

Search for extraterrestrial intelligence gets hearing on Hill

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The Arecibo radio telescope in Puerto Rico.

Dan Werthimer, who directs Berkeley's new SETI Research Center, summarized current efforts to search for extraterrestrial intelligence at a hearing today (Wednesday, May 21) of the U.S. House of Representatives' Committee on Science, Space, and Technology.

At the invitation of committee chairman Rep. Lamar Smith (R-Texas), Werthimer and astrobiologist Seth Shostak of the SETI Institute in Mountain View, Calif., described current projects to find intelligent life on other planets and how NASA's Kepler space observatory is

contributing to this effort. They also reviewed the newest projects, such as "eavesdropping SETI," and the latest tools, including the Allen Telescope Array in northern California now operated by the SETI Institute.

"SETI experiments are trying to determine whether other intelligent, technologically capable, life exists in the universe," Werthimer told the committee, "to answer the question 'Are we alone?' or 'Is anybody out there?'"

He noted that the Kepler mission has shown that the Milky Way Galaxy alone has a trillion planets, three times the number of stars.

"Billions of these planets are Earth sized and in the 'habitable' or so called 'Goldilocks' zone – not too distant from their host star (too cold), and not too close to their star (too hot). And there are billions of other galaxies outside our Milky Way galaxy – plenty of places where life could emerge and evolve," he added.

"I hope today's hearing will enable us to learn more about how research in astrobiology continues to expand this fascinating frontier," Smith said in his opening remarks. "The unknown and unexplored areas of space spark human curiosity. Americans and others around the world look up at the stars and wonder if we are alone or is there life on other planets."



The Robert Byrd Green Bank Telescope in West Virginia, the largest steerable radio telescope in the world.

Longest running SETI project

UC Berkeley operates the longest-running search for extraterrestrial intelligence (SETI) as well as the popular crowd-sourced computing project SETI@home. Werthimer's searches have piggybacked on the Arecibo Telescope in Puerto Rico, the world's largest radio telescope. Since 1999, that data has been funneled into SETI@home, which allows volunteers to use their idle computer time to search for patterns in extraterrestrial radio signals that might be an indication of intelligent life.

In a phone conversation from Washington, Werthimer noted that one

limitation of merely scanning the sky for signals from ET is that, unless ET is deliberately attempting to signal other [intelligent life](#), it relies on picking up signals accidentally leaked from other civilizations. Earth broadcasts of the TV series I Love Lucy have already reached the nearest stars, betraying our existence to any intelligent civilizations that may live there.

But many advanced societies would probably limit such wasted energy, he said, either sending signals via fiber or in tightly focused beams. If these civilizations have colonized other planets in their solar systems, however, they would still have to send signals between planets, or at least use broad beams to track spacecraft. Werthimer and his SETI colleagues have embarked on a new project called "eavesdropping SETI," where they listen only when two planets in a distant system are aligned with Earth, giving Earth a chance to intercept such targeted communications.

"The Kepler mission has given us a ton of multiplanet systems to look at," said Werthimer's colleague Andrew Siemion, a research scientist at the Space Sciences Laboratory who holds joint postdoctoral appointments at ASTRON, the Netherlands Institute for Radio Astronomy, and Radboud University in Nijmegen, Netherlands. In 2012, the team observed 75 such line-ups using the Robert C. Byrd Green Bank telescope in West Virginia.

They now plan a broader, more coordinated effort, dubbed the Panchromatic SETI Project, to observe the planets around all 30 stars within 13 light years of Earth in the northern hemisphere. To do this, the UC Berkeley collaborators will harness six different ground-based telescopes, including Arecibo, Green Bank and the Keck telescopes in Hawaii, to look for optical, infrared and radio signals simultaneously and for more extended periods of time.

While admitting that "no confirmed exoplanet detections have been

made around any of the stars in our sample," Siemion said that "statistically speaking, we know that some of these stars should host habitable planets," and this survey will be the first to put broad multi-wavelength limits on how common technological civilizations are.

"We plan to use every technology we have available to us to look very, very closely at these 30 stars," he said.

Werthimer noted in his committee remarks that while "SETI programs use the world's largest radio and optical telescopes to search for evidence of advanced civilizations and their technology on distant extrasolar planets," two of the best – the Arecibo and Green Bank telescopes – are in danger of losing federal funding.

"It's unfortunate that the two largest radio telescopes in the world and that are best for SETI are in danger of closing their doors," he said.

More information: A PDF copy of Werthimer's remarks is available online: [newscenter.berkeley.edu/wp-con ... ny_seti_may2014d.pdf](https://newscenter.berkeley.edu/wp-content/uploads/2014/05/ny_seti_may2014d.pdf)

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