

## NATURE'S LABORATORY

*"Where there is a stink... there is a smell of being."*

-- Antonin Artaud

When you're hiking outdoors, odds are you'll come across some animal droppings. A cluster of pellets, perhaps, or a furry wad of mucous and bones. These leavings are known in the world of science as scat and cough pellets. Believe it or not, there is a whole field of science dedicated to the study of animal waste - scatology. Scat, more familiarly called feces or excrement, helps scientists identify and classify scat specimens and their makers. Studying scat also gives scientists insight into a species' diet, what they eat.

Specifically, scat is excreted animal waste. Cough pellets, also known as castings or bird pellets, are particular to birds, which collect non-digestible material - hair, bones, claws, beaks - in their gizzard to be coughed up and ejected orally later. Both, however, can be examined to disclose the contents of their maker's last supper. Other non-digestible materials that might survive a trip through the digestive track include fibrous material, woods chips, fish scales, insects parts and seeds.

In fact, many seeds rely on such a trip, stomach acids and all, to break down their seed coat as they pass through. And when they finally make it through to the forest floor, they are fortunate enough to be deposited in the scat, fertilizer for a future seedling!

Between species, even within species, scats vary tremendously in their abundance, distribution, consistency, size and shape. Still, every species leaves behind its own distinctive scat. Although scat won't always identify an animal to species, it will help narrow down your choices. Familiarizing yourself with scat and learning to identify animal tracks (September's NatLab) will give you the essential tools to properly identify a creature that passed by hours ago.

Rabbits deposit small, spherical pellets flattened top to bottom, as well as a black semi-liquid scat they reingest to get any last nutrients. Rodents (including porcupines) and shrews deposit small, elongate spheres which differ some between species. Deer and elk leave similarly shaped pellets of much larger proportions. Those that aren't oval shaped have a characteristic point and depression on either end, known as a "nipple" and "dimple."

Dogs, wolves, foxes, coyotes, bears, and raccoons deposit long, thick cords of scat. In particular, dog, wolf and fox scat usually has one end that tapers into a distinct "tail." Bear and raccoon scat is usually blunt ended; bears' scat often boasts berry seeds and ants, while raccoons' are loaded with crayfish remains. Big cats like mountain lions and bobcats have blunt ended scat interrupted by constrictions, oftentimes broken at the points of constriction into short segments.

Opossum scat is hard to identify, being indistinct, irregularly segmented and cylindrical in shape. Skunk scat is cylindrical and blunt, folding back on itself like a squiggly line. River otter scat is characteristically oily and fishy, loaded with fish scales and vertebrae.

Owls, raptors, crows, ravens, jays, magpies, gulls, herons, storks, flycatchers and kingfishers all leave cough pellets, not to mention long, thin cords of scat often tipped or covered with white, nitrogenous urine deposits. When fresh, cough pellets are usually black and covered in mucous, but they gray in color as they dry out. These castings are most often found near nests and roosting sites. Logically, pellet size is determined by the diameter of the throat, which can help identify the bird's relative size.

Scat serves another purpose in the animal kingdom - marking territory. Scat, urine and musk, a heavy, persistent territorial marking scent, are used regularly to stake claims and advertise to passersby not to trespass. Some predatory species even defecate on the remains of a kill after they've eaten their fill.

Mountain lions and bobcats mark their territory on prominent markers with a heavily-scented urine. Since the scent is bound to diminish over time or wash away in a rain storm, these scentposts are refreshed regularly as the cats make their rounds.

***Hands On:*** Armed with a field guide and your knowledge of tracking and scatology, you are ready to explore your backyard. See who visits each evening after you go to bed. Is that a raccoon visiting your trashcan, or a curious opossum? A tree trunk graffitied with bird scat might mean a nesting scrub jay, or it might mean there are cough pellets to be found.

It's important not to smell or handle scat and cough pellets without adult supervision. Raccoon scat, for instance, can carry a parasite fatal to humans. But with some help, and a little luck, dissecting an owl's cough pellet might offer up the complete skeleton of its last meal. Barns are a great place to look for castings of - who else? - barn owls. Check beneath the rafters or atop hay bales where an owl might lurk waiting for dinner to scurry by.

Collect a few castings and bring them home. Sketch the castings and their bones as you carefully dissect the remains. The outlying fuzz is matted fur. Inside is a jumble of bones, hopefully the whole skeleton. Look for the skull and the jaw bone. With some patience, you can reassemble the mess of bones into their former owner - perhaps a mouse or shrew.

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