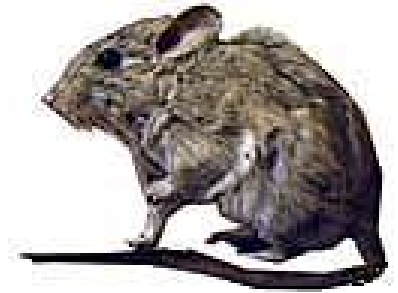




**Packrats, as little as they are, played a very important role in the understanding of Ancient Lake Lahontan environments...**

- These little tykes, the size of hamsters, have been around since the days of Ancient Lake Lahontan.
- They build their nests out of plant parts from within 50 yards of their home. These nests are built in caves, rock shelters, and the cracks in cliff faces.
- This practice keeps the Packrat's (also known as woodrat) nest out of weather and safe from other animals.
- They also use the same nest year after year, adding additional layers to the top and sides. Packrats have been known to create nests as large as four feet across.
- As the packrats build on to their nests, they use the older parts as a sort of storage unit for the miscellaneous garbage they like to collect such as twigs, rocks, bones, seeds, etc. This concoction of "garbage" is known by scientists as midden.
- The tendency to collect such items is the reason the "pack" rat got its name.
- The packrat also uses this pile as a lavatory, depositing fecal pellets and urine in with the midden mix.
- The plant debris that comprises their nest slowly soaks in the packrat urine.
- The urine of packrats is very thick and sticky due to the limited water resources in desert regions. The consistency of the urine is an adaptation to conserve water.
- The urine eventually crystallizes, forming a crust around the plants. This crust looks like dark amber. It is often referred to as amberat.
- The urine, although it might sound gross, actually kills bacteria and keeps out air. The amberat protects the midden from decaying. It also protects everything from being eaten by insects or other animals.
- The result is that amberat can protect the midden for thousands of years.
- The stuff in midden is mummified and preserved.
- The preserved midden is a treasure chest for scientist, as it provides intrinsic clues as to what plants and animals were found around the packrats nest. By knowing this, the climate can also be determined. If we know what flora and fauna thrived, and we know what kind of temperatures and environment is needed to support it, then we know what the climate was!
- Exactly how old the preserved plants and fossils are is determined using radio carbon dating.
- Stuff has been found that dates as far back as 50,000 years, which is the practical limit of radio carbon dating. Packrats have been around a long time!





# The Secret of the Packrat

## Packrats and the Black Rock Desert

- The Packrat studies are crucial to understanding the past environment, including what types of plants were present at the time of Lake Lahontan.
- By examining different packrat middens, scientists have found that the climate was such that it was able to create the lake and support woodlands.
- The midden also indicates that the lake was able to support a vast array of mammals: mammoths, mastadons, camels, mustangs, bison, elk, pronghorn, deer, smildons, sabertooth cats, cougars, bobcats and possibly dire wolves, short faced bears and teratorns.
- In fact, in one study, recorded in the Journal of Quaternary Research by R.S. Thompson, L. Benson and E.M. Hattori (1986), a sample of midden was analyzed that was found below the highest levels of the ancient lake. The radiocarbon dates showed that the level of the lake dropped below the middens by at least 12,070 yr BP. Thus, the middens can even supply a time frame for which the lake receded.
- Samples of juniper and an array of other plants that need a cooler and wetter climate have been found in middens in the Black Rock region.
- Such a little animal that has persevered throughout these dramatic climate changes serves to illustrate the extremes Nevada lands have faced in a short amount of time.
- Packrat midden helps to reveal that The Great Basin was once a land of vast lakes and cool meadows that spread beneath mountains capped in glacial ice.



Dr. Peter Wigand of the Desert Research Institute/Quaternary Science Center holds a chunk of packrat midden that he described as a “weird-looking mass of crystallized plants and dung.” This picture appeared alongside an article in the Las Vegas Review describing the scientific process of analyzing packrat midden

[www.unr.edu/geography/.../faculty](http://www.unr.edu/geography/.../faculty)

### Packrat Fun Fact:

Packrats obviously like to collect various objects. They are particularly fond of small, bright, shiny objects. A popular superstition holds that they are fair businessmen. When they take something, they leave behind something of equal value. While carrying one trophy, they often times might see something they like a little better. They will then put down their first item in exchange for the second. Of course, this is largely because they can only carry one thing at a time.