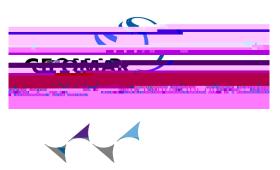
Press Release



future ocean

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Deep-Sea Organisms – Rare Life at GEOMAR

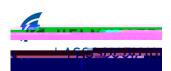
First-time cultivation of mussels from hydr othermal vents by Kiel marine biologists

12 February 2014/Kiel. There are still many puzzles in the deep-water ecosystems that scientists are trying to solve. These systems are extremely difficult to investigate, and it takes a lot of effort to cultivate deep-sea animals under controlled conditions. Now, for the first time in Germany, Kiel marine researchers have succeeded in maintaining deep-sea mussels of the species Bathymodiolus azoricus in aquariums. The aim of the project is to find out how the animals propagate in the deep sea.

Theirnatual habitat is dak and externelyuncomfotable, at least in human terms. Mus sels of the genus Bathymodiolus, deep sea elatives of the Mytilus mus sels, live in auterdepths of 500 to over 3000 metes nearcold seeps "orhotothemal vents, als oknow as black smokes." Hee up to 400°Cels ius hot auters hoots from the seabed. At these locations, the auteris eniched not only with minerals but als o with gases such as methane and hydogen sulfide. Highlys pecialized bacteria us e these substances for enegy twich in turn benefits the mus sels: Theyget their nutirents most tybyling in symbios is with the bacteria, so theytake advantage of the cabon poduced by the microoganisms thems elves. However, explititle is know about the exact circums tances of the deep-sea oganisms she interpoduction and popagation. Long-term and lage-s cale studies in the natural habitat of the mus sels are interally biologist Coinna Beus ing for GEOMAR HelmholtzCente for Ocean Research Kiel.

Now Beus ing, in cooperation with the Kiel Maine Oganis m Culture Center (KIMOCC), a joint poject of GEOMAR and the Clus terof Excellence The Future Ocean," has been able to cultivate deep s ea mus s els of the s persides symodiol azoricus in culture chambes at GEOMAR. This is eallys pecial. Woldwide, as ide from the Oegon Institute of Maine Biology and the University of the Azes, evaluate the onlyins titution that has evermanaged to maintain Bathymodiol bialless success fully in culture," Beus ing s as . As pat of the Geman - Canadian graduates chool HOSST at GEOMAR, s he is waking on her doctoral t hes is about how different s pecies of the genus Bathymodiol have emerged in the deep s ea and how the genetic exchange between different populations takes place. Without the opportunity to obs ever the mus s els under controlled conditions, this outed hadly be pos s ible," Beus ing adds.

The muss sels we collected duing a wage of the Fenches each wess el POURQOI PAS? in the summer of 2013 by the ROV VICTOR 6000 fom an 850-meter deep hydrothemal went located near the Azees in the Atlantic. Keeping the muss sels alive poided a major challenge for the scientists: In oder to poide these elight-shyanimals and theirs ynbionts with ital amounts of hydrogen sulfide and methane, the ese aches installed a continuous feeding" with sodium sulfide and an ai/methane mixtue - not an easy task. Since both hydrogen sulfide and methane are to ic and flammable in theires pective concentrations, some safety as pects had to be considered. But to tackle those kind of challenges in the culture of maine animals in a ese each environment is our goal, "explains Dr Claas Hiebenthal, the head of KIMOCC.



Unlike manyotheranimals of comparable deep-s ea habitats Bathymodiolus azoricusals o have theirow diges tive s ys tem in addition to the synbios is in the bacteria. Theefoe, they in als o eccive s ingle-cell maine algae as food. The muss s els are active, is ibly filter the patter and climb aound the aquairums - s o it s eems that they are doing vall," Dr Hiebenthal continues. Fotunately another environmental factor of the deep s ea did not have to be s imulated by the s cientis ts :

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