JUPIIS: Jurnal Pendidikan Ilmu-ilmu Sosial, 17 (2) (2025):291-299
DOI: 10.24114/jupiis.v17i2.61755

JUPIIS: Jurnal Pendidikan Ilmu-ilmu Sosial

Available online:http://jurnal.unimed.ac.id/2012/index.php/jupiis

LUBUK LARANGAN: AN ANALYSIS OF CULTURAL AND SPACIAL APPROACHES INCORPORATING CULTURAL AWARENESS IN FLOOD DISASTER MITIGATION EFFORTS IN BAHOROK

William Jordan Nainggolan[1], Riri Putri Siwi[2], Rifki Faturrahman[3], Alya Zhafirah[4], Putri Yola Endayanti Tarigan[5], Ayu Febryani[6]
Departement of Anthropology Education, Faculty of Social Sciences, Universitas Negeri Medan, Medan, Indonesia[123456]

william.3223122045@mhsunimed.ac.id[1], ririputrisiwii@gmail.com[2], rifkifaturrahman@mhs.unimed.ac.id[3], alyaazanaa@gmail.com[4], putriyolatarigan@gmail.com[5], ayufebryani@unimed.ac.id[6]

Accepted: Dec, 29th 2025 Published: Dec, 31th 2025

Abstract

Bahorok Subdistrict is one of the subdistricts in Langkat Regency, North Sumatra, known for the BahorokRiver, which has experienced flooding in 2003, 2015, and most recently in 2023. Given this, natural disasters such as flooding pose a crucial risk to the sustainability of tourism in Bahorok Subdistrict if mitigation efforts are not planned effectively. Therefore, this study aims to analyze the implementation of *lubuk larangan* as a flood disaster mitigation effort in Bahorok Subdistrict, examine the cultural approach with cultural awareness applied to *lubuk larangan* as a flood disaster mitigation strategy, and analyze spatial factors that need to be considered in developing flood disaster mitigation strategies in Bahorok Subdistrict. This research explores the role of *lubuk larangan* as a cultural and spatial approach in flood disaster mitigation in Bahorok Subdistrict, Langkat Regency, North Sumatra. It employs a mixed-methods approach with an embedded design, combining qualitative and quantitative strategies. Data were collected through participant observation and questionnaires distributed to 60 respondents around the Bahorok River. Qualitative analysis was conducted through ethnographic interviews, domain analysis, and taxonomy, while quantitative analysis used descriptive statistical tests and Geographic Information System (GIS) to produce spatial maps related to flood potential. The study found that the implementation of *lubuk larangan*, initiated by local communities, iseffective in preserving river ecosystems and serves as a form of non-structural disaster mitigation. The community's cultural awareness of *lubuk larangan* is still at the level of cultural consideration. Spatialfactors such as topography, land slope, and land use are also crucial in developing flood mitigation strategies.The findings are expected to contribute significantly to river conservation efforts and community safety around the Bahorok River.

Key words: *Cultural, Spatial, Mitigation, Flood, Bahorok*

How to cite: Nainggolan. W. J. Et al (2025) Lubuk Larangan: An Analysis Of Cultural And Spacial Approach Incorporating Cultural Awareness In Flood Disaster Mitigation Efforts In Bahorok. JUPIIS: Jurnal Pendidikan Ilmu-ilmu Sosial (291-299)

*Corresponding author:
ayufebryani@unimed.ac.id

ISSN 2085-482X (Print)
ISSN 2407-7429 (Online)

INTRODUCTION

Bahorok is one of the sub-districts in Langkat Regency, North Sumatra Province, Indonesia. The Bahorok River is a tourist destination that attracts many visitors due to its pristine and beautiful natural scenery. The beauty of the lush green forest, the sound of theflowing water, and the fresh air around the river create a calming and refreshing atmosphere foranyone who visits. Tourism is believed to be one of the main drivers in boosting the local economy (Liyushiana et al., 2023). However, theBahorok River also carries a high risk of natural disasters. Flash floods and landslides are serious threats that can occur at any time, especially during the rainy season. These disasters not only have the potential to damage the surrounding natural environment but also pose a threat to the safety of local residents and tourists.

In 2003, a flash flood occurred and devastated settlements along the banks of the Bahorok River (Aksa & Sinulingga, 2022). Herawati and Kartini (2019) found that disaster mitigation based on local wisdom in Wajok Village involves non-structural mitigation measures, including the local wisdom of mutual assistance known as "Belalek." In Belalek activities, the village community carries out river normalization to anticipate floods. Other efforts during the rainy season include rainwater harvesting, river damming, and water pumping. Similarly, for the Bahorok River, natural disasters such as floods could have crucial impacts on the sustainability of tourism in Bahorok Sub-district if mitigation efforts are not carried out systematically.

Disaster mitigation based on local wisdom in Tieng Village, Wonosobo Regency, by Puspitasari et al. (2018), found non-structural disaster mitigation measures in the village, namely: (1) Community service once a month involving river cleaning and reforestation efforts. (2) Local wisdom dictates that during heavy rain with high intensity for more than twohours, residents will leave their homes with valuable belongings and head to a predetermined gathering point at the village office. (3) Socialization about flood and landslide disasters. Therefore, the management and mitigation of disaster risks are crucial to ensuring the safety and preservation of the natural environment around the Bahorok River.

Efforts to mitigate flood disasters in Sustainable Tourism Areas such as Bukit Lawang, Bahorok Sub-district, are essential, both structurally and non-structurally. Ginting and Putra (2019) recommend the need for structural mitigation efforts such as strengthening dam structures, repairing damaged canal gates, and planning flood retention walls along the riverbanks. Meanwhile, non-structural disaster mitigation requires planning regulations for land use when constructing buildings, monitoring deforestation, and educating the community about the dangers of floods. In this regard, focusing on non-structural disaster mitigation also includes the need to maintain the area free from waste, which can be one of the causes of floods, and maintaining river ecology. Similarly, research by Suparmini et al. (2014) found disaster mitigation based on local wisdom practiced by the Baduy community, which involves non-structural disaster mitigation through the tradition of "perladangan dan pikukuh," a set of rules for selecting field locations (huma), farming times, methods for clearing and burning land, and the tools allowed for use.

T. Lubis et al. (2021) state that Lubuk Larangan is a natural resource for the village community that holds economic, social, ecological, cultural, and religious value. Lubuk Larangan refers to a place with a prohibition, where 'lubuk' can be interpreted as a breeding ground for fish, and 'larangan' represents the prohibition of fishing in the Bahorok River. Hendayana M. et al. (2018) describe a management system for Lubuk Larangan, suchas in Dusun Tanah Tumbuh, Tanah Tumbuh District, which adheres to local wisdom in its planning, organizing, implementation, andsupervision.

The adaptation of local wisdom regarding Lubuk Larangan in Bahorok District was initiated by the Bukit Lawang Tourism Awareness Group, which then involved the community by forming the Masyarakat PeduliSungai Bahorok (MPSB) or Bahorok River Care Community. The management of Lubuk Larangan is

strengthened by involving three villages: Perkebunan Bukit Lawang, SampeRaya, and Timbang Jaya, which agreed onregulations, sanctions, and agreements as outlined in PERKAPEDES No.01 of 2022. These include fines of 40 sacks of cement and purchasing 2,000 fish seedlings to be released into the river. Soni, A. (2021) explains that thelocal wisdom of Cao Mukak Imbo Adat plays asignificant role in disaster mitigation. This wisdom includes prohibitions related to land cultivation in steep areas or around waterfalls due to these areas being water catchment zones. Cultivating crops like secondary crops in such regions could trigger landslides or floods. Similarly, the local wisdom of Lubuk Larangan in Bahorok District aims to preserve the river's sustainability by imposing sanctions on those who violate the prohibition.

A cultural approach imbued with cultural awareness is crucial for the in-depth examination of the implementation of Lubuk Larangan. The community's understanding of the importance of preserving river ecology through Lubuk Larangan is linked to river conservation efforts and flood disaster mitigation in Bahorok Sub-district. Cultural awareness is created through the habituation of cultures that are introduced and accepted by the community. Wunderle (2006) identified five levels of cultural awareness: data and information, consideration, knowledge, understanding, and cultural competence. Thesefive levels of cultural awareness are important inrelation to the implementation of LubukLarangan in the Bahorok River, considering that this local wisdom is absorbed through a process of cross-cultural awareness adopted from the implementation of Lubuk Larangan in West Sumatra.

Additionally, spatial analysis is necessary to uncover the spatial factors that need to be considered in developing flood disaster mitigation strategies, such as rivers, topography and land slope, land use, rainfall, population density, and vegetation surrounding the Bahorok area. Therefore, this study isrelevant to the title "Lubuk Larangan: Analysis of Cultural and Spatial Approaches with Cultural Awareness in Flood Disaster Mitigation Efforts in Bahorok Sub-district." This research is expected to contribute to the community living around the river flow, which has the potential to experience flash floods, particularly those around the Bahorok River in Langkat Regency.

METHODOLOGY

Data was collected qualitatively and quantitatively by following the embedded designstrategy, specifically Qual to Quan, which meansqualitative data is the primary method while quantitative data is the secondary method. Qualitative data collection was carried out through participant observation related to a series of activities in the lubuk larangan, such as fish harvesting, seed dispersal, and observing the lubuk larangan area. This was followed by thedistribution of questionnaires conducted through purposive sampling. Respondents consisted of 60 people, divided into 20respondents in each area around the Bahorok River. This research is titled 'Lubuk Larangan: An Analysis of Cultural and Spatial Approaches Incorporating Cultural Awareness in Flood Disaster Mitigation Efforts in Bahorok District.' The main focus of this research is to describe the implementation and analyze spatial factors in the development of flood disaster mitigation strategies in Bahorok District. Furthermore, the research is also directed towards analyzing cultural and spatial approaches incorporating cultural awareness in the implementation of lubuk larangan in flood disaster mitigation efforts in Bahorok District.

A mixed-method approach was used inthe analysis techniques of this research by employing a sequential exploratory design strategy, prioritizing qualitative data which is then reinforced with quantitative data (Cresswell, 2016). The qualitative analysis techniques included ethnographic interview analysis, domain analysis, and taxonomic analysis. All the data will form a taxonomic diagram related to lubuk larangan. Meanwhile, the quantitative analysis used descriptive statistical tests to provide an overview of the level of cultural awareness of the Bahorok community in the implementation of lubuk larangan using the formula P=F/N x100%. P isthe percentage, F is the frequency of respondents, and N is the

number of data / samples. This test provides a description of the data obtained from the minimum, maximum, sum, mean, standard deviation, and variance of the sample size. Next, spatial analysiswas conducted through overlay, 3D, and Slope stages using Geographic Information System (GIS) to produce a 3D map of the lubuk laranganarea, a flood vulnerability map, and a topography and land slope map to detect potential flood disasters. The analyses are thenpresented in the results achieved after going through the stages of research preparation, data collection, data processing, data reduction, data presentation, data verification, and conclusion drawing.

RESULT AND DISCUSSION

1.Implementation Of Lubuk LaranganAs A Flood Disaster MitigationEffort In Bahorok District

Lubuk Larangan was initially proposed in Timbang Lawan Village, Bahorok Sub-district, in 2020. A community leader named Pak Siddiq (63 years old) adopted the local wisdom of Lubuk Larangan, which he had encountered in Pariaman, West Sumatra. This strategy initially aimed to address issues related to community practices that damaged river ecology by poisoning and electrocuting fish. However, over time, it became a non-structural flood disaster mitigation effort, serving as a regulation governing community behavior. Murdoch (2017) revealed the Actor-Based Model of Human Ecology, as applied by the community leader, which emphasizes the individual processes in making various decisions about how to interact with their environment.

Human adaptation to their environment is not only a result of natural selection on culture but also a result of individual decisions about their environment (Abdullah, 2017). In this context, the Tourism Awareness Group in the Sustainable Tourism Area of Bukit Lawang also began to initiate the practice of prohibiting fishing in the irrigation areas. Lubuk Larangan was then developed and expanded through an agreement between three villages: Bukit LawangPlantation Village, Sampe Raya Village, and Timbang Jaya Village on December 18, 2022, asstated in Perkapedes No. 1 of 2022. This agreement also involved the central government, sub-district head, hamlet heads, the Indonesian Tourism Association (HPI), the Head of the Gunung Leuser National Park Resort (TNGL), Bhabinkamtibmas, Babinsa, and Koramil.

Lubuk Larangan is an area within specific zones along the river where fishing of any kind is prohibited in the Bukit Lawang area spanning 1.6 km, encompassing 5 points: Jungle Inn, Camping Ground, Lubuk Pakam, Timbang Lawan Dam, and Rindu Alam. The selection of these 5 points includes the deepest points amongthe other currents of the Bahorok River. This area is also a tourist destination preserved and maintained by the local community with the aimof preserving the river ecosystem and ensuring the availability of fish resources for the long term. By preserving the river ecosystem, it is hoped to positively impact tourism activities in Bukit Lawang.

The socialization and education process conducted by the village authorities to the community is through the village head (kadus),and the managers of Lubuk Larangan invite the Indonesian Tourism Association (HPI) todisseminate information to the local community and tourists about this prohibited fishing area. Socialization to the local community around the Lubuk Larangan area is done face-to-face by visiting coffee shops and restaurants around the river area, informing that fishing is prohibited along the designated Lubuk Larangan area and violators will be sanctioned. Information dissemination also involves utilizing community gatherings within each ethnic group in the threevillages.

Here is the decision-making model flow for implementing the Lubuk Larangan steps in the Bahorok River.At the upstream and downstream of the Lubuk Larangan in the Bahorok River, mystical barriers are installed, such as threads with white cloth resembling flags. This signifies that fish that have entered or passed beyond these mystical barriers cannot exit. In an interview on May 23, 2024, the Chairman of POKDARWIS stated:

"We also employ a traditional expert, so to speak. This expert is tasked with ensuring that the fish do not leave the zone we have established, which spans 1.65 km. At each boundary of this zone, the expert sets up mystical barriers so that the fish can enter but

cannot exit. We use these mystical barriers as our 'fences'."

The mystical barrier referred to is a requirement for establishing Lubuk Larangan. It is believed that the mystical barrier set up by the traditional expert ensures that fish introduced into the river will not be able to leave the zone defined by the mystical barrier**.**

Figure 1. Installation of the mystical barrier bythe traditional expert

Source: Researcher, 2022

The prohibition established is an agreement among the three village heads, formalized in Perkapedes, which forbids all forms of fishing, including: angling, netting, electrofishing, poisoning fish, bombing fish, andother fishing activities. The three village headsalso agreed on penalties for violations of this prohibition, which include a fine of 40 sacks ofcement and the purchase of 2,000 fish fry to be released into the river. To enforce these penalties, the villages also involve Bhabinkamtibmas and Babinsa from the three villages as a demonstration of the villages' commitment to managing the Lubuk Larangan.The penalties will be distributed among the three villages, with each village receiving 10 sacks, and 10 sacks allocated to individuals who report violations.

The Chairman of MPSB explained thatthe opening of the Lubuk Larangan in the Bukit Lawang area took place over 6 days. Following that, on May 17, 2024, a simultaneous fish harvest was held with the goal of enhancing solidarity and harmony among the community. The event started with collective fishing, followed by cooking together, and then enjoying the harvest together. According to Mr. Masno (Treasurer of MPSB), he elaborated:

"The fish from yesterday, well, we have obtained results, one of which is that we harvested together, and there was also fishing, which had a pay-to-participate system. Some of the proceeds were donated to the mosque. Yes, it is prioritized for religious purposes" (Interview, June 24, 2024).

2. Cultural Approach With Cultural Awareness In The Implementation Of Lubuk Larangan In The Bahorok River

The five levels of cultural awareness, according to Wunderle (2006), related to the implementation of lubuk larangan consist of fiveparts. Data and information is the lowest level,where individuals are merely aware of the data and information about lubuk larangan but do not yet understand it. Culture Consideration means understanding the values and rules that apply in lubuk larangan. Culture Knowledge means deepening knowledge about non- structural disaster mitigation and lubuk larangan through training. Cultural Understanding is a stage understood only by the initiators of lubuk larangan, examining the follow-up actions for lubuk larangan. Cultural Competence is the highest stage, enabling individuals to make decisions and demonstrate cultural intelligence. Quantitatively, the following are the percentages of the levels of cultural awareness among the Bahorok community concerning the implementation off lubuk larangan: based on the percentages of cultural awareness according to Wunderle (2006), there are five forms of cultural awareness: Data and Information, Culture Consideration, Cultural Knowledge, Cultural Understanding, and Cultural Competence.

Based on the percentages submitted by60 respondents, it can be understood that, in general, the level of cultural awareness amongthe Bahorok community is already at a point where they have awareness of cultural practices, especially in participating in environmental conservation and understanding the impact of environmental damage.

3. Spacial factors that need to be considered in the development of flood disaster mitigation strategies

There are several spatial factors to consider in developing flood disaster mitigation strategies, particularly non-structural ones in river areas. The Bahorok River system is locatedin an area with three different longitudinal slopes and topographies. The first zone, in the upstream area, features a relatively steep longitudinal river slope (more than 10%), with slope gradients exceeding 60% and a main river length of about 8 km. The second zone has moderate to high longitudinal slopes (4-6%) with slope gradients around 30-45% and a main river length of 7 km. The third zone has a longitudinal slope of about 2%, with slope gradients of less than 30% and a main river length of approximately 3 km. The morphology of the Bahorok River in the tourist area is braided, meaning the river has multiple branches with sandbars between them. The sandbar material consists of sand, gravel, cobbles, and pebbles (1-25 cm).

The topography, slope, and land use in Bahorok District are predominantly characterized by plantations and conservation forests, including the Gunung Leuser National Park. This area features steep slopes and soil types that are susceptible to landslides. The regions bordering Karo, Southeast Aceh, and Gayo Lues are undulating to mountainous with relatively steep terrain, with elevations ranging from 30 to 1200 meters above sea level. The slope map of the Bahorok River basin, particularly in the Bukit Lawang tourist area, shows varying degrees of slope steepness. Slope Class I has a slope gradient of 0-8%, categorized as flat terrain. Slope Class II has a gradient of 8-15%, considered gentle slopes. Slope Class III has a gradient of 15-25%, categorized as moderately steep. Slope Class IV has a gradient of 25-45%, categorized as steep slopes. Slope Class V has a gradient of over 45%, categorized as very steep slopes.

The land slope in Bahorok District features land use predominantly for agriculture and residential areas. Agricultural land spans 700 hectares for rice fields and 105,185 hectares for other agricultural uses. Residential and commercial land use covers 4,298 hectares. In Bahorok District, much of the land has been converted into residential areas and accommodations for visitors. Unregulated landuse can decrease the land's ability to absorb rainwater. Additionally, using riverside land for commercial or residential purposes reduces thearea's value and poses dangers, as buildings along the river can disrupt the water flow.

Meanwhile, the rainfall level in Bahorok District is relatively high. This is due to frequent rains in the late afternoon to night with prolonged periods and unpredictable rainfall accompanied by long durations. This is the mainfactor causing flooding in this area. The reduction in water absorption areas due to increased construction of residential and commercial buildings, along with the hilly topography causing steep slopes, results in rainwater quickly flowing to lower points without being easily absorbed by the soil. According to BPS data from 2022, the annual rainfall in Bahorok District averages 340 mm/year, with an average of 14.33 rainy days per month.

In this area, when the flash flood occurred in 2003, the population density was quite high, with residents living right on the riverbanks. This resulted in many casualties when the flash flood happened. Dense settlements along the riverbanks can obstruct the river's flow and affect the soil's ability to absorb water. According to BPS data (2023), the population in Bahorok District is 42,730 people, with a population density of 38.78 per km^2. The settlement pattern in Bahorok District, especially in Desa Perkebunan Bukit Lawang, follows the road, as evidenced by residential and commercial buildings lining the roads.

Bukit Lawang is located near Gunung Leuser National Park in North Sumatra, known for its biodiversity and tropical rainforest. Thediverse types of vegetation in this area certainly have varying water absorption capacities. The vegetation types found in Bukit Lawang include Dipterocarpaceae trees, palms and rattan, epiphytes and lianas, bamboo, understory plants, and fruit and valuable wood plants. Overall, the vegetation in tropical rainforests like Bukit Lawang is highly effective in absorbing water and maintaining water balance in the ecosystem. The deep and extensive root systems of large trees, along with the understory vegetation and epiphytes, all contribute to maintaining soil moisture and preventing erosion.

Figure 2. Map of Lubuk Larangan Area and Topography with Land Slope

Source: Researcher, 2022

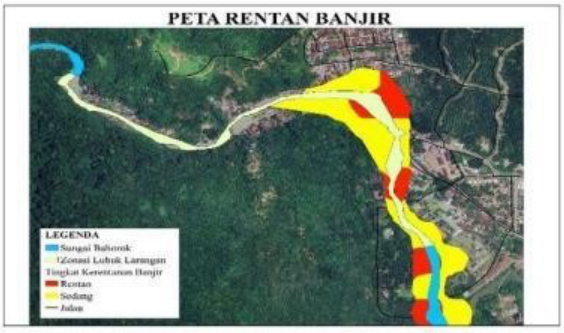
From the data obtained through the Langkat BPBD and Geographic Information System analysis, it has been determined that the flood impact radius in Bahorok District, specifically in the Bukit Lawang tourist area, extends 100 meters from the riverbank. This impacts residential buildings, commercial structures, and vegetation in the vicinity of the river affected by flooding. The flood classification levels are categorized as Vulnerable (red) and Moderate (yellow).

The total area affected by flooding in this region is 6,546 square meters, with 4,503 square meterscategorized as moderate flood impact and 2,403 square meters categorized as vulnerable floodimpact.

Figure 3. Flood Vulnerability Map

There are 8 designated gathering pointscreated as part of the flood disaster mitigation efforts on the Bahorok River, specifically at the Bukit Lawang tourist area. The selection of these gathering points is based on the elevation of locations that are less likely to be affected by flooding. Additionally, the points are chosen according to their proximity to areas where local community activities occur along the river. Theestablishment of these mitigation points can be categorized as a form of non-structural disastermitigation effort.

Figure 4. Disaster Mitigation



Source: BNPB Langkat, 2022

In addition to elevation considerations, the selections of assembly points also took intoaccount their proximity to areas of communityactivity along the river. This is crucial for ensuring that the points are easily accessible and quickly reachable by residents in emergencies. The implementation of these assembly points isan example of non-structural disaster mitigation, focusing on risk reduction through effective planning and preparedness rather thanphysical infrastructure.

With these assembly points in place, it isexpected that the community will be better prepared to handle emergency situations, reducing potential losses and expediting evacuation processes during floods. This strategy is an integral part of a broader disaster mitigation effort, encompassing community- based risk management and enchancing emergency response awareness and skills.

CONCLUSION

The "lubuk larangan" in the Bahorok River was implemented in Timbang Lawan Village, Bahorok District, in 2020. Pak Siddiq, a local community leader, adopted this concept from Pariaman, West Sumatra, to combat environmentally harmful practices such as poisoning and electrofishing. Initially, the "lubuk larangan" aimed to preserve the river's ecosystem and later evolved into a non- structural flood disaster mitigation effort. An agreement to prohibit any form of fishing was reached among three villages in 2022 and reinforced with local regulations.

Socialization and education about the "lubuk larangan" are conducted through

direct meetings and supported by various parties, including the Indonesian Tour Guide Association(HPI). The implementation of the "lubuk larangan" involves the installation of a mystical barrier by a local shaman to ensure that fish do not leave the designated area. Violations of this prohibition are subject to sanctions, including fines and the procurement of fish fingerlings to be restocked into the river.

The implementation of the "lubuk larangan" also holds significant cultural dimensions, with five levels of cultural awareness based on Wunderle's model (2006). The cultural awareness of the Bahorok community is generally at level 2 (Culture Consideration). Additionally, spatial factors such as land slope and irregular land use must also be considered in flood disaster mitigation strategies in this area. The "lubuk larangan" is expected to preserve the river ecosystem while supporting tourism activities in Bukit Lawang.

Kecamatan Bahorok has various spatial factors that need to be considered in developing flood disaster mitigation strategies, particularly non-structural ones. The Bahorok River, with its varied topography and different slopes, has a complex morphology that affects the flood potential in the area. Land use in Kecamatan Bahorok is dominated by agriculture, residential areas, and commercial buildings, which, if not properly managed, can reduce the land's ability to absorb rainfall and worsen flood risks. The high rainfall in this region, often occurring in the late afternoon and evening with prolonged duration, is a major factor in flooding.

The high population density, especially along the riverbanks, results in greater risks during flash floods. The settlement pattern along roads also affects water flow and the land's ability to absorb water. The presence of Gunung Leuser National Park, with its biodiversity and tropical rainforest, plays a crucial role in maintaining water balance through vegetation that effectively absorbs water and prevents erosion. The implementation of "lubuk larangan" is expected to preserve the river ecosystem and support tourism activities in Bukit Lawang, while also serving as an effective flood disaster mitigation strategy.

ACKNOWLEDGMENT

The author extends their gratitude to the Directorate General of Learning and Student Affairs, Ministry of Education, Culture, Research, and Technology, Universitas Negeri Medan, the internal PKM reviewer at Universitas Negeri Medan, the Dean and Vice Dean of the Faculty of Social Sciences, the Head of the Study Program, the Supervising Lecturers, the Government of Bahorok District, Langkat Regency, the Head of Perkebunan Bukit Lawang Village, the Head of Sampe Raya Village, the Head of Timbang Jaya Village, the Lubuk Larangan Traditional Healer, BPBD North Sumatra, BPBD Langkat, the local community around the Sungai Bahorok, and colleagues who supported this research.

REFERENCES

Abdullah, O. S. (2017). *Ekologi manusia dan pembangunan berkelanjutan*. Gramedia Pustaka Utama

Aksa, F. I., & Sinulingga, E. (2022). Risk Perception and Preparedness in Flash Flood-Affected Communities: Evidence from Bahorok, Indonesia. *Geosfera Indonesia*, *7*(1), 61-71.

Creswell, J, W. (2016). *Research Design: Pendekatan Metode Kualitatif, Kuantitatif, dan Campuran.* Edisi ke-4, Pustaka Pelajar. Yogyakarta.

Ginting, S., & Bengkel, B. (2022). The role of local wisdom in supporting policies Rekap Sumber Dana Belmawa 10.000.000 Perguruan Tinggi 2.000.000 Instansi Lain - Jumlah 12.000.000 10 deforestation supervision in langkat regency, north sumatra. DIA:Jurnal Administrasi Publik. 20 (02): 243-262

Herawati, H. (2019). Mitigasi Bencana Berbasis Kearifan Lokal di Desa Wajok Provinsi Kalimantan Barat. *Jurnal Teknik Sipil*, *19*(2), 28-39.

Handayani. M., Naiddju., Hertati. R. (2018). Sistem Pengelolaan Lubuk Larangan Sebagai Bentuk Kearifan Lokal Di Sungai Batang Tebo Kabupaten Bungo Provinsi Jambi. Journal Pengelolaan Sumberdaya Perairan.

2(3). 1-8.

Liyushiana. dan Simanjuntak. A.O. P. dan Angelina, R. dan Sitanggang, Y. (2024). Village-based tourism development as a strategy for local economic empowerment in bukit lawing. *Proceeding of IROFONIC 2023 "Global Initiatives for Sustainable Development Goals"*.1 Februari 2024, Medan,Indonesia.348-355.

Lubis. T., Niladarda., dkk (2021). Tradition *Lubuk Larangan* As A Local Wisdom For Ecocultural Tourism River Management Through Landscape Anthropolinguistic Approuch In Mandailingnese. Journal Of Physics: Conference series.

Puspitasari, A. E., Bima, D. P. S., & Dewi, T. P. (2018). Mitigasi bencana berbasis kearifan lokal di Desa Tieng, Kabupaten Wonosobo. *Jurnal Geografi Lingkungan Tropik*, *2*(2), 42-49.

Ritonga, A. H. (2022). Model Pemberdayaan Masyarakat Berbasis Kearifan Lokal Melalui Lubuk Larangan di Kota Padangsidimpuan. Jurnal at-Taghyir: Jurnal Dakwah dan Pengembangan Masyarakat Desa, 4(1), 69-92.

Soni, A. (2021). Community Participation inNatural Disaster Mitigation Based onLocal Wisdom" Adat Cao Mukak Imbo" North Bengkulu Regency of Bengkulu Province Indonesia. Local Wisdom: Jurnal Ilmiah Kajian Kearifan Lokal, 13(2), 138-151.

Suparmini, S., Setyawati, S., & Sumunar, D. R. S. (2014). Mitigasi bencana berbasis kearifan lokal masyarakat Baduy. *JurnalPenelitian Humaniora*, *19*(1).

Triastari, I., Dwiningrum, S. I. A., & Rahmia, S. H. (2021, November). Developing disaster mitigation education with local wisdom: Exemplified in Indonesia schools. In *IOP Conference Series: Earth and Environmental Science* (Vol. 884, No. 1, p. 012004). IOP Publishing.

Wahid, K. A. (2023). Kajian Upaya Mitigasi Struktural dan Nonstruktural Bencana Banjir di Kota Kendari. *Journal of Geographical Sciences and Education*, *1*(1), 20-29.

Wunderle, William. (2006). Through the Lens ofCultural Awareness: A Primer for US Armed Forces Deploying to Arab and Middle Eastern Countries. Combat Studies Institute Press, USA.