

Use Case: Monitoring Carbon Sequestration in Seaweed Habitat

Problem

A team of researchers from Korea's Kunsan National University, the Korea Marine Environment & Ecology Research Institute, and the East Sea Research Institute at the Korea Institute of Ocean Science & Technology (KIOST) set out to evaluate carbon sequestration capacity in response to metabolic change of the macroalgal community in the East Sea of Korea, as well as determine the effect of barren ground in seaweed-dominated habitat on carbon sequestration capacity. Because of the inherent danger associated with scuba diving and the limited amount of field data that divers can collect through direct seawater sampling, the research team recognized the need to deploy data loggers at the study's in situ incubation chambers in order to obtain adequate, meaningful data.



Solution

The team selected the [HOBO Dissolved Oxygen data logger \(U26-001\)](#), an affordable, high-performance monitoring device with 0.2 mg/L accuracy, and the [HOBO pH/Temperature data logger \(MX2501\)](#), featuring Bluetooth technology for easy setup, data download, and guided calibration with the free [HOBObconnect app](#). The data loggers were deployed in two flow-through benthic incubation chambers to evaluate macroalgal primary production and carbon sequestration capacity.

Results

Because of the reliable, accurate, and plentiful data the HOBO loggers provide, the research team relies on scuba divers only for initial deployment of the loggers and periodic data downloads. Since the data is acquired regularly, the team can use the data to establish a protocol for calculating productivity (i.e., carbon sequestration capacity). And because the loggers record data frequently, at one-minute intervals, they provide enough data to help the team understand the dynamics of metabolism of macroalgae. For example, the diel rhythm of macroalgae during the daytime can be understood, as well as phenomena such as deterioration in carbon removal potential due to photo-inhibition in the afternoon.

I've used HOBO monitoring products for more than 15 years, and the dissolved oxygen loggers and Bluetooth pH loggers have helped me to lead South Korea in the field of seaweed climate change research.

*- Dr. Ju-Hyoung Kim, Associate Professor
Kunsan National University*

Products Used

Product	How it was used
HOBO U26-001 Dissolved Oxygen Data Logger	to monitor DO levels in benthic incubation chambers
HOBO MX2501 pH/Temp Data Logger	to monitor pH and temperature in benthic incubation chambers
HOBOconnect mobile app	to configure HOBO MX2501 loggers and download data wirelessly

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