

# Clam fields found at deep, low-temperature Mariana vents

February 10 2012, By Cheryl Ernst

---



Vesicomyid clam from the Shinkai Seep Field

(PhysOrg.com) -- Scientists have marveled at the unusual life forms thriving at high temperature hydrothermal vents of the deep ocean.

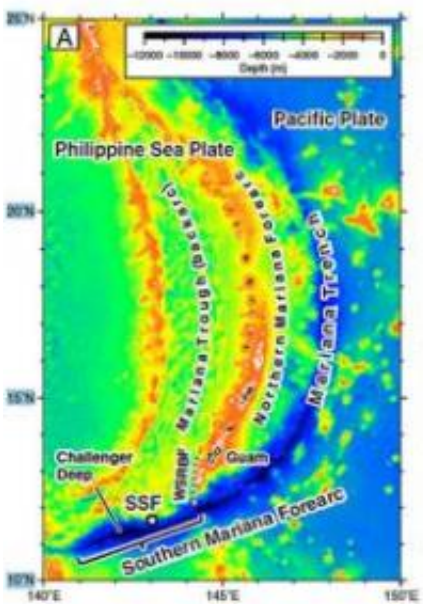
Now the discovery of clam communities near lower temperature [vents](#) in the Mariana Trench is providing information about both the [biogeography](#) of the clams and the extent of the serpentinite vents that sustain them.

A team of scientists from the United States and Japan discovered the vesicomyid clams while conducting deep sea dives from the Japanese R/V Yokosuka to study the [geology](#) of the southern Mariana forearc.

## Venting from faults

Located east of Mariana Islands in the western Pacific and at the deepest part of [Earth](#)'s ocean, the 1,580-mile long trench is where the Pacific Plate is pushed under the Mariana Plate. The research team, which included University of Hawai'i at Mānoa's Fernando Martinez, was exploring an area on the inner trench slope of that convergent margin during September 2010.

They discovered abundant vesicomid clam communities associated with a serpentinite-hosted hydrothermal vent system and dubbed the area Shinkai Seep Field for the Japan Agency for Marine-Earth Science and Technology manned submersible Shinkai 6500 used in the dives.



Mariana Trench features, with Shinkai Seep Field indicated as SSF

Serpentinite is a type of metamorphic rock formed in the [deep-sea](#) by

alteration of mantle rock. It is named for its snakeskin-like appearance, characterized by a mottled color, with a waxy luster and curving, polished surfaces, explains Martinez, a researcher in the Hawai'i Institute of Geophysics and Planetology.

The serpentinization of peridotite rock generates a hydrogen- and methane-rich environment that supports the biological communities.

Since magmatic heat contribution is unlikely and no serpentinite mud volcanoes were observed, the scientists believe the serpentinization of peridotite at the Shinkai Seep Field is triggered by the flow of heated fluids traveling through faults from the subduction zone.



Japan's Shinkai 6500 submersible lent its name to the newly discovered seep field

### **Abundance of clams**

The vesicomid clam community is the first live example described from a low-temperature serpentinite-hosted hydrothermal system from either convergent or divergent margins, the researchers write in an article published February 9, 2012, in *Proceedings of the National Academy of*

*Sciences'* online edition.

“The discovery of the Shinkai Seep Field supports the prediction that serpentinite-hosted vents may be widespread on the ocean floor,” they write. “The discovery further indicates that these serpentinite-hosted low-temperature fluid vents can sustain high-biomass communities” with implications for both the chemical budget of the oceans and the distribution of abyssal life.

In addition to Martinez, the researchers included scientists from Japan’s Hydrographic and Oceanographic Department, Japan Agency for Marine-Earth Science and Technology, Shizuoka University and Fukada Geological Institute and the University of Iowa, University of Texas at Dallas and University of Rhode Island.

**More information:** Read the abstract [here](#).

Provided by University of Hawai‘i at Mānoa

Citation: Clam fields found at deep, low-temperature Mariana vents (2012, February 10)  
retrieved 26 April 2024 from

<https://phys.org/news/2012-02-clam-fields-deep-low-temperature-mariana.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--