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Potential Diversity of Water Organism and Water Quality of The Lebak Lebung Swamp Ecosystem for Fisheries in Rantau Bayur District, Banyuasin Regency

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Abstract

The abundance and diversity of aquatic organism and fish in Lebak Lebung Kemayan and Lebak Lebung Tudakan in Rantau Bayur District and their relationship to water quality in both of Lebak Lebung were researched in November 2021. The method used in determining the sampling location was "Purposive Sampling." Direct measurements in the field and sampling were carried out at station I, station II and station III in the two waters of Lebak Lebung. The results of the water quality analysis showed that the condition of the Lebak Lebung Kemayan and Lebak Lebung Tudakan swamp waters was classified as suitable for fishing activities (Government Regulation No. 82 of 2001). The average value of plankton and benthic diversity index was 2.34 and 1,86, the average uniformity index value was 0,85 and 0.95 (high) with a dominance index of 0.14 and 0.18 which indicated that there were no dominating plankton species and benthic. The value of the nekton diversity index ranges from 1,68-1,87 (average), the uniformity index value was between 0,47-0,73 (average-high) with a dominance index of 0,21-0,49 with the criteria that there were no dominating species nekton at this location. The results of the land suitability evaluation that waters Lebak Lebung in Rantau Bayur District are very suitable for fishing activities

Keywords : Diversity, Water Quality, Plankton, Benthos, Nekton, Lebak Lebung

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1. Introduction

The habitat of lebak lebung swamp waters or floodplains is classified as productive and can function as a place to find food, spawn areas and nurseries for fish [1]; [2]. The environmental conditions of swamps, especially acid marshes are very limited so that only certain fish are able and can survive in swamp waters, but the number of aquatic plants found in lebak swamps varies.

Banyuasin Regency is an area that has a lot of Lebak Lebung swamps because it has a topography of 80% flat area in the form of tidal swamps and lebak swamps. Rawa Lebak Lebung in Banyuasin Regency is found in almost all sub-districts, namely Pulau Rimau, Rantau Bayur, Rambutan, Sumber Marga Telang, Betung, Muara Telang, Banyuasin I, Banyuasin II, Makarti Jaya, Muara Sugihan, Talang Kelapa, Tanjung Lago, Banyuasin III and the Penuguan Strait District. that the highest number of lebak lebung swamps is found in Rantau Banyur District, namely 98 spots and the lowest is in Pulau Rimau District, which is as many as 2 spots, this is due to hydrological conditions where Rantau Bayur District is a wet plain area which is strongly influenced by river flow patterns, type Climate B with an average rainfall of 2359-2521 mm/year and the type of soil is Andosol which has physical properties such as having a lower density than other soils [3]

Lebak lebung has great potential for biodiversity resources to support the agriculture and fisheries

sectors [2]. This potential makes Lebak Lebung an important value for the people who live around it. Such as social values, economic values and political values. One of the factors that influence this important value is water quality, diversity of nekton species and lebak lebung plants.

The diversity of fish species is due to variations in the habitats of tributaries. Along the tributaries, shrubs and mostly swamps were found, black fish species from the genus *Clarias* sp, *Anabas* sp, *Trichogaster* sp, *Bellontia* sp, and other species were found [3]. Blackfish is a type of fish that is resistant to deoxygenation conditions and generally survives in swampy areas and stagnant water in the forest. The diversity and abundance of nekton is also determined by the characteristics of the aquatic habitat. Habitat characteristics in rivers are strongly influenced by the speed of river flow [4]. The speed of the flow is determined by differences in the slope of the river, the presence of forests or plants along the watershed which will be associated with the presence of the animals that inhabit it [5].

2. Materials and Methods

This research uses survey method. Observations, measurements and sampling are carried out directly at a predetermined location. The method used in determining the sampling location is purposive sampling. The research was conducted in the waters of Lebak Lebung, Tebing Abang Village, Rantau Bayur District, Banyuasin Regency (Figure 1). Based on the environmental zone, 3 observation stations were set at Lebak Lebung Kemayan and Lebak Lebung Tudakan (Table 1). Fish data collection was carried out from May to November 2021 (May-June and August 2021 represented the dry month and November represented the wet month).

Measurement of physical, chemical and biological factors of water quality is carried out in-situ in the field and ex-situ in the laboratory. Plankton samples were taken using a bucket on the surface to a depth of 1 m and then filtered using a 25 m Plankton net. Benthic samples were taken using ekman grab. Fish samples were taken using traditional fishing gear, gill nets, as well as direct interviews with the winning fishermen from Lebak Lebung Kemayan and Lebak Lebung Tudakan.

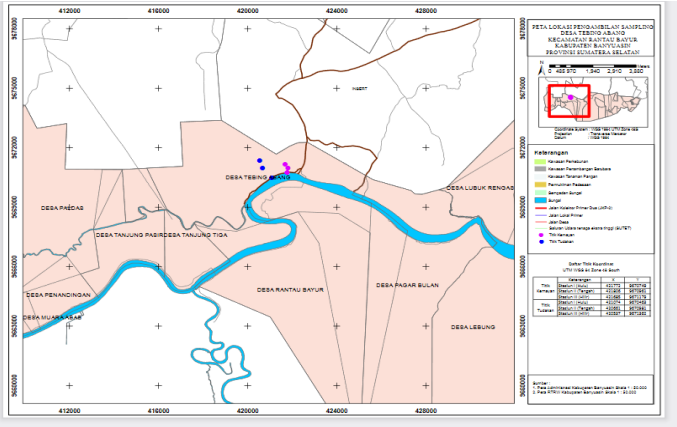

Figure 1 Research Site Map (Source: Banyusin Regency PUTR Office, 2022)

Table 1 Sampling Locations

No	Location	Coordinate Latitude (S)	Longitude (E)
Kemayan			
1	Stasion 1 (Upstream)	02°58'42.9"	104°17'45.8"
2	Stasion 2 (Middle)	02°58'36.0"	104°17'46.9"
3	Stasion 3 (Downstream)		
Tudakan			
1	Stasion 1 (Upstream)	02°58'52.2"	104°17'23.5"
2	Stasion 2 (Middle)	02°58'46.9"	104°17'14.6"
3	Stasion 3 (Downstream)	02°58'22.9"	104°17'05.8"

Data from the measurement of water quality parameters is compared with water quality standards according to the Government Regulation of the Republic of Indonesia Number 82 of 2001 with quality standards criteria for fishery activities (Class III).

Data on the number of plankton and benthos were tabulated and calculated in Microsoft Excel. The calculation of the abundance of plankton was carried out using the formula [6] as follows:

$$\mathbf{N} = \frac{Ns\ x\ va}{Vs\ x\ vc}$$

Where N = abundance of plankton per liter of sample water (ind/l); Ns = Number of Plankton in Sedgwick Rafter Counting Cell (individual). va = Volume of concentrated water in the sample bottle (ml); vs = Volume of water in Sedgwick Rafter Counting Cell (ml). vc = Volume of filtered water sample (L).

The calculation of the species diversity index using the Shannon Wiener formula is as follows:

$$\mathbf{H^1 = -\sum pi \ln pi}$$

Where H^1 = species diversity index or Shannon Index; N = total number of individuals in the community; ni = number of individuals per species. With criteria: H^1 >3 (height); 1 H^1 3 (medium); H^1 < 1 (low).

The Evenness Index is calculated using the formula [7] as follows:

$$\mathbf{E = \frac{H^1}{H^1 \, maks^1}}$$

Where, E = Evenness index; H1 max = ln S; S = Number of species in the community; H'= Shannon Wiener diversity index. Criteria: E > 0.6 (height); 0.4 < E < 0.6 (medium); and E < 0.4 (low).

The Dominance Index is calculated by the Simpson dominance index formula as follows:

$$\mathbf{C = \sum (ni/N)^2}$$

Where C = Dominance Index; ni = Number of individuals per species; N = Total number of individuals in the community. Criteria: C < 0.5 (there is no dominant species while C ≥0.5 (there is a dominating species).

Evaluation of land suitability is carried out by comparing the requirements for land use with the quality (characteristics) of the existing land, so that the land can be assessed whether it is in the appropriate class for the intended land use. Conversely, if there is one quality or characteristic of the land that is not suitable, then the land is included in the class that is not suitable [8].

3. Results and Discussion

3.1. Overview of The Research Locations

The research location was carried out in 2 (two) Lebak Lebung namely Lebak Lebung Kemayan and Lebak Lebung Tudakan where each Lebak Lebung was observed at 3 stations, namely station I (upstream), station II (middle) and station III (downstream).

a. Lebak Lebung Kemayan 1)

1) Station I (upstream)

The Station I area is located upstream of Lebak Lebung which is located on Jl. Raya Pengumbuk Dusun I, Tebing Abang Village, Rantau Bayur District with the coordinates of LS 02°58'42.9" and BT 104°17'45.8"

Figure 2 Station I (Upstream) Lebak Lebung Kemayan

The condition of water brightness during observation was 0 m (cloudy) because the measurement time was cloudy and it rained all night and high tide conditions with very fast water currents of 1.6 m/second (>1 m/second). Station I is 7 m wide and 0.6 m deep (Figure 2).

2) Station II (middle)

The Station II is located at the midpoint of Lebak Lebung with coordinates LS 02°58'36.0" and BT 104°17'46.9". The condition of water brightness is 0 m (cloudy) with mud and sandy bottom substrate, has a width of 5 m with a shallow depth of 1 meter. The current velocity at station II is categorized as fast, namely 1 m/second and there is vegetation of trees that are more than 5 m high, grass, teki and purun (Figure 3).


Figure 3 Station II (Central) Lebak Lebung Kemayan

3) Station III (downstream)

Station III is the downstream part of Lebak Lebung Kemayan which is located at the coordinates of LS: 02o58'28.9" and BT:104o17'43.0" with a fast current speed of 0.5 m/s, a depth of 0.5 m, with a substrate of mud and sand. At this station the water brightness is 0 m (cloudy), the distance from the settlement is approximately 2 km, the vegetation is dominated by grass, trees that are more than 5 m high, community gardens and rice fields (Figure 4).

Figure 4 Station III (downstream) Lebak Lebung Kemayan

b. Lebak Lebung Tudakan

1) Station I (upstream)

Station I is the upstream station of Lebak Lebung Tudakan which is located at the coordinates of LS: 02°58'52.2" and BT: 104°17'23.5" with a width of 5 meters in Lebak Lebung, a depth of 4.7 m, with moderate water currents (0.5 m/s) and water brightness 0 m (cloudy) with a basic substrate of mud and sand (figure 5).

Figure 5 DI Station (upstream) Lebak Lebung Tundakan

1) Station II (middle)

Station II is located at the coordinates of LS: 02°58'46.9" and BT: 104°17'14.6" with a width of 5 m, depth of 2.7 m, the current velocity is categorized as medium at 0.3 m/s with a water brightness value of 0, 3 m (cloudy). Conditions around station II (middle) were found with vegetation of trees more than 7 m high, shrubs, grass but no settlements were found around the station and the brightness of the water was cloudy (Figure 6)

Figure 6 DI Station (upstream) Lebak Lebung Tundakan

1) Station III (downstream)

Station III is located downstream of Lebak Lebung Tudakan which is located in hamlet I of Tebing Abang Village at coordinates LS: 02°58'22.9" and BT: 104°17'05.8" with environmental conditions found vegetation of trees more than 7 m high, grass, puzzles, and purun and shrubs and far from settlements. The waters of this station have a width of 5 m, a depth of 2.6 m, a water temperature of 26.7°C with a water brightness of 0.4 m (cloudy) and has a mud and sandy substrate (Figure 7).

Figure 7 Station I (downstream) Lebak Lebung Tudakan

Analysis of Physical, Chemical and Biological Factors

The condition of the Lebak Lebung Kemayan and Lebak Lebung Tudakan swamp waters is classi-

fied as very good and suitable for fishery activities because all physical, chemical and biological parameters in accordance to the quality standards (class III) based on quality standards for fishery activities (PP No. 82 of 2001)

Temperature

The results of temperature measurements in Lebak Lebung Kemayan waters at station I, station II and station III ranged from 24.7ºC-26.4ºC, the highest temperature at station III was 26.4ºC while the lowest temperature at station I was 24.7ºC. The temperature values at the Lebak Lebung Tudakan location (station I, station II and station III) ranged from 26.3ºC–26.7ºC, the highest temperature at the location of station III was 26.7ºC and the lowest temperature at station I was 26.3ºC. The temperature values in Lebak Lebung Kemayan and Lebak Lebung Tudakan in accordance to the quality standard based on the water quality standard class III (deviation 3) for fishery activities which have been stipulated in PP Number 82 of 2001, and according to [10] that water temperature can affect growth optimum for phytoplankton.

Total Dissolved Solid (TDS)

Based on the results of measurements of total dissolved solids (TDS) at the location of station I, station II and station III Lebak Lebung Kemayan ranging from 44.0–48.81 mg/l and in Lebak Lebung Tudakan it ranged from 40.15–44.59 mg/l. l. The highest TDS value of the 6 stations at station I Leak Lebung Kemayan was 48.8 mg/l and the lowest value at station II Lebak Lebung Tudakan was 40.15 mg/l. The TDS value of the measurement results in accordance to the quality standards that have been required in PP no. 82 of 2001 (<1000 mg/l) for fishery activities.

Current Velocity

The results of the measurement of the value of the current velocity of Lebak Lebung Kemayan ranged from 0.5 to 1.6 m/sec and Lebak and Lebung Tudakan ranged from 0 to 0.5 m/sec. The current velocity of Lebak Lebung Kemayan was categorized as fast current (0. 5 - 1 m/sec). In Lebak Lebung Tudakan, the current velocity is in the medium current category (0.25 - 0.5 m/second).

Biological Oxygen Demand (BOD_5)

The value of the BOD_5 measurement in Lebak Lebung Kemayan ranged from 1.6 to 1.99 mg/l. The highest BOD_5 value was 1.99 mg/l at station III, while the lowest was 1.6 mg/l at station II. In Lebak Lebung Tudakan, BOD5 values ranged from 1.6 to 2.02 mg/l. The highest BOD_5 is 2.02 at station II, the lowest is at station III. The BOD_5 value in the Lebak Lebung waters in accordance to the quality standard for fishery activities because the BOD_5 value is <6 mg/l based on the quality standard set by PP. 82 of 2001.

Chemical Oxygen Demand (COD)

Based on the results of the study, the COD value of Lebak Lebung Kemayan during the study ranged from 22.1 to 24.1 mg/l and the COD value in Lebak Lebung Tudakan ranged from 23.3 to 28 mg/l. Based on the quality standards that have been set by PP No. 82 of 2001, the COD value is still classified as good, not polluted and in accordance to the quality standard for fishery activities (class III) because the COD value of the research results is on average <50 mg/l.

Degree of Acidity (pH) of Water

Based on the measurement results, the pH value in Lebak Lebung Kemayan ranged from 6.7 to 6.87 and the pH value in Lebak Lebung Tudakan ranged from 6.39 to 7.15. Based on PP No. 82 of 2001 shows that the pH of the water at the research site still in accordance to the class III quality standard for fishery activities, namely pH 6-9.

Dissolved Oxygen (DO)

The results of the measurement of dissolved oxygen (DO) levels in Lebak Lebung Kemayan are still relatively high, ranging from 6.04 to 6.44 mg/l and in Lebak Lebung Tudakan are still relatively high ranging from 6.04 to 6.44 mg/l . Based on PP No. 82 of 2001 the results of the measurement of dissolved oxygen content in the waters of Lebak Lebung Kemayan and Lebak Lebung Tudakan in accordance to the quality standards.

Nitrate (NO3-N)

The measurement results show that the content of nitrate-nitrogen (NO3-N) in Lebak Lebung Kemayan and Lebak Lebung Tudakan is still low, with an average of 0.006 – 0.077 mg/l. Based on class III water quality standards for aquaculture activities that have been stipulated in PP No. 82 of 2001 the value of NO3-N levels in waters is < 20 mg/l

Total Phosphate

Phosphate values measured in Lebak Lebung Kemayan ranged from 0.187 – 0.216 mg/l with the highest value at station III being 0.216 mg/l and the lowest value at station II being 0.187 mg/l. In Lebak Lebung Tudakan the phosphate content ranged from

0.208 – 0.239 mg/l, where at station II the highest phosphate content value was 0.239 mg/l and the lowest phosphate value at station III was 0.208 mg/l. Based on the quality standard that has been set in PP No. 82 of 2001 which is < 1 mg/l or in accordance to the quality standard for aquaculture activities.

Total Coliform

The results of the measurement of biological parameters in the form of Coliform in both Lebak Lebung showed the highest number of Coliforms at station I Lebak Lebung Kemayan as many as 500 amounts/100 ml and the lowest amount at station III as many as 240 amounts/100 ml. In Lebak Lebung Tudakan, the highest number of Coliforms was at station I as much as 350 amounts/100 ml. and the lowest amount was obtained at station III, namely 240 mg/l, this result still in accordance to the quality standards set in PP No. 82 of 2001 for aquaculture activities. (class III) which is 10,000 amount/100 ml.

Analysis of Plankton, Benthos and Nekton

Plankton caught in the waters of Lebak Lebung Kemayan ranged from 15-18 species while in Lebak Lebung Tudakan ranged from 14-15 species. including *Navicula* sp, *Cyclotella* sp, *Nitzschia* sp, *Flagillaria* sp, *Diatoma* sp, *Spirogyra* sp, *Chlococcum* sp, *Ulosthrix* sp, *Isthmia* sp, *Closterium* sp, *Triceratium* sp, *Laxodes* sp, *Colcopoda* sp, *Tintinnopsis* sp, and *Phacus* sp.

The diversity index value of plankton in Lebak Lebung Kemayan ranged from 2.26 to 2.43 and in Lebak Lebung Tudakan ranged from 2.22 to 2.42 and both were categorized as medium species diversity (Figure 8).

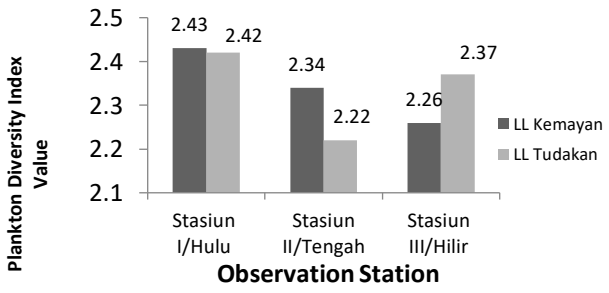

Figure 8 Plankton Diversity Index Value

The evenness index of a community is influenced by the distribution of the number of individuals of each species in a community. The uniformity index value at the study site was high with the evenness index value (E) > 0.5 where the evenness index value in Lebak Lebung Kemayan ranged from 0.81 to 0.90 while in Lebak Lebung Tudakan it ranged from 0.84 to 0.88 (Figure 9)

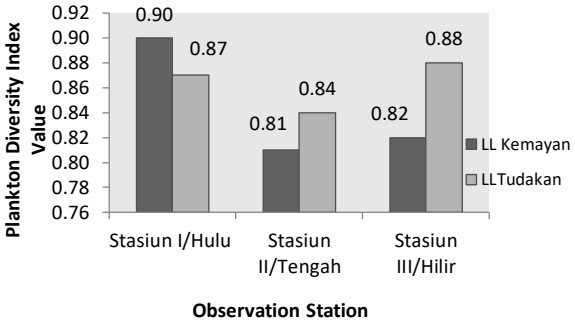

Figure 9 Plankton Evenness Index Value

Overall the average value of the dominance index (C) at the study site is < 0.5 or close to 0, this indicates that there is no dominant species in the waters of this Lebak Lebung, this is in accordance with Simpson's opinion [11], that if the dominance index value is close to 0 it means that there is no dominant species (Figure 10).

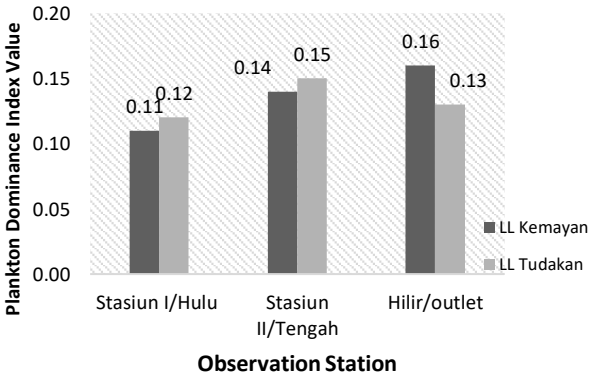

Figure 10 Plankton Dominance Index Value

The results of this research found four (4) benthic classes, namely Oligochaeta class, Annelida class, Mollusca class and Insecta class. Class Oligochaeta consists of species *Limnodrillus* sp, *Tubifex* sp, and *Lumbricullus* sp. The Annelida class consists of species *Annelida* sp, class *Mollusca* consists of species *Filopalidina Javanica*, *Pila ampullacea* and *Melanoides tuberculata* while in class Insecta consists of species *Chironomus* sp, *Ghompus* sp and *Phtiraptera* sp.

The highest benthic diversity index value was at station III in Lebak Lebung Kemayan with a value of 1.97, while the lowest was at station I Lebak Lebung Kemayan, namely 1.67 in the medium category because the index value was in the range of 1 H¹ 3

(Fig. 11).

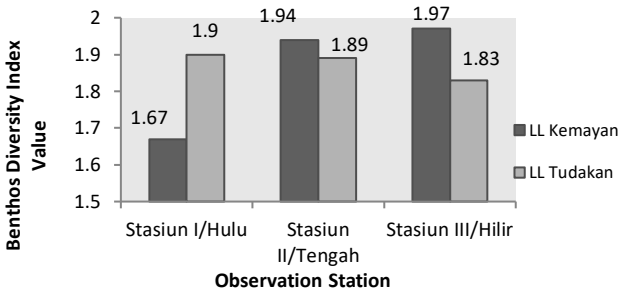

Figure 11 Benthos Diversity Index Value

The highest evenness index value at Lebak Lebung Tudakan at station II was 0.97, while the lowest value at station III at Lebak Lebung Tudakan was 0.88. While in Lebak Lebung Kemayan, the highest evenness index value was at station III of 0.95 and the lowest value was at stations I and II with the same value of 0.93. This shows that the uniformity index value at both research sites is categorized as high (E > 0.6) (Figure 12).

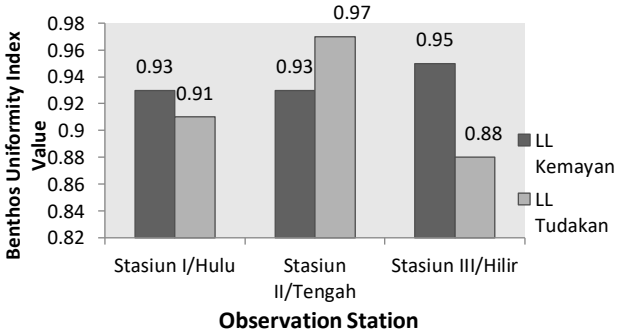

Figure 12 Benthos Uniformity Index Value

Dominance is expressed as the species richness of a community and the balance of the number of individuals of each species. Based on the results of the measurement of the dominance index value in the waters of Lebak Lebung Kemayan and Lebak Lebung Tudakan close to 0 or C < 0.5, this indicates that there is no dominant species in the two research locations significantly, environmental conditions are stable and ecological pressures in the waters. This result is in accordance with research by [11] that the lower the dominance index indicates that each species has a balanced mastery ability and its sustainability can be maintained. The dominance index value is presented in Figure 13.

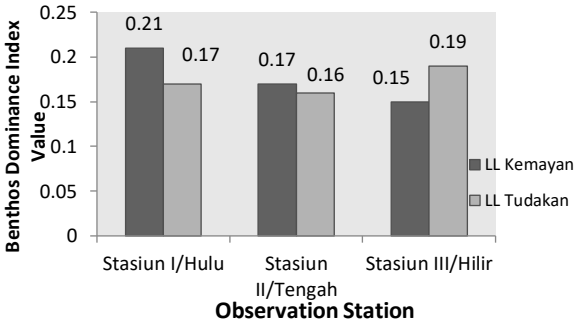

Figure 13 Benthos Dominance Index Value

Nekton Analysis

Fish catches in November 2021 (wet month) in the waters of Lebak Lebung Kemayan and Lebak Lebung Tudakan found 4 fish species consisting of 3 orders, 4 families, 4 genera and 4 species. The dominant fish species found in almost every station were from the Helostomotidae family, namely *Helostoma temminckii* (5), followed by the Clariidae family, namely *Clarias batrachus* (1), the Mastacembelidae family, namely *Mastacembelus erythrotaenia* (1), and the Osphronemidae family, namely *Belontia Hasselti* (1). The relatively small number of catches is influenced by November being the rainy season or wet month.

The catch of fish in the dry month at each station in the two waters of Lebak Lebung found 15 species of fish consisting of 7 orders, 11 families, 13 genera and 15 species. The dominant fish species were Thryssa harmiltonii (10,600), followed by *Helostoma temminckii* (4,050), *Ompok hypophthalmus* (3,800), *Trichogaster pectoralis* (1,600), *Trichopodus leeri* (1,500), *Anabas testudineus* (1,440), *Mystus mumurus* (1,080), *Osteochilus basseltinilem* (750), *Channa striata* (520), *Clarias batrachus* (378), *Channa micropeltes* (109), *Oxyeleotris marmorata* (80), *Notopterus chitala* (35), *Wallago attu* (14), and *Osphronemus septemfasciatus* (5).

The diversity index value of nekton in the two waters of Lebak Lebung is in the medium category, which ranges from 1.42 to 0.12, this result indicates a moderate community stability condition with species diversity and the number of individuals of each species being relatively evenly distributed. This is in accordance with the opinion of [12] stated that a community is said to have high species diversity if there are many species with a relatively even number of individuals.

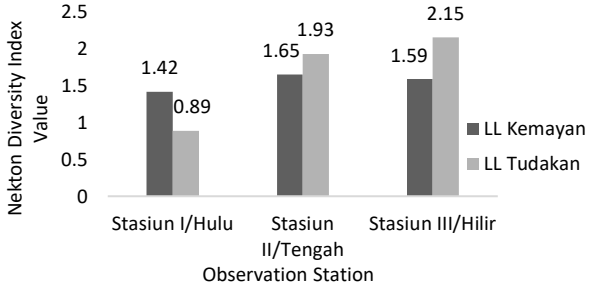

Figure 14 Nekton Diversity Index Value

The value of the nekton evenness index in Lebak Lebung Kemayan at station II and station III was 0.66 and 0.64 where the value of E > 0.6 with the criteria for evenness of community height was stable, while at station I it was 0.57 with the criteria for medium species eve. unstable community. In Lebak Lebung Tudakan, the evenness index values at stations II and II were 0.75 and 0.81 with the criteria for high species evenness of stable communities and for station I obtained values of 0.34 with low species evenness criteria of depressed communities (E < 0.4). The value of the nekton evenness index is presented in Figure 15.

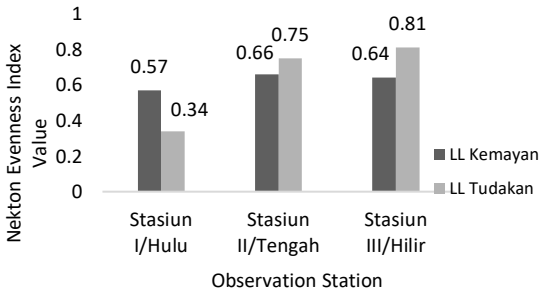

Figure 15 Nekton Evenness Index Value

Based on Figure 16 shows that the value of the nekton dominance index at the two research sites on average there is no dominant species because the dominance index value is smaller than 0.6, only at station I Lebak Lebung Tudakan has a value of 0.66 (C > 0.6) which indicates that at this station there is a dominant species. This is in accordance with the opinion of Krebs, 1989 which states that the lower the evenness index value of a community, the tendency for a species to dominate the community because it is suspected that the distribution of the number of individuals for each species is not the same and vice versa, the higher the evenness value of a community, there is no dominant species.

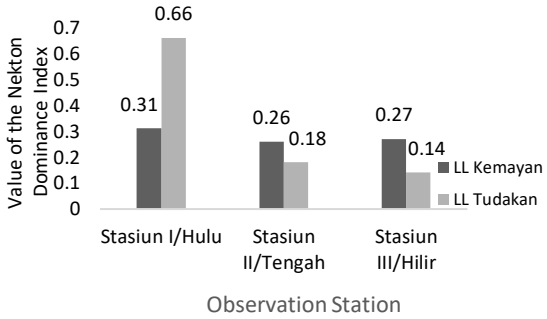

Figure 16 Value of the Nekton Dominance Index

Land Suitability Evaluation

Based on the results of the analysis of the diversity of aquatic biota (plankton and benthic) at stations I, II and II of Lebak Lebung in Tebing Abang Village, Rantau Bayur District, it can be concluded that it is suitable for natural fishing activities. This is supported by the observation that phytoplankton are dominated by Bachilariaophyceae and Chlorohyceae classes which are indicators that the waters of Lebak Lebung are still very good. These phytoplankton also act as primary producers and play a very important role in ensuring natural food for primary consumers in the form of fish larvae and other zooplankton that live in the Lebak Lebung aquatic ecosystem [13].

The results of the analysis of the quality of swamp water at each research station showed that all physical, chemical and biological parameters in accordance to the quality standards set by the Indonesian Government Regulation Number 82 of 2001 concerning Water Quality Management and Class III Water Pollution Control for fishery activities.

The results of the analysis of the potential of nekton in the Lebak Lebung waters, Rantau Bayur District, showed moderate species diversity, high nekton evenness and no dominant nekton species, another basic thing that became an important concern for researchers was that groups of black fish and white fish were also found in these waters. betook fish, catfish, sepat fish and lais fish, this is in accordance with the opinion of [14] which states that based on the living habitat of fish in flooded swamp waters, it is known that there are groups of fish that usually live in swamp waters called 'black fishes' or groups of black fish. and there is a group of fish that usually live in river waters called 'white fishes' or groups of white fish. Groups of black fish include tain kan betok (*Anabas testudineus*), sepat siam (*Trichogaster pectoratis*). fishpond (*Helostoma temmincki*), cork (*Channa striata*), catfish (*Clarias* sp), and others that generally have additional

breathing apparatus. While the white fish (white frshes) include belida (*Notopterus* sp), catfish (*Pangasius* sp), jams (*Ompok hypophthalmus*).

Fish production and environmental suitability for natural fishing activities almost entirely depend on the production of plankton and the condition of the water quality in which they live [15]. If the water quality does not match what is needed, the survival of the fish will be disrupted [16]. Lebak Lebung waters in Rantau Bayur District have excellent natural fishery waters that can support the survival and growth of fish communities. Control of the type and number of aquatic plants is one way to manage aquatic ecosystems [17]. If aquatic plants that cover 10-20% of the water area are classified as good for fisheries [16], this is also in accordance with [6].

4. Conclusion

The results of this research can be concluded as follows:

1. The condition of the swamp waters of Lebak Lebung Kemayan and Lebak Lebung Tudakan are classified as very good and suitable for use for fishing activities based on quality standards for fishery activities (PP No. 82 of 2001).
2. Plankton caught in the waters of Lebak Lebung Kemayan ranged from 15-18 species, while in Lebak Lebung Tudakan ranged from 14-15 species. The range of the plankton diversity index value 2.36.
3. In the swamp waters of Lebak Lebung Kemayan and Lebak Lebung Tudakan, four (4) benthic classes were found, namely the Oligochaeta class, the Annelida class, the Mollusca class and the Insecta class. The range of diversity index value is 1.87 with moderate diversity criteria. The environmental conditions are stable and the ecological pressure in the waters is low.
4. Nekton caught in the swamp waters of Lebak Lebung Kemayan were 12 species. The value of the nekton diversity index in the two waters of Lebak Lebung entered the medium criteria.
5. The evaluation of land suitability, the waters of Lebak Lebung in the District of Rantau Bayur are very suitable for natural aquaculture activities.

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