which states that the number of species found on an island can be

determined by the size of the island. Currently, the island of Borneo has ± 222 species of mammals and 44 species of which are endemic (BAPPENAS 2003).

Tanjung Puting National Park has several types of ecosystems, namely lowland tropical forest, dry land forest (heat forest), freshwater swamp forest, peat swamp forest, mangrove or mangrove forest, coastal forest, and secondary forest. Tanjung Puting National Park has an area of 4,150 km². This National Park is the center of orangutan research and conservation throughout the world. In the heath forest area inhabited by insect-eating plant flora such as pitcher plant (*Nepenthes* sp). True peat swamp forest is found in the center of the area and on the banks of several rivers, and there are plants with knee roots, and aerial roots. Along the banks of all the rivers in this area is true freshwater (*alluvial*) swamp forest, containing complex plant species and large and small woody vines, epiphytes and ferns in abundance. In the north to the south of the area there are fields with extensive shrub species, the result of the destruction of heath forests due to logging and burning. Generally found in pockets along the Sekonyer River and its tributaries. Plants in the upstream area of the main river consist of grass swamps which are dominated by *Pandanus* sp. and floating macrophytes (*daffodils*) such as *Crinum* sp. In coastal areas there is mangrove forest cover and further inland, namely in brackish areas at estuaries along the main rivers, there are native nipah plants (*Nypa fruticans*) that grow inland as far as rivers, and indicate the level of intrusion of brackish water into the sea. land. The coastal areas on sandy beaches are overgrown with the genera *Casuarina*, *Pandanus*, *Podocarpus*, *Scaevola*, and *Barringtonia*. The TNTP area is inhabited by about 38 species of mammals. Seven of them are well-known and protected primates such as the Bornean orangutan (*Pongo pygmaeus*), the proboscis monkey (*Nasalis larvatus*), the Kalimantan gibbon (*Hylobates agilis*), and the sun bear (*Helarctos malayanus*). Types of large mammals such as the sambar deer, muntjac deer (*Muntiacus muntjak*), deer mouse (*Tragulus javanicus*), and beard pigs (*Sus barbatus*) can be found in this area. In fact, several types of aquatic mammals such as dugongs and dolphins have been reported to have been seen in the waters around the Tanjung Puting National Park area.

The orangutan population is currently experiencing a significant decline. The threat to this population is because their habitat is narrowing due to irresponsible human activities such as forest destruction, conversion of land to plantations, forest fires and land exploitation so that orangutans need to be preserved (Anonymous, 2016). The tactical approach used by the region (local or national government agency) will make or break how ecotourism is perceived by local people, according to MacKinnon (1995).

The threats of orangutan sustainability will increase along with the rate of forest degradation and fragmentation forest where land use around Tanjung Puting National Park tends to develop and the natural environment, culture and local communities of protected areas are in a constantly changing balance, affected by internal and external forces.

During the pandemic, on 26 March 2022, 13 rehabilitated orangutans were released in stages in the Tanjung Puting National Park (TNTP) area, Central

Kalimantan Province. The process of returning orangutans to their habitat is carried out by the Tanjung Puting National Park Office in collaboration with the Central Kalimantan Natural Resources Conservation Agency (KSDA) and the Orangutan Foundation International (OFI). These protected animals came from the community's surrender and the results of the rescue of the Central Kalimantan KSDA team who were entrusted with the Orangutan Care Center and Quarantine OFI in Pangkalan Bun. The released animals have previously been assessed and declared eligible to return to their habitat. If he is able to find and choose the type of feed in nature, is able to build a nest, has no physical defects that make it difficult for him to move, and has been declared healthy through a health test and a PCR test with negative results. In releasing animals, Tanjung Puting National Park believes that it has applied the principles through a one health approach for orangutan conservation. The purpose of this study is to analyze the development of ecotourism based on orangutan conservation in Tanjung Puting National Park based on previous studies.

RESEARCH METHODS

The methodology used in this study is a literature review approach. Data collection in this study was carried out by collecting data and information in the form of related journals from previous research. Researchers review some literature on concept of conservation as tourism development in ecotourism.

This literature review described by Cooper in Creswell (2010) has several objectives, namely to inform readers of the results of other studies that are closely related to the research conducted at that time, to link the research with the existing literature, and to fill gaps in previous studies. Further, the required data in research can be obtained from sources library or document and variables on literature study research is non-standard (Melfianora, 2017).

The analyzed data are secondary data obtained from around literature related to ecotourism. The tools used to search journals or scientific writings are Perish. Perish is software as a helping tool that can be used for free, which makes searching process for articles easier and connected in various publication sites such as Google Scholar and Scopus, so it can provide convenience for researchers in finding articles that can be used as reference material in the literature study.

Furthermore, the collected data is analyzed using the literature review method. researchers conducted data searches through literature reviews starting from April to May 2022. In addition, researchers also use journals, textbooks, government reports and website data that have a period of 10 years as data sources in the literature review of this research. The literature study was focused with the qualification of the selected articles that having a research on the development of conservation-based ecotourism. The literature review conducted in this study is to review the dynamics of ecotourism in Tanjung Puting National Park and the efforts that can be made to maintain the habitat of the orangutan (*Pongo Pygmaeus*) in Tanjung Puting National Park in Central Kalimantan.

Researchers get twenty articles related to the development based conservation ecotourism. Research focus then more adjusted with the dynamics of ecotourism in conservation and the results obtained ten articles related to the research focus analyzed. These articles have a research period of ten years back.

Table 1. Previous Researches

No.	Literature Title	Authors, Publication Year, Source	Research Method	Conclusion
1.	Analysis of Social Economic Conditions of the Community to the Existence of Tanjung Puting National Park in Kumai Hulu Kelurahan Kotawaringin Barat	Agustina, A., & Itta, D, 2021, Jurnal Sylvia Scientiae, Vol.4	Qualitative Descriptive Analysis	The impact of TNTP on social conditions in Kumai Hulu Village is high and for economic conditions is being seen with increasing economic opportunities such as trade, lodging and klotok transportation business
2.	Community Empowerment through Rural Tourism Development and Its Implications for Regional Socio-Cultural Resilience (Study in Penglipuran Bali Tourism Village).	Andayani, A. A. I., Martono, E., & Muhamad, M, 2017, Jurnal Ketahanan Nasional	Qualitative Descriptive Analysis	The results of the study revealed that the community empowerment process in Penglipuran Tourism Village took place in three stages, namely the stage of awareness, capacity building and empowerment. Other forms of community empowerment involve community participation starting from planning, implementation and evaluation. Community empowerment through the development of tourist villages has

No.	Literature Title	Authors, Publication Year, Source	Research Method	Conclusion
3.	Habitat Suitability Model of the Bornean Orangutan (Pongo Pygmaeus Wurbii) in the Lamandau River Wildlife Refuge, Central Kalimantan.	Fitriana, F, 2021, Jurnal Agroprimatech Vol. 5	Principal Component Analysis (PCA)	implications for regional socio-cultural resilience in the form of strengthening and several changes to social, cultural and environmental values.
				The Lamandau River wildlife Sanctuary is the habitat of the Bornean orangutan and has an important value because it is a rehabilitation location for orangutans in Kalimantan. Modeling the suitability of orangutan habitat Kalimantan is done by identifying the nesting points of the Bornean orangutans spatially on habitat factors, namely the distance to the river and the value of NDVI (Normalized Difference Vegetation), and disturbance factors. Validation for low suitability class level 0%, medium suitability class 60.87% and high suitability 39.13%. Habitat suitability model Bornean orangutans can be accepted with 100% validation in the

No.	Literature Title	Authors, Publication Year, Source	Research Method	Conclusion
				medium and high suitability.
4.	Tanjung Putting National Park Spatial Planning Strategy, Central Kalimantan	Ernady Syaodih, 2013, Prosiding SNaPP2012: Sains, Teknologi, dan Kesehatan	Qualitative method	Research results in National Park Planning Tanjung Puting is Tanjung Puting National Park has a weakness in border security, the potential for forest fires, weak systems security control, slow rehabilitation of critical land in the Tanjung Putting National Park area, not yet optimal cooperation in partnership and forest protection, community empowerment, enclave villages, area management, biodiversity management, environmental service management, implementation of conservation education, research and development of science
5.	Community Based Ecotourism influence the condition of Ecology, Social and Economic	Emma, H., & Rina, M, 2014, Jurnal Sosiologi Pedesaan	Quantitative with SPSS analysis	. The results showed that the presence of community based ecotourism Batusuhunan give change for the community especially

No.	Literature Title	Authors, Publication Year, Source	Research Method	Conclusion
6.	Orangutan Conservation and Rehabilitation Center in Kutai National Park	Purwadita, A., Poerbantaoe, B, 2021, Jurnal e- Dimensi Arsitektur	The design approach used is an ecological approach with consideration of how to minimize destruction of nature and produce designs that	<p>in the ecological and social aspects. On ecological aspect, the population has had the awareness to protect the environment by disposing of waste in place and environmentally friendly lifestyle. In the social aspect, ecotourism increase cooperation of community especially in the field ecotourism. Social activities in the community often held in line with the development of ecotourism. On the economic, employment opportunities derived from ecotourism sector could be extra income for the family</p> <p>Design of Orangutan Conservation and Rehabilitation Center in Kutai National Park was designed after see the condition of the orangutans that are approaching extinct so it needs to be preserved. The depth of the design taken is spatial to maximize the</p>

No.	Literature Title	Authors, Publication Year, Source	Research Method	Conclusion
			are blend in with the surrounding environment.	correlation between anthropometry humans and orangutans in realizing building architecture.
7.	Participation of Ecotourism Actors in Conservation Efforts in Tanjung Puting National Park, Central Kalimantan.	Hastari, B., & Girsang, S. R. M, 2020, Daun: Jurnal Ilmiah Pertanian dan Kehutanan	This research is a combination of qualitative descriptive and quantitative methods with respondent survey, and scoring analysis methods.	The result showed that the value of participation of ecotourism actors is 1.486 which is categorized as medium participation level. The level of participation for conservation efforts by ecotourism actors has been good, they are awareness about conservation likely silence on feeding area, not disposing of waste and taking forest resources, and involvement in ecotourism activities.
8.	Behavior Dynamics of the Bornean Orangutan (<i>Pongo pygmaeus wurmbii</i>) in Sebangau National Park, Central Kalimantan	Panda, A., 2020, Jurnal Jejaring Matematika dan Sains	Descriptive exploratory study, using a non-invasive observation method	The results show confirmation of walking on the forest floor as a new part of the orangutan association of behavior. Based on this, the conclusion drawn is that the dynamics of orangutan behavior develop dynamically in response to changes in natural habitat conditions.

No.	Literature Title	Authors, Publication Year, Source	Research Method	Conclusion
9.	Investment Opportunities in the Tanjung Puting National Park (TNTP) Tourism Area in West Kotawaringin Regency, Central Kalimantan Province with a Built Operate Transfer (BOT) System.	Parayogi, L. M., Anwar, M. R., & Pujiraharjo, A, 2014, Jurnal Rekayasa Sipil	The research method used questionnaire for tourist at TNTP, and count financial feasibility with Net Present Value (NPV), Internal Rate of Return (IRR), Payback Period (PP), Profitability Index (PI), and descriptive statistical analysis methods	The result of this research is that the facility is needed, campground cottage - inn, restaurant, boat kelotok, audio visual room, trackking area, gift shop, health clinic, and investment in the area of TNTP judged worth doing with BOT for maximum concession periode 18 years. If investment more than 18 years, prefer doing without BOT.
10.	Nature Tourism Responds to Climate Change Challenges; Case Study in Tanjung Putting National Park	Setiawan, J, 2015, Jurnal Nasional Pariwisata	Quantitative method	The results of this study are as follows: (1). the tourism market of TPNP has a feature of 'eco-tourist' with a high awareness and concern towards environmental issues, including the threat of climate change phenomena, (2). The visitors of TPNP realize that climate change is a serious challenge and need a concrete action, 3). The visitors were

No.	Literature Title	Authors, Publication Year, Source	Research Method	Conclusion
				unwilling joined with other guests into any public boat of a large capacity, in order to keep fuel efficiency and GHG mitigation

Based on the previous researches, it can be identified some research gaps. According to (Sandberg & Alvesson (2011), research gap is problems that have not been thoroughly researched or never been investigated by research previously, and generally used to differentiate between one research and another. The following is added value and research gap that was found from various previous research:

Table 2. Research Gap

No.	Added Value	Research Gap
1.	Methodology	There is a methodological gap, where the majority of previous researchers mostly use method Quantitative. It is still necessary to use literature review to find out which study literature is the most appropriate to answer the development of conservation-based ecotourism for Orang Utan in Tanjung Putting National Park
2.	Research Object	There is a gap in the object research, where the majority previous research focus on the physical condition of the environment and the economic side that can be generated in the utilization of Tanjung Putting National Park. Even though it is important to know the dynamics of harmony in Orangutan conservation and development ecotourism in Tajung Puting National Park.
3.	Impact of Ecotourism on Orangutan Conservation in Tanjung Puting National Park	Mostly in previous research, they only tell the positive impact of Tanjung Putting National Park and not tell the opposite impact/negative impact of Tanjung Putting National Park.
4.	Subject of Ecotourism Development in Tanjung Putting National Park	Majority in previous research, focus on the phenomenon of ecotourism related to the local community and local government. In

Fact, the development of Tanjung Puting National Park conservation also requires the cooperation of non-profit organizations, for example NGO

Based on the research gap, in this study the author tries to look at problems related to ecotourism development in Tanjung Puting National Park from a different perspective and make some novelty compared with previous research, such as:

Table 3: Research Novelty

No.	Novelty
1.	Methodology research in this journal is using literature. We try to collect data from ten literature study and try to analyze it. By using literature review, we hope can get an answer the development of conservation-based ecotourism for Orang Utan in Tanjung Puting National Park.
2.	The object research in this journal focus on the dynamics of harmony in Orangutan conservation and development ecotourism in Tanjung Puting National Park.
3.	Researcher try to see from different perspective of problem that occur ecotourism dynamics of Orang Utan in Tanjung Puting National Park
4.	The development of Tanjung Puting National Park conservation need a good cooperation in all aspect like local community, government, non-profit organizations, etc

The focus of the discussion in this study is about the development of ecotourism based on orangutan conservation in Tanjung Puting National Park in Central Kalimantan. The limitations of this study are based on a literature review and the results reported by previous studies due to limited time and research costs so only the literature review method can be used. Another issue of this research is there are not many studies discuss about conservation-based ecotourism in Indonesia, so it is difficult for researchers to get more data related to this research.

RESULTS AND DISCUSSION

The Bornean Orangutan (*Pongo pygmaeus*) is an endemic species that is generally can be found in the lowland forest in Indonesia, especially in Kalimantan. Directorate General Conservation of Natural Resources and Ecosystems (KSDAE) noted that in the last 10 years there has been a tendency to decrease the population of the Bornean Orangutan from 0.45-0.76 individuals/Km² to 0.13-0.47 individuals/Km². KSDAE also conducted a Population Viability Analysis (PVA) of orangutans with the result that the minimum number of populations that will survive in a habitat is 200 orangutans for a probability of extinction of less than 1% in 100 years and less than 10% in 500 years. It is also known that there are 500 orangutans to maintain the quality and genetic variation. Based on the results

analysis of KSDAE, it shows that the threat to Orangutan sustainability is increasing as a result of degradation and fragmentation rate of Orangutan habitat forest due to forest conversion outside forestry functions such as plantations, and industry development. Orangutan life is very dependent on forest conditions and as primates Orangutans need fruit as their main food source. However, Orangutan habitat is increasingly threatened, and it causing the Orangutan population to decrease. With this continuous forest degradation condition, it is possible that one day Orangutans will become the first ape species to become extinct from the wild (Kuswanda, 2014).

Besides, to the conversion of forest land into plantations, threats to the survival of Orangutan (*Pongo pygmaeus*) population also occur due to poaching. The surrounding community considers Orangutans to be pests that must be exterminated, even this condition is getting worse since many Orangutans baby are traded illegally. In fact, Orangutans are animals that are protected by National Law based on UU 5, year 1990 concerning Conservation of Biological Natural Resources and Their Ecosystems. In CITES (2021) the status of Orangutans is Appendix I, which means that they are endangered species that are protected and should not be hunted or traded. Conflicts between orangutans and humans by hunting activities have caused the decline of Orangutans for 25 percent in the last 10 years (Parayogi *et al.*, 2014). With the destruction of the orangutan's natural habitat, this condition forces the orangutans to enter residential areas. Stress arising from the lack of food, drink and the lack of comfortable shelters forced Orangutans to carry out biological invasions by entering residential areas. Habitat modification and infrastructure development that occur in the original environment without paying attention to the survival of the species provide opportunities for the species of the area to carry out biological invasions into the surrounding area (Ballantyne & Packer, 2013). Furthermore, according to Ballantyne & Packer (2013), prevention of biological invasion of species can be done through the selection of good risk management strategies, for example through periodic monitoring of important species in protected areas and conservation areas. Tanjung Puting National Park (TNTP) as one of the locations for conservation and research of Orangutans (*Pongo pygmaeus*). It is an alternative for conserving the habitat of Orangutans and other endangered species, especially in Kalimantan.

Moreover, the conservation building design model also affects the adaptation of the Bornean orangutan habitat. Purwadita, *et al.* (2021) in their research find that consideration of correlation between good anthropometry and building functions will save more orangutans abandoned by using an ecological approach as well make this facility closer to nature both meaning and function. The functional design of the medical area circulation makes it easy for the circulation flow to rescue orangutans that need help. Supporting facilities that are quite complete also help in the recovery process. In addition, the location far from human areas is very influential in accelerating the rehabilitation process for orangutans being cared for.

In addition, the habitat suitability model of the Bornean Orangutan is very much needed as a basis for orangutan habitat management. The existence of

information on habitat suitability models can be used as basic data in conservation management and as a basis for taking further steps to protect the habitat of the Bornean orangutan. From the research conducted by Fitriana (2021), it is known that the construction of spatial models of the habitat suitability of the Bornean Orangutan is carried out by analyzing the assessment of the Life Requisites of the Bornean Orangutan on habitat factors and disturbance factors. Habitat factors used are water availability which is represented by river distance and NDVI (Normalization Difference Vegetation Index), while the disturbance factors come from human activities which are identified by distance from the road and distance from the village. The results showed that the Bornean Orangutan Habitat had a high habitat suitability with the acceptable Bornean Orangutan habitat model.

Hall (2007) in Ballantyne & Packer (2013) states that biodiversity conservation is an integral part of the continuity of ecotourism. Milgrath (1989) argues that humans have the value of being able to maintain survival that has naturally evolved into certain concerns and values for others. Sustainable development by prioritizing the balance between economic, social and ecological systems makes it very relevant to the tourism industry. McCool (1985) believe that in order for sustainable tourism to succeed, humans should consider the following:

1. How tourists assess and use the natural environment;
2. How society is improved through tourism;
3. Identify the social and ecological impact of tourism;
4. Management of these impacts.

Consulting and Audit Canada (1995) in Fennell, (2015) developed guidelines for the development of core indicators and site-specific indicators of sustainable ecotourism as follows:

Table 3: Table Core Indicator and Site Specific of Sustainable Ecotourism

No.	Core Indicator	Site Specific
1.	Site Protection	Category of site protection according to IUCN index
2.	Stress	Tourist numbers visiting site (per annum/peak month)
3.	Use intensity	Intensity of use in peak period (persons /hectare)
4.	Social impact	Ratio of tourists to locals (peak period and over time)
5.	Development control	Existence of environmental review procedure or formal controls over development of site and use densities
6.	Waste management	Percentage of sewage from site receiving treatment (additional indicators may include structural limits of other infrastructural capacity on site, such as water supply)
7.	Planning process	Existence of organized regional plan for tourist destination region (including tourism component)
8.	Critical	Number of rare or endangered species

ecosystems	
9. Consumer satisfaction	Level of satisfaction by visitors (survey- based)
10. Local satisfaction	Level of satisfaction by locals (survey- based)
11. Tourism contribution to local economy	Proportion of total economic activity generated by tourism
12. Carrying capacity	Composite early warning measure of key factors affecting the ability of the site to support different levels of tourism
13. Site stress	Composite measure of levels of impact on the site (its natural/cultural attributes due to tourism and other sector cumulative stress)
14. Attractivity	Qualitative measure of those site attributes that make it attractive to tourism and can change over time

[Source: Consulting and Audit Canada, 1995]

According to WWF, the Orangutan (*Pongo pygmaeus*) is currently listed as Critically Endangered species based on IUCN Red List, with estimated total population are 57.350 individuals which spread across Indonesia and Malaysia. So to preserve the orangutan population, the establishment of Tanjung Puting National Park as an orangutan conservation center is important. Ecotourism concept conservation areas, especially in National parks is doing management National Parks for action-based use of nature tourism conservation. It is hoped that through ecotourism development in the National Park, not only has an economic impact improvement for the community and area but also at the same time carry out conservation missions (Hastari & Girsang, 2020). In the core stress indicator, the tourist number is still in a suitable condition, as shown in the table below:

Table 4: Table Number of Tourist Visiting Waringin Barat City

Regional Development	Performance Achievement				
	2012	2013	2014	2015	2016
Tourist Number	12.286	13.355	16.035	12.564	15.106

[Source: RKPD Waringin Barat, 2019]

With the number of tourists compared to the area of West Kotawaringin City, especially Tanjung Puting National Park, the number of tourists who come is still in good levels and the presence of tourists is expected not to put pressure or stress on orangutans.

The other core ecotourism indicator is social Impact. The socio-economic aspects of the community around the ecotourism location will impact on the existence of community-based ecotourism, as well as Tanjung Puting National

Park. The impact of tourism development in Tanjung Puting National Park on social aspect is high, such as improving community living standards by creating new jobs and increasing community's income in Kumai Hulu Village, West Kotawaringin City (Agustina & Itta, 2021). From research It is known that the social impact of Tanjung Puting National Park has a positive impact on the level of cooperation between residents locally by forming the Kumai Klotok (boat) Tour Association and Indonesia Tour Guide Association. The vision and the mission of this association is to prosper community and tourism klotok business in Kumai

Ecotourism is a responsible tourism journey of natural sustainability and well-being local community. In addition of ecotourism indicator, tourism contribution to local economy has also make positive impact to improve economic of society. The economic impact is felt by communities around ecotourism areas with community-based ecotourism (Emma & Rina, 2014). Positive impact from the economic aspect with the existence of Tanjung Puting National Park, namely increasing local standard of living and income for community, create many new jobs for the local community, indirectly increase community skills in economic aspects and help the local community in the local infrastructure. Agustina & Itta (2021) also state in their research that tourism development in Tanjung Puting National Park also provide business opportunities for the surrounding community, by opening small souvenirs shop and groceries shop.

Public local also can take part in terms of participation starting from planning activities to implementation, is also used for evaluation (Andayani *et al.*, 2017). This statements that community involvement participation in ecotourism is expected to make changes for environment and ecology aspects, such as awareness community on local hygiene. Community can also take part in the preservation of natural beauty in Tanjung Puting National Park. Tourism activities are not exploitative, but only exploratory, people can enjoy the beauty of nature without destroying conservation area. This is the value added from the existence of ecotourism which based on conservation like a National Park (Supriyanto & Sari, 2013). In research analysis by (Hastari & Girsang (2020), participation rate for conservation effort in Tanjung Puting National Park by ecotourism community has quite well done, namely the existence of an understanding of conservation such as no make noise at the feeding location, no littering and taking forest resources and get involve in ecotourism activities. Enhanced conservation campaigns through ecotourism is important, same like the education about conservation for ecotourism communities.

In addition to the local public, tourists who come to Tanjung Puting National Park also have a role in increasing ecotourism in the area. Setiawan (2015) in his research, found that the Tanjung Puting National Park market public has an ecotourism factor with a high awareness of environmental concerns, including the threat of climate change. Tourists who come have high ethics towards nature and local culture. They realize that climate change is a serious challenge and requires real action. Multiple adaptation programs are made by tourist, such as fundraising program to conservation of orangutans and their habitat, encourage the manager to do some innovation and technology improvisation of Klotok (boat) so it will not

make any loud noise, and also limit the number of visitors so as to protect tourism resource. Changes in social aspect of ecotourism are expected to create communities work together to develop ecotourism in Tanjung Puting National Park (Agustina & Itta, 2021)

But not all Tanjung Puting National Park potential can be developed as one of the potential investment. One of the barriers is the limitation of funds and Government resources in developing this sector. Parayogi *et al.* (2014) in their research find that very large cost needed for the development of Tanjung Puting National Park become the main obstacle for the government of West Kotawaringin City. Government and private partnership emerges for cooperation in investment of Tanjung Puting National Park tourism area development. From the result analysis of feasibility calculation results investment, noted that this investment is worth to invest, through at worst condition. This Government and Private Sector cooperation in ecotourism development of Tanjung Puting National Park can be used in all local development aspect. The success of Tanjung Puting National Park ecotourism is of course the shared responsibility of all parties involved (government, local public, community, private sector, and market tourism)

In reality today, Tanjung Puting National Park does not meet the criteria for a biosphere reserve. Land use around the National park tends to develop activities that are not in accordance with the function National Park Conservation (Syadiah, 2012). Physically, every biosphere reserve must consist of three elements, namely: first core zone, which is a protected area for biodiversity conservation, monitoring disturbed ecosystems, and conducting research activities non-destructive and other low-impact activities (such as education); the two buffer zones surrounding or adjacent to the core zone, and utilized for cooperative activities that are not mutually ecology, including environmental education, recreation, ecotourism and applied research and base; and the three transition zones, or transition zones, which can contain activities agriculture, settlement and other land uses. In the transition zone of society, research institutions, NGOs, indigenous peoples and other stakeholders can work together to manage and develop resources in a sustainable manner (UNESCO). To avoid further damage, intervention is needed in the form of Tanjung Puting National Park spatial planning policy and its buffer zone according to the characteristics of the area as a National Strategic Area (KSN) with an angle of interest in the function and carrying capacity of the environment.

CONCLUSION

The condition of ecotourism based on orangutan conservation in Tanjung Puting National Park (TPNP) is very potential to be developed because the area has lots of interesting spots with natural scenery typical of lowland forests, and animals that are easy to find, one of which is the Bornean orangutans (*Pongo pygmaeus*) became the main attraction for tourists. However, the life of orangutans is strongly dependent on forest conditions where the orangutan habitat is increasingly threatened, caused the orangutan population is being reduced.

One of the obstacles in developing the potential of Tanjung Puting National Park is the limited funds and government resources in managing and developing sustainable ecotourism in Tanjung Puting National Park in Central Kalimantan.

The orangutan population is currently experiencing a significant decline. The threat to this population is because their habitat is decreasing due to irresponsible human activities such as destroying forests, changing the function of forest land into community plantations, forest fires and also land exploitation so that orangutans really need to be preserved.

In the final results, there are 14 indicators of sustainable ecotourism locations that have the opportunity to be developed in conservation-based ecotourism, namely: site protection, stress, use intensity, social impact, development control, waste management, planning process, critical ecosystems, consumer satisfaction, local satisfaction, tourism contribution to local economy, carrying capacity, site stress, attractivity.

It is important to pursue synchronization and cooperation between stakeholders in improving the management of Tanjung Puting National Park in an integrated and professional manner, as well as implementing policies so that they are effective and optimal. In this case, the regional government must apply strict sanctions against environmental and ecosystem destruction, conduct socialization and education to the community about licensing and utilization of forest resources, and continue to firmly ensure the boundaries of orangutan conservation forest zone with community gardens so that there is no animal conflict that results in the disruption of the orangutans habitat.

In addition, the development of ecotourism in Tanjung Puting National Park also requires significant financial investment. Therefore, a framework for cooperation between the government and the private sector is needed; in this case, investors, to cooperate in investing in sustainable ecotourism development in Tanjung Puting National Park in Central Kalimantan.

Local governments should be expected to be able to manage and implement policies that are balanced between the economy, the environment and society- In order to development of ecotourism based on orangutan conservation to be successful, it requires cooperation of all stakeholders directly involved, both managers and employees, local government and local communities.

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