

Occultation by the Trojan Asteroid (3548) Eurybates in the s.w. USA, 2021 Oct. 20
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Eurybates one of the Trojan asteroid targets of NASA's Lucy mission that launched only 4 days before this occultation. The Lucy mission is described in a good article, "Rock On", about it and other NASA missions to asteroids on pages 12-19 of the February issue of Sky and Telescope. On p. 17 is a box called "Get Involved", where the Southwest Research Institute (SwRI) asks interested amateurs to contact them, to possibly join their campaigns to observe occultations by the Lucy asteroids, and give an example of one by (11351) Leucus that occurred in Arizona in late December, 2019; Joan and I successfully ran 4 stations for that event, obtaining the southernmost chord and one other, as well as the constraining miss line on the south side.

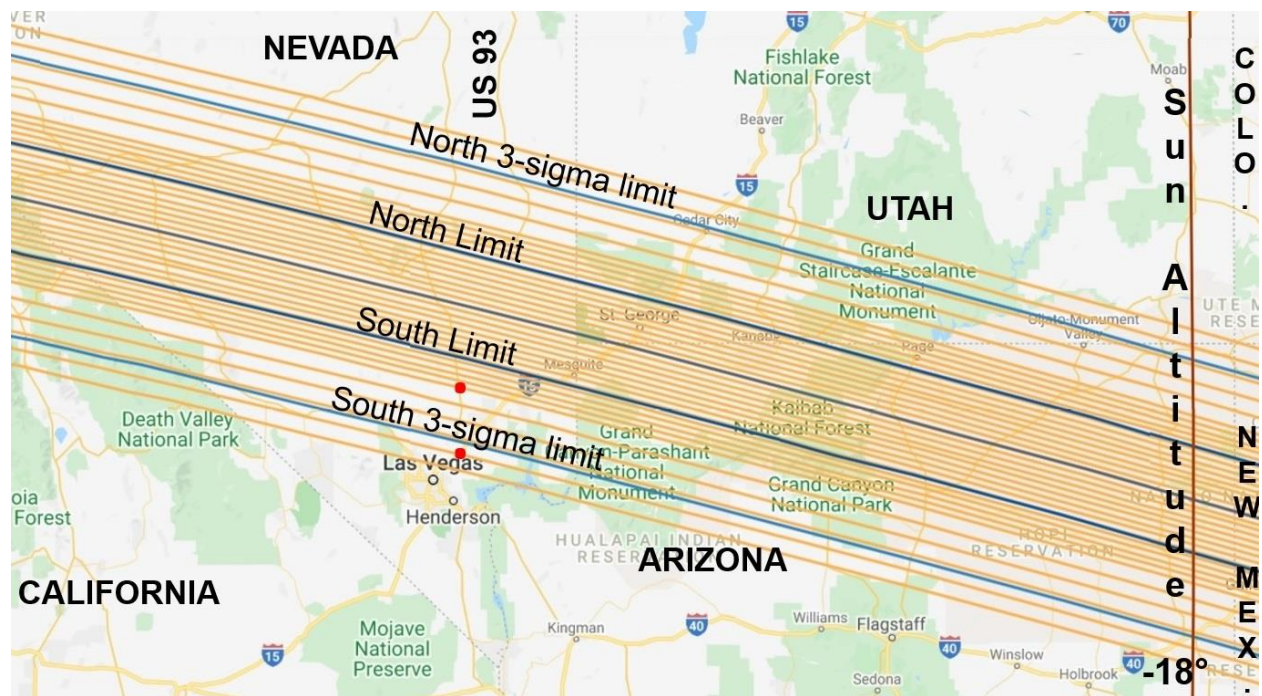


Fig. 1. This map shows the observations planned by SwRI for the occultation of a 13.5-mag. star near 5th-mag. 32 Tauri by Eurybates last October 20th. Credit: SwRI and Google Maps. Observers set up telescopes with video and CCD cameras at each of the 37 orange lines shown on the map, near where they crossed highways. Most participants, including teams from SwRI, many of the volunteer observers of the 50 observatories of the Research and Education Collaborative Occultation Network (RECON), and IOTA, converged on Las Vegas for practice sessions, helped by local amateur astronomers and high school students. On event night, they travelled to their assigned line, many near US 93 north of Las Vegas. Two red dots show the locations of the two stations run by the authors, with a pre-pointed stationary 10-in. Dobsonian on line 2 (numbered from south to north) and an 8-in. SCT on line 6. Results are shown below.

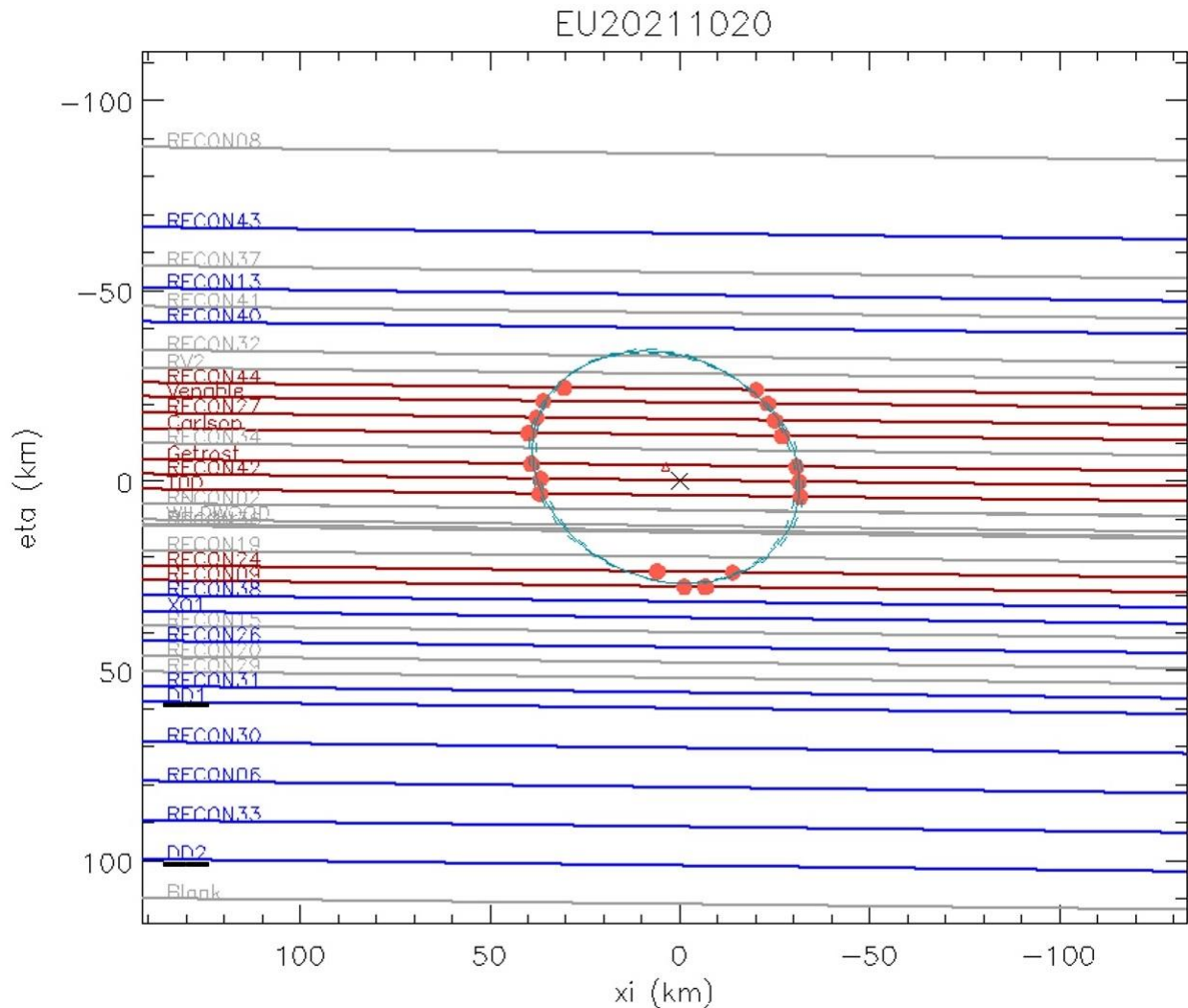


Fig. 2. Observations of the occultation projected onto the sky plane at Eurybates. Credit: Marc Buie, SwRI (presented at the AGU meeting in New Orleans in December). Red lines show the paths of the stations that recorded the star and had an occultation, with dots marking the disappearances and reappearances of the star. Blue lines show stations where the star was recorded but no occultation occurred, including our two lines, DD1 and DD2, underlined. Gray lines are stations where observations were attempted, but the star was not recorded due to clouds or equipment problems. The best-fit ellipse is in green, with axes lengths 58 km and 73 km. The path was accurately predicted because a few observations had been made during an earlier occultation. But it was not known then if Eurybates might have a large relatively close moon that could shift the paths of future events, including this one; that's why observers were spread out so far. The October observations showed there was no such moon, which will allow tighter coverage of future events by Eurybates, to better improve our knowledge of the asteroid's size and shape.

Another occultation, of a 10.4-mag. star by another Lucy Trojan, (15094) Polymele, will occur on March 27 UT (evening of the 26th EST) in the Carolinas, but also visible as far west as Kansas. The observation area will be decided only a few days beforehand when weather forecasts

stabilize. You are invited to join SwRI's and IOTA's campaign to observe that event. Information about it and other 2022 Trojan occultations is available at

<https://occultations.org/publications/rasc/2022/nam22Trojanoccs.htm> while SwRI's Google Map for the March 27th path is at <http://lucy.swri.edu/occ/20220327Polymele.html> .