

Commentary...

Astronomy students delve into solar system research

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Correspondent

Sisters High School Astronomy Club has been participating in a research project called RECON (Research and Education Collaborative Occultation Network) since 2015.

RECON is a project funded by the National Science Foundation that studies objects orbiting the sun beyond Neptune in the outer edge of the solar system. These objects are called trans-Neptunian objects (TNOs) and are located in the Kuiper Belt, a region beyond Neptune holding millions of icy and rocky objects. The TNOs are frozen bodies believed to have formed at the same time as the rest of the solar system.

RECON seeks to learn more about the properties of these objects, giving information that could tell us much more about the formation and early history of the solar system. To gain information about these objects, 64 communities all along the West Coast have been given telescopes and cameras to record events called occultations in order to measure the size and shape of specific asteroids' shadows. An occultation

occurs when an object passes in front of a star, making it black out for a moment then reappear. The amount of time the star disappears and how many communities see that blackout helps determine properties — such as size — of the object being studied.

Scientists Marc Buie and John Keller are the founders of the RECON project. John Keller is an astronomy educator at the University of Colorado, Boulder, and Marc Buie works at the Southwest Research Institute and has worked on the NASA New Horizons mission studying Pluto, Kuiper Belt objects, and other TNOs. They started the project in 2012, with 14 communities in Nevada recording events. In 2014 they expanded with communities spreading from the borders of Mexico to Canada, and in 2018, collaborators in Canada added six more locations reaching into British Columbia.

Sisters was chosen as one of these communities.

Assisted by the telescope donation by a community donor and the expertise of local astronomers, the Sisters High School Astronomy Club has been collecting data for almost five years,

participating in about nine events each year. The group has recorded and collected data for about 36 occultations. Of these 36 events, at least two have contributed publishable data for the project. Last year on October 20, 2018, the team recorded data showing no detection of an occultation which actually helped determine the boundary point of the object, showing the limits of its size. Up until this year, our Sisters High School Astronomy Club had never seen or recorded an actual occultation.

This fall our club had an incredible opportunity to take our telescope and camera, as well as the equipment from the Redmond and Bend teams on the road to try and capture an occultation of the Jupiter Trojan asteroid Leucus, which they had a very high probability of viewing.

On October 1, after a full school day, the students were greeted by Teri Ast who drove them on a bus for four hours to a remote area east of Burns. The group was also accompanied by local Sisters Astronomy Club member Rod Moorehead and teacher Rima Givot.

Upon arriving at the specified point, the students split



PHOTO PROVIDED

The mobile RECON team after a successful occultation mission.

into three groups, each taking a different telescope to a set location spaced a couple miles apart from each other. The teacher in charge of the club, Rima Givot, led the furthest south group of ninth-grade students Zoey Lorusso, Olivia Newton, and Matthew Riehle. Co-president and senior leader Delsie McCrystal led her team of Holly Werts and Catalina Chapman with the support of Teri Ast at the middle location, and co-president and senior leader Ramsey Schar led her team of students Christopher Lundgren and Corbin Fredland with the support of Rod Moorehead to the furthest north point. The leaders of each group worked on a tight schedule to teach their group how to use the equipment as the team set up

the telescopes and aligned on the prearranged star that was expected to be shadowed by the speeding asteroid.

All the groups managed to align on the correct star field in a short amount of time. Even though they were successful in aligning, there were some issues after that. One group started recording on the correct star field but the video cut out right before the occultation happened, so they were unable to record the entirety of the event. Another group had difficulty focusing the telescope so the stars looked like "donuts."

In spite of an unfocused telescope, the data they collected was still useful and helped constrain the region of

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