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# ENVIRONMENTAL Fact Sheet

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## Meteorites in New Hampshire

Meteorites are chunks of metallic or stony material that survive their plunge through the Earth's atmosphere and land on its surface. Intersecting the Earth's orbit and surviving a ride through the atmosphere without being vaporized, is a very rare event. While out in space, debris in the solar system is called **meteoroids**. However, they become **meteors** when they enter our atmosphere. Meteoroids are generally the size of a grain of sand, and are quickly vaporized by the heat of friction created as they collide with air molecules of the upper atmosphere. We see this vaporization as a "shooting star," or when several meteors appear seconds or minutes apart we see a "meteor shower."



A meteor that actually lands on Earth's surface is called a **meteorite** and is difficult to identify, especially if you did not actually see the "fall." Those that endure the friction of the atmosphere are large enough meteoroids to survive vaporization. Heating of the outside surfaces causes their surface to "melt" (ablate), giving parts of the surface a smooth molten appearance. However, the inside may still be cold, since out in space their temperature can approach absolute zero ( $0 = -273\text{ }^{\circ}\text{C}$ ) or be over  $400\text{ }^{\circ}\text{C}$  if the meteoroid had been orbiting in direct sunlight.

### Types of Meteorites:

Metallic meteorites may have enough iron and/or nickel in them to be attracted to a magnet and will be heavy for their size. Sawing off a portion of an iron/nickel metallic meteorite may reveal a cross hatched pattern (called a Widmanstätten pattern). Having cooled slowly over several million years in orbit, the presence of this pattern proves that it is an extraterrestrial object.

Stony meteorites are not magnetic or particularly heavy for their size. They may have what appear to be small "clumps" within the stony mass, which are rounded grains of silicate minerals called **chondrules**.

### Why is it so difficult to find meteorites in New Hampshire?

New Hampshire's soil was almost completely removed by recent glaciation. Melting of the ice sheet deposited new soil that is filled with stony pieces of different weights, sizes and shapes. Therefore, finding them in our rocky soil is much harder than finding them on glaciers or sand dunes.

To date, there are no confirmed meteorite finds in New Hampshire. However if you think you've found one, search the web for "Meteorite ID." There you will find helpful websites with identification tips.

For questions, please contact NHGS - Public Outreach at (603) 271-1976 or [geology@des.nh.gov](mailto:geology@des.nh.gov).