

Squirrels That Smell like Snakes

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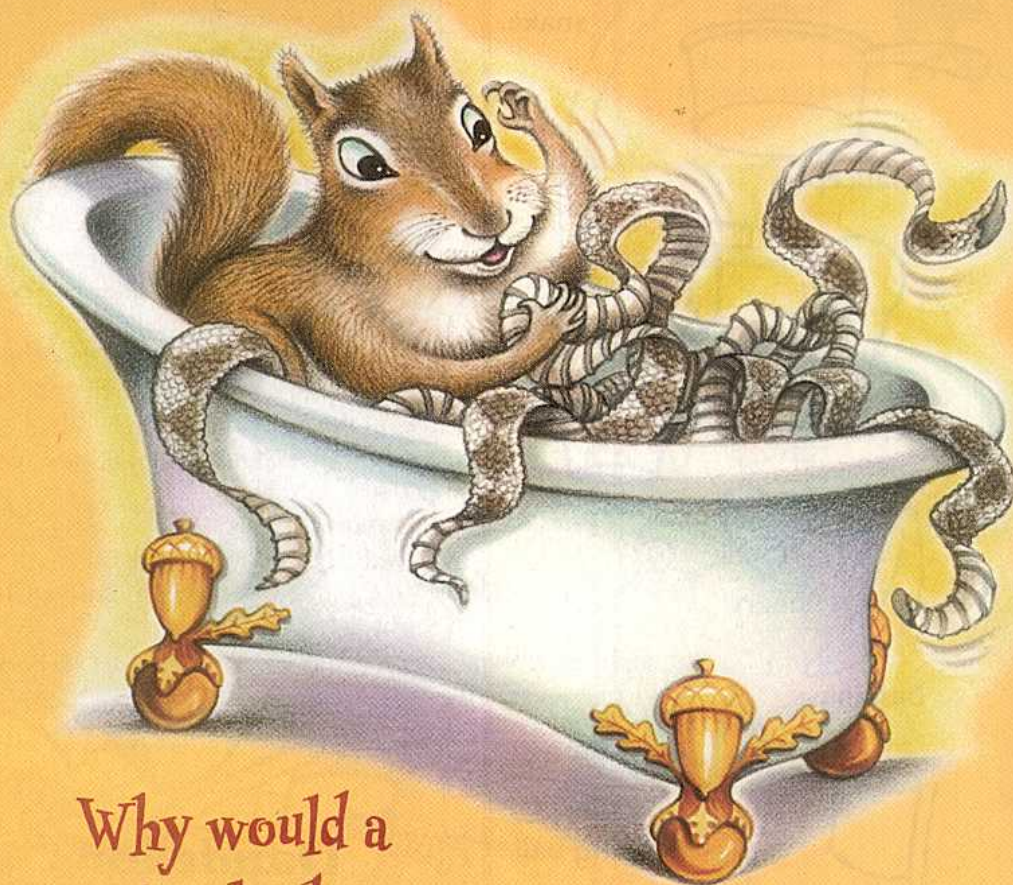
From the trunk of her Volkswagen hatchback, Dr. Barbara Clucas aimed her camera.

Nose a-twitch, a California ground squirrel bounded toward Clucas's bait: a circle of sunflower seeds. A ground squirrel will almost always stop for sunflower seeds. Inside the circle of seeds was a rattlesnake skin.

The squirrel grabbed the skin with both front paws and began to chew. Then it smeared snakeskin-scented saliva onto its fur.

Clucas is a scientist who studies animal behavior—especially squirrel behavior—at the University of California, Davis. How did she get started studying how ground squirrels use snakeskins?

Other researchers had seen



Why would a squirrel take a snakeskin bath?

chipmunks and mice taking snakeskin baths. One day, Clucas saw a ground squirrel doing the same thing, using a skin left behind by a snake. As a snake grows, from time to time it must shed its skin. That shedding lets a new, larger skin underneath expand and make room for more growth. Clucas watched the ground squirrel chew the skin and then smear a mixture of snake scent and saliva onto its sides, hind legs, and tail.

Why would a squirrel do such a thing? There was only one way

to find out. Clucas needed to spy on ground squirrels.

What Are They Thinking?

Before Clucas began, she came up with three different educated guesses, or hypotheses, that might explain why squirrels spread snakeskin saliva on themselves.



Dr. Barbara Clucas loves her job: spying on squirrels.



Photographs courtesy of Dr. Barbara Clucas and the University of California-Davis.



The squiggly lines above the white mouse are from one of Dr. Holy's "sound pictures." It shows that a male mouse's sounds are not just a jumble of squeaks. They have a regular pattern.

mice can carry a tune.

the sounds, and finally he found a pattern.

Holy grouped mouse sounds based on how much they jumped in pitch. He identified at least seven different types of syllables—about the same number of syllables as in some birds' songs. He found that mouse sounds contain distinct syllables, the first characteristic of true song.

Songs Have Structure

In true songs, the syllables are arranged with a specific structure, not jumbled together. For example, a word makes sense only if the syllables are in the right order. *Crocodile* means something, while *dile-o-croc* does not.

Once Holy had figured out how to use the computer to identify different syllables, he looked at sound pictures to see how the mice arranged those syllables. "We wanted to know that they weren't just drawing syllables randomly out of a hat," he said.

The result? "Mice tend to repeat themselves with one

syllable type and then they'll move on to another," Holy said. Birds often do the same thing. Mouse sounds show structure, the second characteristic of true song.

Every mouse sings a different song.

Songs Are Unique

Another characteristic of song is that every animal sings a slightly different song. In fact, individual birds can be identified by their songs. Holy wondered if the same was true for mice.


To find out, Holy had to write another computer program. "It gave us a result that I hadn't really expected," he said. He found that different mice preferred to use certain types of syllables. By listening for the syllables, he could identify individual mice by their songs. Mouse sounds are individual, the third characteristic of true song.

Mouse sounds contain different syllables, arranged

in a structure, and each individual male mouse sings his own song. "When they start singing, sometimes they'll sing for 10 minutes," Holy added. Mice really, truly sing.

Understanding Songs

Now Holy and other scientists have a list of other questions about mouse songs. Do male mice sing to attract females? Do female mice sing, too? How do mice learn to sing?

Holy and his lab will try to answer some of these questions. That's his favorite part of science. "You get to spend your time trying to figure out how the world works," he said. "To me, that's the best job there could possibly be." 

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