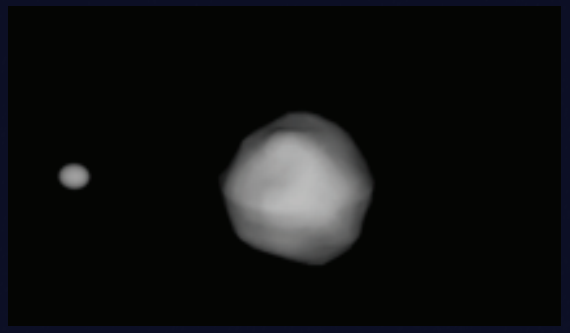
DART

NASA'S FIRST PLANETARY DEFENSE TEST MISSION: WHAT CAN I SEE FROM HOME?

NASA's Double Asteroid Redirection Test, or DART, is the world's first full-scale planetary defense test, demonstrating one method of asteroid deflection technology. As part of NASA's larger planetary defense strategy, the



DART mission will prove that a spacecraft can autonomously navigate to a target asteroid and intentionally collide with it, a method of asteroid defection known as kinetic impact. While members of the DART team will be obtaining and analyzing high-precision data through large telescopes, the DART target asteroid system should be visible in smaller telescopes as it moves across the sky in 2022-2023.

DART's target, which poses no threat to Earth, is the asteroid moonlet Dimorphos (160 meters in diameter), which orbits a larger asteroid named Didymos (780 meters in diameter). By colliding with Dimorphos, DART will change its orbit around Didymos by a few minutes –in much the same way that we might change an asteroid's orbit should we ever discover one on a collision course with Earth. DART will arrive at the Didymos system on September 26, 2022, and astronomers will observe the results with telescopes on the ground and in space.

Around the time of DART's arrival, Didymos will be a 14th-magnitude object. While this is brighter than most near-Earth objects typically shine, it will still be too faint to observe through an eyepiece with an eight-inch telescope. However, telescopes of that size can easily image Didymos when combined with a CCD or DSLR camera, using exposure times of a minute or less.

The motion of Didymos across the sky in late 2022 and early 2023 is shown superimposed on the Apollo-era star map on the back of this page, along with its brightness at monthly intervals. Didymos reaches 17th-magnitude in early August 2022 and remains this bright until mid-January 2023. It will be a difficult object for observers in the Northern Hemisphere at the time of the DART impact, but will rapidly move north in the following days and weeks and become easier for those observers. It will be moving at a peak rate of seven arcseconds per minute compared to the background stars, and sidereal tracking should be sufficient for most curious backyard astronomers!

For more information, please visit https://dart.jhuapl.edu/

Thanks to Brian Warner (Palmer Divide Observatory, Minor Planet Bulletin) for exposure times and tracking rates

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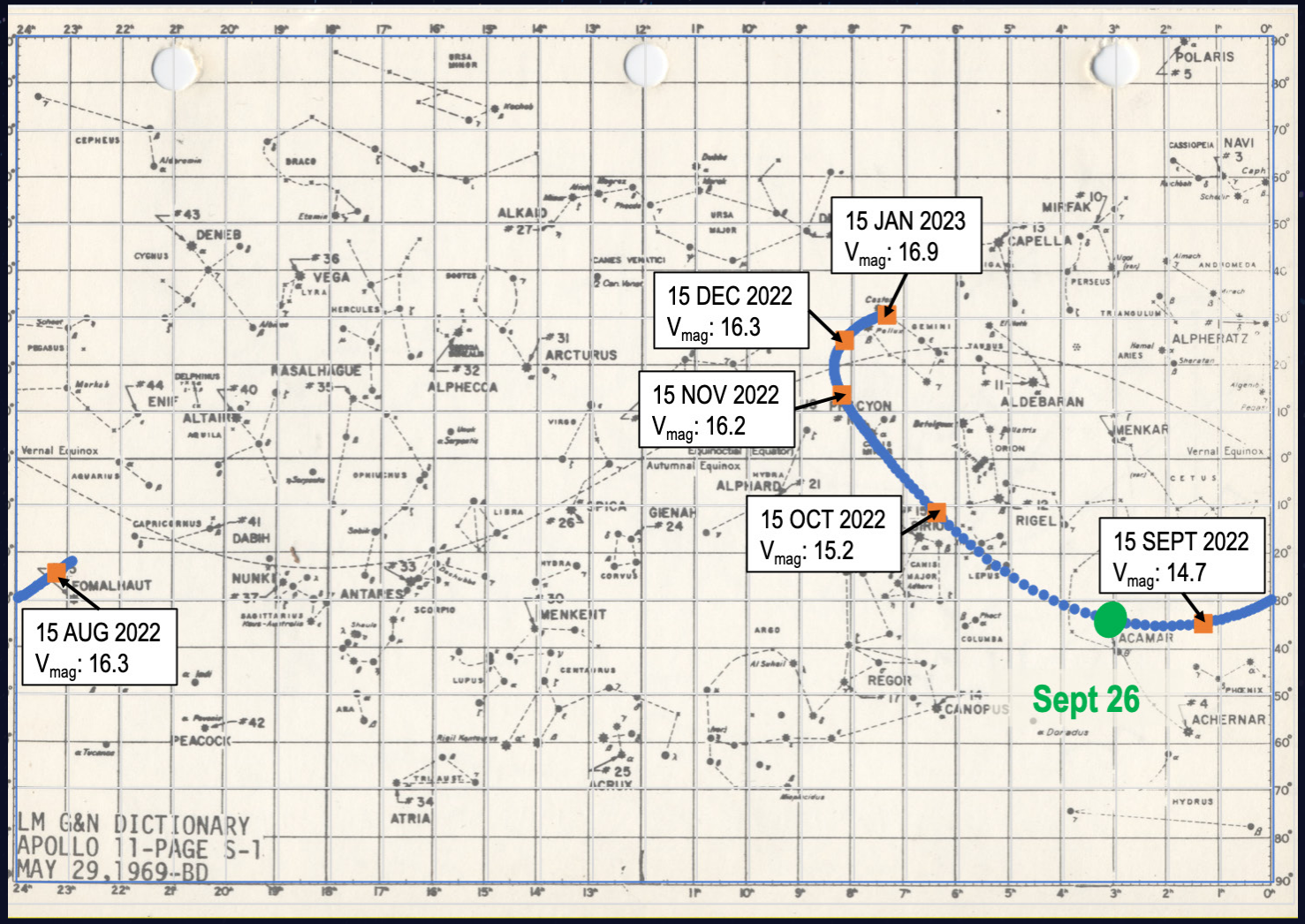

Star Map: *NASA's Apollo 11 Lunar Surface Journal site/Lawrence McGlynn,* https://www.hq.nasa.gov/alsj/a11/A11StarCharts.html.
Graph: Andy Rivkin