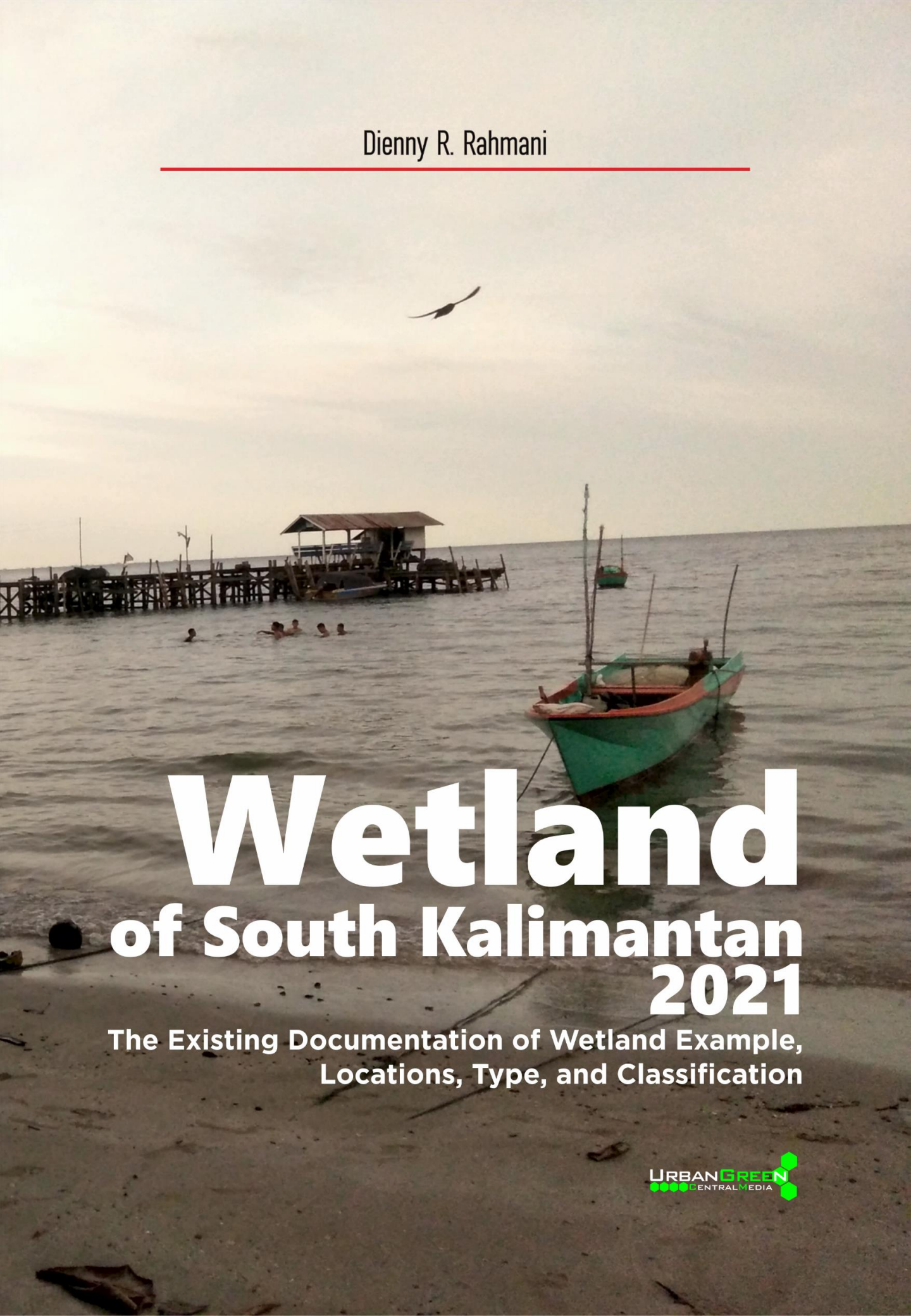
Dienny R. Rahmani



Wetland of South Kalimantan 2021

The Existing Documentation of Wetland Example, Locations, Type, and Classification

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Written By:
Dienny Redha Rahmani

Publisher:

URBAN GREEN CENTRAL MEDIA

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ISBN: 978-623-93684-2-5

Written By:
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Publisher:
CV. UrbanGreen Central Media

UrbanGreen Studio (Publisher Office) - Jl. Kayutangi II
Komp. Kejaksaan RT.19 No.45 Banjarmasin,
South Kalimantan – 70124
Website: urbangreen.co.id
Book Gallery: book.urbangreen.co.id
email: urbangreen.mail@gmail.com
Office phone/Whatsapp/Telegram: +6282252194580

User & Reader Guideline

This book provides the **GPS location** for every wetland documentation that is already **connected to Google Maps**. To access the auto-locate GPS feature, please follow the steps:

1. Go to the desired page or click the bookmark page
2. Click the "**go to map (click here)**" button.
3. If you use a mobile phone, it will be **directly addressed** to the **Google Maps App**.
4. If you use a PC or laptop, it will be **directly addressed** to **web browsers** and automatically **open Google Maps**.

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Preface

Wetlands are areas with sensitive characteristics to various kinds of activities. The problem that arises is, that its existence has not been a concern for both stakeholders and the community in developing countries such as Indonesia. South Kalimantan is one of the areas that is dominated by wetlands, which at first glance the number is shrinking every year.

This book is the result of documenting examples of the existence of wetlands in South Kalimantan which are arranged by location, type, and classification. The existence of this book is expected to be a starting point for recording the timeline of the existence and condition of wetlands from time to time. Of course, the data in this book is far from complete. Therefore, it still needs improvement.

Banjarmasin, December 2021
The Writer

Content

Introduction

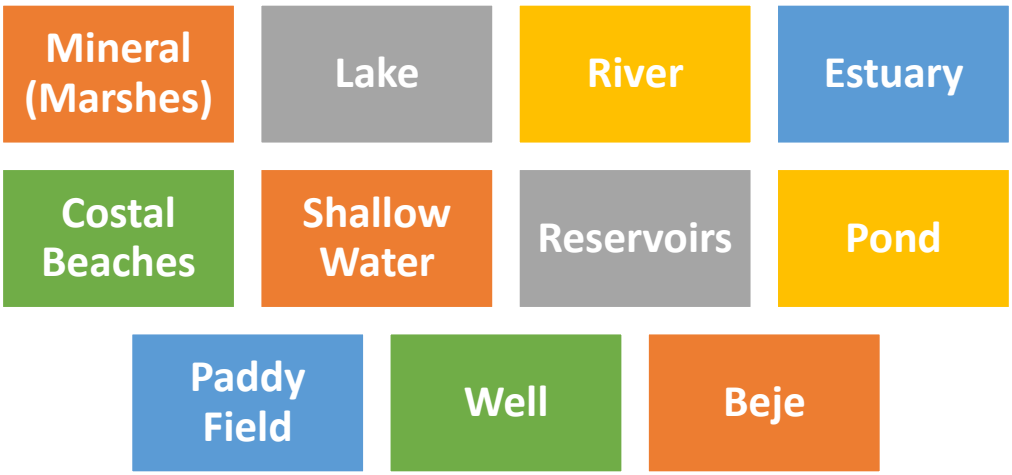
Wetlands are lands that have been covered with water for a long time and form a combination of aquatic and terrestrial ecosystems. Wetlands have unique characteristics. This type of land certainly has an ecological function. Another function is as a catchment area.

Wetlands are the “kidneys of the earth”, natural reservoirs, and “Species Banks”. Ecosystem values and their culture make a major contribution to the perpetuation and development of the world's civil society. Wetland ecosystems are an important component in the ecological safeguard network system and the foundation for sustainable development in the field of economics and humanity (Krisdianto et al., 2010).

Wetlands are generally divided into two types, There are (1) natural wetlands and (2) artificial wetlands. Natural wetlands are wetlands that have existed in the environment. Meanwhile, artificial wetlands are wetlands formed by human activities. The classification based on the 1991 Ramsar

Convention shows that there are 32 types of natural wetlands in the world.

Based on the 1991 Ramsar convention, Swamp, brackish, peatland and water areas; permanent or temporary; with stagnant or flowing water; unsalted, brackish, or salty; including areas of sea waters whose depth is not more than six meters at low tide (National Committee for Wetland Ecosystem Management, 2004).



Generally, almost all natural wetlands are watersheds, natural reservoirs, and Species Banks. So, it cannot be explored easily like dry land. In terms of utilization for community activities, it will be very difficult to use wetlands for daily life.

Wetland of Indonesia

Wetlands dominate Indonesia. This type of land is often found, especially on the islands of Sumatra and Kalimantan. Based on its area, natural wetlands on the island of Sumatra

account for 35.9% of Indonesia's total area of natural wetlands. The rest, in the Papua region, reached 24.6% and Kalimantan reached 25.5%. Kalimantan Island – Especially South Kalimantan – has very potential wetland resources (Rusmilayansari and Setyobudi, 2020).

Indonesia is one of the countries that has a fairly large area of wetlands and is estimated to reach 30.3 million ha. However, changes in land use and global climate change are a separate threat to the existence of this land (Anjani, 2020).

The condition of the land which is very vulnerable to wetlands results in the community having to adapt to survive in meeting their daily needs. People living in wetlands have widely used various activities based on local wisdom and are environmentally friendly, especially in Indonesia. These activities include transportation, agriculture, fishing, and other daily activities.

Wetland of South Kalimantan

Wetlands in Kalimantan, especially South Kalimantan, this type of land is one of the typical lands. Many of the activities of the indigenous people of South Kalimantan are carried out in wetlands. This is due to the lack of available land because wetlands dominate it. In addition, the activities of the Banjar kingdom in South Kalimantan are generally located on the banks of rivers classified as wetlands.

Kalimantan, especially South Kalimantan, is an area dominated by wetlands. The most common types found in South Kalimantan are swamps and rivers. This area, especially

the riverbanks, is currently more dominated by settlements than riverbank vegetation. One of the riverbank areas in a city in southern Kalimantan, namely Banjarmasin, which is classified as an old settlement and is densely populated, is the Kuin riverbank.

Wetland Existing Documentation

Wetlands in South Kalimantan have not been of great concern to many. This can be seen from the existing conditions which show a relatively rapid conversion of wetlands. Meanwhile, data on the type and existing conditions are not available or documented to show that the basalt exists and can be seen. Furthermore, wetlands can be used as a source of regional income if they can be explored properly.

In this book, not only visual documentation can be obtained, but also digital locations. This book is in an interactive format with an ebook concept. So that the location can be obtained by using Google Maps if you press the button available at each location.

River

The river is a form of ecosystem consisting of elements of water, aquatic life, and land which is affected by the level of the water level. The existence of the river can affect the balance of the surrounding ecosystem. Rivers play an important role in the hydrological system by ensuring the balance and availability of surface water and groundwater and maintaining air humidity in conditions that are comfortable for life.

A river is a natural water flow that plays a significant role in shaping the landscape and culture of a region (Selly, 2021; Putro, 2020). In South Kalimantan, rivers have historically been crucial for transportation and trade, connecting the hinterland with the foreland and serving as a battleground against colonial powers (Susilowati, 2011). The relationship between the people and the river is complex, with riverine urbanism being a key aspect of the region's development (Lubis, 2021).

The rivers of South Kalimantan have played a significant role in shaping the region's society and culture and its historical and economic development (Putro, 2020; Susilowati, 2011). The region's river network has been a crucial transportation infrastructure, facilitating the movement of goods and people between the hinterland and the coast (Susilowati, 2011). However, further research is needed to fully understand the morphometric characteristics and environmental health of these rivers.

Banjarmasin

Barito River - Dock of Kembang Island

go to map (click here)

Martapura River - river siring of Banjarmasin city government
(siring pemerintah kota Banjarmasin)

go to map (click here)

Martapura River - Sultan Suriansyah Hospital

go to map (click here)

Teluk Dalam River - Dr. Soeharsono (TPT) Hospital

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Trisakti Harbor - Teluk Dalam Downstream River Point

go to map (click here)

Banjar Regency

Martapura River – Martapura City

go to map (click here)

Dalam Pagar River

go to map (click here)

Lingkar Selatan Road

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Sungai Lulut

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Banjarbaru

Liang Anggang

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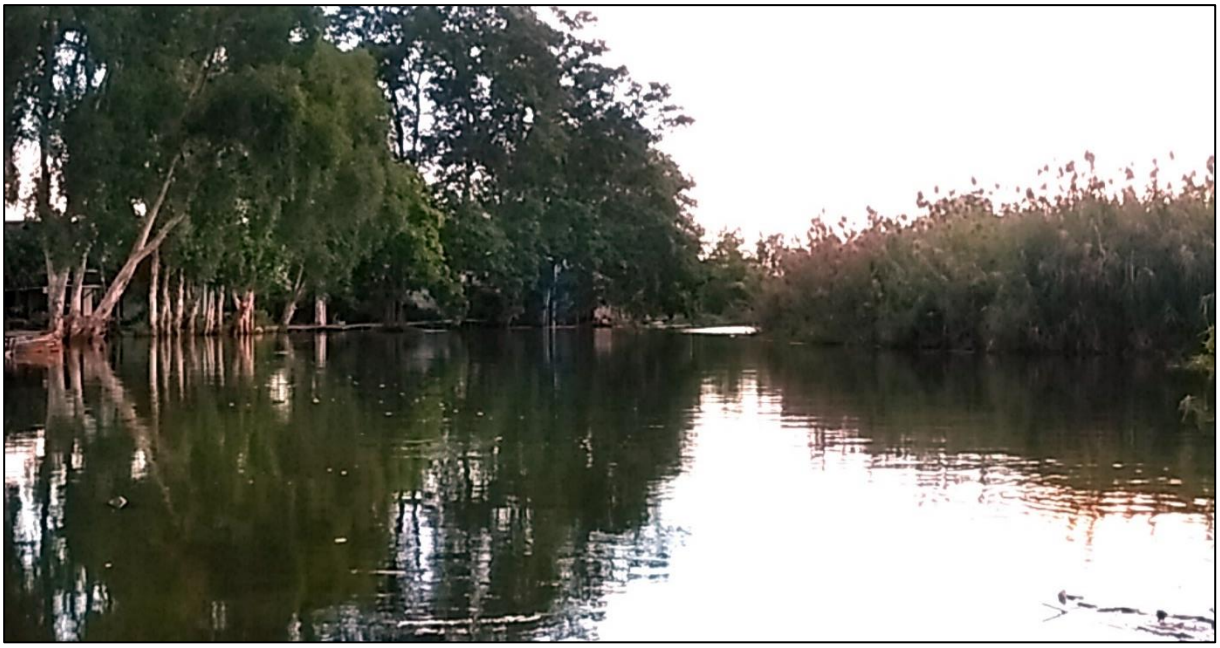

South Hulu Sungai

Amandit River – Kandangan

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Nagara River

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Central Hulu Sungai

Danau Caramin River

go to map (click here)

Kasarangan River

go to map (click here)

North Hulu Sungai

Alabio River

go to map (click here)

Tahah Laut

Bati-Bati

go to map (click here)

Handil Maluka

go to map (click here)

Kotabaru

Sungai Simpang

go to map (click here)

Barito Kuala

Semangat Karya Village

go to map (click here)

Marshes (Peatland)

Marshes or Mineral wetlands are wetlands whose soil is formed and develops from mineral materials, through weathering processes, both physically and chemically which are assisted by climatic influences and environmental topography (Zen, 2022).

Marshes, particularly those classified as peatlands, are a type of wetland characterized by waterlogged conditions and the accumulation of organic matter, primarily plant material. This slow decomposition leads to the formation of peat, a rich, carbon-dense soil that can build up over thousands of years. Marshes are prevalent in cooler, temperate regions and are dominated by herbaceous plants such as grasses, sedges, and reeds, which are well adapted to the wet conditions. Peatlands play a critical role in the global carbon cycle by storing vast amounts of carbon, thereby helping to mitigate climate change.

Marshes and peatlands are vital habitats for a diverse range of plant and animal species, offering crucial services such as water filtration, flood control, and nutrient cycling. These unique ecosystems act as natural sponges, absorbing excess rainwater and providing breeding and feeding grounds for a variety of species. It is essential to preserve and restore these wetlands to maintain their ecological functions and the benefits they provide to the environment and human societies.

Banjar Regency

House of Banjar (Bubungan Tinggi) Martapura

go to map (click here)

Lingkar Selatan

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North Hulu Sungai

Alabio

go to map (click here)

Central Hulu Sungai

Lake of Cermin (Mirror)

go to map (click here)

South Hulu Sungai

Kandangan

go to map (click here)

(Google Earth, 2021)

Nagara

go to map (click here)

(Google Earth, 2021)

Banjarbaru

Liang Anggang

go to map (click here)

Tanah Laut

Bati-Bati

go to map (click here)

Pabahanan

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Coastal (Beach & Mangrove)

The coastal area – including Beach, estuarine, and mangroves – is an estuary ecosystem where fresh water and seawater meet which are still affected by tides. Coastal areas are very productive because they are rich in nutrients from rivers and seas.

Coastal regions are characterized by their unique ecological, geological, and socio-economic attributes, where natural processes interact with human activities to shape diverse landscapes and habitats. Coastal areas are critical hubs of biodiversity, providing vital nesting, breeding, and feeding grounds for numerous species.

Coastal areas represent the dynamic and intricate interface where land and sea converge, encompassing a diverse range of ecosystems and processes. These areas extend to include estuaries, tidal flats, marshes, and adjacent land regions that experience the influence of tides and saltwater. These areas are not only of ecological significance due to their unique biodiversity but also hold immense socio-economic importance. This tipe of wetland areas often serve as centers of human activity, supporting fisheries, trade, tourism, and agriculture. Balancing the preservation of ecological integrity with sustainable development is a paramount challenge in coastal management, ensuring the well-being of both the environment and the communities reliant on these dynamic zones.

Kotabaru

Beach - Ferry Harbour – Teluk Gosong

go to map (click here)

(Google Earth, 2021)

Beach – Siring Kotabaru

go to map (click here)

Beach - Sarang Tiung

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Beach – Gunung Asun

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Beach – Gedambaan

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Beach – Speed Boat Harbour (Teluk Gosong)

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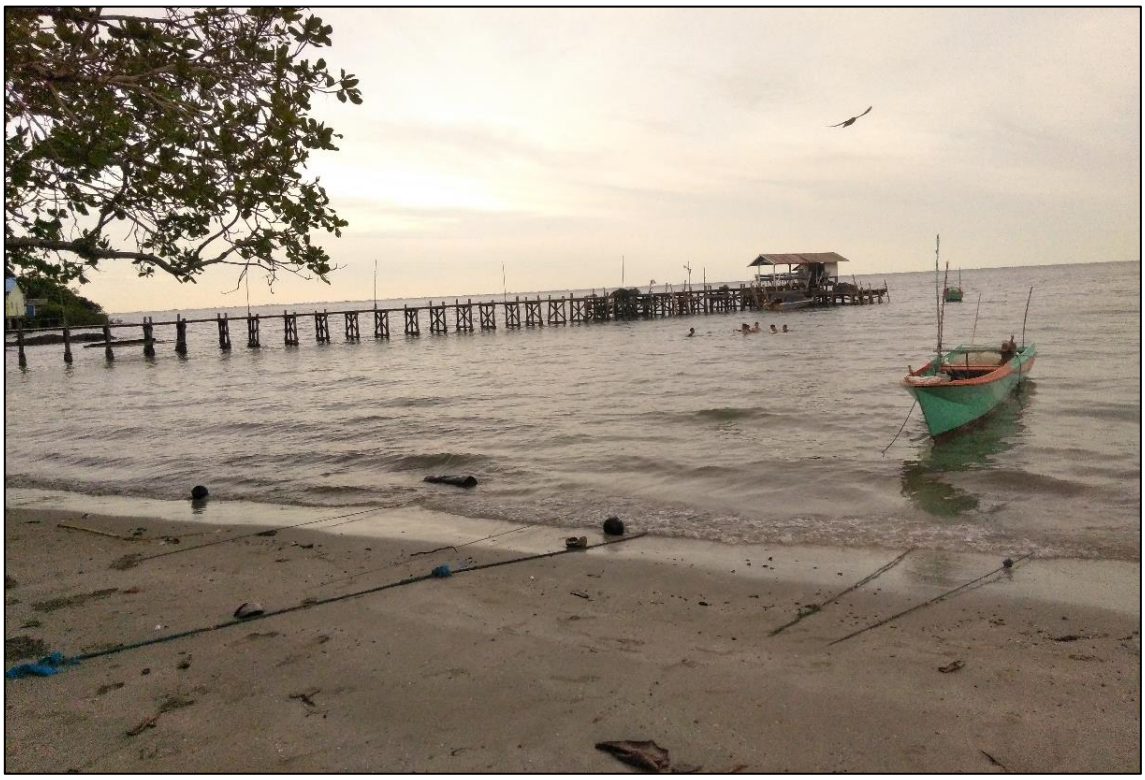

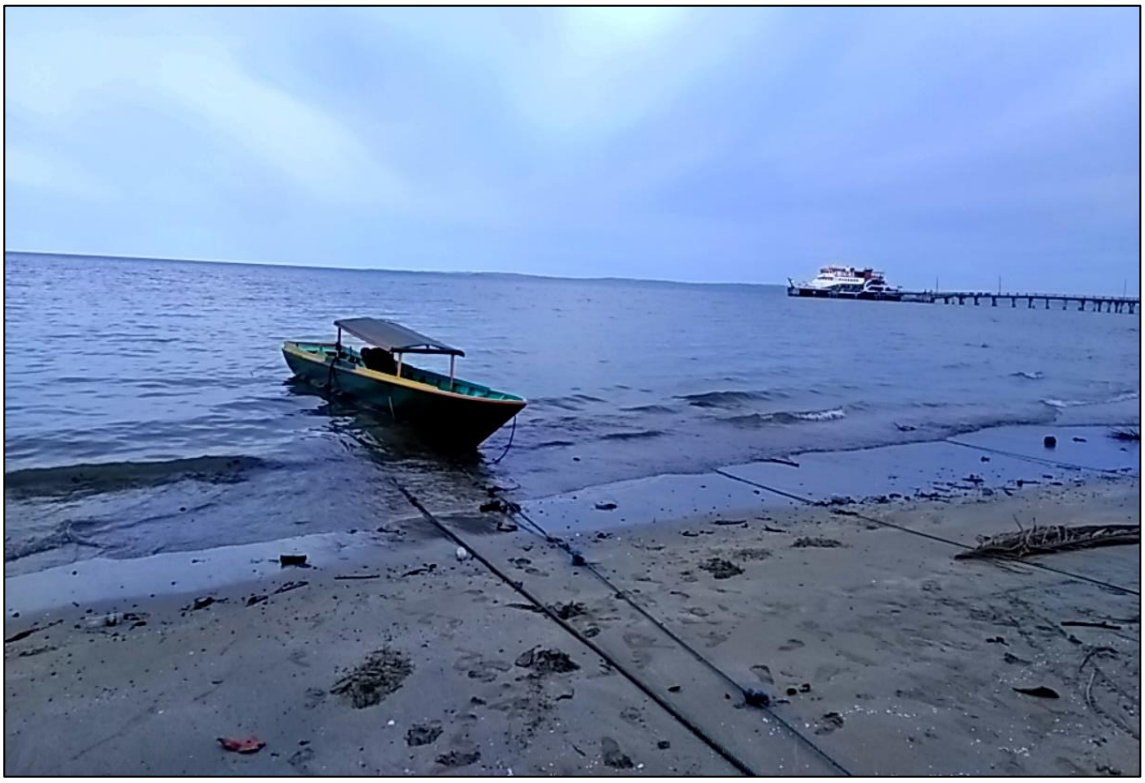

Mangrove – Tanjung Serdang Harbour

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Tanah Bumbu

Beach – Pagatan Harbour

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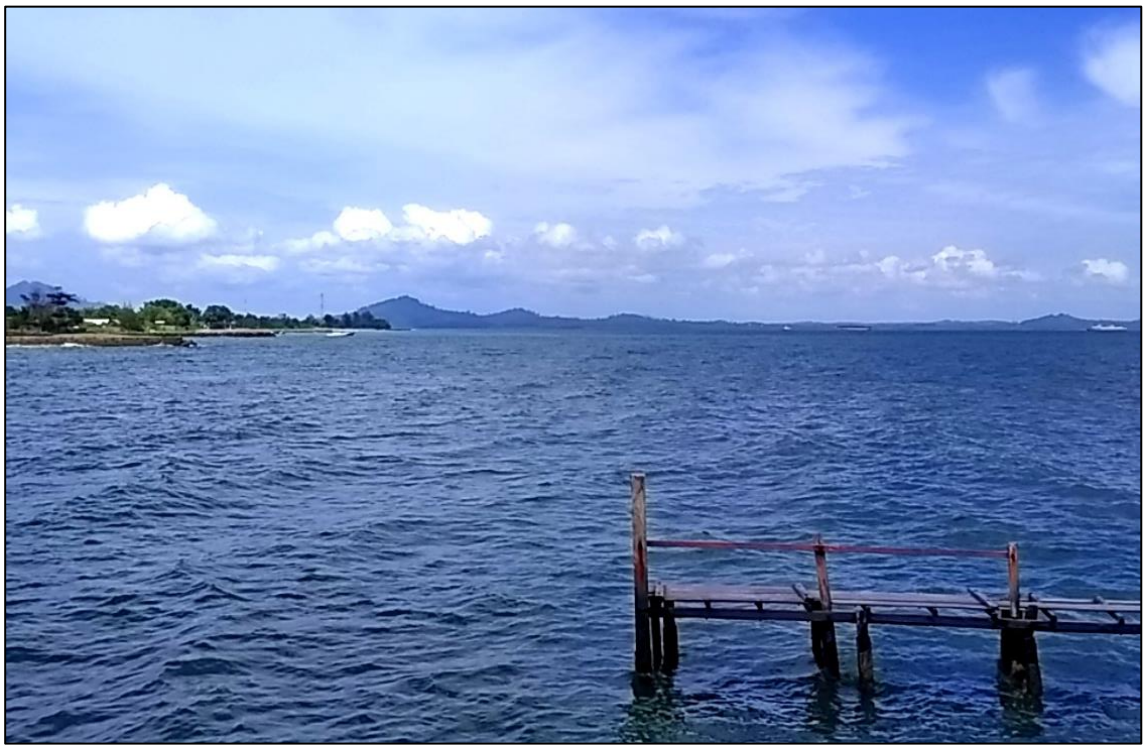

Beach – Pagatan (Near Street)

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Beach – Pagatan (Far from Street)

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Mangrove – Pagatan

go to map (click here)

Mangrove – Pagatan (Pandanus Community)

go to map (click here)

Mangrove – Pagatan (Nipah Community)

go to map (click here)

Mangrove – Pagatan (Fisherman Bridge Harbour)

go to map (click here)

(Google Earth, 2021)

Tahan Laut

Beach - Muara Asam-Asam (VillageSide)

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Beach – Muara Asam-asam (VillageEnd)

go to map (click here)

Mangrove – Muara Asam-Asam

go to map (click here)

Paddy Field

A paddy field is a flooded parcel of arable land used for growing rice and other semi-aquatic crops. These fields are most commonly found in Asia, particularly in countries such as China, India, Indonesia, and Vietnam, where rice is a staple food. Paddy fields are characterized by their unique irrigation systems, which involve the controlled flooding of fields to create an optimal growing environment for rice plants. This method allows for the cultivation of rice in areas with varying topography, including flat plains, terraces on hillsides, and river valleys. The waterlogged conditions of paddy fields help to suppress weeds, making it easier to manage crops with minimal herbicide use.

Paddy fields play a vital role in supporting biodiversity and maintaining ecological balance by providing a unique habitat for diverse aquatic and semi-aquatic species. They also contribute to nutrient cycling and soil fertility through the decomposition of organic matter. However, it is important to carefully manage water use and consider environmental impacts, such as methane emissions and downstream water quality. Sustainable practices and integrated management are essential to ensure that paddy fields continue to provide these ecological benefits while supporting food production and local economies.

Tanah Laut

Pabahanan

go to map (click here)

Jorong

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Handil Maluka Village

go to map (click here)

Tanah Bumbu

Pagatan

go to map (click here)

Kotabaru

Beachside Rice Field Tourist Attraction - Sarang Tiung

go to map (click here)

Sungai Limau Village

go to map (click here)

Teluk Mesjid Village

go to map (click here)

Kulipak Village

go to map (click here)

(Google Earth, 2021)

Central Hulu Sungai

Sungai Buluh Village

go to map (click here)

(Google Earth, 2021)

South Hulu Sungai

Binuang

go to map (click here)

(Google 2021)

Rantau

go to map (click here)

(Google Earth, 2021)

Banjar Regency

Sungai Lulut

go to map (click here)

Pematang Panjang

go to map (click here)

South Ring Road

go to map (click here)

Barito Kuala

Anjir Serapat Village

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Shallow Water

Shallow water is prevalent in coastal areas, riverbanks, lakeshores, and wetlands, fostering the growth of algae and aquatic plants. Consequently, it serves as a productive ecosystem and a nursery for a diverse range of fish and invertebrates.

Shallow waters are defined as aquatic ecosystems with a mean depth of less than 3 meters, where benthic algae and submerged macrophytes can occupy most of the lakebed under favorable light conditions (Bennion et al., 2010). These ecosystems, including rice fields and coastal lagoons, are characterized by their vulnerability to pollution and eutrophication (Fernández-Valiente and Quesada, 2004). Tidal freshwater marshes can encroach inland faster than salt marshes in response to sea-level rise, emphasizing the need to manage adjacent uplands for the future of these ecosystems.(Orson, 1996).

Shallow water habitats are incredibly important for supporting a diverse range of plant and animal species, making them vital for maintaining the delicate balance of ecosystems. These habitats also provide crucial protection by mitigating the impact of storms and floods. Additionally, they play a fundamental role in essential biogeochemical processes that are vital for the overall health of aquatic ecosystems. Conservation efforts are dedicated to safeguarding the ecological integrity of these habitats and ensuring that they continue to provide benefits to both the natural world and human communities.

Kotabaru

City Border of Kotabaru

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Sarang Tiung – Crab Monument

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Sungai Simpang

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Pond

A pond is a small body of water, often smaller than a lake, that can occur naturally or be created artificially. Ponds serve as vital habitats for a variety of aquatic life, play a significant role in the hydrological cycle, and represent essential resources for both wildlife and human populations across diverse environments.

Despite their ecological significance and abundance, ponds have historically been understudied in comparison to larger water bodies. (Hill et al., 2021). Urban ponds, encompassing garden ponds and stormwater management systems, represent frequently encountered yet frequently overlooked habitats (Hassall et al., 2016). Urban ponds may function as both ecological traps and essential breeding sites for amphibians. The outcome depends on various factors, including pond morphology, biotic and abiotic conditions, as well as the presence of pollutants.(Clevenot et al., 2018).

Ponds are dynamic ecosystems that support a wide range of interactions between living and non-living elements. They provide a habitat for diverse species, promoting biodiversity. Additionally, ponds play a crucial role in nutrient cycling, serving as breeding and resting grounds for various species, as well as providing resting places for migratory birds. Furthermore, ponds make a significant contribution to carbon sequestration, making them crucial for conservation and environmental research.

Banjar Regency

Sungai Lulut

go to map (click here)

South Hulu Sungai

Nagara

go to map (click here)

(Google Earth, 2021)

Beje

Beje is a traditional form of fishpond commonly found in the wetlands of South Kalimantan, Indonesia. These fishponds are ingeniously designed to harness the natural ebb and flow of tidal waters in swampy areas. Constructed by local communities, Beje typically consists of a series of interconnected canals and enclosures that trap fish during high tides and prevent them from escaping during low tides. This sustainable aquaculture method has been used for generations, allowing local people to cultivate fish without the need for modern technology or significant environmental disruption.

The ecology of beje ponds is influenced by various factors, including site age and the presence of fish. Newly constructed beje ponds are typically colonized by predatory beetles, while older ponds support more herbivorous species associated with specific vegetation types (Fairchild et al., 2000).

The Beje system not only sustains local livelihoods by providing a reliable source of fish but also contributes to the preservation of wetland ecosystems. Through working in harmony with natural water cycles, Beje fishponds uphold environmental well-being, fostering biodiversity, and safeguarding the natural habitat of numerous species. This traditional practice highlights a harmonious balance between human needs and environmental stewardship, underscoring the significance of indigenous knowledge in sustainable resource management.

Banjarmasin

Tatas River – FloodGate

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Tatas River – Canal

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Martapura

City Border – Irigation FloodGate

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Sekumpul Irigation

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Banjarbaru

Intake of Banjarbaru Regional Water Company

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Banjarbaru Irigation

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Banjar Regency

Intake of Pematang Panjang Regional Water Company

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Reservoir

Reservoirs are systems designed to regulate water flow and provide various services, including water supply, irrigation, and hydropower (Koutsoyiannis, 2005). The concept of a reservoir extends beyond physical structures to include ecological systems (Ashford, 2003).

A reservoir, whether natural or artificial, serves the purpose of storing water for drinking, irrigation, hydroelectric power generation, and recreational activities. Typically formed by constructing dams across rivers, these water bodies collect water from rainfall, river flow, and other sources, enabling the controlled distribution of water to meet the needs of communities and ecosystems. This management ensures a dependable water supply during dry periods and assists in regulating river flow to prevent flooding.

Reservoirs have environmental benefits, creating habitats for wildlife, supporting ecosystems, and contributing to biodiversity. However, their construction and operation must be carefully managed to minimize negative impacts on communities, land use, and natural habitats.

Climate change poses potential threats to reservoir services, including increased sedimentation, water quality degradation, and algal blooms (Yasarer and Sturm, 2016). However, effective management balances human needs with environmental protection to ensure sustainable and equitable use of water resources.

Banjar Regency

Karang Intan Dam

go to map (click here)

Kotabaru

Sungai Simpang Dam

go to map (click here)

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Author Profile

Dienny R. Rahmani

Dienny Redha Rahmani is an environmental researcher focusing on urban ecology and wetland environment studies. Has a Bachelor's educational background with a Bachelor of Science degree in the Biology Department, Faculty of Mathematics and Sciences with a study field of urban vegetation. Master's Education was continued at the Natural Resources and Environmental Management Department in urban social ecology with a Master of Science Degree. Both were at Lambung Mangkurat University, Banjarbaru.

This UrbanGreen Studio founder is a lecturer of the Environmental Science field at the Urban and Regional Planning Study Program, at the University of Muhammadiyah Banjarmasin. The author's complete data can be seen through orcid ID http://orcid.org/0000-0001-9230-8608.

Wetland of South Kalimantan 2021

The Existing Documentation of Wetland Example, Locations, Type, and Classification

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Dienny R. Rahmani
Lecturer of Environmental Science
Urban and Regional Planning Department
Universitas Muhammadiyah Banjarmasin

Publisher:
UrbanGreen Central Media
Jl. Hasan Basri - Kayutangi II Komp. Kejaksaan
RT.19 No.45, Banjarmasin, South Kalimantan - Indonesia
website: www.urbangreen.co.id

ISBN 978-623-93684-2-5 (PDF)
9 786239 368425