

UH Hilo astronomy alumnus discovers second closest object on record to graze by Earth

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By Staff

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Now a research specialist at the Catalina Sky Survey in AZ, UH Hilo alumnus Theodore Pruyn discovered the second closest object on record to graze by Earth and not impact, a close approach that happened only about seven hours after discovery.

By Susan Enright.



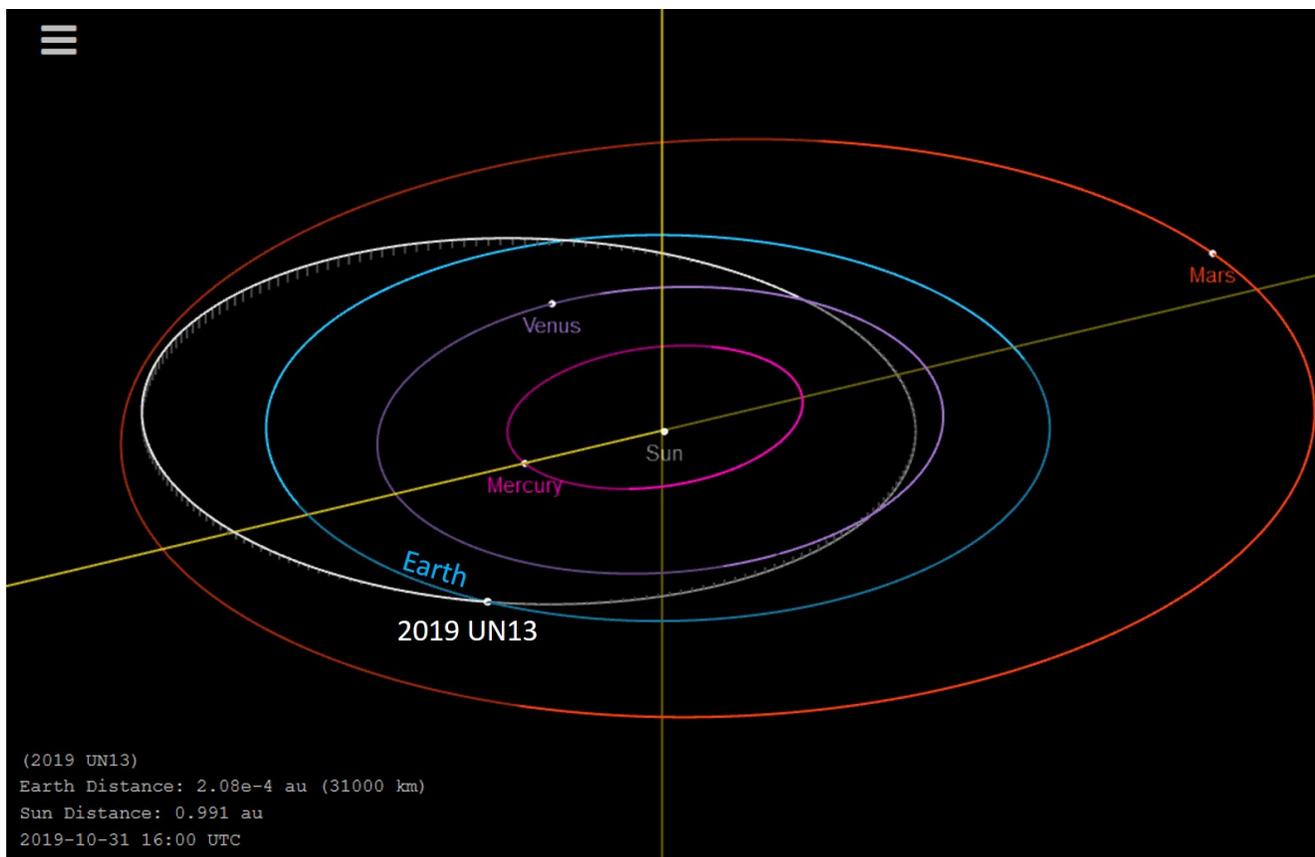
Teddy Pruyn and the Catalina Sky Survey, Tucson, AZ. Courtesy photos.

Theodore Pruyn, with a bachelor of science in astronomy from the University of Hawai'i at Hilo (2018), is now employed as a research specialist at the Catalina Sky Survey in Arizona. His task is to survey the night sky for objects classified as Near Earth Objects (NEOs). And on Halloween night last year, something extraordinary happened.

From [Catalina Sky Survey news](#):

When Catalina Sky Survey (CSS) astronomer Teddy Pruyne submitted a new near-Earth asteroid candidate to the Minor Planet Center in the earliest hours of October 31, 2019, he had little idea the object's orbit would soon bring it within a cosmic whisker of striking Earth's atmosphere. Using CSS's 28-inch (0.7-m) Schmidt telescope on Mt Bigelow in southern Arizona, Pruyne discovered the asteroid, now designated '2019 UN13' while 'blinking' through four images taken within the constellation Aries. For Pruyne, 2019 UN13 appeared as four blips of light tracking across the image against the distant background stars.

But that's not actually the most extraordinary part of the story. It turns out, Pruyne had discovered the second closest object on record to graze by Earth and not impact, a close approach that happened only about seven hours after discovery. Additional observations confirmed that the object was not an impact threat to Earth during this passage.



Using the Catalina Sky Survey's 28-inch (0.7-meter) Schmidt telescope on Mt Bigelow in southern Arizona, Teddy Pruyne discovered the asteroid, now designated "2019 UN13" while "blinking" through four images taken within the constellation Aries. Courtesy photo CSS.

And there's more amazing news about Pruyne's work: on another night, he says, he "also managed to discover a comet: P/2019 X1 (Pruyne)." This discovery is classified as a Jupiter-family comet.

"These are all in addition to finding plenty of NEOs every shift!" he adds in an email describing his work.

The search for NEOs

Pruyne's nights are spent working from one of two different survey telescopes. One, a 60-inch, is located on the summit of Mt. Lemmon. Another, the 0.7-meter Schmidt, is located on Mt. Bigelow.

"Each night, both of these telescopes cover a portion of the sky," Pruyne explains. "Each night the two survey telescopes are assisted through a 40-inch follow-up telescope also located on the summit of Mt. Lemmon. The survey telescopes discover new NEOs, and the follow-up telescope recovers the objects, locking in their positions, magnitudes, velocities and vectors, etc. On any given night that I am scheduled, it is my duty to operate one of these three telescopes, and discover/assist the discovery of NEOs."

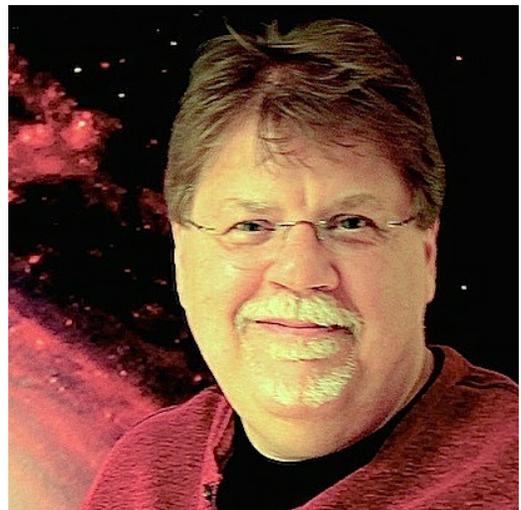
The Catalina Sky Survey is a NASA funded project supported by the Near Earth Object Observation Program under the Planetary Defense Coordination Office. The congress-mandated project is run through the University of Arizona Lunar and Planetary Laboratory in Tucson, AZ. The goal initially was to discover life threatening-sized asteroids. "These would be [one kilometer] in diameter and larger, and could have the potential to wipe out life," says Pruyne.

However, since roughly 90 percent of asteroids above 140 meters in diameter have been discovered, the new mandate is for asteroids 140 meters in diameter. These are large enough to destroy a state. Further information, success, and statistics can be found at the [Catalina Sky Survey website](#).

Pruyne's mentor while at UH Hilo, Associate Professor of Astronomy **Rene Pierre Martin**, says searching for small solar system bodies is important, in particular those that could eventually come close to or even impact Earth. "The work done by Teddy, sponsored by NASA, is not only scientifically interesting, it could provide vital information on a potential impactor."

Experiential learning pays off

Pruyne says his undergraduate experience in the astronomy program at UH Hilo helps him a lot on the job. "Not just from the classroom, but from the fact that in UH Hilo's backyard is the best site for astronomy in the world. I got research experience at the Subaru Telescope through a lab at UH Hilo, as well as working under Dr. Martin for a year through NASA Hawai'i Space Grant."



R. Pierre Martin

The budding astronomer also gained observing experience, knowledge, and terminology

through his UH Hilo courses and accompanying labs. “In these labs with Dr. Martin we were able to actually get hands-on experience with operating small telescopes and the following research. The University Astrophysics club, managed by Dr. Martin, also offered great hands on experience.”

“In short,” he adds, “UH Hilo helped me for this profession and success, and it went far beyond the classroom. The courses and professors helped a great deal, but the real learning took place through these experiences.”

Martin says his student showed a lot of perseverance at UH Hilo. “This is why I offered Teddy a one-year internship to work with me on a scientific project focusing on galaxies when he was a senior student. I’m not surprised that he is now very successful in his work searching for new asteroids and comets, as this requires patience and dedication.”

Noting that the UH Hilo astronomy program aims to provide excellent hands-on training on modern observing techniques and research in astronomy, the proud mentor says, “It is always very satisfying to see many of our graduates making an impact in our field following their studies here.”

Story by Susan Enright, a public information specialist for the Office of the Chancellor and editor of UH Hilo Stories. She received her bachelor of arts in English and certificate in women’s studies from UH Hilo.

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