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The environmentally friendly approach for measuring the geographical capability of an ocean reef

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ABSTRACT

Probiotic products were seen as an alternative to antibiotic use in freshwater murrel fish farming. Probiotic microorganisms such as bacteria, yeast and fungi provide several benefits to fish such as growth promotion, pathogen suppression and improvement of food digestion, poor water quality and stress tolerance agents, and reproduction enhancement. As a result, the purpose of this review is to identify the major trends in probiotics in freshwater murrel fishes. In probiotic research and commercial uses for freshwater murrel fishes, strategies for including probiotic strains in fish feed or pellets to allow optimal survival of the strains when they reach the fish Gastrointestinal Tract (GIT) are critical.

Keywords: Probiotic; Yeast; GIT; Microorganisms

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INTRODUCTION

Our analysis reveals that human gravity was the strongest predictorof fish biomass. Fish biomassconsistently declined along a human gravity gradient, a trend particularly evident at the nation/state scale. However, thisrelationship can vary by management type. Specifically, we found that biomass in reserves demonstrateda flatter (but still negative) relationship with gravity compared withopenly fished and restricted areas. Interestingly, this differential slope between reserves and fished areas wasduetoa strong interaction between gravity and reserve age such that olderreserves contributed more to biomass in high-gravity situations than in low gravity ones. This is likely due to fish stocks at high gravity sites being heavily depleted and requiring decades to recover, whereas low gravity sites would likely require lesstime to reach unfished biomass levels. Thus, given average reserveage in our sample biomass in reserves did not decline asrapidly with gravity compared with fished and restricted areas [1]. In the highest gravity locations, modeled fish biomass inmarine reserves was approximately five times higher than in fishedareas (270 kg/ha compared with 56 kg/ha). At the reefsite scale, there was considerable variability in reef fish biomass, particularly at low gravity. For example, at the lowest gravity locations, biomass levels in reserves spanned more than three orders of magnitude. Importantly, there was neverextremely high biomass encountered in high gravity locations. Ourestimate of target fish biomass included top predators. As a supplemental analysis, we also examined target fish biomass with the biomass of top predators excluded, which displays a similar trend, but with lower fish biomass in reserves at low gravity comparedwith when top predators are included. A key finding from our study is that top predators were encountered on only 28% of our reef sites, but as gravity increases, theprobability of encountering top predator on tropical coral reefsdropped to almost zero (<0.005), regardless of management. The probability of encountering top predators was strongly relatedto gravity and the type of management in place, as well as samplingmethodology and area surveyed. Atlow gravity, the probability of encountering a top predator washighest in marine reserves (0.59) and lowest in fished areas (0.14), when controlling for sampling and other environmental and socialdrivers [2].

The islands are geographically isolated, have unique ecosystems and fragile natural environments, making high density exploration and development irreversible in the short term. Sustainable development and protection of islands and surrounding marine areas require rational allocation of spatial resources. Marine spatial planning of the waters surrounding islands can standardize the protection and use of islands and promote coordination between ecological security and economic development. Marine spatial adequacy assessment is

an important component of marine spatial planning for the surrounding waters. This is a relatively important issue that has not been well studied for the Chinese islands. Issues still remain in assessing the spatial suitability of islands for oceans, such as insufficient theoretical support and lack of detailed technical information [3].

China's territorial and spatial planning is currently in the process of formation and in the process, coastal zone planning has become a special planning project with binding and guiding effects on the sea. Because the spatial and ecological environmental characteristics of islands are of particular importance in spatial planning, this study proposed a method to assess the marine spatial suitability of islands. We evaluated the spatial suitability of the sea area around the Islands and provided useful reference materials for land sea coordination and sustainable development of island space [4].

LITERATURE REVIEW

Due to the special nature of the islands, the waters around the islands are different from other waters and pose new challenges in assessing oceanic spatial suitability. It is necessary to propose a unique evaluation method according to the characteristics of the islands. The fields of sustainable development and land sea linkages have been extensively studied in recent years by experts and scholars, including their implications [5].

Land sea coordination or sustainable development strategies and frameworks applied to coastal cities, ports, spatial planning and related metrics. As distinct spatial elements of land and sea, research on the land-sea integration of islands, especially inhabited islands, has focused on the opportunities and challenges associated with the management of integrated land-sea networks and the ecological protection of islands. Conceptual theory and scope studies on sustainable development are gradually extended to island classification management measures and sea suitability assessments. Based on sustainable development, for example, the confidential development and management of islands was considered from the point of view of ecological suitability. Using the example of tanzhou island in Guangxi Zhuang autonomous region, the traffic data and the inventory of ecological assets were comprehensively reviewed to create an ecological asset evaluation index system for land-sea adjustment. From the perspective of the concept and connotation of land-sea coordination and sustainable development, a strategic proposal for land sea coordination development in the Zhoushan archipelago new area was proposed [6].

Some scientists have evaluated the suitability of seas and oceans from various aspects, including ecological and economic aspects. For example, the propriety of exploration and development of uninhabited islands was evaluated from the perspective of the importance of environmental protection and the potential for economic development. Based on the comprehensive evaluation and development of ecology, economy and industry, proposed zoning for island exploration and development. To create the evaluation index system, 12 indicators were selected based on geographic location, topography and topography, protection and development status. Zoning and suitability assessment of island areas using GIS. The functions of coastal areas are zoned according to suitability for spatial development. A suitability assessment system for "ecology, production and habitat" in the southwestern part of Guangxi and Beiwan has been developed, dividing the sea and land into "three chambers" [7].

The above studies enrich the theoretical implications and applications of 'dual assessment', 'assessment of suitability' and 'assessment of spatial suitability of oceans', from suitability assessment of land to oceans and even islands. Steadily expanding to this study differs from the work of the scientists mentioned above by focusing more on the spatial ocean suitability of islands and creating a suitability assessment model to assess the spatial suitability of water bodies around islands [8].

Appropriate marine ecosystem areas emphasize the regulatory effects of natural ecosystems. Areas that need to protect the natural ecology should be protected in the form of nature reserves, scenic spots, marine parks, etc., mainly in the eastern waters under the jurisdiction of County and the coastal waters of Dannan Bay and Haitan Bay distributed in Shanqi Bay, Yangtze River Bay, Lianyang, Nanhai city. has excellent natural resources and environmental conditions, and unique natural and cultural resources. The 70 km long fine sandy beach, harbor and coastline are wonderful. Sea eroded landscapes are also widespread throughout the region, with a large number of uninhabited islands containing rich marine and island resources. Attractions include Haitan Scenic area and Islands national forest park. However, most of the ecologically suitable areas are located in areas or islands far from cities, with poor infrastructure, incomplete tourism elements, weak port transport capacity and seasonal natural factors. There are problems such as being susceptible to the effects of natural disasters and the fragility of the ecological environment [9].

Results of the suitability zoning

In the three types of space determination method, the evaluation results of the three types of spaces were superimposed to obtain the results. The suitable area of the marine ecological space is 1847.58 square kilometers, accounting for 64.47%, concentrated in the southeastern waters far away from the islands. The area suitable for marine aquaculture covers 964.58 square kilometers, accounting for 33.64% of the total area, covering the entire main island. The land suitable for offshore construction was 60.87 square kilometers (1.89%) around the main island. According to the ecological protection area and marine ecological red line of comprehensive pilot zone marine functional zoning (2013-2020), the ecological protection red line is defined. The red line of ecological protection refers to areas with particularly important functions that require strict and mandatory protection within the framework of ecological space and development activities that significantly affect the functioning of marine ecosystems are prohibited or failing to meet marine ecosystem targets. Ecology environmental protection measures are strictly limited [10].

CONCLUSION

The suitable land area of the offshore construction area is 60.84 square kilometers. It was separated by "two spaces and a red line". Among them, the sea area used was 1,847.58 square kilometers, accounting for 64.3% of the total sea area and the sea area used was 1,025.42 square kilometers, accounting for 35.7%. Overall, the marine ecological space area is located in the southeastern waters of the Islands and the marine utilization space is located around the Islands, which can meet the exploration and development needs of. Different islands have different ecosystems and resource rich environments. Regarding evaluation techniques and methods, improve evaluation indicators, evaluation contents and technical methods to objectively reflect island resources and

ecological characteristics and provide scientific basis for zoning and sustainable development. At the level of zoning methods, the relationship between suitability and adaptability should be further considered. Considering the difference between the current background conditions and the future background conditions that will change with the development of the economy and society, we propose a suitability management strategy that can dynamically adjust zoning, and promote the sustainable development of island space and island resources.

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