

TOURISM CARRYING CAPACITY OF SEJANGAN ISLAND BEACH, LABUHAN TERATA, LABUHAN KURIS VILLAGE, SUMBAWA REGENCY, WEST NUSA TENGGARA

**Daya Dukung Ekowisata Pantai Pulau Sejangan Labuhan Terata Desa Labuhan
Kuris, Kabupaten Sumbawa, Nusa Tenggara Barat**

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ABSTRACT

This study aims to: (1) analyze the suitability of the area for beach recreation tourism activities and its tourism carrying capacity, and (2) estimate the area's carrying capacity for beach recreation tourism activities. The research was conducted from June to August 2021 on Sejangan Island, Labuhan Terata Hamlet, Labuhan Kuris Village. An exploratory method was employed, utilizing a survey and direct field measurements. Data comprised primary data, obtained directly from the field in the form of measurement estimates, surveys, observations, and interviews with tourists and relevant stakeholders, as well as secondary data gathered from literature studies and documents from related institutions. The results indicate that the tourism suitability of Sejangan Island for beach recreation is as follows: zones 2, 3, 4, and 5 fall into the highly suitable (S1) category at 90%, 94.44%, 93.33%, and 85.56%, respectively, while zone 1 is categorized as suitable (S2) at 73.33%.

Keywords: Carrying Capacity, Ecotourism, Sejangan Island, Suitability

ABSTRAK

Penelitian ini bertujuan untuk (1) menganalisis kesesuaian kawasan untuk kegiatan wisata rekreasi pantai dan Daya dukung wisata, dan (2) mengestimasi daya dukung kawasan untuk kegiatan wisata rekreasi pantai. Penelitian ini dilaksanakan pada bulan Juni sampai Agustus 2021 di Pulau Sejangan Dusun Labuhan Terata Desa Labuhan Kuris. Metode yang digunakan adalah eksploratif dengan menggunakan metode survey dan pengukuran langsung di lapangan. Data yang digunakan adalah data primer yaitu data yang diperoleh secara langsung di lapangan berupa data hasil perkiraan pengukuran, survey, observasi, wawancara dengan wisatawan dan pihak terkait serta data sekunder yaitu data yang diperoleh dari studi literatur dan dokumen instansi terkait. Hasil penelitian menunjukkan bahwa kesesuaian wisata Pulau Sejangan untuk rekreasi pantai yakni: zona 2, 3, 4 dan 5 termasuk kategori sangat sesuai (S1): 90%, 94,44%, 93,33% dan 85,56%, zona 1 termasuk kategori sesuai (S2) 73,33%.

Kata Kunci: Ekowisata, Kesesuaian, Daya Dukung, Pulau Sejangan

INTRODUCTION

Saleh Bay is a body of water located in the eastern part of Indonesia, precisely between Sumbawa Regency and Dompu Regency, West Nusa Tenggara Province. Saleh Bay is currently being developed to enhance its fishery resources. In addition to being utilized as a fishing ground by local fishermen, this water body is also used for aquaculture activities (Mujiyanto & Wasilun, 2006). Saleh Bay is a protected water body, making it highly conducive for the breeding of reef fish and for marine fishery activities. The potential of a water body to produce biological natural resources is primarily determined by its primary productivity.

The substantial potential of small island regions has led to increasingly vigorous development efforts. A current trend widely featured in both electronic and print media is coastal and marine tourism, particularly underwater tourism. Consequently, interest in tourism, both from local and international visitors, continues to rise. This trend, if unmanaged, will subsequently result in significant ecosystem and natural resource degradation.

Sejangan Island is one of the small islands with considerable natural resource potential. It is characterized by surrounding stretches of white sand and rocks that appear neatly arranged, along with the beauty of its marine gardens inhabited by various species of economically valuable reef fish. Part of the island's contour consists of forests with diverse types of trees. Located in Labuhan Terata Hamlet, the island has an area of less than 10 hectares.

Currently, Sejangan Island is utilized as a coastal and marine tourism area. This island has become one of the sectors developed as it serves as a source of income for Labuhan Terata Hamlet. Considering that the development of the tourism industry is a strategy used to promote specific regions and generate significant foreign exchange, Sejangan Island's development is prioritized. At present, Sejangan Island is used as a coastal and marine tourism area. This island is one of the sectors being developed as it serves as a source of regional income. Given that the development of the tourism industry is a strategy used to promote specific regions and generate significant foreign exchange.

On the other hand, uncontrolled tourism development will lead to substantial damage to coastal resources and the environment. This includes environmental quality degradation such as marine pollution from visitor waste and pollution from boat or ship fuel. Furthermore, coral reef damage can be caused by the use of boat or ship anchors, reef-walking (trampling on coral reefs), the intentional collection of coral species by snorkelers or divers, fishing activities, and the intentional removal of materials such as sand, gravel, stones, or coral fragments for construction purposes. The lack of, or even complete ignorance among visitors regarding tourist spots in a tourism area can lead to negative impacts such as stings from dangerous biota or drowning fatalities. Additionally, the construction of resting places, cottages, and gazebos within the tourist area can disrupt the comfort of tourism activities.

All of these impacts are caused by insufficient attention from relevant authorities. Tourism development orientation is focused on economic interests without considering ecological and community interests. The higher the level of tourism development, the higher the demand for resources, and automatically, environmental change will also increase. The high demand for nature-based tourism and the decreasing availability of natural resources necessitate an effort to manage tourism based on conservation principles, known as ecotourism. The concept of ecotourism is an approach aimed at preserving resources while utilizing them for sustainable tourism. The most crucial aspect in utilizing ecotourism resources is the suitability of the resources and the carrying capacity that can support marine tourism activities (Hutabarat *et al.*, 2009).

Therefore, basic scientific research is needed regarding the suitability analysis and carrying capacity of ecotourism on Sejangan Island. This research aims to determine appropriate spatial utilization and the area's carrying capacity in efforts to develop Sejangan Island as a tourism destination.

METHODS

This research was conducted on Sejangsan Island, Labuan Terata Hamlet, Labuan Kuris Village, Lape District for six months, from January to June 2021. This research is exploratory in nature, using survey methods and direct measurements in the field. The variables studied are physical parameters, coastal and water biology, and the carrying capacity of the area. The data sources collected in this study consisted of primary and secondary data. Primary data was obtained directly from the research location in the form of measurement estimates, surveys, observations, and direct interviews with tourists and related parties at the research location.

Secondary data is data obtained from literature studies and documents from relevant agencies at the research location. Data collection was carried out in coastal and marine areas using purposive sampling, which is based on regional representation from direct observation in the field. In addition, qualitative observations were carried out by visually interpreting Google satellite images of Saronde Island to obtain a general picture of the location and biophysical conditions of the coast and waters in order to determine the appropriate observation location. The data analysis methods in this study included zone determination, coral reef condition analysis, and tourism area suitability analysis. Data collection was carried out in coastal and marine areas using purposive sampling based on regional representation from direct observations in the field. In addition, qualitative observations were conducted by visually interpreting Google satellite images of Saronde Island to obtain a general picture of the location and biophysical conditions of the coast and waters in order to determine the appropriate observation location.

Primary data collection included coral reef conditions and coral fish abundance. Coral reef data collection was conducted using the Manta Tow survey. This survey was conducted to obtain data on coral reef conditions in the form of the percentage of live coral cover and data on the life forms or growth patterns of the coral species found at the location. The Manta Tow survey uses the principle of visual assessment, which can provide a quick overview of the condition of extensive coral reefs. The type of beach was determined through observation. The most ideal location is a white sandy beach.

Beach width is measured directly using a tape measure. The beach must be wide enough for tourist activities, ideally >15 meters. Water depth is measured directly using a scale stick for depths of 0-3 meters and using bathymetric maps for depths >3 meters. The most suitable depth for recreation and snorkeling is 1-3 meters. The determination of the water substrate material is carried out using an Egman Grab sampler and then observed visually. The most suitable location is one with a sandy water substrate.

Current speed measurements are carried out directly using a drift pool (current kite). The most suitable current speed for beach recreation is not too strong or relatively weak, namely 0-0.17 cm/sec. For snorkeling, the ideal range is 0-15 cm/sec. Beach slope measurements are taken directly using a geological compass. The most suitable beach slope for beach recreation is <100.

Water clarity measurements are taken directly using a Secchi disc. The ideal water clarity for beach recreation is >75%. Meanwhile, snorkeling tourism requires 100%. The determination of land cover or beach vegetation is done through visual observation. Beach tourism requires that the beach area is not barren and has beach vegetation.

The determination of dangerous biota is done through visual observation and interviews with tourists and related parties. Beach recreation requires a safe beach, which is a beach free from several dangerous biota, including stingrays, lepu, sharks, and porcupine fish. The availability of fresh water is determined by how far the fresh water source is from the beach. This determination is made by tracking using GPS. Beach tourism requires that the fresh water source be available and not far from the beach, i.e., < 1 km.

RESULTS

No.	Parameter	Zone Score (N)						Weight (B)
		Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	
1	Water Depth (m)	3	3	3	3	3	-	5
2	Beach Type	2	3	3	3	2	-	5
3	Beach Width (m)	2	2	2	2	3	-	5
4	Water Base Material	2	3	3	3	3	-	3
5	Current Speed (m/sec)	2	2	3	3	2	-	3
6	Beach Slope (0)	3	3	3	3	3	-	3
7	Beach Land Cover	1	3	3	3	1	-	3
8	Water Clarity (%)	2	2	3	3	2	-	1
9	Hazardous Biota	2	3	3	2	2	-	1
10	Distance to Freshwater (km)	3	3	3	3	3	-	1

No.	Type of Activity	DDK
1.	Beach Recreation	162 people

DISCUSSION

Suitability of Sejangsan Island for Beach Recreation Tourism

The suitability level of Sejangsan Island's beaches for beach recreation tourism was assessed based on 10 parameters: water depth, beach type, beach width, bottom substrate material, current velocity, beach slope, water clarity, coastal land cover, presence of dangerous biota, and availability of freshwater. Suitability determination was carried out using a weighting and scoring method based on the urgency level of each parameter.

The results of the suitability analysis for the six observation zones, as shown in Table 7, indicate that four zones have a very high suitability class (very suitable/S1): zones 2, 3, 4, and 5. Meanwhile, the score for zone 1 classified it as a suitable zone (S2), while zone 6 was classified as a non-suitable zone (S3).

The fundamental difference causing zone 1 to have a slightly lower score compared to other zones lies in its beach morphology. The area of zone 1 is a rocky beach. From a tourism marketability aspect, the condition of the rocky beach, from the intertidal to supratidal zones, is actually one of the attractions or advantages of the beach tourism offered by this island. This is considering that not many beach tourism sites offer the exotic scenery of a beach filled with rocks that appear neatly arranged, displaying unique rock formation stratigraphy. A successful example of a rocky beach attracting tourist interest is the one located on Belitung Island. This advantage, however, also indirectly presents a potential drawback. Therefore, proper management is required to minimize the risk of injury from falls on the rocky terrain.

In zones 2, 3, 4, and 5, there are stretches of very clean white sandy beaches. The gently sloping beach profile, combined with minimal threats from dangerous marine biota, provides space and a sense of security for tourists to engage in various recreational activities such as sunbathing, reading, dining, swimming, and playing various skill games. This aligns with the statement by Hutabarat *et al.* (2009) that the suitability of resource and environmental characteristics for tourism development is assessed based on aspects of natural beauty, area safety and protection, biodiversity, uniqueness of resources or environment, and accessibility.

Dahuri *et al.* (2004) stated that every development activity (such as ponds, agriculture, plantations, and tourism) must be located in a biophysically "suitable" area. This requirement can be met by creating land suitability maps, including for aquatic areas (land suitability).

The identification of coral reef fish across the six observation zones found 28 coral reef fish species belonging to nine families. The observed families were Labridae, Nemipteridae, Chaetodontidae, Acanthuridae, Balistidae, Mullidae, Pomacentridae, Zaclidae, and Scaridae. The family Pomacentridae had the highest number of species among other families, with 10 species. As stated by Montgomery *et al.* (1980) in Yar Johan (2011), one of the coral fish families always found in coral reef areas is Pomacentridae. The Pomacentridae family is one of the dominant coral fish families in the coral reef fish community of a reef ecosystem. The most frequently found species was *Ctenochaetus striatus*.

Indicator fish such as butterflyfish (Chaetodontidae), parrotfish (*Scarus* sp.), and moorish idol (Zaclidae) are still quite commonly found on Sejangsan Island, indicating that the condition of its coral reefs is still reasonably good. This finding is not significantly different from that reported by BALITBANGPEDALDA Gorontalo Province and the Marine Division of PKP Unhas in 2004, which stated that the body color of fish on Sejangsan Island is generally dark or black patterned. Species still found include indicator fish such as parrotfish (*Scarus* sp.) and moorish idol (Zaclidae), target fish such as rabbitfish (*Siganus* sp.) and snapper (Lutjanidae), and major fish such as surgeonfish (Acanthuridae) and damselfish (Chromidae). Myers & Randall (1983) stated that the presence of butterflyfish is inseparable from the existence of coral reefs, as this fish is an indicator of reef health. Greater diversity of coral reef fish species from this indicator group suggests a higher level of coral reef fertility.

Carrying Capacity of Sejangsan Island

Based on observation results and visitor surveys on Sejangsan Island, as well as a geographic information system (GIS) analysis, the total area of Sejangsan Island was obtained as 6.22 hectares. The area of land highly suitable for beach recreation tourism is 5.19 hectares, the suitable area is 0.62 hectares, and the non-suitable area is 0.41 hectares. Meanwhile, the area of the water zone is 114.11 hectares, with land areas suitable for marine tourism [note: this phrase seems contradictory; it likely refers to the suitable area for marine tourism, which may include parts of the water zone].

The number of beach recreation visitors that can be accommodated is 162 people per day. This number is higher [incomplete thought in the original text. Likely meant: "higher than the current number of visitors" or "higher than the carrying capacity of comparable islands"].

CONCLUSION

Based on the results of the study, it can be concluded that the suitability of Sejangsan Island for beach recreation activities is categorized as suitable (S2) in zone 1, very suitable (S1) in zones 2, 3, 4, and 5, and unsuitable (TS) in zone 6. The carrying capacity of Sejangsan Island for beach recreation tourism activities is 62 per day. The carrying capacity of Gili Sejangsan for beach recreation tourism activities is 162 per day. This research suggests that further research is needed on the economic analysis of Sejangsan Island. There is a need for government regulations (PERDA) regarding the designation of Sejangsan Island as a tourist attraction.

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