A Memory Bank for the Planet

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Rings of bristlecone pines, Earth’s oldest trees, hold clues to global warming and human history. A scientist seeks missing link in a record of nearly 12,000 years.

ANCIENT BRISTLECONES PINE FOREST, Calif. - The twisted sentinels of this desolate forest up a study in perseverance. Contorted by wind, deprived of sun, buried by the nutrient-poor dolomite slopes to which they cling, they have been known to live nearly 5,000 years. Rings — major trees that have died but remain standing; snags — majestic trees that have died but remain standing; the branches that have been stripped of their bark. Snags noted more than twice that long, their resinous wood resistant to rot.

Beautiful and grotesque, the bristlecone pines in the White Mountains of eastern California — the world’s oldest trees — are a vast memory bank for the planet that can be used to date archaeological remains half a world away. Their growth rings — each one representing a calendar year — log the passing seasons. Their tiny variations record climate changes, volcanic eruptions, years of drought.

Thomas Harlan, 67, is a human soul mate to these resolute plants. Tenacious, persistent, the retired University of Arizona tree-ring scientist has spent years scouring these arid mountains for one singular piece of wood.

Since the ancient trees were discovered near Mammoth Lakes in the mountains along the Nevada line, the scientists who study tree rings — dendrochronologists — use wood samples from both living and dead bristlecones to construct a chronology that could serve more than Please see PINE, A28
A Memory Bank for the Planet

The contents of the article is original, but the new layout for the Lustia web site was designed by Mauri Timonen.
The trees are the oldest on Earth, and their growth rings reveal details of climate change in North America. Scientists hope to find bristlecone remnants that would bridge a key gap between two sequences, creating a single chronology. Such a timeline could be used to calibrate the carbon-dating process for the years when humans first inhabited the continent.

Why They Live So Long

The small trees grow on dolomite, a kind of limestone. It retains moisture and reflects light better than the surrounding sandstone, making a cooler root zone.

To hunt for the remnant, Ferguson and Schulman set out on a three-day hike to Peak in search of a log, dead for more than 40 years.

The Finnish couple—Mauri and Marjatta Toivonen—head to a spot near the forest visitor center, searching for a gnarled tree atop a But it was the bristlecone chronology that dealt archeologists an even more startling surprise. For years, archeologists had used radiocarbon dating to determine the age of organic objects. The technique measures the amount of radioactive carbon 14 in an object to determine its age. What archeologists did not know is that the process gets slower as years go by because of fluctuating levels of carbon 14 in the atmosphere. The precise chronology of the bristlecone pines helped the radiocarbon scale, requiring archeologists to change the dates for ancient civilizations across the world. A long chronology of Irish bog oak had led to a series of recalibrations. For some of them say, 'How can a shrubby little bush in the Califor- nia mountains tell us something about life in the Mediterranean?' said Ferguson. But it does.