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Deep Sea Creatrues Collected for Studies

Sea animals that live deep in the ocean near hot water vents, and rarely brought to the surface for study, were recently brought to University of California, Santa Barbara by James Childress, a professor of biology and an authority on deep-sea organisms.

Fifteen scarlet-colored tube worms, 12 white crabs, and 30 yellow mussels are now on the campus in tanks that simulate the pressure of the deep ocean. Although tube worms have been collected before, this marks the first time that deep sea crabs and mussels have been brought back alive from the deep.

The animals were taken from an area called the East Pacific Rise, which is 400 miles south of Manzanilla, Mexico. They were living at a depth of a mile and a half below the surface.

At that depth, the ocean is very dark and cold and the worms and mussels survive by chemosynthesis. They convert hydrogen sulfide from the vents as an energy source (instead of light) for the synthesis of proteins and carbohydrates. In the tanks they are being provided with hydrogen sulfide, which is poisonous to most forms of life. The crabs are eating pieces of squid.

The animals, which have been on campus for about six weeks, are being studied to understand their physiology and what conditions they need to stay alive.

Currently they are being kept at seven degrees centigrade. The deep sea where they lived is about two degrees centigrade, or just above freezing. At UC Santa Barbara, they are being kept in special tanks that provide 3,000 pounds of pressure. Scientists can view the animals through small portholes.

To collect the animals, Childress went down to the deep sea vents in a three-person submersible called Alvin. The deep sea vents are like hot springs, and are located in areas where the Earth's tectonic plates are moving and there is volcanic activity. Rock is fractured and water seeps down, is changed chemically, and then shoots up through vents of various sizes.

Using a mechanical arm, the pilot collected the animals and put them in a special plastic box, which kept the water cool, insulating the animals from the very warm temperature at the surface.

"When the animals go to lower pressure, they do better with cooler temperatures," said Childress. "It's tricky to get them back alive and under pressure."

Soon, the animals will be moved to a UCSB lab in order for scientists to perform additional tests to understand more about their physiology. "Currently the tube worms are growing, the mussels are attaching and moving around and the crabs are walking around and eating," said Childress.

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Editors: The deep sea animals are available for viewing by the press this week only. They can be photographed. James Childress can be reached at (805) 893-3203, or by e-mail at (childress@lifesci.ucsb.edu). Photos are available.

About UC Santa Barbara

The University of California, Santa Barbara is a leading research institution that also provides a comprehensive liberal arts learning experience. Our academic community of faculty, students, and staff is characterized by a culture of interdisciplinary collaboration that is responsive to the needs of our multicultural and global society. All of this takes place within a living and learning environment like no other, as we draw inspiration from the beauty and resources of our extraordinary location at the edge of the Pacific Ocean.