STUDY OF ACOUSTIC RESONANCE EFFECT OF SEAGRASS BED IN DONGSHA ATOLL

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Abstract: Seagrass plays an extremely important role in the marine environment. It can provide habitats for marine life and foraging in the coastal sea, convert carbon dioxide from the environment into oxygen by photosynthesis, and also intercept suspended particles in the water layer through dense blades to increase the transparency and slow down the wave trend. Seagrass beds can be used to balance the current flow in the coastal waters and also protect the coast from direct storm surges so that the seagrass meadow is the best natural barrier.

Dongsha Atoll is located in the north of the South China Sea, which is between 20°35'~47' north latitude and 116°40'~55' east longitude. The main land, Dongsha Island, is located on the west side of the atoll. It is the only land always above the water in the Dongsha atoll. The surrounding water cover a large area of seagrass, which is the largest seagrass meadow in the country, with an area of about 1,185 hectares, that is about 20 times more than the total number of seagrass beds in other parts of Taiwan.

Acoustic propagation experiments were conducted to study the acoustic effects of seagrass beds. The experimental field of this study is chosen at Dongsha's seagrass region. The experiment is mainly divided into two part, including the active acoustic experiment of seagrass bed for bubble resonance (SBR), and the active sonar transmission of seagrass bed comparison to the sandy sediment(AST). During the experiments, stable acoustic signals was transmitted and propagated through the seagrass beds and was received by hydrophone to measure the data in the field. The measurement and analysis results show that the bubble resonance frequency band mainly falls on 5000 Hz ,and the data also shows there is an energy attenuation from 7 to 25 decilbel. Also, the data of AST tell us the seagrass field gives more attenuation than sandy field,the maximum energy loss observed can be up to 60 dB caused by the seagrass bed while comparing with the propagation on sand bottom. [This research is funded by the]

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