Huge worms live 250 years under the sea

By United Press International
Saturday, February 05, 2000

Giant tube worms at the bottom of the Gulf of Mexico are living a life of such ease, they can survive for up to 250 years - longer than any other single creature lacking a backbone, researchers say.

"Just think of these huge worms sitting down there through the Vietnam war, through the World wars, maybe through the American Civil War," study co-author Derk Bergquist of Pennsylvania State University said in an interview, "totally oblivious to what's going on above them."

"It's amazing."

What makes the discovery even more remarkable is that the animal's close relations, which bear a striking resemblance to it in both look and diet, measure their longevity in months or, at most, years, the researchers said.

"There are two things that are really exciting," Charles Fisher, professor of biology at Penn State, said in a telephone interview from aboard the Queen Mary. "1. That the animal lives up to 250 years, and this is a very conservative estimate, based on a 6-foot animal when we've collected animals up to 9 feet long, and 2. that some of its closest relatives-the same basic animal, with no mouth, gut or anus-are adapted to completely different life cycles. You have the high-energy, get-to-full-size-quick, reproduce-as-soon-as-you-can and die-young species and the grow-slow, kick-back, reproduce-in-laid-back-fashion and live-long kind."

The difference could lie in location. It seems the cold constancy of the hydrocarbon seeps the tube worm calls home are conducive to leisurely living while the searing, shifting environs of the deep-sea hydrothermal vents inhabited by its relatives promote life in the fast lane, the scientists note.

They discovered the vestimentiferan tube worm Lamellibrachia, found 1,800 feet below the ocean surface around the hydrocarbon seeps on the Louisiana continental slope, is the longest-lived non-colonial marine invertebrate known. (Coral, anemone and other colonial animals can live more than 1,000 years.) Lamellibrachia takes between 170 years and 250 years to develop to around 6 feet (2 meters), a feat achieved in less than 24 months by its vent-dwelling relatives-some of the fastest growing invertebrates on Earth.

"The hot hydrothermal vents are a much more vigorous, variable and ephemeral environment than the cold hydrocarbon seeps," said Fisher, co-author of the study published in the British journal Nature.

Although seeps and vents both mark ocean floor regions where fluids rising from Earth's crust break through and mix with seawater, hydrothermal vents offer a great deal more variety, with such fluctuating features as "black-smoker" chimneys that spew material as hot as 752 degrees Fahrenheit (400 degrees Celsius). Seeps, on the other hand, are slow and steady in their release of hydrocarbon fluid at seawater temperatures.

"The chemical content of the fluid is similar, but it's cooled down and calmed down a lot at the seeps," Bergquist said.

Thus it's not the diet of the two tube-worm species, both sustained by sulfide and other chemicals seeping through the seafloor cracks, that accounts for their vastly different growth rates.

"The long-lived tube worms live in a stable environment, with a stable food source, don't get banged about a lot so there's no need to repair damage, their environment can be inhospitable for outside predators that could prey on them," Bergquist told UPI. "It's a very low-stress environment."

To conduct the study, the team went to the bottom of the sea in a specially equipped submarine. There, they stained the tube ends blue and returned a year later to see how much they had grown. Tube worms, which are protected by a thin, flexible, shell-like tube, undergo the fastest growth spurts when young, slowing as they age.

The work stems from a Mineral Management Service policy designed to protect the worms from oil drilling. The policy requires oil companies to show prior to building a drilling platform that the site is either vacant or the drilling activities will not harm any animal communities inhabiting it.

"They extend bush-like structures formed by the intertwining of their tubes over thousands of meters, providing thousands of animals with a habitat and food source and forming almost forest-like communities," Fisher said. "They are the key ecosystem structure organisms."

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Article questions

1. What are the two things that are really exciting about this find, according to Charles Fisher?
2. How deep are the worms found?
3. How hot do black smokers get?
4. Why is the worms environment considered low stress?
5. What is the policy of the Mineral Management Service?