

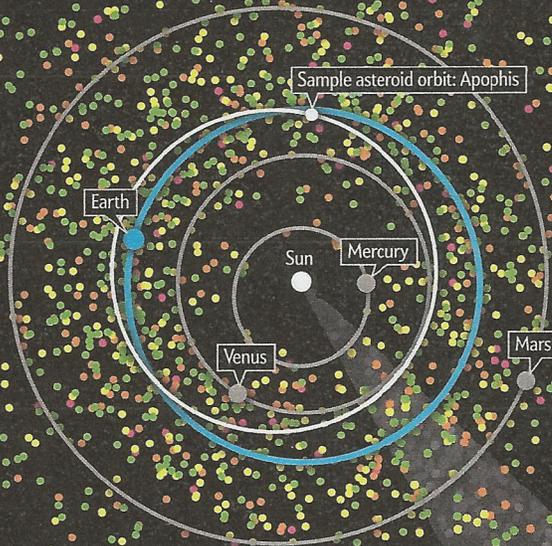
Potentially Hazardous Objects  
(positions on March 1, 2011)\*

ASTEROIDS (2,382)

- 30–100 meters in diameter (991; could destroy a city or county)
- 100–300 meters (695)
- 300–1,000 meters (538)
- Greater than 1 kilometer (158; could destroy civilization)

◆ COMETS (15)

\*A few outliers not shown



# Death by Asteroid

What we don't know could hurt us

Researchers have identified more than 2,300 asteroids and comets that are big enough to cause considerable damage on Earth and could possibly hit us. These “potentially hazardous objects” look ominous on the flat plot here, but because they travel in three-dimensional orbits, the perfect timing needed to intersect Earth makes the likelihood of collision remote. The symbol sizes shown also deceive; each object is many thousands of times as small as Earth.

NASA is concerned nonetheless. Scientists estimate that they have found fewer

than 1 percent of the projectiles. “We are discovering them at a rapid clip, but the population is very large,” says Donald K. Yeomans, manager of the Near Earth Object Program Office at NASA’s Jet Propulsion Laboratory. A NASA advisory group says that for \$250 million to \$300 million annually over 10 years, the space agency could inventory the objects and develop and test technologies that could alter a worrisome asteroid’s trajectory. One option: ram it with a massive spacecraft to knock it off course.

—Mark Fischetti

SEE ASTEROID ORBITS  
[ScientificAmerican.com/mar2011/graphic-science](http://ScientificAmerican.com/mar2011/graphic-science)

**More to come:**

Only 1 percent of hazardous objects have been found; gray dots show the likely density once more are revealed.

**Recent big hit:**

In 1908 a 30-meter asteroid flattened 2,000 square kilometers of forest in Tunguska, Siberia.

SOURCE: NASA/JPL