Kueishan Island is located in the northeast coast of Taiwan. – (Picture credit - Taiwan Tourism Bureau)

Professor Chan (left) and Dr Chen (right) during a discussion on the biodiversity of marine invertebrates.

UMS, Taiwan university conduct research on meiobenthos

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KOTA KINABALU: The Borneo Marine Research Institute (BMRI) of Universiti Malaysia Sabah (UMS) together with the National Taiwan Ocean University (NTOU) are conducting a thorough research on meiobenthos in hydrothermal vents near Kueishan Island, Taiwan.

Meiobenthos, a relatively small and unnoticeable marine organism, plays a vital role as bioindicators in the monitoring of the marine ecosystems. They lie deep in the dark ocean and have hitherto remained unexplored and are life forms that can make an enormous impact on human life.

Taking this into crucial consideration, BMRI together with NTOU are conducting a thorough research on meiobenthos in hydrothermal vents near Kueishan Island.

Hydrothermal vents were first discovered in 1977. These fissures on the ocean floor spew out fiercely hot, mineral-rich water, yet somehow diverse ecosystems are able to thrive in these hostile conditions.

According to Dr Chen Cheng Ann, head of the Marine Science Programme, Faculty of Science and Natural Resources in UMS, the research is imperative not only to protect and maintain the ocean's rich biological marine life, but also in sustaining a healthy conducive planet as a whole.

"Free-living nematodes are often overlooked and go unnoticed regardless of their high-valued applications. We know that nematodes directly benefit humanity and also enhance our understanding of the earth's biodiversity," he said.

He explained that the nematodes are significant in benthic ecosystems such as the production of detrital organic matter and recycling of nutrients that help enrich the coastal waters, which support marine benthic production.

"The ability of vent organisms to survive and thrive in such extreme pressures and temperatures and in the presence of toxic mineral plumes is fascinating.

"Nematodes can survive in submarine hydrothermal vents with high temperatures, high pH and toxic trace metal. However, its ecological distribution in submarine hydrothermal vents receives little attention," he said.

Dr Chen further explained that meiobenthic organisms such as nematodes have strong environmental adaptability, which make them perfect candidates in quantifying the environmental status of a specific area.

He added that most research is limited to deep-sea hydrothermal vents compared to shallow submarine hydrothermal vents.

"We need to gain a better understanding of shallow-water marine biodiversity; in determining the richness of the meiofauna, which serves as an important part in the marine ecosystem with full infinite potential for future applications," he said.

Professor Tin-Yam Chan, director of the Center of Excellence for the Oceans in NTOU, said that hydrothermal vents may offer valuable marine resources in the future.

"There is a lot that has yet to be discovered especially when you have unusual and potentially useful capabilities organisms that live in extreme environments. The relative stability of populations, the short turnover rate, and the generally high tolerance to ecosystem alterations make nematodes particularly suitable as bioindicators.

"These attributes have made nematodes as an indicator for assessing the ecological quality of marine ecosystems," he said.

Chan said that it is essential to monitor the quality of the environment and stated that nematodes are an ideal medium for the research.

"I believe this strategic research will contribute to society in many ways. The most important contribution in this regard is in research and education. We have learned significant and unique discovery throughout these phases," he said.