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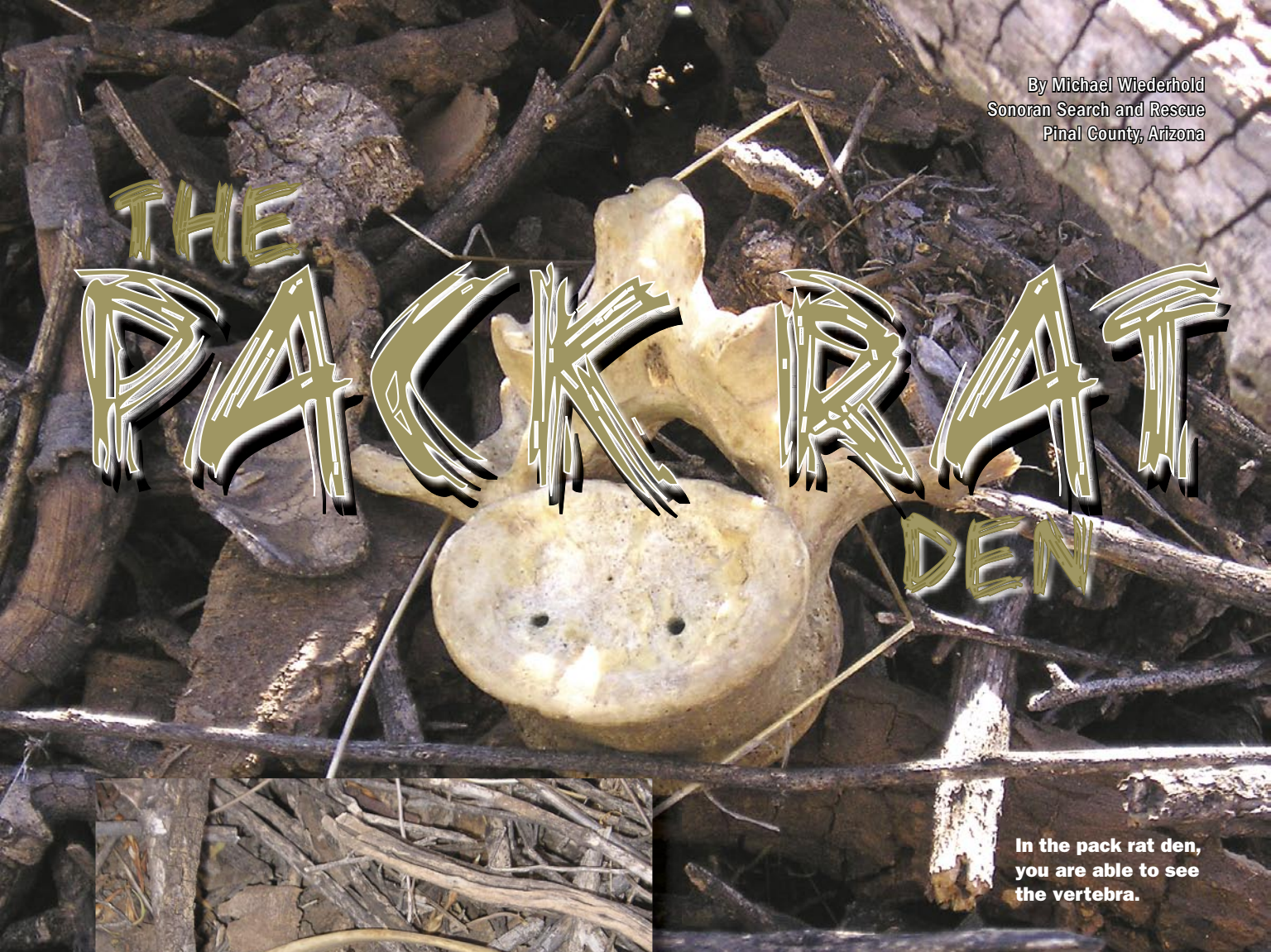
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The Pack Rat Den


**Mounted SAR:
Effective Management – Part 2**



THE PACK RAT DEN



In the pack rat den, you are able to see the vertebra.



Note the rib bones visible in pack rat den.

The pack rat is a very common desert creature in the Sonoran desert, where we are called out to search. Routinely, those searches are for people who are not prepared for the challenge of being out in the desert. For those who are unprepared, the desert is very unforgiving. Temperatures can reach 120 degrees or more in the shade and there is no water in sight. This is the home of the pack rat.

The pack rat also builds his home from the bits and pieces found about the desert, including wood, cactus and garbage left by man. It favors areas where cactus is plentiful and uses it to crate an impenetrable barrier of spikes and thorns. Once inside this structure, he is completely safe from all predators.

If you are a search and rescue person who lives and works in this environment, it



This photo shows a cactus protecting the pack rat den.



A leg bone is visible in this pack rat den.

is important to know how a pack rat makes its home. Once we have made a recovery, our team will search the immediate area for any pack rat dens, or “middens” as they are correctly known. If the person has been missing for any significant amount of time, the pack rat will have collected further evidence and used it to construct their home.

We then either check them out with the cadaver dogs or we can see the bits and pieces we are interested in. Once we have confirmed the evidence that this pack rat has collected is from the missing person, we set about excavating to uncover more. We can find everything – wallets which contain identification, bone fragments and even major

bones that you would not expect these little creatures to be able to move. These bones can be as far as a couple of hundred yards away from the original source.

The bones these little creatures carry to their homes are easily detectable by cadaver dogs if they are trained. But there are several issues you need to be aware of when training for these conditions.

- These dens can be very dangerous places for the dogs. Not only can they be stuck with bits and pieces of cactus (which can easily get into a dog’s pads, feet, nose, face and everywhere else), but the pack rat den is a favorite habitat for scorpions and rattlesnakes. So your dog should be completely aware and trained to avoid rattlesnakes if you are going to work these dens. Then you should also consider having your dogs wear protective boots to prevent them from getting the cactus and thorns in their feet and pads.

- Pack rats urinate on everything. If you have a dog that is having issues with crittering and then try to work a pack rat den, you will be encouraging the crittering behavior. You will be essentially teaching your dog to check out each and every spot that an animal urinates with the idea of discovering what you are truly searching for.

- The possibility of contracting the hanta virus, so you need to take the appropriate personal protection measures.

Pack rat dens can be a real treasure chest to the search and rescue personnel. But you need to be aware of the dangers that go with uncovering this treasure. ■

DEFINING THE PACK RAT

PACK RAT [pack rat]: Rodent of the genus *Neotoma*, of North and Central America, noted for its habit of collecting bright, shiny objects and leaving other objects, such as nuts or pebbles, in their place; also called trade rat or wood rat. Most common in the southern and western parts of the United States, but found as far south as Nicaragua, the pack rat stores the objects it collects to decorate its nest. The rodent may reach a length of 18 inches (45.7 cm) including tail, has soft brown fur, and resembles a squirrel with large ears. It eats nuts, berries, seeds, twigs, and roots. Its nest is a large stick structure built in a sheltered area. The desert species adorns its nest with bits of cactus, turning it into an impenetrable fortress. A litter is born after a gestation period of 33 to 39 days and contains from two to six young. Pack rats are classified in the phylum Chordata, subphylum Vertebrata, class Mammalia, order Rodentia, family Cricetidae.

Source: Author not available, PACK RAT, The Columbia Encyclopedia, Sixth Edition. Copyright 2006 Columbia University Press.

HANTAVIRUS

Any of a genus (*Hantavirus*) of single-stranded RNA viruses virus, parasite with a noncellular structure composed mainly of nucleic acid within a protein coat. Viruses usually are too small (100–2,000 Angstrom units) to be seen with the light microscope and thus must be studied by electron microscopes. In one stage of their life cycle, that are carried by rodents and transmitted to humans when they inhale vapors from contaminated rodent urine, saliva, or feces. There are many strains of hantavirus. The first to be isolated (1976) was the Hantaan virus (from the Han River in South Korea, which also gives the species its name). Hantaan virus and its related strains, Seoul virus and Puulmala virus, cause Korean hemorrhagic fever (more correctly, “hemorrhagic fever with renal syndrome”), a condition in which the capillaries of the circulatory system begin to leak blood. Although some people with the disease are nearly asymptomatic, in others it can lead to shock, acute kidney failure, and, in 10% of cases, death.

A second disease, hantavirus pulmonary syndrome, was

identified in the United States in 1993 and is caused by at least three strains of the virus. It is known to be carried by deer mice, white-footed mice, and cotton rats. This disease is much more deadly, causing flulike symptoms that can lead to fluid accumulation in the lungs and death. One of the pulmonary strains, the Sin Nombre virus (named for a Spanish massacre of Native Americans that occurred in the canyon where it was discovered), was the cause of a 1993 outbreak in the Four Corners area of the SW United States that killed 32 of 53 people known to have been infected. Sporadic occurrences of hantavirus pulmonary syndrome still occur in North America. Outbreaks of a hantavirus strain that apparently can be spread from person to person occurred in South America in 1996 and 1997. There is no vaccination for pulmonary hantavirus. Treatment includes respiratory and hemodynamic support; the antiviral drug ribavirin has been effective in some cases.

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MIDDEN STRUCTURE

Packrats are known for their characteristic searching of materials to bring back to their nests creating an ever-expanding collection known as a “midden” for its messiness. In

natural environments, the middens are normally built out of sticks in rock crevices or caves to protect themselves from predators. In the absence of crevices or caves, the middens are often built under trees or bushes. The packrats will also use plant fragments, animal dung and small rocks in building the nest. The vast majority of the materials will be from a radius of several dozen yards of the nest. The packrat urinates in the midden during the time it lives there; the sugar and other substances in the urine crystallize as it dries out, cementing the midden together. After a few decades, the packrat will abandon the midden and move on to start a new nest.

PACK RAT MIDDEN ANALYSIS

In 1978, paleoecologist Julio Betancourt was asked to study packrat middens. Betancourt had previously tried to imagine where the Anasazi had gotten the numerous large logs for the buildings of the treeless Chaco Canyon site in what is now northwestern New Mexico; he called midden expert Tom Van Devender and confirmed that Van Devender had found pinyon needles near the site, though none of these trees grew

there in modern times. Thinking that the middens were perhaps a century old, Van Devender and Betancourt submitted the middens to radiocarbon dating and found that many of them were over 1,000 years old. Research since then has found middens can last 40,000 years.

The unsuspected resilience of the middens is due to three factors. The crystallized urine dramatically slows the decay of the materials in the midden. The dry climate of the American Southwest further slows the decay, and middens that are protected from the elements under rock overhangs or in caves survive even longer.

Zoologists examine the remains of animals in middens to get a sense of the fauna in the neighborhood of the midden, while paleobotanists can reconstruct the vegetation that grew nearby. Because middens are abandoned after a short period of time, they are uncontaminated “time capsules” of several decades of natural life, centuries and millennia after they occurred.

Source: Betancourt, Julio L., Thomas R. Van Devender, and Paul S. Martin, eds. Packrat Middens: The Last 40,000 Years of Biotic Change, University of Arizona Press, 1990, ISBN 0-8165-1115-2.