

Life blooms on floor of deep Siberian lake

A joint U.S.-Soviet research team has discovered an oasis of life around springs of heated water along the floor of Siberia's Lake Baikal, the oldest and deepest lake on Earth. Many similar "hydrothermal vent communities" thrive in the oceans, but until now scientists had never seen an example in fresh water.

Expedition members discovered the field of vents at a depth of 1,350 feet in the northern section of the 395-mile-long, crescent-shaped lake, which sits just north of Mongolia. Using a submersible to explore the field, researchers photographed a rich community of sponges, bacterial mats, snails, fish and transparent shrimp, some apparently representing unknown species, says chief scientist Kathleen Crane from Columbia University's Lamont-Doherty Geological Observatory in Palisades, N.Y. Fluids spewed from the vents measured at least 24°F warmer than the normally frigid bottom water.

The discovery surprised some researchers because measurements made during an expedition two years ago showed no signs that the lake harbored vents, says geochemist Ray F. Weiss of the Scripps Institution of Oceanography in La Jolla, Calif. "I was skeptical that they would find any vents at all," he told

SCIENCE NEWS. The recent vent search, conducted during six weeks in June and July, concentrated on a virtually unexplored section of the lake.

Organisms living near hydrothermal vents in the ocean have attracted considerable attention over the last 13 years. While almost all biological communities on Earth derive their primary energy from sunlight through photosynthesis, oceanic vent communities rely on a process called chemosynthesis, drawing their basic energy from chemical nutrients in the warm fluids.

Biologists now seek to determine whether chemosynthesis supports the Baikal communities, says Barbara Hecker of Lamont-Doherty, who has studied photographs from the recent expedition. Researchers will also examine the Baikal organisms to see what characteristics they share with those from ocean vents. Such comparisons could offer insight into the evolution of vent communities.

Whereas most large lakes date back only 10,000 to 20,000 years, Lake Baikal formed about 25 million years ago. Due to its great depth, it holds about 20 percent of the world's supply of liquid fresh water.

The vents found at the bottom of the lake indicate that previous studies have significantly underestimated the amount

of heat flowing out of the Earth's crust in the Baikal region, says geoscientist Marcia K. McNutt of the Massachusetts Institute of Technology in Cambridge. Future studies of the vents and local heat flow, she says, will yield more accurate estimates and should help geoscientists resolve a debate about why the Asian continent is splitting along the giant rift that created the deep lake. Many researchers view the rifting as a passive process driven by tectonic stress from the distant collision between India and Asia. But some think the Baikal rift results from a more active process, in which hot material rising from Earth's mantle forces the Asian plate to crack apart.

— R. Monastersky

Agent Orange: Hue and Cry

Reagan Administration officials "obstructed" an Agent Orange exposure study in Vietnam veterans, the House Committee on Government Operations charges in a report issued last week.

In 1987, top White House officials canceled plans for a study of Agent Orange exposures by the Atlanta-based Centers for Disease Control (CDC). In justifying the move, they noted that a panel of federal officials and scientists had concluded that military records could not establish a veteran's contact with the herbicide — a jungle defoliant sprayed during the Vietnam conflict. But last week's report alleges that the administration canceled the study because the administration "had secretly taken a legal position to resist demands to compensate victims of Agent Orange exposure." The report says it's possible to assess Agent Orange exposures by studying troop movements.

The committee recommends that Congress order the Department of Defense to develop ways of estimating Agent Orange exposure. It further suggests that the federal government finance an independent study of Agent Orange exposures and health problems in Vietnam veterans.

Earlier this year, CDC did complete a separate study of selected cancers in Vietnam-era veterans (SN: 4/14/90, p.236). It found an increased risk of a rare cancer in these veterans, but no link with Agent Orange, which contains dioxin, an animal carcinogen.

The congressional report says that the study failed to find a connection between the herbicide and cancer because it relied on flawed exposure estimates, since the administration had canceled the earlier effort to establish a reliable index of exposures. Not all committee members agreed. Six of the 15 Republicans issued a dissenting view labeling the report "an ideological assault on a Republican White House." □

Light therapy shines for some ARC patients

Experimental treatment with a combination of ultraviolet radiation and a light-activated drug appears to have bolstered the immune systems of a few people with AIDS-related complex (ARC), according to a new report. The researchers emphasize, however, that these very tentative findings involve only five people diagnosed with an early stage of AIDS and do not demonstrate the treatment's ability to stave off the full-blown disease.

"This is a very preliminary study with a small number of patients," cautions study coauthor Albert S. Klainer of the Morristown (N.J.) Memorial Hospital. Nonetheless, he says, "we have seen what appears to be an encouraging clinical and laboratory response."

In the past, other scientists have inactivated the AIDS virus (HIV) in the test tube by treating it with a light-activated drug called psoralen and then exposing it to ultraviolet radiation. Klainer's team took that work a step farther, treating actual patients with a technique called photopheresis, in which blood pretreated with a photoactive drug is temporarily removed from the body and exposed to ultraviolet light.

The researchers treated four men and one woman with ARC on two consecutive days each month for six to 15 months. After administering an oral dose of

psoralen to each volunteer, the researchers waited two hours, then removed a pint of blood. They filtered out the red blood cells and immediately injected them back into the patient's bloodstream. For three hours, they exposed the white cells and plasma (the clear portion of blood) to the long "A" wavelengths of the ultraviolet spectrum, and then injected these treated components back into each volunteer.

Within six months, the swollen lymph nodes initially seen in all patients had shrunk and all volunteers showed a rise in HIV-fighting antibodies, the researchers report in the Aug. 15 ANNALS OF INTERNAL MEDICINE. The three patients who remained in the study for 15 months also developed increased levels of white cells called CD4 T-lymphocytes, evidence of a roused immune system.

Though four of the ARC patients reported feeling more energetic as treatment progressed, this could have resulted from a placebo effect, since the study lacked an untreated control group, notes Clifford H. Lane at the National Institute of Allergy and Infectious Diseases. The early evidence has convinced the Food and Drug Administration to approve an expanded trial, exploring the treatment's efficacy and safety in up to 20 ARC patients. — K.A. Fackelmann