



How to Read a Tree

Learn to decipher the stories that wildlife leave behind on bark and branches. **BY ELLEN HOROWITZ**

BARK MARK Bear scratches are the easiest tree hieroglyphics to decipher. Gouges made by the animal's powerful claws on the trunks of aspens or poplars show up years later as dark scars.

One winter many years ago while we were skiing through an aspen grove, my husband stopped to admire bear claw marks, large and small, etched on a tree. We wondered: Were they made by a female and her cub as they climbed the tree one spring day to feed on buds and catkins? Had she sent her cub up ahead of her to flee danger? Or were the dark lines and patterns on the pale trunk made by two unrelated bears that visited the grove many years apart?

That's when I first began thinking about the various ways trees can be "read" to decipher the secretive lives of many wildlife species. Since that afternoon I have rarely gone for a walk, ski, or snowshoe in the woods without noticing the hieroglyphics inscribed by furred, feathered, and six-legged creatures.

Trees attract animals of every size and type that climb, gnaw, eat, rub, thrash, and burrow into bark and branches. The scratches, scuffs, gouges, and gnaw marks left by animals on tree bark represent a form of picture writing created by claws, teeth, beaks, mandibles, and antlers. Like ink on paper, the markings show up most distinctly on aspens, darkening with age and contrasting with the smooth, cream-toned trunk. But nearly every kind of tree chronicles the lives of forest dwellers. Once you know what to look for, even dark, rough-textured trunks read like picture books.

Bear claw gouges are among the most conspicuous bark marks. Some are from climbing bears, while others indicate a paw's vertical swipe that rakes a trunk for several inches. I've also seen marks made by bears working both paws on a tree and bringing them close together in a V pattern. "During breeding season, males are cruising around and want to let other bears know they are in the vicinity," says Mike Madel, Montana

Fish, Wildlife & Parks grizzly bear management specialist in Choteau. "When a male griz comes to a tree, he stands up, sniffs and rubs, and bites and claws, like he's saying, 'This is who I am.'"

Trees close to trails make convenient and easy-to-read message boards for bears to leave and receive notices. The same is true of "rub" trees. Once thought to be simply places used to relieve a bear's itchy back, rub trees are now recognized as a type of bruin signpost. They allow males to communicate with each other by scent, which helps reduce



SENDING A TREE "TEXT" A grizzly bear rubs a ponderosa pine to tell others, "I was here."

fighting over potential mates. Trees used by bears over generations display a patina where the bark is worn smooth from rubbing. Other rub trees may be coated with dirt or covered in hair. Females and cubs also use rub trees, though biologists aren't sure why.

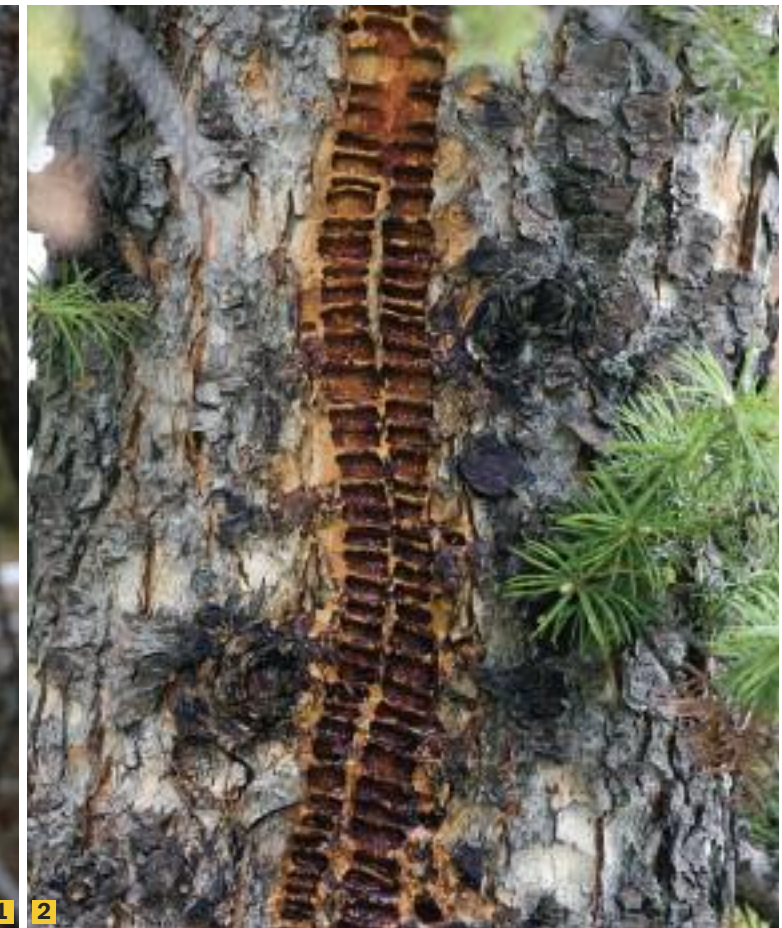
TEARING UP TREES

Trees are convenient bulletin boards for other animals, too. Mature bull elk prefer saplings for advertising their dominance when the rut begins in September. Rubs start about 3 feet above the ground and go as high as the bull's antlers can reach. Elk hair commonly appears on vigorously rubbed trees. "Elk rub with a vengeance," says Tim Thier, FWP wildlife biologist in Trego. "They twist their head so hard I've seen them rip young trees right out of the ground." Shredded branches and trunks indicate to other bulls the size and power of the testosterone-crazed bull that caused the damage. The noise created by the commotion sends a message of "Bring it on" to other bulls within earshot

Buck deer leave sign on shrubs and young trees starting in late summer, when their antlers finish growing and harden. Rubbing on woody plants removes dried velvet and stains the antlers various shades of brown. High-ranking bucks continue to rub their antlers on trees throughout fall. Deer rubs typically appear on smooth-barked trees 1 to 4 inches in diameter, though larger trees are sometimes used by especially big bucks. Rub tree bark looks scraped or shredded from 1 to 4 feet above the ground. Bucks also leave a scent message to younger bucks and does by rubbing glands on their forehead against low-hanging branches.

BITE MARKS

Animals that eat tree components leave evidence of their dining. Bears, for instance, tear off outer bark to reach the sweet and nutritious inner bark and cambium in spring. Madel says a bear initially bites into a tree with its canine teeth until it lacerates the bark. Then it grips the torn piece with the upper and lower incisors "like a pincers," he says, and tugs with all its might. Once the outer bark is yanked clear of the tree, the bear scrapes its incisors against the freshly exposed inner layer. Pieces of bark lie strewn



WHAT DID THIS? Guess which animals left their "signatures" on or in these trees (answers on page 15).



CLOCKWISE FROM LEFT: TONY BUNIM; JESSE LEE WAINWOLD; FRANCIS AND JANICE BERGQUIST; GAIL WISER; ONDY GREDDEL

about the bottom of the tree or hang in jagged strips above the peeled area. Toothy grooves in the trunk are often visible.

Elk browse aspens in winter when deep snow thwarts access to the animal's preferred grasses and forbs. Because elk lack upper incisors, they gouge the trunk with their bottom front teeth in an upward or diagonal motion. In *A Field Guide to Mammal Tracking in North America*, Montana author James Halfpenny writes that the lower edge of a debarked area shows a well-defined line where the elk's teeth cut deepest into the bark. Aspen groves with many black-scarred tree trunks indicate where elk congregate during cold months. In heavily used winter range, it's not unusual to find evidence of new feeding activity above old, dark, healed-over aspen trunk sections. Feeding activity may appear several feet or more above the height of an elk's head, indicating where the animals were able to walk atop deep, densely packed snow.

In winter, voles and snowshoe hares nibble saplings for cambium when other foods

Tree markings come in all shapes and sizes. Some are dots and dashes reminiscent of Morse code; others flow like calligraphy.

several feet up a sapling. Porcupines climb trees and chew irregularly shaped patches of bark for the cambium. It's common in porcupine range to spot trees with patches of missing bark along the trunk and limbs from the animals' gnawings.

Birds, particularly sapsuckers, inscribe trees from the time they show up in spring until fall migration. These members of the woodpecker family hammer small holes on tree trunks and branches to obtain sap. At one time it was thought that sapsuckers tap trees primarily to attract insects. Research now shows that the birds come specifically for the sweet liquid, and that bug consumption is incidental.

reduces wasteful seepage down the trunk, and makes it easier for sapsuckers to sip.

The pileated woodpecker is another bird that leaves a trademark sign on trees. The crow-sized, stout-billed bird excavates foraging cavities roughly 8 inches wide and 14 inches deep. Its ability to reach far inside a tree's heartwood allows the woodpecker to reach abundant carpenter ants living there.

BUG MARKS

Evidence of insects appears on most every tree in the forest. Minute holes in the outer bark serve as entrances or exits for a variety of bugs that spend most of their lives hidden from view. Beneath the bark, wood-boring and engraver beetles scrawl their stories using their mandibles as writing instruments. The secretive lives of these beetles are revealed when a tree dies and the bark sloughs off. The patterns, known as galleries, are the insect equivalent of journals. Because each species has a unique way of telling its tale, entomologists can identify a beetle by its gallery. Some patterns are beautifully intricate, while others appear as broad, sawdust-packed troughs.

According to Amy Gannon, an entomologist with the Montana Department of Natural Resources and Conservation in Missoula, certain insect diaries reveal extremely complicated lives. Several species of the ips engraver beetle create complex galleries that read like chapters from *The Arabian Nights*, complete with nuptial chambers for the males' harems, the females' egg-laying chambers branching off from breeding compartments, and grooves carved by hungry larvae.

Tree markings come in all shapes and sizes. Some, like a pileated woodpecker's large excavations or a grizzly's deep slashes, denote power or aggression. Others, like an insect's delicate pinpricks, tell of tiny creatures at work. Some are dots and dashes reminiscent of Morse code; others flow like calligraphy. All have a story to tell.

When I hear someone say they didn't see anything in the woods, I suspect they didn't take the time to look. Even if animals themselves are not visible to us, many leave messages behind on trees. It's just a matter of learning the language and then slowing down to read what they wrote. 🐻



WOOD CHIPPER A northern flicker sends trunk fragments flying as it excavates a nest cavity. Large holes in trees are usually the work of flickers, sapsuckers, or woodpeckers.

are unavailable. Voles tunnel under snow and chew bark from the base of young trees, leaving tiny tooth marks as evidence. Snowshoe hares prefer to dine from atop existing snow levels, which leaves their teeth marks visible

Parallel rows of quarter-inch-wide round or rectangular openings, known as sawwells, denote the work of sapsuckers, with new holes appearing above older ones. The birds create the well by drilling at a downward angle and making the hole slightly deeper in the back than at the opening. The shape holds more of the high-calorie drink,

Writer Ellen Horowitz of Columbia Falls is a longtime contributor to Montana Outdoors.



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CAUGHT IN THE ACT 1. Rutting bull elk rub their antlers against the bark of saplings. 2. Woodpeckers such as this Williamson's sapsucker make elaborate patterns with their beak. 3. Black bears leave claw marks and scrapes as they climb large aspens and poplars. 4. Engraver beetles such as the ips gouge elaborate tunnels, known as galleries, that reveal where the insects lived, laid eggs, and fed.



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CLOCKWISE FROM LEFT: BECCA WOOD; MICHAEL MAURO; FRANCIS AND JANICE BERGQUIST; SHUTTERSTOCK; TONY EPINUM